



F. J. Given

### F. J. Given Earns 40-Year Service Award from BTL

A service emblem representing 40 years with Bell Telephone Laboratories was presented May 20 to F. J. Given, Vice President, Administration. He was honored at a special luncheon held at the Alvarado Hotel.

Mr. Given started with the Western Electric Company in 1919 and worked until 1925 in supervision of a group of engineers developing coils and capacitors for telephone apparatus.

From 1925-52 he held various supervisory positions with Bell Telephone Laboratories and was Assistant Director of Apparatus Development prior to coming to Sandia in 1952 as Director of Apparatus Engineering. He was named Vice President, Research and Development Technical Services, in January 1956 and assumed his present post in January 1959.

### Livermore Students See Drafting Group In Laboratory Visit

A group of Livermore High School students visited the Livermore Laboratory last week to get a first-hand look at a working drafting organization.

About 70 youngsters were shown through the plant engineering area, located in an uncleared section of the laboratory. Guide was J. H. Mafit (8221).

The students, all of them freshmen or sophomores, represented four drafting classes. They visited the Laboratory in three groups at intervals during the day.

R. L. Siglock (8114-3) spoke to the groups on mechanical drafting and Mr. Mafit discussed architectural drafting. Marlin Pound (8212-1) talked about employment opportunities and R. E. Dewhurst (8233) and W. A. Jenkins (8233-1) each explained the Corporation's history and function.

### H. W. Maglidt Speaks

H. W. Maglidt, Document Department manager, spoke at the National Records Management meeting held in Chicago May 25-27.

He discussed before the group "Application of Xerox Methods of Reproduction in Records Management Controls."

## R.A. Bice Named Vice President

Richard A. Bice will become Vice President, Engineering for Manufacture at Sandia Corporation July 1. He succeeds H. N. Snook who has accepted a position as Assistant Works Manager in charge of Operations, Merrimack Valley Works of Western Electric Company of Massachusetts.

Mr. Bice has been Director of Sandia Corporation's Field Testing Organization since 1954.

Entering the atomic weapons program in 1945 as an Alternate Group Leader for Los Alamos Scientific Laboratory, Mr. Bice transferred to Sandia Laboratory in 1947. First he was a Group

Leader of the Sandia Branch of the Mechanical Ordnance Development Organization.

#### Department Manager

Later, when Western Electric Company's subsidiary, Sandia Corporation, took over the operation of the Laboratory, Mr. Bice became manager of one of the Laboratory's engineering development organizations. He remained in this position until he was made Director of the Field Testing Organization.

Before entering the atomic weapons program Mr. Bice was employed as an Agricultural Engineer by the University of California. From 1940 to 1944 he per-

formed lubrication research as Senior Engineer with Westinghouse Engineering Laboratories.

#### Colorado State Grad

Mr. Bice received his BS and ME degrees from Colorado State University and attended the University of Pittsburgh for additional graduate work. He is past chairman of the American Society of Mechanical Engineers and is a member of the National Society of Professional Engineers and the Alvarado Heights Civic Association.

Mr. Bice is actively engaged in civic affairs as a member of the Albuquerque City Commission to which he was elected in 1954.



R. A. Bice

### Kimball Prince Named to BTL Legal Position

Kimball Prince, General Attorney for Sandia Corporation, has been named Assistant General Attorney of Bell Telephone Laboratories, Inc. He will assume his new post in New York City July 1. He will become General Attorney for the Laboratories on Aug. 1 succeeding W. C. Toole who then retires under the age retirement rule.

With Western Electric Company since 1944, Mr. Prince came to Sandia Corporation November 1, 1955.

After graduation from Harvard, Mr. Prince received his LL.B. degree from New York Law School in New York City. During World War II he served as Chief Counsel in the rationing division of the Office of Price Administration in New York.

Mr. Prince was active in community affairs while living in the East and during his residency in Albuquerque has served on the Executive Committee of the Board of the Directors of the Albuquerque Civic Symphony and has been a member of the Tennis Club, the Harvard Club and the Ski Club in Albuquerque.

### Sphere of Science Ready for Visitors

Sandia Corporation's Sphere of Science is ready for showing. Educational groups, scientific and technical societies and service organizations are invited to visit the exhibit.

Groups wishing to visit the "Sphere" should contact Sandia Corporation Public Relations Division 4731, Bldg. 829, or call ext. 44264.



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

VOL. II, NO. 11

ALBUQUERQUE, NEW MEXICO

MAY 29, 1959

## AEC to Seek Bids for Sandia Laboratory Construction Jobs

Three expansion projects for present buildings and the construction of a field headquarters building for Sandia Laboratory were announced this week by the Atomic Energy Commission. The AEC advised contractors that construction bids for these jobs are invited.

Bldgs. 868, 851 and 6560 will be expanded and the new field headquarters building will be constructed in the Coyote Canyon Test Field.

The Industrial Hygiene Division 4961 will occupy the expanded Bldg. 868. It will be used for the storage, machining and testing of all toxic and radioactive materials used by Sandia Laboratory. The building will house an accountability station for the material.

Bids will be opened about June 16 for the 868 expansion. A 2,500 sq. ft. addition will be constructed at an estimated cost range of \$42,000 to \$52,000. Project engineer for Plant Engineering Department 4540 is Vernon Kerr (4543). Work is to be completed within 100 days after notice to proceed is issued by the AEC.

**Metal Cutting Operations**  
Bldg. 851 will be expanded to give Stock and Material Control Division 4212 additional space for cutting operations and storage. The building currently is the Development Shops' supply center for steel, aluminum, tool steel and steel flat metals and the addition will provide more adequate facilities.

The expansion of Bldg. 851 will consist of a prefabricated steel frame addition of approximately

3,200 sq. ft. Estimated cost range for the job is \$30,000 to \$40,000. Bids are scheduled to be opened by the AEC June 19 and work is to be completed within 100 days after the contractor receives notice to proceed. Project Engineer for Plant Engineering Department is James Reid, Jr., (4543).

A vibration facility in Area III, Bldg. 6560, will have an addition of a prefabricated steel structure, a concrete slab floor and a 12-ton overhead bridge crane. The facility currently houses a large shake table and the expansion is to house an additional shake table and a new local control console. Both shakers will operate from the present power supply. The facility is used by the Test Laboratory Department 1610 and the project engineer is J. R. Windham (1613).

Project engineer for Plant Engineering is Vernon Kerr (4543). Bids are scheduled to be opened by the AEC June 23 and construction is to be completed 150 days after the contractor receives notice to proceed. Cost range is estimated at \$33,000 to \$43,000.

The new headquarters building scheduled for Coyote Canyon will house the present facilities of the Field Experiments Section 5112-2 now located in the basement of Bldg. 802. It will be a reinforced concrete structure housing four lab areas, office space, film projection room, automatic data handling room, and utilities.

Estimated cost range of the construction is \$55,000 to \$65,000. Bids will be opened about June 17 and work is to be completed within 120 days after the contractor receives notice to proceed from the AEC. Project engineer for Plant Engineering Department is Frank Scheer, Jr., (4543).

Construction contracts for Sandia Laboratory are awarded by the AEC. Plant Engineering personnel prepare preliminary layouts and design criteria for use by the architect-engineering firm selected by the AEC to prepare final drawings. During the design period, Plant Engineering performs liaison with the architect-engineer and then checks final plans and specifications.

