



PREPARED FOR VACATION, Carl J. Kentfield (4411) appears loaded down with recreation equipment of all kinds. Typical of Sandia employees, Carl is 36 which is the average age of employees and has been at Sandia almost five years, the average length of service for employees. He accrues 24 days vacation each year.

Employees Received \$3 Million While Vacationing Last Year

Whether basking in summer sun or skiing in winter, Sandians enjoy a year around privilege of choosing their own kind of recreation and having the time to pursue it. Employees have long been aware that 24 days of paid vacation a year is a very special feature of working with Sandia Corporation.

In the past, the Lab News has told of Sandians vacationing in Europe, Hawaii, or South America. Employees have spent their vacations panning for gold in Alaska, fishing in the Pacific,

boating on the Sacramento River or running the rapids of the Colorado.

There have been others who have spent their leisure in building homes, working in the yard, painting their houses, or painting pictures. Some have escorted youth groups on camping trips, instructed at scout camps or attended special workshops at universities.

On any work day of the year the average number of Sandia Corporation employees on vacation is 486. The 7,500 employees of the Corporation take a total of 123,-

000 man-days a year in vacation. If one man were to take this much vacation, he would be off work for 47 years.

The combined pay for this leisure is \$3,037,116.

In addition, employees who are eligible may sell back to the company up to 14 days vacation time of a current year's accrual. In 1958 these employees received \$1,156,486, for their unused vacation time.

All employees are required to take at least two consecutive weeks of vacation each year.



published every other friday for the employees of sandia corporation, contractor to the atomic energy commission

D. A. Quarles — Former SC President — Dies Suddenly At Home in East

Donald A. Quarles, president of Sandia Corporation from March, 1952, to September, 1953, died May 8 at his home in Washington, D.C. Since leaving Sandia he

Bell System. While with Western Electric Company he worked in the Company's Engineering Department in New York City. In 1925 this Department became the Bell Telephone Laboratories.

From 1919 to 1924 he was in transmission engineering and research and then for four years he was a member of the Inspection Engineering Department. In 1929 Mr. Quarles became director of outside plant development.

As director of transmission development from 1940 to 1944, he was in charge of the development of carrier telephone systems, broad band telephone and television systems and improved voice frequency transmission systems.

In 1944 he was appointed director of apparatus development and in 1947 he was elected a vice president of Bell Labs.

President Eisenhower, speaking of Mr. Quarles, said "As deputy secretary and prior to that Secretary of the Air Force, Mr. Quarles devoted his extraordinary talents to the service of his country. His contribution was of inestimable value to the security, not only of the United States but of the entire free world."

J. P. Molnar, Sandia Corporation president, said "We are all shocked by the news of the untimely death of Mr. Quarles. As president of Sandia Corporation and a resident of this community he made many friends here before going to Washington. The nation has lost an outstanding leader and Albuquerque a good friend."



Donald A. Quarles

had been serving the Department of Defense in various capacities. Most recently he was Deputy Secretary of Defense.

With the Bell System since 1919, Mr. Quarles first served with Western Electric Company until 1925 and then was with the Bell Telephone Laboratories. When he came to Sandia he was a vice president of the Bell Telephone Laboratories.

Mr. Quarles was born in Van Buren, Ark. He graduated from Yale University in 1916 with a Bachelor of Arts degree.

Mr. Quarles had a varied and distinguished service with the

Graphics, Design Meet Emphasizes Industrial Drafting Practices

Two Sandians will participate in a full-day Graphics and Design Conference to be held at the University of New Mexico on May 25.

E. S. Roth (2562) will discuss the instruction in dimensioning and tolerances at Sandia Corporation and F. F. Eichert (4410) will speak on mechanical drafting.

The meeting in the Lobo Room of the Student Union will be attended by high school and university instructors, and representatives of industries and government agencies.

Purpose of the university-sponsored meeting is to inform instructors of drafting practices currently being followed in industry so that courses may better adapt students.

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ALBUQUERQUE, NEW MEXICO

MAY 15, 1959

Sandia's Work in 'Plowshare' Told in 8 Technical Papers

Aspects of Sandia Corporation's participation in the Plowshare Program were discussed in San Francisco this past week. A series of eight technical papers by Sandia authors were presented during the Second Plowshare Symposium sponsored by the San Francisco Operations Office of the Atomic Energy Commission and the Lawrence Radiation Laboratory.

The papers and their authors are as follows:

"Cratering by Chemical Explosives" by M. L. Merritt (5110), B. F. Murphey (5112) and L. J. Vortman (5112-1).

"The Use of Upper Atmosphere

Nuclear Bursts as a Research Tool" by T. B. Cook, Jr., (5111).

"Underground Mining with Nuclear Explosives" by R. E. Smith (4421).

"Some Speculations on the Effects of Nuclear Explosions on Hurricanes" by J. W. Reed (5111).

"Utilizing Nuclear Explosives in the Construction of Underground Oil Storage Tanks" and "Utilizing Nuclear Explosives in the Construction of Geothermal Power Plants" by R. H. Carlson (5112-1).

"Sub-Surface Earth Motions" by W. R. Perret (5112-1).

"Requirements for Nuclear Excavation of a Sea Level Isthmian Canal" by L. J. Vortman (5112-1).

H. N. Snook, F. E. Burley Get New Positions With Western Electric

Announcement has been made that H. N. Snook, Vice President, Engineering for Manufacture, 2000, and F. E. Burley, Director of Manufacturing Development, 2500, will return to Western Electric Company to accept new positions. The transfers will be effective July 1.

Mr. Snook will become Assistant Works Manager in charge of Operations, Merrimack Valley Works, Mass.

Mr. Burley will become Superintendent of Engineering, Indianapolis Works, Ind., and will be responsible for product engineering, machine, tool and test set design.

Joining the Western Electric Company in 1941, Mr. Snook spent most of his time at Kearny Works, becoming Superintendent of Crossbar, Wired Unit and Quartz Crystal Shops in 1955. On January 1, 1958, he was assigned to Sandia Corporation as Vice President, Operations.

Mr. Burley's Bell System career began in 1928 as a cooperative student. In 1940 he was assigned to Kearny Works and subsequently to Burlington and Winston-Salem, N. C. He was Superintendent, Headquarters Engineering, at Winston-Salem when he was transferred to Sandia as Superintendent of Inspection in December, 1955.

Admiral Praises Sandia, LRL Polaris Work

Rear Admiral William F. Raborn, director of the Special Projects Office, Bureau of Ordnance, has praised Lawrence Radiation Laboratory and Sandia Corporation's Livermore Laboratory for their work on the Polaris warhead.

Adm. Raborn, who has been in charge of the development of the Polaris weapon system, said:

"My compliments to the Lawrence Radiation Laboratory and Sandia Corporation's Livermore Laboratory on the very smooth and efficient work toward the development of the Polaris warhead. I particularly want all those working on the project to know my deep appreciation of this splendid cooperation with the Navy."

The Polaris missile is designed especially for submarine use and will use a solid propellant. Its range will be about 1,500 miles. Contracts have been let by the United States government for seven nuclear powered submarines which will each carry 16 of the missiles.

New Corporation Directors Visit Sandia, Livermore

H. I. Romnes, newly-appointed president of the Western Electric Company, J. B. Fisk, president of Bell Telephone Laboratories, and C. R. Smith, vice president, Radio Division, Western Electric, attended technical briefings at Sandia Corporation in Albuquerque and Livermore last week.

As part of the briefing in Albuquerque the members of Sandia's Board of Directors were taken on a tour of Area I and Area III. J. P. Molnar, president of Sandia Corporation, and S. P. Schwartz, vice president and general manager, accompanied the group to Livermore May 8.

While at Livermore they were briefed by R. E. Poole, vice president, Livermore Laboratory, on the relationship of the Laboratory to the Lawrence Radiation Laboratory, Department of Defense, and Sandia Laboratory.

W. J. Howard (8100) explained the technical program status and C. W. Campbell (8200) spoke on Livermore Laboratory administration.

During the day the visitors were taken on a tour of the recently completed Laboratory buildings and facilities.



ATTEND BRIEFING: Officials of Bell Telephone Laboratories and the Western Electric Company attended technical briefing sessions at Sandia in Albuquerque and Livermore last week. From left to right are: J. B. Fisk, President, Bell Telephone Laboratories; H. I. Romnes, President, Western Electric Company; C. R. Smith, Vice President, Radio Division, Western Electric Company; J. P. Molnar, President, Sandia Corporation; and R. W. Henderson, Vice Pres., Development, Sandia Corp.

Money Matters.. Can You Answer?

Financing, deficits, taxes and U. S. Savings Bonds are the subject of the Sandia Lab News quiz this week. Still in the pursuit of helping people know more about those things which greatly affect them, this paper compiled the following questions.

If you answer all of them correctly you probably know more than the average person about governmental money matters. Eight correct isn't bad, but why not brush up? If you have less than half right you're not keeping up with the situation and you'd better brush up quickly.

Here are the questions.

1. How much money has the Federal government collected in taxes and other charges since its beginning in 1789?
2. How much money has the Federal Government spent since 1789?
3. How much is the national debt today?
4. To pay off the national debt, how much would each person in the United States have to pay?
5. How much money do Americans have in Series E and H Savings Bonds?
6. What per cent of the national debt is in the hands of the people through Savings Bonds?
7. How did the sale of U. S. Savings Bonds in 1958 compare with the amount of Savings Bonds cashed in?
8. Why are U. S. Savings Bonds "safe"?
9. If you invest \$2.50 per week in U. S. Savings Bonds, how much money will you have in three years? In five years? In eight years and 11 months?
10. How much interest does your money earn when you invest in U. S. Savings Bonds ("E" Series)?

You will find the correct answers at the bottom of the page.

Back From Service

Desert land must seem strange to Ralph W. Kelley after nearly three and one-half years in the



R. W. Kelley

Navy. Most of his service was in the Pacific in special weapons work.

Ralph had been an engineer at Sandia for about two and one-half years before entering the Navy. Since his return this month he has been in the Environmental Test Division 1611.

Owners of New Homes

H. W. "Bill" Pumphrey (5143) and family have moved to a new home at 9801 Haines NE.

There's a new address for Mr. and Mrs. Jack Kilmartin (2711-7) who have moved into a new home at 321 Moon St. NE.

Enjoying their new home at 2920 Avenida Nevada are Mr. and Mrs. J. H. Placek (2543).

Mr. and Mrs. John Zimmerman (1262-2) recently moved into their new residence at 6101 Rogers NE.

A new home owner in California is Joyce D. Ralph (8212-3) and her family, who have moved from Livermore to Walnut Creek, some 30 miles from the Livermore Laboratory. Their address is now 326 Crest Ave.