## GAC Studies Fallout Problems; Commends AEC for Activities

The General Advisory Committee to the U. S. Atomic Energy Commission has completed an extensive review of the problems presented by radioactive fallout. The results of this re-

view were presented by the AEC in hearings early this month on radioactive fallout which were being held by a Special Subcommittee on Radiation. This subcommittee is a part of the Joint Committee on Atomic Energy of the United States Congress.

Membership of the General Advisory Committee includes James W. McRae, former president of Sandia Corporation.

The report included a study of the problems of radioactive fallout and the activities of the Commission and the Department of Defense and other groups pertaining to these problems.

The text of the report follows: The General Advisory Committee has reviewed carefully the available facts and many opinions regarding the magnitude of fallout to date, and how much can be anticipated in the future from weapon tests that have already been carried out by the United States, the United Kingdom, and Soviet Russia.

We find that the Atomic Energy Commission has released all significant fallout data to other

agencies and to the public.

Certain information as to the estimated yield of various weapon tests and certain other factors bearing on radioactive content of the upper atmosphere have defense implications which require classification, but the significant information on actual fallout throughout the free world that the AEC has developed has been released. Furthermore, the Commission has been largely responsible for the development of equipment and procedures to measure extremely minute quantities of radioactive materials.

It is now apparent that the circulation of the upper atmosphere, and particularly the stratosphere, is much more complicated and the concentration of bomb debris less uniform than had been anticipated when early estimates were made.

This has resulted in non-uniform distribution of the fallout with higher concentrations in the middle latitudes of the Northern Hemisphere. Fortunately, it was just here that most of the early

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LIVERMORE LABORATORY was host to visiting Bell Telephone Laboratories and Western Electric Company officials recently: (L to R) W. J. Howard (8100); H. I. Romnes, president, Western Electric

Company; J. B. Fisk, president, Bell Telephone Laboratories; C. R. Smith, vice president, Radio Division, Western Electric Company; R. E. Poole (8000) and C. W. Campbell (8200), Livermore Lab.

## Education and 'The Plan'

The complexity of communist efforts to defeat the capitalism of the Free World makes opposition to the totalitarian pressures difficult and even unpopular at times.

In the last issue of the **Sandia Lab News**, and concluding in this issue, is an article on how education is part of "The Plan" in Russia. On the surface this looks good for until recent years the Russian system was called an "ox-cart economy." We had little to fear from these people and a good army, navy and air force could do a successful job of preserving the peace.

On Oct. 4, 1957, the world's eyes were opened to the fact that "Krushev & Company are no longer a rude barbarian horde." On that day we entered the Sputnik Era. We find Russians well disciplined in science and well armed with engineering. We now realize they are schooled in economics and political theory. Today, we realize they are superbly equipped to force their will on the rest of the world.

Here we begin to see how Russian education, being a part of "The Plan" is shaping the events of our lives.

The answer? It lies in the education efforts of the free world. Our education must be in science, in the economy of the free enterprise system, in our American political system, in the values of human courage.

We cannot stop aggression of communism with flag waving patriotism alone, we cannot stop it with broad oceans, warning systems and words, or even bombs and missiles.

The ultimate weapon in this struggle, according to Frank Rockwell Barnett, director of research of the Richardson Foundation, is human courage and faith in certain unalterable moral laws.

And where should those weapons be "manufactured" other than in our educational system?

A song heard in the Russian schools is "The Internationale." And Russian students, as they sing it, say these words:

" 'Tis the final conflict,  
Let each stand in his place;  
The International Soviet shall be the human race."

Free World education is the "factory" where we can produce the human courage and faith necessary to preserve the freedoms and rights of mankind.

We cannot win this education competition by emulating the Russians. We can win only by doing a superior job in our schools of preparing our young people in all ways for the eventualities of tomorrow.



Mary Lou Valdez (1265)

### Take a Memo, Please

Work as though your life depends on it—it does. Your life could depend on awareness of safety practices or safety hazards.

### Tops in Essay Contest

Paula Neighbors, daughter of R. V. Neighbors (5544), was chosen as first place essay contest winner and delegate to the National Youth Conference on the Atom held in Atlantic City, N. J. recently. She competed against students from California, Oregon, Utah, Arizona and Nevada. The students were required to write an essay on the subject "The Importance of Scientific Progress to America."

A straight "A" student through 12 years of school, Paula plans to attend the University of Colorado this fall where she will further her studies in science and higher mathematics.

### Jim Reed Speaks

A talk on "Aerodynamics" was presented by Jim Reed (5142) last week before members of the Jackson Junior High School Science Club.

## Sympathy

To Emma Hollingsworth (5131) for the death of her brother May 8 in Big Springs, Tex.

To Archie Fisher (2234-2) for the death of his sister in Cheboygan, Mich., on May 10.

### Fireman, Save My House

Wally Jungmeyer (5126) was called upon to be a fireman recently.

A house under construction across the street from his at 1208 Indiana NE began to blaze. Wally and his family were eating dinner when his wife noticed the fire.

Wally called the fire department, grabbed his garden hose from the front yard and dashed across the street to see if anything could be done. A neighbor came to help. Within minutes they had the fire under control.

In 10 minutes the Fire Department trucks arrived and extinguished the fire. Wally returned home and finished his dinner.



Reporter Ruth Wood takes news item from Paul Syroid (1613)

### Speaking of Reporters

## Ruth Wood Is Seven-Year Veteran As Volunteer Worker for Lab News

This is another article telling of the volunteer reporters who contribute to the Sandia Lab News.

Ruth Wood has been reporting for the Sandia Lab News for seven years, first for organization 5111 and more recently for Test Laboratory Department 1610.

She once worked for a weekly newspaper in Barrington, Ill. "I had to write society items, handle want ads, and do a variety of other things, but that was a long

## Congratulations

Born to:

Mr. and Mrs. George Glaser, Jr. (4753) a daughter, Elizabeth Claire, on April 19.

Mr. and Mrs. Dale Cole (4411-6) a son, Randall Wesley, on April 24.

Mr. and Mrs. Stuart Asselin (1246) a son, Stuart Lawrence, on May 14.

Mr. and Mrs. R. E. Moery (4514-2) a daughter, Joy Delynn, on April 23.

Mr. and Mrs. L. E. Janssen (8224-1) a daughter, Doralene, on May 12.

Mr. and Mrs. Wynne Grace (1451) a son, Kenneth Peter, on May 6.

Mr. and Mrs. John Willis (1456) a daughter, Jane, on May 15.

Mr. and Mrs. Bernard Robertson (1625) a daughter, Susan Gail, on May 17.

Mr. and Mrs. James Allensworth (5242) a daughter, Susana Marguerite, on May 9.

Mr. and Mrs. John Melvin (5241) a son, John Patrick, on May 20.

## Weddings

Roy E. Smith and the former Lucille Cuthbertson were mar-



Mrs. R. E. Smith

ried May 22 in a double ring candlelight ceremony at La Mesa Presbyterian Church.

After a wedding trip to the southern part of the state the couple planned to reside at 1503 Wyoming Blvd. SE.

Lucille has worked at Sandia three years and is in the Typing Services Section 4623-5.



BOND DRIVE ENDS—I. M. Moore (5310), drive chairman, and Kendra Atkisson (4623) still say "U. S. Savings Bonds are a good buy." The drive upped Sandia payroll deduction participation 50%, an increase of more than \$74,000 invested annually by Sandians.