Moving into a new home at 2910 Utah NE this week is Bert Lindsay (5126) and his family.



Kajean Stover (4623)

Take A Memo, Please

You can't be safe by going to sleep (mentally, of course) and hoping that somebody will be around to worry about you and "order" you into safety. Safety is something you have to worry about yourself. Nobody's going to do it for you.

Track Star Student-Employee

Returning to Sandia in June for the second time under the summer student hiring program will be Clyde Northrup, Jr., presently rated second in the nation in discus throwing.

Young Clyde, son of Clyde J. Northrup (5252), is a junior at Oklahoma State University where he maintains a "B plus" scholastic average in his studies (he's majoring in math and nuclear physics) and will be president of his class next year.

In track meets Clyde set a new school record with 173'3 1/2" in his sophomore year and has set new records in competition against Colorado and Nebraska universities.

Clyde started throwing the discus while attending Highland High and only 2 1/2 inches stands between his longest distance and the country's best college mark.

Auditors Bowl

Bowlers of the Auditing organization (4120) have organized a summer bowling club. A prize is to be awarded for high pins of each three game series and the losing team will be host of a party in September.

Congratulations

Born to:

Mr. and Mrs. W. Kendall Gentry (4412-1) a daughter, Elizabeth Anne, on April 14.

Mr. and Mrs. J. M. Berry (5251) a son, Robert Kenton, on April 15.

Mr. and Mrs. J. C. Mitchell, Jr. (5254-1) a daughter, Mary Katherine, on April 22.

Mr. and Mrs. Elliott "Tiny" Harris (4762-1) a son, Jeffery Craig, on April 30.

Mr. and Mrs. Kenneth Drake (1624) a daughter, Mary Kathleen, on May 3.

Mr. and Mrs. Cecil Page (1624) a daughter, Nancy Gill, on April 26.

Mr. and Mrs. Jack Teta (2711-7) a daughter, Marianne, on April 15.

Mr. and Mrs. E. M. Aldred (2542) a son, Christopher Max, on May 2.

Mr. and Mrs. L. A. Parker (1262-1) a son, David Bruce, on May 1.

Mr. and Mrs. Jack McCollum (4232-1) a daughter, Sandra Joyce, on April 20.

Mr. and Mrs. Frank Duggin (4314) a son, Frank David, on April 29.

Mr. and Mrs. R. F. Harlan (1613-3) a daughter, Jan Ellen, on May 2.

Mr. and Mrs. Billy Johnson (1613-3) a son, William Blakely, on May 2.

Mr. and Mrs. C. W. Williams (5126) a boy, Robert Harwin, on May 8.

New Mexico Magazine Uses Talent Of Two Sandians in Current Issue

Proof of employees' enthusiasm in the Southwest might be indicated by a glance at contributors to the May issue of *New Mexico Magazine*.

The front cover, a color shot of Tent Rocks, was taken by Howard Pennypacker (1463) and those are his sons in the foreground.

Howard, an engineer, has been in Albuquerque almost two years. He said, "The first photograph I submitted to the magazine was accepted; it was taken of a ranch in the Jemez Mountains and appeared in the November 1958 issue."

Another feature of the current issue is a story and pictures by H. H. "Pat" Patterson (5250) on boating down the Rio Grande. "I used to boat as a youngster in Tennessee," Pat explained, "but about three years ago when I

bought a boat in New Mexico friends thought my interest was completely disoriented."

Both his wife and children often accompany him on trips down the river and their favorite section is 23 miles between Otowi Bridge and Cochiti Pueblo. Here the Rio Grande passes by ancient Indian ruins and through scenic areas otherwise inaccessible. Pat is believed to be the first person to run a rigid boat through this stretch.

Vocal Recital

Elaine Hughes (4633) will present a vocal recital Sunday, May 24, at 4 p.m. at the Lyric Thea-



Elaine Hughes

ter, 1520 Central SE.

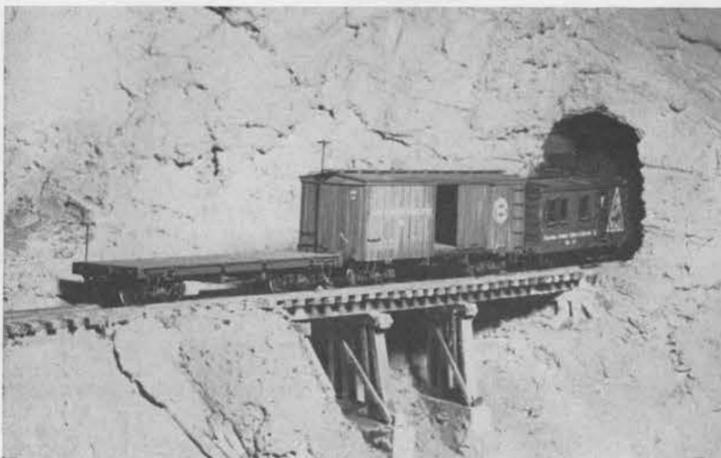
Accompanied by James York, Elaine will sing the Card Song from "Carmen," several Negro spirituals, and lullabies by Brahms which will be sung with viola accompaniment.

Elaine sang the Messiah with the Civic Symphony orchestra in 1955 and 1958, and in 1957 she won second place in the Young Artists competition.

Miniature Train Puffs Way to First Prize In Coast Competition

A freight car only a few inches high—in fact, small enough to disappear into a donut size tunnel—won for Lee E. Klaus (8115-1) first place for freight cars in the Pacific Coast Regional Branch of the National Model Railroad Association's annual convention.

Lee has been miniaturizing railway equipment for about 10 years. To scale his tiny models he uses actual 19th century railroad relics discovered in his searches through California mountains and deserts.



IF CASEY JONES were the engineer on this train he'd have to be the size of a mosquito. Lee E. Klaus (8115-1) made this model railroad equipment, only a few inches high, which won state prize.

Sick List

Ralph Lepore (2711) is recovering from surgery and is expected back on the job soon.

Get well wishes are extended to Iva W. Bencotter, wife of Frank L. Bencotter (retired Sandian), who has been confined to the National Institute of Health in Bethesda, Md., with rheumatoid arthritis.

Get well wishes are extended to Donna Weldon (2721-2) who has had a lengthy bout with the virus.

Convalescing at home from surgery is Marian Goddard (2221), wife of Ray (1218).

A speedy recovery and get well wishes go to Ray Sims (5532), who underwent surgery recently.

Also get well wishes are extended to Dan Padilla (5524), who is convalescing following surgery.

Get well wishes are extended to Soloman Apodaca (4221-2), who has been ill for the past month.

Top Bowling Score

Joan Sorensen (8212-3) bowled a 221 high score recently, barreling her Sandia team to the top of the Twin Valley Women's League. Joan, who has been bowling four years, said it was the highest score she had ever made.

Sympathy

To Marcial Valdez (4152) for the death of his father-in-law May 1 in St. Petersburg, Fla.

To J. P. Johnson (5231-1) for the death of his father May 3.

To Ellen Foster (4761-1) for the death of her mother in Albuquerque May 7.

To June Kelly (4722-1) for the death of her husband in Albuquerque April 29.

Weddings and Engagements

Best wishes are extended to Oscar Oberle and his bride, Alice Millie Graves, who were married April 24 in Albuquerque.

Millie (4762-3) has worked for Sandia Corporation more than seven years.

Mr. and Mrs. James McAllister are now "at home" at 3039 Manzano NE after a wedding trip to



Mr. and Mrs. McAllister

the southern part of New Mexico. The bride is the former Nancy Carmany (4752).

The couple was married April 4 in a candlelight, double-ring ceremony at St. Lutheran Church with Nancy's brother officiating.

Nancy has been at Sandia since August 1957.

Regina Wadach (8114-1) and Edward F. Schaefer (8114-1), who were recently engaged, will fly to the Wadach home in Syracuse, N. Y., for their Nov. 7 wedding.

Regina has been with the Livermore Laboratory since February while her finance has worked for Sandia more than three years.

Mr. and Mrs. James Lawson have returned from their honeymoon in Oregon and are now liv-



Mrs. Lawson

ing at Rt. 1, Box 36, Wetmore Road, Livermore. The couple was married April 18 in Reno, Nev.

Mrs. Lawson is the former Rose Marie Mueller (8213-2), who has worked at Livermore Laboratory since last December.

Quiz Answers

Here are the answers to the quiz at the top of the page.

1. \$1,000,000,000,000 (One trillion dollars).
2. \$1,283,000,000,000 (One trillion and two hundred and eighty-three billion dollars).
3. \$283,000,000,000 (Two hundred and eighty three billion dollars).
4. \$1,611.
5. \$42,500,000,000 (Forty two and one half billion dollars).
6. Fifteen percent.
7. \$1,100,000,000 (One thousand one hundred million dollars) more bonds were sold than were cashed.
8. First, they are as safe as the money standard of the government, second if they are lost or destroyed they are replaced at no cost by the United States Government.
9. Three years: \$404; Five years: \$695; Eight years and 11 months: \$1,330.
10. 3 1/4 per cent.

Return from Military

Two Livermore Laboratory men recently returned to work after military duty in separate parts of the world.

Edward Schaefer (8114-1) returned to his old job in the Drafting Division. A transferee from Albuquerque in June 1956, he went into the Army the following January. During military service he was assigned to Fort Ord, Calif., and was an instructor in the chemical school at Fort Lewis, Wash.

Richard Greeno (8161-3) is on a new assignment in the Records Release Section. During his tour, Dick spent a year at Thule Air Force Base in Greenland.



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Donald E. Graham, Cherry L. Burns, June Leonard William A. Jenkins, Livermore Laboratory, Livermore, Calif.



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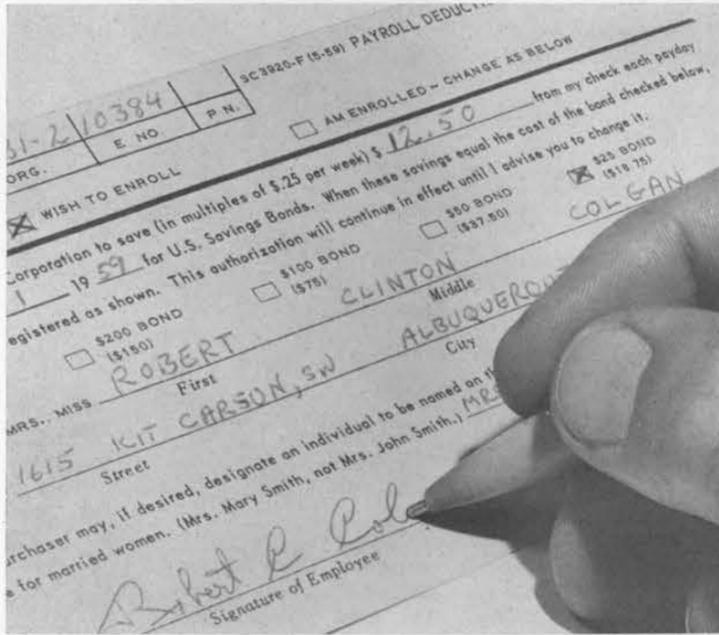


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Sandia-Livermore Drives Seek To Double Labs' Bond Buying



SIGN UP NOW. All employees have these payroll deduction cards for the purchase of U. S. Savings Bonds. Sandians who wish to enroll are urged to complete the cards and turn them in to Division Supervisors today. Payroll deduction makes regular saving easy.

Payroll deduction cards for purchases of U.S. Savings Bonds are in the hands of all employees at Sandia Laboratory today. Those wishing to enroll for regular Savings Bond deductions are urged to complete the cards and turn them in to division supervisors.

For the past week a concentrated campaign to sell bonds has been conducted by the Sandia Savings Bond Committee. At Livermore Laboratory a similar campaign will start Monday.

The committee has spread the message that the purchase of bonds is an investment in the nation's future security as well as a good financial investment for the individual. "Plow Your Share into America" is widely used in the Sandia Campaign as well as the official "Share in America" slogan.

Message to Employees

In a letter to all employees, S. P. Schwartz, vice president and general manager and chairman of the Albuquerque bond drive, said "We at Sandia are perhaps more aware of the need for a strong and free America than many of our fellow citizens. You can Share in America and help provide for your own future security by completing the payroll deduction card."

Sandia committee for the "Share in America" campaign is headed by I. M. Moore (5310). Members are J. M. Wahlenmaier (4842), A. A. Amato (4742), H. E. Burrell (4224-3), W. A. Benson (5311), R. C. Colgan (4731-2), R. W. Devore (2710) and R. L. Peurifoy (1245).

"As soon as the results of the drive are known," Mr. Moore said, "they will be posted on the large rocket display in front of Bldg. 800. The committee has aimed at doubling the number of employees presently enrolled in the Savings Bond program, currently 12 per cent."

10 Major Displays

The large rocket was one of 10 major displays used in the drive. An earth satellite sending the slogan, "Get into Orbit—Buy Bonds," added to the display's effectiveness. Another display featured a large Sandia rocket sled.

"Are You a Bond Buying American?" was asked of persons viewing themselves in a closed circuit TV display in Bldgs. 880 and 836. Stressing scientific achievement as a major part of the nation's defense program, a space capsule display urged employees to buy

AEC Names Apparent Low Bidder For Sandia Area I Electrical Work

Reynolds Electrical and Engineering Co., Inc. of Albuquerque is apparent low bidder for the installation of a government-furnished transformer for Sandia Laboratory's Sub-Station No. 4. The firm's bid was \$25,051.20 the Atomic Energy Commission announced.

Work is to be completed within 90 days after the contractor receives notice to proceed from the AEC.

Purpose of the new sub-station is to serve the electrical load requirements on the west side of Tech Area I. It will be located at Main and "H" Streets. First major load to go on the new sub-station will be that from the almost completed Bldg. 861.

Plant Engineering Department 4540 prepared preliminary design criteria furnished to the consulting engineering firm of Uhl and Lopez of Albuquerque. Consulting engineering contract was awarded by the AEC. Plant Engineering project engineer is V. O. Easley (4543-1). Liaison during the design period was performed by Plant Engineering and the Department checked the final plans. The transformer to be incorporated into the construction was ordered by Plant Engineering.



SAVINGS BOND POSTERS for the Livermore Laboratory's first bond drive are displayed by Pat Wilson (8212-3). The bond drive begins Monday at Livermore and will continue through May 25.

bonds. The capsule used film and a TV camera to depict a trip into space.

"The committee felt that these displays were merely the tools to urge employees to act," Mr. Moore said. "No American needs to be sold bonds and most of us are either buying them now or plan to in the future. However, the need is great and we urge employees to start today—just fill out the card and give it to division supervisors."

Sandians Present Tech Papers at Radar Meet

Two technical papers by Sandia authors were presented at a symposium on Radar Return May 11-12. The symposium was sponsored by the U. S. Naval Ordnance Test Station, China Lake, Calif., and the University of New Mexico Engineering Experiment Station. It was held in Albuquerque at UNM.

C. S. Williams (1454) presented "Some Doubts Concerning the Specular - Plus - Scatter Theory of Radar Returns."

"Radar Return Data at Sandia Corporation" was presented by Douglas H. Gragg (1454).

Sandia Talk Scheduled For Colloquium Meet

"Sandia's Participation in Operations Teak and Orange" will be discussed by D. B. Shuster (5230) and T. B. Cook (5111) at a meeting of the Sandia Research Colloquium, Wednesday, May 20. Tickets will be required, according to Craig Hudson (5111), Colloquium chairman.

Welcome Newcomers

April 27-May 8

Albuquerque	
Marie K. Carlson	4233
Ben B. Conklin	4766
Carolyn F. Cranfill	4721
Kathleen M. Cox	2243
Hilda G. Cruz	2226
Edward J. Cunningham	2713
Leslie F. Hale	4766
Robert J. Harks	4766
Kay Hill	4653
Daniel G. James	4764
Maxine H. Karns	4752
Bettye A. Libby	4623
Ruth S. Styron	4623
Richard G. Vigil	4231
*Mary D. Ward	4721
E. Lorraine Wooten	4752
California	
Arthur M. Youtz, Alameda	1463
Illinois	
Robert J. Buxton, Herrin	1625
New Mexico	
Albino C. Bustamonte, Las Cruces	5143
Pennsylvania	
Albert D. Smaller, Lancaster	2561
James A. Johnson, Bryn Mawr	5243
James F. Sorgini, Philadelphia	1522
Washington	
George H. Bouchard, Jr., Seattle	1626

Bond Drive West Coast Sandians Use Mock Missiles

Livermore Laboratory savings bond drive will rocket into action May 18 when mock missiles bearing bond slogans appear on the desks of secretaries throughout the Laboratory.

The missiles, complete with nose cones and tail fins, will be made of rubber balloons and will come in special do-it-yourself kits.

The bond drive committee—A. G. Schuknecht (8213-2), chairman, Leo Gutierrez (8140) and J. F. Genoni (8223-1)—has also planned several other features of the drive which will last through May 25.

All employees will get key chains with bond slogans on the fob, and huge five foot bonds will be displayed throughout the Lab buildings. A special display is planned for the Office and Laboratory building 912, and plaques and posters for the drive will be set up at the gates.

Information on the drive, which is part of a nationwide campaign, will be mailed to all the Livermore Laboratory employees and their supervisors and on May 20 each employee will receive a payroll deduction card and further information on the drive.

"This is the first savings bond drive at the Livermore Laboratory," Chairman Schuknecht said, "and we're hoping for an impressive showing."

"Regular savings through an intelligent bond-buying plan is a sound, sensible way to handle family finances," he added, "and we intend to make a point of this during the Livermore Laboratory bond drive."

D. P. Peterson Reads Paper at Meeting of Research Society

Donald P. Peterson (5122) delivered a technical paper in Las Vegas, Nev., last week. "Expected Off-target Damage as a Function of the Number of Bombs Used Given That the Expected On-target Coverage Is Constant" was the title of the paper. It was a theoretical treatise not based on test results.

The paper was delivered to a joint meeting of the Operations Research Society of America and the Institute of Management Sciences.

Sandians Have Important Role in National Telemetry Conference

A program of national significance has been arranged by Allan P. Gruer, Instrumentation Services Department Manager 5210, for the National Telemetry Conference to be held in Denver, Colo., May 25-27. As program chairman, Mr. Gruer arranged for authorities to report on "Investigation of Space," the theme of the conference.

The conference is sponsored by the American Rocket Society, American Institute of Electrical Engineers, Institute of Aeronautical Sciences and Instrument Society of America.

Representatives of American industries, government agencies and research organizations will discuss advanced technical progress in the field of telemetry. Technical papers by three Sandia authors will

be presented and John C. Eckhart, Instrumentation Development Department Manager 5220, will chairmen the opening technical session of the conference.

"Accuracy and Reliability of the Sandia 220 MC Telemetry System" will be presented by James H. Scott (5255). C. E. Land (5223) will present "A Variable Inductance Modulator for Transistorized FM/FM Sub Carrier Oscillators."

One paper by P. R. Palmer and J. E. Scheibner (both 5222) "Tra-Com—A Transistorized Pam Decommutator" will be presented during the conference and another, "A Practical Approach to PCM Telemetry in Missiles" will be published as part of the appendix to the proceedings of the conference.

Patents Granted AEC in Names Of Two Sandia Corporation Engineers

Two Sandians were awarded patents recently. The patents were issued to the Atomic Energy Commission in their names for inventions developed as part of their work at Sandia Laboratory.

Robert C. Creveling (1413) was awarded patent No. 2878382 for the invention of a precision time delay circuit.

In describing the circuit, Mr. Creveling said, "It is for a simple circuit wherein a capacitor, an inductance and a diode are arranged in a manner to produce time delays. These delays are in the order of tens of a microsecond with a precision of better than three one-thousandths of a microsecond." He explained that "in electronics it is often desirable to generate a voltage pulse at a precise time after an initiating impulse."

J. W. Grear, Jr. (1463) was awarded patent No. 2877314 for his invention of an electrical contact means. Mr. Grear said, "This invention is an electrical contact means in which a movable metallic bar bridges across two stationary contacts, completing an electrical circuit.

"Any tendency of the bar to bounce or vibrate away from the stationary contacts due to applied vibration, acceleration or other forces is substantially reduced. The reduction is accomplished by the sliding action of a leaf spring interposed between an insulating support and the contact bar."

The invention was perfected during the development of a high current switching device.



SANDIA'S SPHERE OF SCIENCE drew large crowds during Armed Forces Day last week. Formal opening of the building, which contains displays and exhibits of phases of Sandia Laboratory's scientific activities, was on May 8 when science students participating in a Space Symposium toured the building.



Sandia Corporation Has Worked 22 Days Without a Disabling Injury

HERE'S WHY...

Corporation employees know that portable power tools present potential dangers not inherent in the operation of manual or bench-based tools. No matter if on the job or in your home workshop, make sure you know the correct, safe operation of the tool, clean tools after using, check electric cords for cracks or breaks in the insulation. Remember, there is no such thing as a fool proof machine.