### Home of Church Brothers

## New Mexico Quarterly Article Tells of Early Los Alamos Days

The atmosphere in which three Sandia brothers were brought up is being re-created in an article entitled "The House at Otowi Bridge" by Peggy Pond Church. The two-part article will appear in successive issues of the New Mexico Quarterly, then is slated to be printed in book form by the New Mexico Press.

Mrs. Church is the mother of Ted (1410), Hugh (5111) and Allen (1265) Church and already has had several volumes of poetry published.

The Church brothers' grandfather, Ashley Pond, founded the Los Alamos School for Boys in 1917 and their father taught there for 20 years before the buildings and land were taken over by the government for a top secret project in December 1942. The sons were all born and raised on Parajito Plateau.

The article is primarily about Edith Warner, described as a shy little spinster from Pennsylvania whose house "beside a bridge between two worlds" was a sanctuary for great minds in Europe and America and whose friendship was valued by the Indians of San Ildefonso Pueblo, who were her neighbors for 20 years.

It is also the story of Los Alamos "before, during and after it became a fierce symbol to the world."

## Hawaiian Styles At Sanado Club Meeting June 2

A "Hawaiian style show" will be presented by the Sanado Club Tuesday, June 2 at 1:30 p.m. at the Coronado Club.

Tea and punch will be served in a surrounding of palm trees, orchids, ferns and bird of paradise flowers. Mrs. J. C. Hart is in charge of arrangements, Mrs. William Sharp is in charge of the program and Mrs. David Brubeck will be commentator for the style show.

Reservations are due today.

### It Got Away

"The fish that got away" proved to be the highpoint of a recent trailer caravan trip to Mexico by several Sandia families.

Families of John Colp (1626), Jim (1626) and Mary Ellen (4650) Sisler, Walt (1615) and Eileen (4623) Taylor, Art Hasenkamp (1626) and Maj. P. J. Sykes traveled to Guaymas, Sonora, Mexico.

While there they did some deep sea fishing. Jim Sisler hooked an estimated 450 pound marlin, but lost it after a long battle.

### New Homes

Moving into a new home last week was Alan Rosner (4152-1) and his wife. Their address is now 1513 Arizona NE.

The Don Morrisons (5126) will move into a new home at 712 Laguaya NE during the coming week end.

### Get Well Wishes

Wishes for a speedy recovery go to Bill Otero (2233) who has been hospitalized since early May and underwent major surgery.

Also convalescing is Jess Lopez (2234) following a hospital stay.

Get well wishes are extended to Frances Najor (4135-1) who underwent surgery recently.

Another person on the sick list is Jerry Dusek (2722), who has been ill for the past month.

Section 2721-3 wishes speedy recoveries to Homer Messenger and Herman Calvery who are on the sicklist.

### Mosaic Prize Winner

First prize in Professional Mosaic at the city wide art exhibit, held May 10, was won by R. L. Burgess (5213). His mosaic and sand cast jewelry will be on exhibit in Santa Fe at the International Folk Art Museum beginning May 29. The museum is open to the public.

### Elected President

Charles W. Sargent (4721-1) was elected president of the Albuquerque Library Association for the year 1959-60 at the group's annual author's dinner May 20.

### New Daughter

There's a new member in the J. L. Dossey (1262) household: Leslie Rhea, a two-week-old girl.

### Wedding Anniversary

Hugh Howe (4721-1) and her husband celebrated their 25th wedding anniversary on May 26.



The Sandia Lab News is an official publication of the Sandia Corporation, Albuquerque, N. M. Office Bldg. 829, Public Relations Division Editor: Robert S. Gillespie

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Deadline Friday noon of week prior to publication



Member Association of Nuclear Editors, Border Council of Industrial Editors, and affiliated with International Council of Industrial Editors.



ANNUAL OPENING of the Coronado Club twin swimming pools is scheduled Saturday, May 30. Joyce Hemsing (4623 assigned to 5113) attractively helps advertise the event as shown above. New feature of the pools this year will be the steam heating of the south pool. The heating system will be installed within a few days after the opening. Pool hours will be 10 a.m. to 6:30 p.m. daily.

## Coronado Club Members to Elect New Directors June 8

Members of the Coronado Club will hold their annual meeting and elect new members of the club's Board of Directors on June 8 at 7 p.m.

Under a proposed change to the club's by-laws to provide better continuity, four directors will be elected for two year terms at each annual meeting and two will be elected for one year terms. This year, however, five directors will be elected for one year terms and one director will complete his two year term, completing the slate of 10 elected directors.

Reason for the proposed change, according to A. C. Taylor (4254), president, "is to give newly-elected board members direct assistance in the better understanding of club and board policies. Each year valuable time is lost because of this," Mr. Taylor said, "and the board feels that having four carryover members each year should eliminate this problem and allow succeeding boards to function as a unit much more rapidly."

The final reading of the proposed change in by-laws will take place at the regular meeting of the Board of Directors on June 4 at the Coronado Club.

Under the proposed change the nine qualified candidates from among those nominated who receive the greatest number of votes will be elected, and the four receiving the highest number of votes will serve for two-year terms. Qualified candidates are those who have served no more than two consecutive years as an elected director. Should a candidate be elected who has served as a director for two consecutive years he will be limited to a one-year term of office.

A suggested slate of candidates has been prepared by the club's nominating committee for the nine directors' positions open.

Those suggested are: A. C. Taylor (4254), A. F. Cone (5510),

### Welcome Back

Back at work after a month long absence due to illness is Mike Norris (5121).

R. E. McClure (1218), J. L. Griscom (2551), J. J. Colwell (1284), Durwood Yates, (AEC), E. C. Peterson (4820), Neil I. Humble (4541) and Mrs. G. M. Whiteman (2723).

Other nominations will be accepted from the floor.

Those eligible to vote in the election, according to Mr. Taylor, must be active members of the club who are not delinquent in payment of their dues and who have not joined or rejoined the club within 10 days preceding the meeting.

Free refreshments will be served at the conclusion of the meeting.

## Special Sandia Summer Staff Comes from Nation's Schools

College students and faculty members from schools across the nation will arrive at Sandia and Livermore Laboratories in early June to work on specific assignments in Sandia's summer student and faculty technical program.

At Sandia Laboratory the faculty members will come from 16 different universities and the students will represent 35 colleges, universities and technical institutes. In addition five teachers from public high schools in Albuquerque will be employed here during the summer months.

The students, numbering 58 at present, are either in their senior year or doing graduate work at the schools they attend. Their majors include mechanical engineering, electrical engineering, physics, mathematics and other technical subjects.

### Schools Listed

Faculty members and their schools are: University of Arkansas, F. K. Deaver; University of Arizona, Jack Smith; Cornell University, Dr. J. W. Dally; Georgia Institute of Technology, Dr. C. E. Stoneking; Howard University, M. L. Walker; University of Illinois, Dr. L. D. Volpp; State University of Iowa, H. W. McCauley; University of Kansas, G. W. Forman; University of Nevada, Dr. W. A. S. Smith; Uni-

## Surplus Vehicles to Be Sold by Sealed Bids at Salton Sea

Six vehicles are offered for sale as surplus property by the Salton Sea Test Base salvage yard. The vehicles include a 1948 International 1½-ton truck, 1950 Mack 10-ton tractor, 1950 Dodge 2-ton stake truck, 1950 Willys Jeep, 1953 Chevrolet sedan and 1953 Ford sedan.

Sale will be by individual sealed bids which can be submitted by mail postmarked no later than June 9. Bids may also be presented in person at the Salton Sea Test Base salvage yard prior to 2 p.m. June 16 when the bids will be opened.