Education Is Large Part of 'The Plan' In Soviet Russia

By Dr. Ralph A. Morgen

Dr. Ralph A. Morgen is Research Director of the Purdue University Research Foundation. Recently he returned from a 5,000 mile inspection tour of Soviet institutions of engineering education. He was a member of an exchange mission sponsored by the American Society on Engineering Education which was supported by the National Science Foundation. The eight members of the mission visited 25 different types of institutions in four cities, Leningrad, Moscow, Kuibyshev and Frunze.

This article is reprinted by permission from *Horizon*, the publication of the Purdue Research Foundation, Lafayette, Indiana.

In the Soviet Union, "The Plan" dominates. A recent issue of *USSR*, an illustrated monthly magazine published by the Soviets for circulation in the United States, contained almost no article or story which did not relate in some way to the plan, the central motivating force of contemporary Russian life.

The lead paragraph of the lead article, "Discussing the Future," reads: "For many months preceding the Twenty-first Congress of the Communist Party, the seven year plan for economic development in the Soviet Union between 1959 and 1965 was discussed at thousands of public meetings held everywhere in the country." The article goes on to discuss the relationship between the Soviet Plan and the Soviet people.

In another article, Nobel prize winner Nikolai Semenov writes: "In my own field, chemical research, as well as in other fields, there was a very great acceleration forward as a result of plans charted by the Twentieth Congress of the Communist Party."

In the same article a lathe operator writes: "A lot of the planning done by the Twentieth Party Congress was pretty directly tied up with my work these past three years. . . . Like other workers at the plant I have tried to make my own contribution to the plans worked out by the last Party Congress."

A Turkmen author asserts: "The (plans of) the present Party Congress will certainly bring about still greater projects than are now in progress. These are the great themes of the future for our Turkmen writers."

Education: The Plan

Soviet education is no less a part of the plan than any other part of Soviet culture. From our observations, it is clear that the aims of higher education in the Soviet Union are identical with the aims of the Soviet State itself.

The Soviet rule is first things first. This is true in politics, in industry, in education. The State and the people appear capable of intense and single-minded pursuit of goals which they have set for

themselves. Right now they are determined to achieve the objectives of their seven year plan of industrial development. Everything which helps him do this is zealously cultivated. Everything which does not is either ignored or discarded.

For example, a power plant's control room, hall, stairways and exterior may be shabby and neglected since these are not vital to the central function of the plant. The power machinery, however, is always in perfect condition since this is the part of the plant important in their plan. This holds true for other industries and for transportation as well. The productive element is meticulously maintained. The dis-repair of external, decorative, non-productive elements is simply overlooked.

The aim of higher education in the Soviet Union for many years has been to produce the highly specialized professionals needed for the fulfillment of the overall growth plan for the nation.

Make Up Ground

This is especially true in engineering education. Because of the ground they have had to make up, the Soviets did not have the time to offer broad general education to students, permitting them to choose their own fields of specialization later on. They knew how many and what kind of highly specialized engineers they needed in their various industries, and they proceeded to train engineering students specifically in these limited areas almost from the beginning of their engineering education. Evidence of this high degree of specialization during training are the 167 specialized engineering curricula in the Soviet Union as opposed to the 23 curricula approved by the Engineers Council for the Professional Development in this country.

There are signs, however, that some aspects of this educational pattern will soon undergo a change in the direction of our educational system. The technique of high specialization has been successful in helping the Soviets come close to meeting their production objectives in industry. As



MOSCOW UNIVERSITY shown here is 32 stories, some 800 ft., tall. It is the tallest structure in all of Russia. Situated on the highest spot in Lenin Hills, it was opened in 1953. Present enrollment is 24,000.

Six thousands of these are correspondence course students. The 5,754 rooms for students are small and poorly furnished, but more than ample for young people who think only of increasing learning.



IT IS NEARLY impossible to go anywhere in Russia without seeing posters about fulfilling "the plan" plastered everywhere.

a backlog of specialists builds up to insure the continued fulfillment of industrial objectives, however, the Soviets will apparently begin to offer broader, less specialized training to increasing numbers of engineering students. They are well aware of the values of this sort of education in bridging the gaps which exist between the many highly specialized disciplines in which their engineers now receive training. The reason they have not yet exploited these values fully is the overriding Soviet rule—first things first.

Precise Planning

The entire Soviet economy including, of course, the educational system, is planned and centralized to the most minute detail. Prerequisites for entrance to educational institutions, courses of instruction, and requirements for the award of diploma or a higher degree are all set down very precisely by the central authority. The only provision for change, in the patterns of engineering educations at least, is in 14 experimental institutions where new educational approaches are tested and screened for incorporation into the standard national curricula. Successful innovations of these institutions which meet the approval of the central educational authority may be incorporated into the regular engineering curricula.

In its overall planning, the central authority determines exactly how many students will enter engineering education at various levels in a given year and thus how many diplomas, candidates

(about the equivalent of our Ph.D.) and doctors degrees (to which there is no comparable degree in the U.S.A. or Western Europe) will be granted the requisite number of years hence. The number of students entering particular engineering curricula is determined by national industrial needs. If the need for engineers in a particular specialty appears to be satisfied, students taking that curriculum are shifted to another specialty for which a need still exists. Allowances are made for these shifted students' academic deficiencies, but the allowance cannot exceed six months.

(Continued in next issue of Sandia Lab News)

Estimated \$40,000 to Be Spent on Modification Of 884 For Research

New quarters for high temperature and hydromagnetics research in Bldg. 884 will be a reality within a few months. The Atomic Energy Commission last week invited bids for the modification of the center section of the building for use by the Physical Sciences Department 5150.

The project will consist of installing partitions, modifying an existing heating system, installing evaporative coolers and providing miscellaneous electrical changes to the existing facilities. Cost range for the project is estimated at \$40,000 to \$50,000.

Bids are scheduled to be opened by the AEC May 27. Plans and specifications for the modification project were prepared by Plant Engineering Department 4540. Project engineer is V. E. Kerr (4543-3).

The modification is to be completed within 90 days after the contractor receives notice to proceed from the AEC.

Herman S. Levine (5150) will head the study of material properties at elevated temperatures to be conducted in the new facilities. John Bannister (5150) will be in charge of the hydromagnetics study.

AEC Seeks Bids for Radiant Heat Facility for Sandia Tech Area III

Another environmental test facility for Area III—a radiant heat facility—is scheduled for construction. The Atomic Energy Commission advised contractors that bids will be invited this week for the project.

The facility will consist of a reinforced concrete structure of approximately 2,200 sq. ft. and a prefabricated building of about 800 sq. ft., complete with heating, lighting, air conditioning, fencing and other support facilities.

Bids will be opened about June 11 and work is to be completed within 150 days after the successful contractor receives notice to proceed from the AEC.

J. C. Moody and K. E. Finders to Speak Before Group

The critically controlled temperature and humidity required in a room used by Division 1651 in secondary physical standards work will be discussed by J. C. Moody (1651-1) and K. E. Finders (8221-2) at a forthcoming meeting.

The occasion will be the monthly meeting of the local chapter of the American Society of Heating, Refrigerating and Air Conditioning Engineers, May 19, at Western Skies Hotel.

Mr. Moody will discuss why such a facility was necessary and Mr. Finders will tell how Plant Engineering Department provided the facility to meet design criteria. It is possible to hold temperature conditions in such a room to 68 degrees Fahrenheit, plus or minus 1/20 degree, and to maintain the humidity at 45 per cent, plus or minus two per cent.

The evening meeting will include a social hour, dinner and talks at 8 p.m.

Sandian Named to First Aid Promotion Group in Community

Recently organized Albuquerque Committee for the Promotion for First Aid Training has among its members A. J. Petersen (5231), certified Red Cross instructor.

At the first meeting of the group present training programs in the community were discussed and considerable interest was demonstrated in Sandia Corporation's in-hours first aid training and evening school courses which provide opportunity for employees and families to receive certified Red Cross instruction.

The committee will concentrate on promoting first aid training in Albuquerque municipal agencies and in Albuquerque high schools.

Mr. Petersen was appointed to the sub-committee for industry.

Photography by Robert Criger, Editor The Sheffield Ladle, Sheffield Division, Armco Steel Corporation, Kansas City, Mo.



GROUP OF RUSSIAN STUDENTS listen to their teacher as she explains the events leading up to the Revolution in 1917. Though Russian schools cannot match American in equipment and facilities, the students talk about improving their minds and being worth more to their country and fulfilling their obligations to "the plan."



MOBILE EQUIPMENT is the backbone of RACES. Left, Paul Scates (1592) transmits from his car. Center, Carl Franz (1471) uses a

10-meter mobile rig. Right, Hub Harrell (L) and Bill Clark (1612) man a station atop a mesa near San Ysidro, New Mexico.

Sandia Radio 'Hams' Provide CD Communications

Twenty-six Sandians, members of the Radio Amateur Civil Emergency Service (RACES), set up radio nets for the Albuquerque-Bernalillo County Civil Defense organization during Operation Alert 1959.

Umpires for the exercise, headquartered this year in the Albuquerque Civic Auditorium, had high praise for the RACES group, which demonstrated a high degree of readiness to establish a communications network between Civil Defense headquarters and emergency assembly and evacuation points located on the periphery of Bernalillo County and in surrounding territory.

RACES, comprised of amateur radio operators holding Conditional or higher class licenses, is the radio communications branch of the national CD organization. In the event of an enemy attack, it would be one of the two civilian radio services which would be allowed to continue operation.

The other would be the broadcast stations participating in the Conelrad service.

Prime purpose of RACES on the local level is to provide communications necessary to transmit messages concerning food supplies, fire and police services, medical services, evacuation and personnel messages, and the maintenance of basic governmental liaison. In addition, contact with CD organizations of other areas, both intra- and inter-state would be maintained.

Lareau is Radio Officer

Jim Lareau (1626), Radio Officer for the Albuquerque CD organization, is responsible for the forming and utilization of the various

nets required to serve this area. He reports that this year stations were set up near Laguna, San Ysidro, Moriarty, Bernardo and Scholle, all in the vicinity of disaster assembly areas.

In addition, a number of other stations were used to establish contact with other areas for a limited time.

"This is a field operation," he emphasized. "Field stations operated on either a portable or mobile basis are completely independent of commercial power lines."

RACES members who set up portable stations use motor-driven generators for radio power and necessary lighting. Mobile stations use high-voltage power supplies running directly off the vehicle electrical system.

Operating in this fashion is not new to Albuquerque amateurs, who have on a number of occasions received recognition from public authorities for public service. Local hams, many of whom are Sandia employees, have assisted local police officials and others during floods and searches for lost persons.

Radio equipment, power units and vehicles used by the RACES group are, with few exceptions, privately purchased, owned and maintained by the amateurs. It is estimated that at the present time they have invested approximately \$30,000 in radio and power units which are available for public service. This figure is exclusive of the value of the vehicles and trailers in which the equipment is installed.

Two Nets Established

Radio nets have been established on both the two and ten meter bands. The two meter group is used primarily for point-to-point

communications between headquarters areas and evacuation areas. It is also used as a supplementary radio link between various units within the Civil Defense organization. Amateurs from this group have designed and built their equipment to function as portable field units.

The ten meter net is comprised almost entirely of mobile stations which may be dispatched to any location. They would provide additional area coverage or provide transportation for personnel whose responsibilities require constant radio contact.

In addition, members of the Albuquerque/Bernalillo County RACES group are the prime movers behind an effort to establish a radio-telegraph net on the 80 meter bands. This group of stations has the responsibility to make contact with state and regional headquarters of CD in several states.

Sandia Corporation has recognized the importance of communications in time of national disaster, and is in constant contact with the local CD organization. Sandia employees are kept informed of plans for evacuation and emergency equipment which may some day be of great importance to their families.

Feel Responsibility

How do the individual amateurs in RACES feel about this activity, which takes considerable time and represents large expenditures on their parts?

Carl Franz (1471), says, "Amateur radio is a hobby with us. We are licensed and regulated by the federal government. Most of us feel that in return we have an obligation to our community, state and country. Granted, a lot

of time and money goes into such an activity; but although we are aware of this, we don't really consider it much. The main thing is—we can provide a needed service, so we do."

In addition to Jim Lareau and Carl Franz, other Sandians active in this year's Operation Alert were:

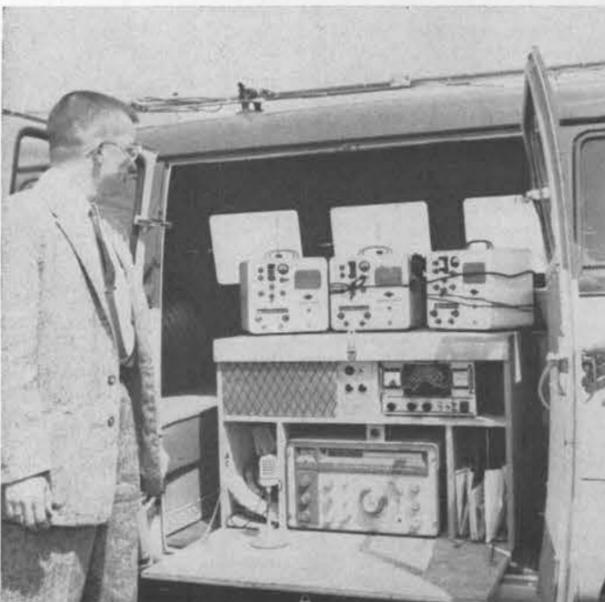
Willie Petty (5513), Paul Scates (1592), Cedric Senter (1456), Charles Butler (5311), James "Hub" Harrell (1614), James Stue-

ber (5224), Bob Dawirs (1261), W. F. "Andy" Anderson (2723), Brian Ward (1262), Paul Vandenberg (2731), Bob Foster (1651), Dean Snyder (4231).

Also, Norman Elliott (1521), Vaughn Nogle (1413), John Price (1413), Brooks Braffett (1413), Buford Eagan (1224), Leon Day (5254), George McClure (4511), Einar "Mort" Morterud (5526), Dean Yearout (1455), Bob Lindsey (1455), Roger Aden (1265), and Jim Armstrong (2711).



CD DIRECTOR for Bernalillo County, C. D. Cole, observes John Price (1413), C. M. Butler (5311), and Cedric Senter (1456) providing communication service during Operation Alert—1959.



RACES EQUIPMENT is purchased by the individual operator. Left, Jim Lareau's portable transmitter equipment. Center, Charles Butler

(L) and Cedric Senter operate equipment at headquarters and in the rear are Dean Snyder (L) and Jim Lareau. At right is Dean Snyder.

Supervisory Appointments



CONTROL ROOM of the main building in Salton Sea Test Base technical area was popular with the youngsters. The glass window allows persons manning the control panel to view the target area.



FAMILY DAY COMMITTEE, Salton Sea Test Base, planned the recent event which was attended by some 300 visitors. L to R: M. J. Lesicka, H. E. Schnarr, J. G. Hawley, M. V. McNabney, B. D. Neil and C. C. Pappas who are shown planning the tour route.

Family Day at Salton Sea Test Base Shows Ballistic Test Range Story

Families of employees at Sandia's Salton Sea Test Base took their first look at the facilities of a ballistics test range April 25 as the Base was host for a Family Day.

Some 300 visitors viewed giant tracking telescopes, Askania and Contraves phototheodolite camera stations and radar installations. Buildings and other field testing equipment were on display with host employees giving demonstrations to explain operations. The instrument lab control room and the new weather station's radio-sonde equipment were popular places of interest.

Salton Sea's "navy"—several launches and other boats—were also on display.

Between 10 a.m. and 3 p.m. as visitors entered the area, guards distributed programs and tour maps which explained the history of the Base and gave brief descriptions of the facilities on display.

Crowds were generally small at individual stations and guests in

Percy H. Williams Dies in California After Brief Illness

Funeral services were held May 1 in Berkeley, Calif., for Percy H. Williams, Jr., who died April 30 after a brief illness. He was 37.

Hired last October at Sandia's Livermore Laboratory, Mr. Williams was assigned to Division 8122 in the Telemetry and Flight Test Section. He was a graduate of the University of Pittsburgh.

Survivors include a seven-year-old daughter, his mother, father and sister, all of Portland, Ore., and a brother living in Philadelphia, Pa.



P. H. Williams

many instances were permitted to participate in the demonstrations of equipment by operating simple controls.

Visitors paused during the tour to sample Coke, coffee and ice cream refreshments served in the instrument lab or in the cafeteria of San Felipe Lodge. Those who remembered their swimming suits took a dip in the Lodge pool.

Souvenirs distributed during Family Day at Salton Sea included the Sandia Thunderbird key chain and a green admission ticket laminated in plastic.

R. E. Hepplewhite (4210) was chairman of the Salton Sea Family Day committee. Members were R. S. Millican (5214), J. G. Hawley (5214), M. J. Lesicka (4581), H. V. McNabney (4582), B. D. Neil (4582) and H. E. Schnarr (4582).

Speaks to Engineers

Jessie H. Burns (8121-3) spoke to members of the Solano County Engineer's Club at a luncheon meeting in Vallejo on May 6.

Lab Ball Team

Livermore Laboratory lob-ball players have entered two teams in the 10 team Rad Lab Recreation Association League, scheduled to start play next Monday.

Howard H. Wicke Presents Technical Paper to Math Society in Chicago

Howard H. Wicke (5126) presented a technical paper recently at a meeting of the American Mathematical Society in Chicago. The paper, "Quadrature Formulas Involving Derivatives of the Integrand," was written in collaboration with Preston C. Hammer, Sandia Consultant from the University of Wisconsin.

The paper demonstrates the existence of numerical quadrature formulas employing values of the derivatives of the function (as op-

MILTON O. JONES to supervisor of Test Projects Division 8134, Livermore Laboratory.



"Mo" has been with Sandia since April 1951, starting as a test engineer. After three years he became a project engineer on facilities with a special projects group and in November 1955 was promoted to supervisor of the Area III Test Activities Section. Last September Mo was transferred to the Livermore Laboratory as supervisor of the Test Projects Section.

He received his Bachelor's Degree in Mechanical Engineering from the University of Wyoming in 1951.

During World War II Mo served three years with the Marine Corps as an aviation gunner.

He is a member of the American Society of Mechanical Engineers, American Rocket Society, and is a registered professional engineer in New Mexico.

GEORGE E. MINCKS to supervisor of Maintenance Division 8222, Plant Services Department, Livermore Laboratory.



George worked as an electrician for three years after joining Sandia in February 1950. He was then promoted to a section supervisor in maintenance operations and five years later in May 1959 was transferred to the Livermore Laboratory as supervisor of a maintenance section.

Previously George served a four-year electrical apprenticeship with the Santa Fe Railroad in Albuquerque. He is a veteran of three years service with the U.S. Coast Guard.

George attended Baylor University for a year and a half and later graduated from the Coyne Electrical School in Chicago as a qualified electrician.

KENNETH J. BENNETT to supervisor of the Receiving, Warehousing and Self Service Stores Section 8225-1, Supply Service Division, Livermore Laboratory.



"Ken" came to Sandia in April 1953 as a coordinator in Albuquerque before he was transferred to Livermore Laboratory in September 1957 as a coordinator.

Before coming to the Corporation, Ken was credit manager for B. F. Goodrich Co., Albuquerque, for three years. Previously he was self-employed in the trucking industry.

Ken studied Mechanical Engineering at the University of Mississippi.

During three and a half years in the Army he served in the European Theater during World War II.

GILBERT L. RHODES to supervisor of the Medical and Safety Section 8212-4, Personnel Division, Livermore Laboratory.



"Gil" joined the Corporation at Livermore in October, 1957 as Safety Engineer. Previously he was director for four years of a home-safety research project sponsored by the W. K. Kellogg Foundation. Gil's background includes: three years with the Industrial Indemnity Co., Oakland, as a supervising engineer; eight years as industrial safety engineer with the California Department of Industrial Relations; a year as safety engineer with a Los Angeles ship building firm; and 10 years with the Standard Oil Co. of California as a field supervisor.

Gil has studied mechanical engineering and related courses at the University of California at Los Angeles and the University of Southern California. He is a member of the American Society of Safety Engineers, Southern California Industrial Safety Society, Northern California Safety Society, Veterans of Safety, and the American Public Health Association.

He is presently consultant to the Alameda County Health Department and to the state of California Public Health Department in accident prevention.

ALBERT A. ALFORD to supervisor of Manufacturing and Shop Liaison Section 8234-2, Program Material Control Division, Livermore Laboratory.



"Al" joined Sandia at Livermore in December 1956. He worked on manufacturing process design with a project group for about a year, then moved into manufacturing and shop liaison work.

Previously Al worked for ACF Industries in Albuquerque for three years as a plant engineering design group supervisor.

He served 10 years in the Army. In the Pacific campaign during World War II he won a battlefield commission and later served a year in Korea as a company commander.

Al studied Mechanical Engineering at the University of New Mexico for two years and is presently attending night school at San Jose State College. He is a member of the American Society of Tool Engineers.

WILLIAM T. SCHMEDDING to supervisor of Machine Shop Section 8223-1, Model Shop and Inspection Division, Livermore Laboratory.



"Bill" came to work for Sandia Corporation nine years ago as a milling machine specialist. Recently he has been in the Model Shops' Mechanical Services Section.