Sandia employees in Albuquerque may obtain further information from Pat White (2242), ext. 40215. At Salton Sea contact either B. D. Neil (4582), ext. 75, or S.S. Harris (4580), ext. 73.

## Travelers Cheques May Be Purchased At Financial Division

Sandia Corporation employees preparing to go on vacation are reminded that Travelers Cheques for their personal use may be purchased from the tellers of the Financial Division 6021 in Bldg. 626. Travelers Cheques, readily negotiable anywhere, provide a convenient and safe way to carry vacation funds.

The service charge to employees is one-third of one per cent of the face value of the Cheques: 33 cents for \$100. Cheques are available in denominations of \$20, \$50 and \$100.

Employees may exchange their pay checks, vacation advance checks, or Credit Union checks for Travelers Cheques. Personal checks will also be cashed for purchase of Travelers Cheques provided the following approvals are obtained: up to \$100, division supervisor; up to \$300, department manager; up to \$500, director; and up to \$1,000, vice president.

To arrange a convenient time to purchase Travelers Cheques employees should call the teller in advance on ext. 3-2147.

## Local Chapter of ISA Elects Officers

Newly elected officers of the Albuquerque Chapter of the Instrument Society of America include several Sandians.

J. H. McCutcheon (1473) was elected vice president and R. P. Baker (1542) treasurer. National delegate is John Cummings (1542) and Al Gruer (5210) was selected alternate delegate. Nick Sannella, Jr., (1455) is the outgoing president.



PRECISE MEASURING of large foundry castings is a delicate matter. Here J. M. Bunch (1651-2) takes a meter reading after carefully aligning gauge blocks along the length of the casting. Sandia is one of 20 selected firms participating in a project for the National Bureau of Standards and American Ordnance Association.

## Sandia Participates in Study For Nat'l Bureau of Standards

Sandia Corporation is one of 20 firms selected to aid the National Bureau of Standards in a special measurements project. The investigation seeks to determine the degree of accuracy of measurements of machined parts of large dimensions (30 to 80 inches) in general commercial practice.

The study will serve as a basis for setting tolerances on such dimensions and will provide information that will aid in determining suitable measuring methods, equipment and procedure for use throughout American industry.

Sponsors of the project include the Dimensional Standards and Metrology Division of the American Ordnance Association and the Engineering Metrology Section of the National Bureau of Standards.

Three large castings were furnished by the Bureau and will be

measured under laboratory conditions and in the Sandia Development Shops.

Performing the laboratory measurement will be the Length Measurements Section (1651-1), supervised by J. C. Moody. Both external and internal measurements of castings will be made.

In the dust-free, temperature and humidity controlled standards laboratory in Building 860, the castings have been carefully supported on the floor and gage blocks set up to determine the measurements. Each of the gage blocks used by the Laboratory have been calibrated against reference standards certified by the National Bureau of Standards. The length of the gage blocks are known to an accuracy of one millionths of an inch per inch of length. The metal blocks react to temperature changes and extreme care has to be used in their alignment.

In the shops, the Program Machining Division 4251, under L. W. Stouder, will make the measurements using regular shop instruments and practices.

A similar investigation was conducted in England and the results forwarded to the International Organization for Standardization. Results of the American study will eventually go to the international body with the hope that they will be helpful in standardizing measuring procedures and equipment throughout the world.

## Nicholas Christofilos To Speak at Meeting Of IRE in Livermore

A talk by a noted scientist on a dramatic "Project Sherwood" device and the annual election of officers will be featured at the next meeting of the Institute of Radio Engineers East Bay Subsection at Livermore June 15.

Livermore Laboratory members of IRE have been invited to hear Nicholas Christofilos, Lawrence Radiation Laboratory Senior Research Physicist, talk on his astrophysics device, part of the Sherwood Project aimed at harnessing thermonuclear energy.

The talk and election will be at the LRL Auditorium starting at 8 p. m.

versity of New Mexico, Dr. N. B. Crowell and K. G. Medearis.

North Dakota State College, L. C. Meyer; University of Notre Dame, Dr. Harold Ellithorn; Pennsylvania State University, Dr. J. R. Mentzner; San Diego State College, E. G. Bauer; University of Texas, Dr. E. A. Ripberger; University of Utah, Dr. Arlo Johnson, and Valparaiso University, Ames Knudsen.

High schools faculty members are: Wilbur B. Maxson, Albuquerque high; Robert E. Krylach, Sandia high, and from Highland high Robert E. Iden, F. E. McCulloch, Jr., and Oliver D. Neece.

### Students Participating

Students participating in the 1959 summer technical program and their schools are: University of Arizona, R. E. Williamson; Brooklyn Polytechnic Institute, I. H. Gilbert; California Institute of Technology, W. D. Burnett; Carnegie Institute of Technology, D. R. Harrington; Harvard College, R. F. Dushen; University of Illinois, Otis Peterson; State University of Iowa, Robert Klingler; Iowa State College, Larry Swanson; Kansas State College, K. K. Stevens; University of Kansas, Duane DeWerrf; University of Kentucky, C. E. Canada.

Maryland University, S. R. Kraft; Massachusetts Institute of Technology, Floyd Mathews and L. D. Roper; Michigan State University, Charles A. Davis and Robert A. Harger; University of Michigan, G. L. Schmidt.

University of Minnesota, N. R. Vanstrom; University of Missouri, T. O. Baldwin; University of Nebraska, Glenn Anderson and M. K. Parsons; University of New Mexico, Henry Hermes, Jr., Floyd E. Lundy, Jr., R. P. Lutz, Jr., Lee J. Seligman, John F. Taylor and Patricia E. Tolmie.

### North Carolina State

North Carolina State College, P. E. Scarborough, Jr.; North Dakota State College, T. D. Herther; Ohio State University, E. K. Greenwald and J. P. Wilcox; Oklahoma State University, O. J. Burdett, Clyde Northrup, Jr., and C. E. Nuckolls.

University of Oklahoma, James Hill, K. C. Ponsor and Scottie Scott; Pennsylvania State

College, J. C. Wambold; Princeton University, J. G. F. Belinfante, H. S. Stone and J. H. Welch.

Purdue University, George W. Day, J. C. Garrison, C. R. Hargraves, John E. Myers and Paul E. Phipps; St. Louis University, Michael Sain; University of Texas, Anthony Bedford, Harry C. Hardee, Jr., Hugh Wade and John T. White.

University of Utah, Kurt J. Linden; Vanderbilt University, Catherine L. Thomas; Virginia Polytechnic Institute, James E. Mann, Jr.; University of Virginia, C. W. Henrich and J. T. Ratchford; University of Wyoming, William H. Dodson, and Yale University, John W. Mitchell.

Livermore Laboratory will have several high school students as well as college level students and faculty members working there during the summer months.

The faculty members are: James Schon, City College of San Francisco; William S. Chalk, University of Washington; Victor Remillard, Stockton Junior College, and John Jellinghausen, Livermore high school.

Students who will report in June and their schools include: American River Junior College, William S. Dawson; University of California, Arthur Rue and Mary Gruver; California Concordia, Harold R. Baldwin.

City College of San Francisco, David Dickie and Theodore Reinke; Diablo Valley College, Dennis B. Sparger, Jr.; College of Mount St. Joseph, Joan Wolowicz; University of New Mexico, Karen Anderson; Oakland City College, Richard Shimada.