He completed his apprenticeship as a machinist at Weaver Aircraft in San Diego, Calif., and, after a two year absence during World War II, he remained with the company until 1948 doing experimental work in die casting machines.

From 1948-50 Bill was with Millard-Smith machine shop in Albuquerque.

He served two years with the combat engineers in both Okinawa and Japan.

Bill played pro baseball for a year with the Brooklyn Dodger farm club at Olean, N.Y.

ARTHUR R. HOPPER to supervisor of Reclamation and Office Furniture Section 8224-2, Supply Services Division I, Livermore Laboratory.



"Art" has been with Sandia since March 1953. He worked in accounting for over a year and a half and in weapons program coordination for a year. In 1956 he accepted a position with the University of California Lawrence Radiation Laboratory as an accountant in the controller's office. He returned to Sandia at Livermore 10 months later to work with the budget and accounting group.

Before joining Sandia in 1953, Art worked as an accountant for a year and a half for Hughes Aircraft, Culver City, Calif. Prior to that he was six years with the Security First National Bank, Los Angeles, Calif.

Art received his Bachelor of Business Administration degree from Woodbury College, Los Angeles, in 1939. He is a member of Gamma Sigma Pi, honorary business society.

He was in the Army four and a half years during World War II, half of the time in the Pacific campaign.

HUGH L. ODELL to supervisor of Photographic Section 8124-2, Test Projects Division, Livermore Laboratory.



Hugh was hired at Sandia 11 years ago as a photographer in what is now the Technical Photography Section of the Optical Measurements Division. In January 1958 he was transferred to the Livermore Laboratory to organize the photo lab group.

Before joining Sandia Hugh worked in an Albuquerque portrait studio. His other working experience includes five years as a bookkeeper in both Kansas City, Mo., and Chicago and two years in prospecting and construction work in Alaska.

Hugh is a graduate of the Chillicothe, Mo., Business College and the New York Institute of Photography. He served three years in the Navy.

He is a member of the Society of Photographic Instrumentation Engineers and the Society of Industrial Photographers.

R. E. MAXWELL to supervisor of Supply Services Division II, 8225, Livermore Laboratory.



"Smoky" joined Sandia Corporation in September 1952 and worked in the Engineering, Standards Engineering, and Manufacturing Relations Engineering organizations. He was transferred to Livermore in August 1957 to work in the Material Control Section and last June he was promoted to supervisor of the Shopping and Receiving Section.

Previously Smoky worked for a number of firms including Standard Register Co., Monarch Machine and Tool Co., Pioneer Tool and Engineering Co., and Standard Dayton Corp., all in Ohio. He was a tool and gauge supervisor for Lear, Inc., Piqua, O., a job that included shipping and receiving responsibilities.

Smoky studied production management and business administration at Contra Costa College and has studied industrial engineering at various trade schools. He is a member of the American Society of Mechanical Engineers.

10 YEAR PINS



William J. Prokosch
4212
May 9, 1949



Gerald L. Morrisroe
5556
May 17, 1959



Ted B. Sherwin
4731
May 17, 1949



Arthur E. Smith
2231
May 17, 1949



Lloyd D. O'Neal
4715
May 20, 1949



Laurence E. Hall
4742
May 24, 1949



Francis Cunningham
8122
May 25, 1949

Five Year Pins

May 15-29
William F. Trent 2713, Harold Schulte 4411, Robert P. Noble 1462, Eugene R. Frye 1625, Florence T. Young 5551, George H. Johnson 5531, Florence M. Bonnell 4623, P. E. Pettigrew 2232.
L. B. Stemporzewski 4233, Ivy E. Dunn, Jr. 1544, Robert C. Ezell 4762, Harrison W. Young 4743, Carl W. Kochmann 4224, C. J. Kenfield 4411, Donadieu Sonnier 2251, Ann McCullough 4722.
Julianne S. Gabriel 2713, Fred A. Drummond 4231, Samuel M. Cummins 5534, John W. Budlong 1246, Edward J. Kurpiers 2722, Dale R. Hanely 4211, Isabel L. Baca 4574.
Two Year Certificates
May 16-22
Robert D. Hole 1614, Lewis P. Wilson 1621, Maurice E. Gilmer 1411, Walter Powdrell 4519, D. Eva Monson 4325, Michael Modis, Jr. 8114,

Calendar
Scientific and Technical Meetings

May 15-29

American Institute of Industrial Engineers
Monday, May 18
Candlelight Room, Kirland ARB Officers Club
Dinner, 7 p.m.
Special: Ladies Night
Speaker: Jack Wentworth, President, Niantic Corporation
Topic: Development of New Industries in New Mexico
For reservations call Jack Cejka, ext. 32161

Illuminating Engineering Society
Tuesday, May 17
El Camino Lodge
Dinner, 6 p.m.
Speaker: Representative from Revere Electric Manufacturing Company of Chicago
For more information contact Stan Johnston, AX 9-0775

IRE Professional Group on Nuclear Science
Tuesday, May 19
Room 217, EE Bldg, University of NM
8 p.m.
Speaker: Dr. R. S. Claassen
Topic: Detection of Nuclear Particles
For more information call John McClay, ext. 35257

Society for Nondestructive Testing
Wednesday, May 20
Dinner, 6:30 p.m., Los Alamos Golf Club
Technical Meeting, 8:15 p.m., Health Research Laboratory Auditorium
Speaker: Joe L. Waisman, Chief Engineer, Tattall Measuring System, Inglewood, California
Topic: Photostress—Uses of a Dramatic New Technique in Experimental Analysis & Testing
For reservation contact Max Littleton, ext. 46138

American Society for Metals
Thursday, May 21
Hoyl's Dinner Bell
Cocktails, 5:30 p.m. Dinner, 6 p.m.
Technical Meeting 8:30 p.m.
Special: Ladies Night
Speaker: Joe L. Waisman, Chief Engineer, Tattall Measuring Systems, Inglewood, California
Topic: Fatigue and Life Testing
For reservations call Don Adolphson, ext. 42250 or Charlie Boettcher, CH 7-0361, ext. 421

American Society of Tool Engineers
Thursday, May 21
Lobby Lounge, Alvarado Hotel
Cocktails 7 p.m., Dinner 8 p.m.
Program:
Film "The 500-Mile Indianapolis Race"
For reservations call John Yopp, CH 7-0361, ext. 266

American Society of Photographic Instrumental Engineers
Friday, May 22
Bldg. 300, Sandia Base
Technical Meeting, 7 p.m.
For more information call William Foy, ext. 36137

Richard L. Read 8123, Julius W. Lenz 8114, Joe A. Chavez 2721, Dominic W. Russell 2251, Ruth H. Bauer 4723, Geraldine M. Adams 5142, Joseph E. Taylor 2562, Roy Palmer 4519, Dorothy C. Schmid 4962, Jerry Y. Koska 4412.
May 23-29
James L. Lovell 1411, James G. Brock 2251, Arthur J. Ahr 4762, Signa O. Matthews 8113, William L. Stevens 1264, Bertha R. Allen 4721, Joseph T. Black, Jr. 1282, Richard B. Reinman 2542, James K. Cole 1473.
Mary E. Hurst 4762, Bernard L. Raiche 8123, Arthur M. Breipohl 1593, Carl W. Kanerva 4231, Catherine W. Brown 2243, Judith L. Thompson 4431, Alma A. Mischke 4135, Arthur J. Burgess 4751, K. H. Koerner, Jr. 1284.

American Society of Safety Engineers
Friday, May 22
Pueblo Room, Franciscan Hotel
2:30 p.m.
Speaker: Mr. Tom Robles, Executive Secretary AFL-CIO
Topic: Labor's Point of View Concerning the New Compensation Law recently passed by the New Mexico Legislature

Society of Technical Writers and Editors
Monday, May 25
Sandia Base Officers Club
Dinner, 6:30 p.m.
Special: Annual Ladies Night
Speaker: Dr. C. V. Wicker
Topic: "Some Ways to Improve Technical Writing"
For more information call Dick Jackson, ext. 39238

This information compiled by New Mexico Council of Scientific and Technical Societies.

R. S. Claassen Gives Last-in-Series Lecture To IRE Nuclear Group

"Detection of Nuclear Particles," the last of a series of educational lectures sponsored by the IRE Professional Group on Nuclear Science, will be presented Tuesday, May 19. Lecturer will be R. S. Claassen, Physical Sciences Department Manager 5150.

Mr. Claassen will describe methods of nuclear particle detection including cloud chamber and emulsions, scintillation counter, G-M tube, Cerenkov detector and neutron detectors.

The lecture will be presented at 8 p.m. in the Electrical Engineering Building, University of New Mexico. Following will be a business meeting of PGNS to elect new officers.

Table Tennis Champs

Congratulations to the 4200 table tennis champions. Flavio Gonzales (4212-2) copped the singles honors, with Leo Paxton (4253-2) runner-up. Flavio also walked away with the doubles, with Stan Urevitch (4212) as his teammate. Daryl Orth and Hugh Sherman (both of 4224-3) placed second in the doubles.

All five will play in the forthcoming Corporation play-off.



READY FOR SEASON opener is micro-midget driver R. E. "Bo" Bohannon (1615) and car owner H. L. "Larue" Miller.

Micro-Midget-Driving Sandians to Open Season With May 27 Races

A long winter's work will end May 27 for a dozen Sandians when the 1959 Micro Midget season gets underway in Albuquerque.

Bo Bohannon (1615) is the defending champion but he expects stiff competition from Mel Heisler (1611), Dick Case (1472) and Kit Holloway (4842). Leo Novada (1612), Larry Woolrich (1612) and Willie Freed (4741) will also be driving cars.

Others working with the micros include George Chapman (1624), Charley Connolly (1611), Leon Wiley (5532), Don Robie (1741),

Larue Miller (4741) and Jim Boag (1473).

Micro midgets are 60 inch wheelbase cars powered by motorcycle engines. The Indianapolis styled cars have been clocked at better than 98 mph at Daytona Beach. They will be raced this year in Albuquerque on a new 1/8 mile track.

Noon Shorthand Classes For Advanced Students To Pick Up More Speed

Noon hour shorthand speed-building classes will shift to a new pace, Mary Williams (4632), instructor, has announced. The informal classes, open to employees desiring to improve their rate of shorthand recording, are conducted in Bldg. 892 on Tuesdays and Thursdays and in Bldg. 302 on Fridays.

Beginning May 12 the speed will be 60 to 80 words per minute from 12:00 to 12:30 shifting to 80 to 120 words per minute from 12:30 to 12:55.

The classes require no enrollment procedure; anyone wishing to attend is invited to do so. Any questions should be referred to the instructor, ext. 48138.