College of the Pacific, Sharon Kenney; San Jose State College, Judith Gardner, Sharon Kirsher and Sharon McNutt; Santa Barbara Junior College, Dale K. Wallen and University of Wyoming, Garth Foster.

High school students who will be summer employees are John T. Doyen of Livermore, Paul F. Farned of Pleasanton, Carol Benedict of Livermore and William A. Lovato of Los Lunas, N. M.

# Constantly Stimulated Russian Research Centered in Educational Institutions

In the following, Part Two of an article by Dr. Ralph A. Morgen, Research Director of Purdue University Research Foundation, Russian methods of scientific research and its aim of fulfilling "the plan" are discussed. In the first article it was shown that all Russian education is for the sole object of providing trained personnel to accomplish the Soviet purposes. The article is reprinted by permission of the Horizon, Purdue Research Foundation, Lafayette, Indiana. Pictures are by Robert Criger, Sheffield Division of Armco Steel Corp., Kansas City, Mo.

Like all the other activities of Soviet educational institutions, research is closely supervised by the central educational authority. One result of this supervision is the constant stimulation of research in institutions of higher learning.

In both technical institutions (diploma-granting schools whose graduates are almost entirely absorbed by industry) and the universities (higher educational institutions most of whose graduates enter teaching), research is considered an obligation at least equal to that of under-graduate teaching. At least 50 per cent of faculty time in these two types of institutions is devoted to research. The only professional people to devote full time to research, however, are those holding positions with the academies of sciences rather than universities or technical institutes.

### Students Encouraged

To keep the flow of creative talent moving to research and teaching positions, promising students are systematically encouraged to develop an interest in research and to plan on a teaching and research career.

Just as the basic direction of economic growth, cultural development and political action are governed by the aims of the central plan, so are the ultimate goals of Soviet research. In the sense that all Soviet research must eventually contribute to the objectives of the plan, there is no free-wheeling exploratory individual research in the Soviet Union comparable to some of that which is carried on in American universities and other research institutions. This is not to say, however, that a great deal of first rate creative research is not being conducted by Soviet scientists.

The central educational authority determines just who can carry on what type of research. In general, staff members of technical institutes concentrate on the sort of developmental research done principally in industrial laboratories in the United States and on basic research in the applied or engineering sciences.

University staff members, on the other hand, may normally not do research defined as "applied science." This division of research labor is, of course, rigid and arbitrary. If any question arises as to whether a given research project is "pure" or "applied" the learned councils of the interested institute make a decision. If they are unable to decide, the central authority makes a final and binding decision.

Whether "pure" or "applied"

however, no contemporary Soviet research is launched without some ultimate idea of application in terms of long range objectives of the state.

One of the most striking aspects of the techniques of support for research is that, although ultimately both industry and the educational institutions are organs of the state, research in the institutions receives a large share of its support from industry, with which research contracts are regularly negotiated.

The research supported by the normal budget of the educational institutions is principally of the exploratory, theoretical type, similar to the kind of research done in American engineering institutions. Typical projects of this sort in chemical engineering are a study of the potentials of sodium and aluminum electrodes in fused cryolite baths, and fundamental studies on polymerization of unsaturated hydrocarbons.

### Contract Research

Contract research with industries, on the other hand, is normally applied and developmental work. Typical examples are development of a remote control system for the operation of overhead cranes, improvement in the equipment of canning vegetables, improvement in agricultural machinery, and development of equipment for quality control in the manufacture of ball bearings.

Staff members are permitted to earn up to 50% of their base salary through contract research. A great majority of engineering professors which our ASEE mission encountered were earning the maximum 50% of base salary from contract research.

Contracts are written between the appropriate industry and the educational institution. Most institutions have an assistant director for research who is responsible for negotiating and supervising contract research. Costs covered by most contracts are salaries for professional and other personnel, travel costs, expendable material and supplies, equipment which reverts to the institution when the research is completed, and indirect costs, usually amounting to between 45 and 50% of the salaries.

In the past few years, a third type of research program has been started. This is known as special laboratory research, and is supported by specific allotments from the state, supplemented by contract funds from industry. This program is designed for the support of basic research in a specific area which, if successful, can be carried on to a practical level.

The advantage of a program of this sort is that it may be carried through in the same institution by the same personnel from a quite fundamental level to the applied level, and that it can be supported on a long term basis without being affected by any annual budget changes of the institution itself.



VISITING PHYSICS CLASSROOM in Kiev, a group of Americans are impressed with youth and dedication of students. Photographer is from the USSR magazine who is photographing visiting officials.

Continued from Page One . . .

## GAC Fallout Study Report

measurements of actual fallout were made.

The principal result of later information has been to reduce somewhat the earlier estimates of future fallout of debris which has been injected into the stratosphere near the Equator by the U. S. and U. K. tests.

The debris injected last autumn by USSR tests into the stratosphere in the more northerly latitudes has been falling out quite rapidly and is largely confined to the Northern Hemisphere.

A reasonable estimate of the amount of fission products that has been injected into the stratosphere by all nuclear tests is 65 megatons (TNT equivalent) of fission energy.

This corresponds to about 100 pounds of strontium-90 in the entire stratosphere. It is estimated that fully 50% (50 pounds) of this strontium-90 has already fallen out. This means that not more than half of the total strontium-90 injected into the stratosphere still remains there.

The present state of knowledge does not permit a full evaluation of the biological effects of fallout. However, in order to place the hazard of fallout in proper perspective, it should be pointed out that the amount of total body external radiation resulting from fallout to date, together with future fallout in any part of the world from previous weapon tests, is:

- (a) less than 5% as much as the average exposure to cosmic rays and other background radiation.
- (b) less than 5% of the estimated average radiation exposure of the American public to X-rays for medical purposes.

It is interesting to note that human beings have lived for many generations in parts of the world which have five times or more the background radiation normal to the United States, or more than one hundred times the average amount of radiation from fallout in the United States.

In regard to internal effects of strontium-90 due to ingestion, the amount of strontium-90 which has been found in food and water is less of a hazard than the amount of radium normally present in public drinking water supply in certain places in the United States, and in public use for many decades.

Next, the Committee addresses itself to the question of the responsibilities of the Atomic Energy Commission with regard to radiation safety.

Clearly, the Commission must assure itself that it is conducting its own operations in a safe manner, as is required by the Atomic Energy Acts. To meet these needs the Atomic Energy Commission has established, in addition to worldwide sampling of air, soil, foods, and water, an effective and outstanding biological and medical research program in the general

field of radiation hazards and protection.

The AEC needs this program in order to have scientific facts available to insure and improve the safety of its own operations. Therefore, the Committee recommends that the AEC continue its scientific studies in these areas.

As the civilian use of X-rays, radioisotopes, and nuclear reactors increases, public health authorities should actively sponsor proper public standards of radiation safety. In so doing they should continue to make use of all information available.

The relation between the public health authorities and the AEC in its civilian activities should be analogous to that between the same authorities and most industry. The Public Health Service and the Food and Drug Administration should make the best use of information developed by the AEC and others and should be given whatever funds are necessary for programs to be carried out on their own initiative, whether these programs be in the realm of research, training, or dissemination of information to local authorities.

It will take time for the public health authorities to develop such programs and to acquire the necessary background of knowledge and experience. In the opinion of the Committee, the public health agencies, both national and local, should gradually assume responsibilities for matters pertaining to the regulation of all radiation hazards affecting the public.

At present X-rays are the most important artificial source of such hazards.

It is the opinion of the Committee that the level of effort the AEC has devoted to its research programs on radiation standards and protection, in the broadest sense, has been quite adequate.