Paper by L. J. Vortman Presented Before UNM Civil Engineers

"Civil Engineering and Nuclear Explosives," a technical paper by L. J. Vortman (5112), was presented last week to a meeting of the University of New Mexico Chapter of the American Society of Civil Engineers.

The paper described the application of nuclear explosives to earth moving using as an example the construction of a hypothetical Isthmian canal.

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CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication unless changed by holiday.

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.

FOR SALE

STUDIO COUCH, \$25. Judd, AX 9-6536.
WHEEL CHAIR, practically new, Hollywood Elite style, \$75. McMahan, CH 3-3129.
'49 FORD V-8, new tires, battery, \$100 cash as is. LaPoint, AM 8-2290.
ELECTRIC WASHER, Handy Hot brand, \$8.50; automatic deep well electric cooker, \$5.50. Andrews, AL 5-4215.
TRAILER HOUSE, 28', 1948, ideal for camping, \$650. Edwards, 6900 Fourth St. NW.
MOBILE TRANSMITTER, 10 watt, 10 meter, Gonset 10/11 converter, 6 volt magnator, and microphone. Has citizen band possibilities, \$55. Bauer, AL 5-7774.
KODAK 35mm camera, flash attachment and carrying case, \$20; Argus L-3 exposure meter, \$10; Starline baby carriage, \$15. Haycraft, AX 9-3220.
SPRINKLERS, two Kraftman flutter birds, with stands, \$5 each. Asturias, 11404 Haines NE, AX 9-4173.
WESTINGHOUSE REFRIGERATOR, used, 7 ft., Cason, 6312 Mossman Pl. NE, AM 8-4212.
CAR COOLER, evaporative type, \$5. Want garden watering cans. Baxter, 1610 Bayita Lane NW, DI 4-7601.
'53 CADILLAC 62, fordor, PS, hydramatic, radio, engine needs work, will sacrifice; 6' x 6' two wheel trailer, spare, steel rack, plates, lights. Huefer, CH 2-1620.
GOLF CLUBS, men's, 3 new woods, 6 used irons, large leather golf bag, \$60. Geibel, AM 8-8147.
AIR CONDITIONER, 3,000 cfm variable speed, complete with all attachments, 1958 model, used two months, \$95. Keith, AM 8-3298.
REFRIGERATOR, GE, 8 cu. ft., left hand door, \$75. Stang, 6209 Bellamah Ave. NE, AL 6-7793.
'47 PLYMOUTH tudor, good transportation, \$100. Refrigerator, \$35. Kane, AL 5-2240.

WINDOW FRAME, steel, picture type with side windows, \$20; set of brakes, complete with or without frame; rebuilt 1948 Mercury engine. Ed, AL 6-1881.
PORTABLE COOLER, Kool-Air, with roll-away stand, Model 586, \$21. Neubauer, AL 6-7068.
'55 CHEVROLET, 2 dr., 210 station wagon 6, Powerglide, complete set of shade screens. Taggart, AM 8-0963.
MIXMASTER, Sunbeam, \$15; Columbia 4-speed record player, \$25. Mitcham, Ext. 41173.
MOSSMAN, 3 Bdm., 1 1/4 baths, 4 1/2 per cent loan available, Harrison, AL 6-6328.
COLT .45 automatic with holster, extra clip, 3 boxes of ammo., \$35; .22 conversion unit for above, \$35, or both for \$65. Donaldson, Ext. 44160 between noon and 1 p.m.
STRATOLOUNGER, king size, brown leather and fabric, \$65; Franciscan bed davenport, matching chair, ranch oak, grey, \$70. Rebbeck, Ext. 29178 after 4:30.
4 BDM. Mossman, den, 1 1/4 bath, walled, landscaped, carpets, drapes, cooler, fireplace, new FHA or cash to mortgage. McCornack, 3100 Indiana NE, AL 6-5829.
ELECTROLUX SCRUBBER-polisher attachment, with buffing pads, \$10. Safety shoes, size 9B, worn once, \$5. Dieruf, AX 9-4525.
6 ROOM HOUSE, no qualifying, by owner, hw floors, close to schools, shopping center, on Adams NE, total price \$10,500. Summer, AX 9-1912 after 6 p.m.
EVAPORATIVE COOLER, down draft, 2200 cfm fan type with recirculating pump and canvas cover. Ideal for trailer, small house, \$45. Landrum, DI 4-3940 after 5:30 p.m.
GOLF CLUBS, 5 irons, 2 woods, bag, \$27.50; slide rule, aluminum, \$8; single action Colt .45, \$95. Burbidge, Ext. 32289.
6 ROOM HOUSE, hw floors, service porch, garage, zoned R-4, located 1218 Lomas NW, \$12,800. Mamie DI 4-6331 evenings.
3 BDM., den, 1 1/4 baths, block Bandler School, fireplace, air cond., carpeting drapes, dishwasher, disposal, 2 patios, \$22,300. Jones AL 6-0828.
GM FRIGIDAIRE, small refrigerator, \$50 or best offer. Odell, AX 9-7483.
'57 METROPOLITAN, \$1,200; one owner, 13,000 actual miles. Anaya, AL 6-0051 or AL 6-6462.
POWER SAW, Dunlap, 8", tilting table, circular saw, \$18; Knight VFO, \$28. Drake, AX 9-0743.
'52 FORD V8 Ranchwagon, R&H, standard transmission, original owner. Schneider, AX 9-6243 after 5 p.m.
3 BDM. HOME, 1nez, carpeting, drapes, complete landscaping, full sprinklers, dishwasher, disposal, stove, water softener, newly redecorated, \$16,950. Weber, AX 9-1389.

NEXT DEADLINE

FOR SHOPPING CENTER ADS
Thursday noon, May 21

'50 HOUSE TRAILER, Spartan, parked in mountain trailer court beside living room w/large fireplace, \$1700. Souder, Ext. 34161.
TRAILER HITCH, Equalizer, used on 41 ft. trailer, \$50. Payne, AM 8-3184.
HOME OF happy couple, parakeets, that is. Cage, \$3; birds free. Matlack, AL 6-7371.
ADMIRAL RANGE, 30" deluxe model, oven timer, rotisserie, minute timer, \$100. Strome, AL 6-3324, 1811 Lafayette Dr. NE.
3 BDM. HOME, Hoffman Royal, 1 1/4 baths, den, garage, circular drive, drapes, shades, carpeting, disposal, dishwasher. Preston, AX 9-1948 after 5 and weekends.
WASHING MACHINE, Maytag wringer type, stand and twin tubs. Ellis, AL 6-5759, 226 Gen. Hodges NE.
'52 NASH RAMBLER, 2 door, hardtop, R&H, overdrive, yellow and black, \$375. Whipple, CH 2-7425.
DACHSHUND PUPPIES, red, 21 Champions (3 Internationals) in pedigree, \$75 each, terms. Becker, AX 9-2539, 2809 Texas NE.
CABIN AND TWO LOTS, at El Vado, sell or trade. LaBrier, AM 8-1262.
'58 PLYMOUTH, 6 cylinders, 2-door, Plaza, low mileage, conventional shift, \$1695 or will trade. Shroka, Ext. 23280.
3 BDM. HOME, 1 1/4 baths, large utility room, hardwood floors, built-in electric range, fireplace, frame stucco in north Princess Jeanne 4 1/2% GI loan. Neel, AX 9-7363.
GARAGE DOOR, single, wood, Snow, w/overhead hardware; washer, wringer type. Sears, Holmes, AX 9-2674 after 5.
'56 FORD, yellow and white hard top, w/Thunderbird engine, automatic transmission. Sadlon, AX 9-7747 after 5.
2 R2 LOTS, 50x138 each, SE location near base, \$5,000; residential lot, corner, 110x130 Montgomery Hts, addition near school, \$2500. Miller, Ext. 52149 after 5:30 p.m.
'55 MERCURY Monterey 4-door sedan, all-power, air conditioned, tune, tires, puncture-proof, NADA, \$1300, \$1200 or best offer no trade. Erni, AL 5-8350 after 4:30.
RANCH-STYLE HOME, 3 bedrooms, den, fireplace, birch cabinets, double garage, 1 1/4 baths, \$1,650 to FHA. Colborne, AX 9-4381, 1800 Blume NE.

'48 KAISER, will sell or trade for almost anything. Harris, AX 9-6664.
EAST MESA corner lot, 125x80, 1/2 mile from construction; ideal homestead; \$1,800, terms. Boling, AX 9-1346.
MOTORBIKE, 26" wheels, 150 mpg, reliable; '59 Plymouth 4-door sedan, V8, standard shift, reasonable. De Herder, Ext. 31148.
WIN. 22 PUMP, \$25; 35mm camera, Argus C3 w/case and flash, \$40; Enfield 30-06 w/3 power scope, trade for guns. Zaluga, DI 4-1564.
'52 HARLEY-DAVIDSON "74", 16,000 miles since rebuild, shield and saddle bags, \$325, will trade for car or truck. Dobias, AL 6-9235.
DINETTE SET, hand vacuum, lawn mower, violin, toy tractor, junior desk, several misc. items. Hlady, AM 8-8185 after 5 p.m.
30 WATT HI FI amplifier and pre-amp, University tweeter, crossover and level control. Write Botsford, 1316 Galisteo Parkway, Santa Fe.
AIR CONDITIONER, 1 ton refrigerated, thermostatically controlled, used 4 months, sacrifice for \$175. Mays, 1002 Caludine NE.
'51 FRAZIER Vagabond, good hunting, fishing car, runs good, \$150 or trade for guns. Connolly, AL 6-3275.
POLAROID Camera/portrait lens, light meter, flash unit and filter, \$100; 35mm Minolta, \$50; Univex double 8 movie camera, \$25. Petrin, AX 9-0356.
DINETTE SET, 5 piece chrome, 1 extension leaf, grey table, grey and black chairs, \$25. Scalf, AX 9-1465 after 5.
WESTINGHOUSE FAN, Oscillating, 24", new. Hackard, AL 6-4312.
OSCILLATING FAN, 10", \$5; '54 Chevrolet-150, new paint, reasonable; reed organ, antique; solid oak cabinet. Benson, AX 9-3315.
TRAINING CHAIR w/tray, \$5; 6 year crib, \$10. Weldon, Ext. 43237.
SIAMESE KITTENS, \$10 and \$15 each. Negaard, AX 9-2830.
PLATFORM ROCKER and slip cover, \$15; floor lamp, \$3; dining room set; bunk beds. Moore, AL 5-4457 after 5.
'57 PLYMOUTH, Belvedere hardtop, push-button drive, R&H, ww's; electric range, 12 cu. ft. refrigerator; foam rubber mattress and box spring. Trumble, AX 9-0055.
BABY STROLLER and bassinette, \$10. Murry, DI 4-5289.
PRACTIMA FX single lens reflex w/F.2 Biotar lens, case and rangefinder. Cost \$300 new, sell for \$150. Hall, AX 9-6689.
SINGER PORTABLE sewing machine w/attachments and buttonholer, new dress form. Long, AX 9-1416.