However, it is realized that in several areas of the programs considerable time will be required to obtain conclusive results which will provide a more comprehensive understanding of radiation and its effects.

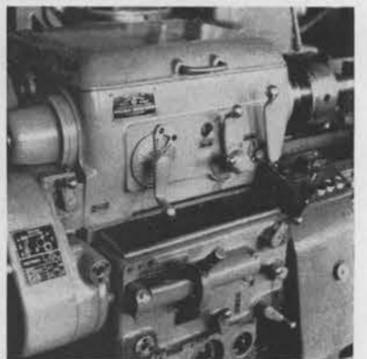
The Committee feels that although the AEC is releasing information on fallout to the public promptly and completely, the statements and scientific papers presenting this information have not always been in a form readily understood by the public.

As a result, the public has been confused about the status of fallout and its implications. There is a real need for clear, simple exposition of the facts of fallout in media widely available to the public. We feel that the Commission should assume this responsibility.

It should be clearly explained to the public that weapons tests have been an essential part of our effort to prevent the occurrence of nuclear war.



DISPLAYING a Russian transistor radio, an employee of the U.S.S.R. Industrial Exhibition seems proud. It is larger and heavier than an American product and several times more expensive. Consumer goods have little importance in Soviet plan.



QUALITY OF WORKMANSHIP in most trades in Russia seems far below American standards. However, things like machinery, airplanes and scientific equipment rate very high anywhere.

## Welcome Newcomers

May 11-22

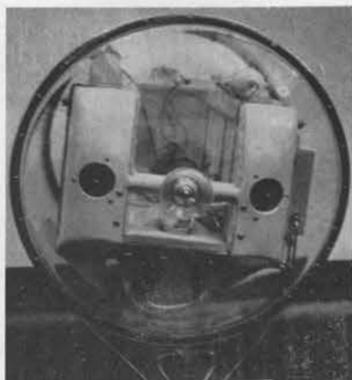
Albuquerque	
Marvin O. Aaron	4574
Herman O. Armijo	4574
Clifford G. Carlson	4763
Nancy R. Dick	4623
Delmar V. Gronseth	4514
Sandra M. Jeffers	2731
Richard F. Jennings	4121
Virginia C. Jennings	4582
Charles E. Leamon	4333
Thomas W. Moffat, Jr.	4518
R. Sharon Nufer	4621
Conrado A. Otero	4761
Lucille R. Trumble	4623
California	
Lillian C. Sprague, Livermore	8212-3
Joseph A. Portolese, Tracy	8232-1
Don V. Tassano, Hayward	8223-3
Arthur C. Feeney, Livermore	8232-2
*Mary Ellen Cunningham, Livermore	8233-2
Thomas M. Harban, San Lorenzo	8232-1
Arnold D. Andrade, San Leandro	8223-4
Carlene M. Mohr, San Leandro	8212-3
Illinois	
Donald R. Edwards, Chicago	5252
Kansas	
Harold F. Linker, Kansas City	1215
Missouri	
Lewis A. James, Baldwin	8114-4
Earle R. Chapman, Laurens	1542
Reuben R. Weinmaster, Kansas City	1625
New Mexico	
Howard R. Heil, Williston	4541
*Denotes Rehired	
Returned from Leave	
E. Beatrice Brinkman, Albuquerque	4762
Michael O'Neal, Albuquerque	4761
Josephine B. Canady, Albuquerque	4413

## J. F. Sladky Loses Out In Close School Board Election at Livermore

Joseph F. Sladky (8121-1) was nosed out of a post on the Livermore Elementary School Board last week by nine votes.

A total of 18 votes separated the top three candidates for the two school board seats.

Mr. Sladky drew 561 votes. The incumbent, T. A. Crowley, received 570. A Lawrence Radiation Laboratory employee took the other seat with 581 votes.



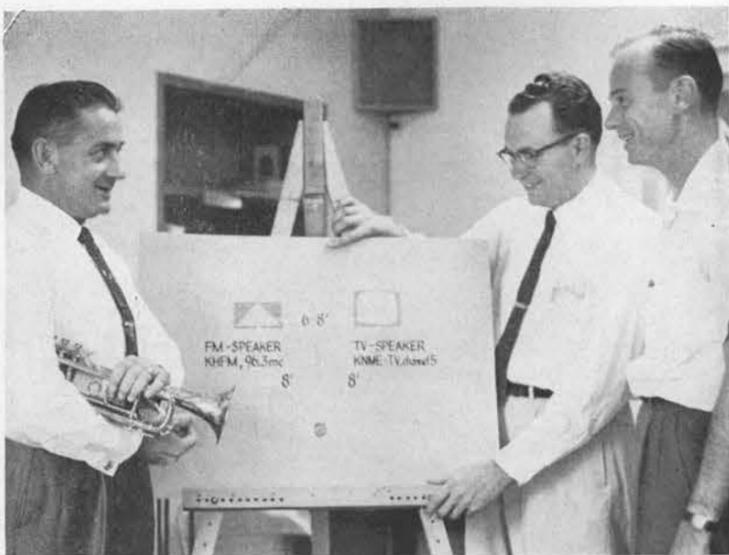
GREATEST ACHIEVEMENT of all time, the Russians say about the satellite that orbited Laika the dog. A plastic model shown above attracts much attention at the Agricultural and Industrial Exhibition in Moscow. The achievement can be attributed to efficient research methods used in Soviet science.



Sandia Corporation Has Worked 35 Days Without a Disabling Injury

## HERE'S WHY...

Because Corporation employees believe in themselves. They have the ability and concern to act constructively in behalf of their own safety. The employees realize that an off-guard minute may have an accident in it. Our people work for pay — not pain.



PROPER SPACING of radio and TV set for listening to high fidelity stereo broadcasts is shown on the above chart. (L to R) are: Jimmy Caldwell, Fred Weibell, who produces show, and Charlie Jackson.

## Fred Weibell Producing Series of Stereo Sound Radio-TV Broadcasts

"Concert in Stereo," a program using both radio and TV to produce stereophonic sound, will be presented each Thursday from 9 to 10 p.m. over KHFM radio (96.3 mc) and KNME TV (Channel 5) starting June 4.

Running the program will be Fred Weibell (1285), who presently has a weekly broadcast on KHFM

called "Hi Fidelity Music Hall."

The first two shows will feature special live and recorded demonstrations of stereophonic sound. Afterwards, concert music will be played during the broadcasts. In addition, Fred hopes to have several live presentations using University of New Mexico talent in the fall.

By watching the TV set, the audience can see where the performers are sitting, and with proper placement of FM and TV speakers, hear where the sound is coming from. Several stereo records and tapes will be used for demonstration purposes. Sound effects in stereo will also be featured.

The Chord Painters, a male vocal quartet, will be featured on the first broadcast. Charlie Jackson (1217) and Bob Harley (2552) are members of this group.

On the second demonstration program, June 11, Jimmy Caldwell's combo will play. Sandians in this musical group include Jimmy Caldwell (1285), who plays trumpet, Howard Sloane (2723), piano, and Tom Kelly (2552), bass.

For best reception the TV set should be placed on the right and the FM radio on the left, six to 10 feet apart. Persons listening to the stereophonic program should be back several feet, approximately halfway between the two speakers, Fred explained.

He pointed out that by using TV sound and FM radio, a hi-fidelity stereo broadcast can be accomplished.

## Gil Rhodes Invents Safety Device for Tots

The Livermore Laboratory's Safety Engineer was granted a patent recently that he says can make the world of the small fry a lot safer.

Gil Rhodes (8212-2) was awarded a patent on a plastic bottle top—intended for containers to hold toxic materials—that small children cannot remove.

The idea began to form some years ago when Gil, then employed by the California Public Health Department, conducted a four-year \$166,000 study of home accidents for the W. H. Kellogg Foundation.

One fact developed during the study was this—each year some children are killed (30 in California in 1958) and many more injured or even maimed for life because they manage to get hold of dangerous poisons.

Gil said he went into the study feeling there were only two ways to beat that particular problem: by educating parents to keep toxics out of reach, or by devising ways to keep the kids out of poisons.

The statistics uncovered, he said, proved that the curiosity of children between one and three years of age can't be bound: that the small fry can climb and can find hiding places under sinks, that the only answer is to keep the kids out of poisons.

As a result, Gil, a father and grandfather himself—although his own offspring never have gotten hold of poisons—went into his workshop to try to solve the problem.

He finally came out with the design on which he just received the patent. His plastic lid is really two lids in one. The inner cap is more or less the conventional screw-type affair. The outer cap, which cannot be removed separately, is a compressible plastic ring. To turn the inner cap, five to six pounds of pressure must be applied on the outercap—enough to apply sufficient friction on the inner cap to turn it.

An adult, he says, has enough strength to do the job. Children of an age which still includes exploring sealed containers, do not.

Gil, a safety man for 20 years, said the plastics division of the American Can Co. is trying to merchandise his invention. He hopes someday to see it in wide use.



TROPHIES AWARDED "The Easy Marks," winners of the Sandia mixed handicap league at Livermore, are displayed by (L to R) Mary Claire Ayen (8114-1), Team Captain Robert Bailey (8114-2), League President Jim Eagan (8151-1), Roy Wilcox (8114-1), Ted Petersen (8114-2), Charles Drummond (8114-2), Dru Bailey (LRL).

## 'U' Night Classroom Work Ending for Employees Who Are Earning Degrees



Evelyn Gilchrist



F. H. Jean



C. F. Schroeder

—All to receive Master's degrees—

Tight schedules necessary for working, studying and attending classes will end June 10 when Bachelor's degrees are awarded seven Sandians and Master's degrees are conferred upon three other employees at the University of New Mexico commencement exercises. One employee will receive a Bachelor's degree from St. Joseph College on the Rio Grande.

Evelyn J. Gilchrist will receive her MA degree in Guidance and Counseling. She already holds a BA degree in Business from Bloomsburg State Teachers College in Pennsylvania. During the past year at Sandia Evelyn has worked as a secretary assigned to division 1283.

Floyd H. Jean was awarded his BS in Electrical Engineering at the University of Akron and will now receive his MS degree at the University of New Mexico. He has been an electrical engineer in division 1454 at Sandia the past two years.

C. F. Schroeder, Jr., has completed work for receiving his MS degree in Physics at UNM, where he was previously awarded his BS. "Chris" has worked as a physicist in division 1621 since October 1956.

Richard C. Angell will receive a BA in English Literature with a minor in Philosophy. Two years of his undergraduate work was taken at Colgate University in New York. "Dick" is a technical manual writer in division 5323 and has worked for Sandia four years. He has been elected to membership in Phi Kappa Phi, national scholastic honorary society.

William S. Austin, III, will be presented his BS degree in Geology, with a minor in Engineering. "Bill" is a document clerk in division 4766 and has worked for Sandia Corporation two years.

Dennis C. Cordova has completed studies to receive his Bachelor's degree in Business Administration at St. Joseph's College on the Rio Grande. He is a plant property investigator in division 4153 and has been at Sandia since December 1950.

Homer L. Crumley, Jr., will be awarded his Bachelor's in Business Administration with a major in Industrial Management. He has been with the Corporation nearly 12 years and is now Assistant Buyer, Electrical Subcontracting.

Donald C. Davidson has majored in General Business and will receive a Bachelor's degree in Business Administration. One semester of his undergraduate work was taken at the University of Maine. At Sandia since January 1958, Don is now an administrative staff assistant in division 2562.

Dorothy E. Mann will receive her BA degree in English, with a minor in Philosophy. She is an editorial assistant in division 4723 and has been with the Corporation five years.

C. Leroy Sparks has completed requirements for receiving his BS degree in Electrical Engineering. He has been at Sandia two years and is a laboratory assistant in division 1612.

Kajeon Stover will be awarded a Bachelor's degree in Business Administration, her emphasis has been in secretarial and office training. Some of her undergraduate work was taken at Texas Western College. She has been at Sandia a year and is a secretary assigned to division 2552.

### Owl Bowlers Win

Members of Division 1452 are proud of seven of their co-workers who, as a team, won first place in the Owl Bowling League this past season. The avid bowlers are H. E. Vaiden, C. H. Carlson, R. E. Hampy, R. F. Patton, E. F. Schroeder, L. D. Swanson and R. R. Preston.