WANTED

TO TRADE good 16 gauge single shotgun w/choke for .410; also need 45-70 brass .22 long rifle shot shells. Pritchard, AL 6-5667.
ONE OR TWO lots in Montgomery Heights. Brunacini, DI 4-6831.
VINTAGE MODEL airplane engines for my collection. Stark, AM 8-8674.
CHILD CARE in my home, one or two children weekdays. Hawthorne, AX 9-1739, 340 Gen. Bradley NE.
HOMES FOR KITTENS. Wide selection, call at any reasonable hour. Jones, AX 9-4900.
TO BUY TRICYCLE. Fulcher, Ext. 43243, 204A Grove NE.

FOR RENT

3 BRM HOUSE, convenient to Bases, \$95 month, available June 1. Negaard, AX 9-2830, 1316 Boatright NE.
UNFURNISHED APARTMENT, new 2 bedroom brick, stainless steel kitchen, electric range, refrigerator, air conditioned, available June 1, \$94.50. Hunter, AX 9-1089.
SLEEPING ROOM, large, Bel-Air district, \$10 per week. Wade, AL 6-6555.
4 BRM HOME, 1 1/4 baths, near shopping center, schools, churches, garbage, water paid, available June 15, \$135 mo. Duffy, AL 6-5075 evenings.
3 BRM HOUSE, attached garage, unfurnished, available June 1. Trujillo, CH 2-3827.
FURNISHED ROOM, comfortable, ideal for elderly lady. Smith, CH 3-3936, 1925 Cool SE.
2 BRM duplex, new, stove and refrigerator, air conditioned, water, garbage paid, \$95, available June 1. Kinney, 231 Utah NE.
2 BRM APT. in new duplex near Carlisle and Gibson, available June 15, carpeted, refrigerator and range optional, \$90 mo. Petrone, Ext. 45194 after 5.

LOST AND FOUND

LOST—Red marked motor pool key, gold cuff link w/red stone, keys w/name and address of Palmer, brown billfold w/I.D. of Ralph McClure, horn rim glasses. LOST AND FOUND, Ext. 26149.
FOUND—Red Thermos bottle, green sweater, 32nd degree Masonic lapel pin, tan gloves, RH white cotton glove, brown wool glove, royal blue scarf, safety glasses, red bead bracelet. LOST AND FOUND, Ext. 26149.

LIVERMORE FOR SALE

HOT WATER HEATER, gas fired, 30 gal., will guarantee, \$20. Richards, HI 7-4389.
'59 CHEVROLET, Impala, 2-door, white hardtop coupe, stick shift, R&H, ww's, other extras, \$300 and assume payments. Truitt, HI 7-1313.

Two-Phase Research Study of Gas Discharges Now Underway

The pinkish-blue flash fills the glass tube. The scientist watches the reaction on an oscilloscope. Within microseconds the experiment is over.

To casual observers the occurrence of the colorful light flash would seem the most exciting aspect of studies on conduction of electricity through gasses, but to the scientists of the Physical Electronics Division (5152) the details of the physical processes that give rise to the electrical conduction are of primary interest. Investigation of gas discharges is one of a dozen experiments in fundamental research being conducted by Sandia's Physical Sciences Department. The aim is the same in all cases: gaining more knowledge.

"Gaseous discharges have been studied analytically since the mid-1800's," according to Gordon W. McClure, division supervisor, "but the type of discharge we are dealing with has never been completely explained."

Theoretical-Experimental

The approaches to the research have been both theoretical and experimental.

The theoretical phase was initiated by combing the vast field of literature to acquire numerical data on fundamental processes involving electrons and ions. Presently these data are being used by Crawford MacCallum to construct a detailed mathematical model of the gas discharge. Some of the calculations are being carried out with the aid of computing facilities of the Systems Analysis Department 5120.

The second phase consists of setting up experiments to analyze the actual discharges. Particular experiments have determined the energy distribution and nature of particles striking the electrodes and the effect of electrode materials and gas pressure on characteristics of the discharge.

The Sandia experiments are conducted with hydrogen at pressures below a thousandth of an atmosphere and voltages up to 100,000 volts.

"An unusual feature of the discharges being investigated is this high applied voltage," Mr. McClure explained. "Most of the earlier studies reported in the literature were carried out at much lower voltages and higher pressures."

After the tests were underway, scientists became aware of a strange phenomenon. Electrons were striking the positive electrode and were bouncing back to produce more ions.

First to Realize

Mr. McClure said, "Although electron scattering from solids had been known for years, we thought that we were the first to realize its importance in gas discharges. Then we came across a Russian article written in 1955 which mentioned the process in the same connection. The reference was long overlooked as the article was in Russian and we had to have it translated by the Technical Library."

One of the other phases being studied is the electrical potential distribution along the walls of discharge tubes. Electrical contact can be made to the body of the discharge by means of a metal probe, which penetrates through the glass wall. Then an oscilloscope can be used to make measurements—but only for brief periods due to the short duration of the discharges.

Others who have been working on the project are Bruce Wickesberg, Dick Berner, Les Balint and Don Schreiner.

As for the future Mr. McClure said, "We contemplate studies of individual collision processes by passing pure ion beams of known energies through hydrogen gas."



Merle Alexander (4224-3)
—Safety shoes on the job—

Safety Shoes Prove Worth Again Both at Home And While on Job

Two Sandians recently had experiences that proved the value of wearing safety shoes on the job and at home.

Merle Alexander (4224-3), a master craftsman in the sheet metal shop, was bending a flange on a piece of metal. This hand forming operation requires the use of two heavy steel bars in bending the metal.

Merle had finished the shaping operation and removed the metal from between the bars. They were resting on the edge of his work bench. When he picked up the top bar the one on the bottom fell off the bench and landed on his left foot. The bar weighed about 20 lbs. and landed partially on the steel toe of his safety shoe and partly on his instep.

The accident did crack a bone in his left foot but it was not serious enough to be classed as a lost time accident. He wore an orthopedic shoe for a week.

"It could have been much more serious," Merle said. "I learned long ago to appreciate the value of safety shoes."

John Hoice (1455) is a man who takes pride in his beautiful clover and blue grass lawn at 8909 Snow Heights NE. He has a large corner lot and a wide expanse of luxuriant lawn which requires mowing at least once a week.

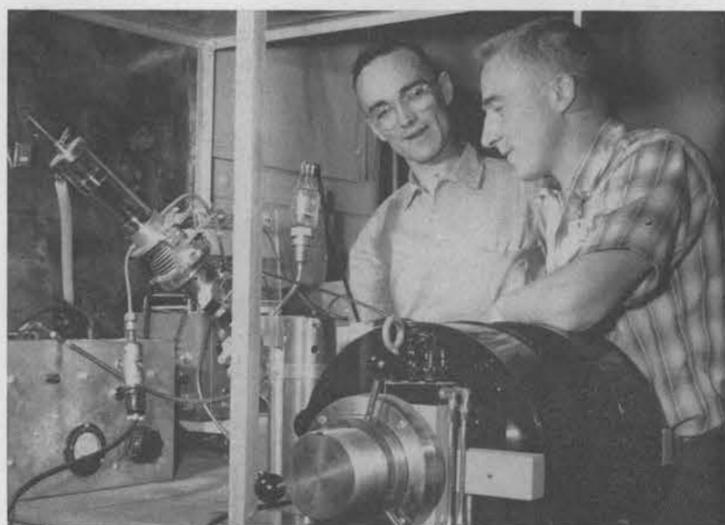
Recently John was running his power mower over the grass when he slipped on a wet spot in the grass and his right foot slid under the rotary blades of the mower.

A large chunk of the leather covering the steel toe of the safety shoe was peeled off. The steel toe was deeply scratched but John didn't feel a thing.

"When I looked at that ruined shoe," he said, "I could just imagine what a mangled foot I could have had. I always wear safety shoes when doing chores around the house."



John Hoice (1455)
—Safety shoes at home—



DISCUSSING AN ADJUSTMENT on an ion energy analyzer are Gordon McClure (L) and Bruce Wickesberg in connection with their study of the conduction of electricity through gas.

Tampering With Electrical Plug Has Painful Results for Fellow Worker

A Sandia Corporation employee received a nasty shock recently from a series of events related here. It was a near miss with a fortunate ending. No serious injuries were inflicted, but a rude jolt was experienced.

Here is the story:

An employee needed a high voltage cord with plug to connect a test setup. He attempted to find an approved three-phase electrical plug that would attach to the cable and fit into a three-phase receptacle that was nearby. Not being able to find an approved plug, he went to Maintenance Stores and procured one to be used with single-phase circuits. One prong of the single-phase plug is bent at a 90° angle (see photo) and grounded to the metal case of the plug.

The employee was aware that the plug, having the one prong bent at 90° would not fit the straight slots on the three-

phase receptacle. (This 90° bend is intended to prevent using the single phase plug in a three-phase receptacle.)

Unaware of the danger involved, the employee placed the prong with the right-angle bend in a vise and flattened it out so it could be plugged into the three phase receptacle. The plug was then attached to one end of the electrical cable.

When another employee got ready to hook up the test setup he did not notice the altered plug. Thinking it was an approved three phase plug, he placed one hand on the receptacle box and placed the single phase plug into the three-phase receptacle with the other hand.

Since the altered prong of the plug was grounded to the shell, an electrical circuit was completed through his body and he was knocked to the floor by the electric shock.



ALTERED PLUG in left hand of Parker Wallace (4811) resulted in nasty shock. Plug with correct prongs is held in his right hand.

Newell H. Tharp Dies Saturday, May 9

Funeral services were held last Monday for Newell H. Tharp, who died suddenly May 9. He was 55.



N. H. Tharp

Mr. Tharp was a security sergeant (4842-5) and had been employed at Sandia since 1950.

Survivors include his widow, Zanza B., three brothers and a sister.

B. N. Charles Writes Article for Journal of Geophysical Research

B. N. Charles (5151) is author of an article which appears in the current issue of *Journal of Geophysical Research*. Entitled "On Some Limitations of Upper Wind Records," the technical paper was presented recently at the annual meeting of the American Meteorological Society in New York City.

The paper describes a meteorological study made by Systems Analysis Division A 5121 which reports that previously collected upper wind measurements were seriously biased toward smaller values because of limitations of observing equipment.