## Promotions

- Ferne L. Saylor (8161) to Staff Asst. Admin.
- Michael G. Gregory (8115) to Staff Assoc. Tech.
- Mayme M. Brunacini (2231) to Wireman
- Felix S. Gabaldon (2711) to Inspector
- Lillian P. Thomas (4766) to Document Clerk
- Freddie K. Millap (5241) to Math Analyst
- Mary L. Lowe (5241) to Math Analyst
- Joyce H. Scott (5241) to Math Analyst
- Janet E. Var (8161) to Record Clerk
- E. J. Marcellin (8212) to Typist Clerk
- Patricia A. Rucker (8212) to Steno. Clerk
- Gerald W. Van Gundy (2562) to Staff Asst. Admin.
- Claude C. Ankeny (4411) to Staff Asst. Sr. Draftsman
- Elmo J. Whitmore, Jr. (4411) to Staff Asst. Sr. Draftsman
- Audrey A. Roukus (4411) to Staff Asst. Sr. Draftsman
- Alfred L. Eusea (4411) to Staff Asst. Sr. Draftsman
- L. L. Strawderman (4411) to Staff Asst. Sr. Draftsman
- K. E. Pilkington, Jr. (4412) to Staff Asst. Sr. Draftsman
- Richard D. McKee (4412) to Staff Asst. Sr. Draftsman
- Vonna J. Burreoughs (4413) to Staff Asst. Sr. Draftsman
- Kenneth T. Risley (4581) to Jr. Tradesman
- Edward Gonzales (4511) to Jr. Tradesman
- Donna L. Richardson (2243) to Record Clerk
- Enice M. Goodman (2562) to Prod. Release Clerk
- J. L. Jordan (4623) to Secretarial Typist
- Linda A. Beattie (4623) to Record Clerk
- Norma M. Simmons (4623) to Secretarial Typist
- Alice A. Aden (4623) to Secretarial Typist
- Norma P. Chadwick (4623) to Secretarial Typist
- Carole A. Cole (4623) to Tab. Eqpt. Optr.
- Marie O. Hubbs (4623) to Typist
- F. E. Cunningham (8232) to Oxalid Operator
- Jerry C. Jamison (8232) to Pressman
- Joyce E. Henkener (8212) to Secretarial Steno.
- Alburtia Stevens (4964) to Sr. Clerk
- Edith F. Milatzo (8212) to Secretary
- Carrie L. Schall (8232) to Document Clerk
- Paul G. Dominguez (8232) to Document Clerk
- Signa O. Mattheus (8234) to Report Clerk
- Nita M. Bower (4766) to Report Clerk
- Shawkest Hindi (4762) to Oxalid Operator
- James E. Lujan (4762) to Oxalid Operator
- Eugenio C. Montano (4575) to Special Handler
- Evelyn J. Hughey (4152) to Accountant
- Nancy M. Tompkinson (8211) to Receptionist
- Carl W. Kanerva (4211) to Staff Asst. Tech.
- Thomas D. Williams (4171) to Staff Member Admin.
- Quirino A. Carrillo (4515) to Laborer
- Mary T. Harrison (4654) to Personnel Clerk
- Irmal R. Brown (8116) to Editorial Asst.
- James O. Avis (2621) to Staff Asst. Admin.
- A. V. McFarland (2562) to Staff Asst. Admin.
- Frank Sawyer (4632) to Staff Asst. Admin.
- Robert C. Jaramillo (2551) to Technician
- Ray D. Mitchell (2234) to Machinist
- Charles F. Wagner (2234) to Machinist
- Bonnie W. Coleman (2731) to Record Clerk
- William H. Stephens (5512) to Message Center Eqpt. Optr.
- Margaret W. Davis (2731) to Data Reduction Clerk
- Maxine F. Buchanan (4431) to Service Clerk
- John R. Wetherhold (5241) to Data Reduction Clerk
- Hazel L. Boyden (5513) to Data Reduction Clerk
- Elizabeth A. Reece (8161) to Prod. Release Clerk
- Robert E. Wolfe (1625) to Laboratory Asst.
- Darlene F. Schafer (2561) to Chartist
- Dennis S. Chavez (4742) to Order Analyst
- Laurence E. Hall (4742) to Order Analyst
- Pamion Lamberson (4742) to Order Analyst
- Rambert T. Rivera (4742) to Order Analyst
- Dorothy Clark (8212) to Steno. Clerk
- George W. Perkins (8234) to Order Analyst
- James M. Morris (8234) to Order Analyst
- Carl Deceaser (8234) to Order Analyst
- John E. Bonetti (8234) to Order Analyst
- Supervisory Lateral Transfers**
- P. J. Kroodahl from 5545A to 5532
- J. M. Phillips from 2554-1 to 2552-4
- J. F. Hammerstran from 2554-3 to 2552-5
- D. C. Robertson from 2554-2 to 2555-3
- Samuel DeHaan from 2223-1 to 2251-3
- H. A. Walters from 5544-1 to 5512-2
- C. F. Zichert from 5512-2 to 5512-1
- P. H. Bircher from 5512-1 to 5513-2
- R. L. Schneider from 5549 to 5541
- E. R. Parsons from 5544 to 5543
- C. H. Goddard from 5545 to 5544
- G. L. Morrisroe from 5556 to 5545
- D. E. Murphy from 5552 to 5546
- S. L. Johnson from 5554 to 5547
- W. A. Sherman from 5555 to 5548
- A. B. Cole from 5557 to 5549
- A. E. Clamp Jr. from 5513-2 to 5511-2
- Mrs. W. K. Cox from 4766-1 to 4765-3
- D. L. Harrison from 4766-3 to 4766-2
- Mrs. C. H. Sproul from 4766-2 to 4766-1
- C. M. Dixon, Jr. from 2243-1 to 2223-1
- M. M. Peoples from 4515-2 to 4575-2
- F. C. Dow from 5536-3 to 5545A-1
- T. A. Eager from 5547-2 to 5536-3
- R. L. Schneider from 5541 to 2731
- D. B. Sparger from 8224-3 to 8225-2
- D. R. Wheaton from 8224-2 to 8224-1

## Horseshoe Pitchers Elect

Parker "Doc" Burns (4741) has been elected president of the recently organized Albuquerque Horseshoe Pitchers Association and Bill Sweatman (4232) will serve as vice president.

The club voted to extend the opportunity for charter membership until the next meeting, which will be held June 3 at 7:30 p.m. in the hospitality room of the Southern Union Gas Company. All horseshoe pitchers are invited to attend and support the activity.

## Supervisory Appointment

THOMAS J. CHIADO to Security Sergeant in the Patrol Division 4842.

"Tom" started working for the Corporation in October 1951 and has been a security inspector the entire time.

Previously from 1946-51 he operated his own grocery business in Albuquerque.

Tom served four and a half years in the Air Force during World War II. More than half of the time he was an officer in the 92nd Air Service Group in the Caribbean.

A native of Albuquerque, Tom graduated from St. Mary's High School.



SPLINTS TO SPLINTERS represents the wide range of medical problems encountered by industrial nurses. (L to R) Student nurses Dorothy Voss and Louise Gray watch Pat Scoggins (4962-1) extract a painful splinter from J. J. Dawson's hand (1414).

## Graduating Nurses Visit Sandia's Industrial Medical Organization

Members of the University of New Mexico's first graduating class in Nursing Arts visited Sandia Corporation's medical facilities last week to learn about Industrial Nursing.

The nine students have completed their requirements for BS degrees and will later take the state exams for registered nurses.

Irene Palmer, Nursing Section supervisor, spoke to the class at

the university about industrial nursing, then the students divided into two groups to spend an observation period of about three hours each with the different Sandia Corporation nurses. Dr. S. P. Bliss, Medical Director, also spoke to the students about their future profession.

Arrangements for the visit were made through Miss Dorothy Pederson, ass'tant professor of nursing, UNM.

## Desert Country Skin Divers Find 100-Foot Water Good for Exercise



UP AND OUT after trial dive in his backyard swimming pool is Marcel Schiess, one of Albuquerque's active skin divers.

Skin-diving in arid New Mexico may sound strange but Marcel Schiess (5533) and other members of the Albuquerque Dusty Divers have found the way and means of following this fast-growing sport.

The most popular spot is "Blue Hole" near Santa Rosa which is about 100 ft. deep and, as Marcel describes it, "it is as clear as a goldfish bowl."

Although Elephant Butte Reservoir would seem a likely location for diving, it's not too desirable. "Since it's man made," Marcel explained, "it's not unusual to bump against the well-preserved branches of a tree, to tumble into a former arroyo, or to have to swim above an eight foot stand of brush. Then there are the many motorboats on week-ends. When you get near the surface you can hear the motors but can't tell which direction the boats are coming from."

Marcel's last two visits to Elephant Butte haven't been at all pleasant—both times he has been helping search for the bodies of drowned fishermen. On the first call for volunteers he and a companion located the body on the second dive in the 51 degree water.

Most recently he spent two days at the reservoir trying to recover the body of a Las Cruces man. "Due to high waves the water was extremely muddy, in fact we were searching in absolute darkness. Our boat would drop an anchor and we would follow that rope to the bottom where another 15 foot rope was attached. By holding onto that rope we could sweep a 30 foot circle," Marcel recalled.

The skin divers also helped to free grappling hooks, used by the State Police and Sheriff's Office, when they became entangled in the underwater brush.

Although Marcel has been swimming all his life in Wisconsin, Florida or Louisiana, it has been only during the past year he has tried diving with a compressed air tank and rubber suit. He has dived to 100 feet and has stayed down a half hour.

The Albuquerque Dusty Divers have between 15-18 active members including LeRoy Ramsey (5532), Jack St. Clair (2561) and Bob Pritchett (5231).

## Announce Program for June 3 and 10 Sessions Of Sandia Colloquium

"Effects on Electromagnetic Waves from High Altitude Nuclear Explosions" will be the title of a talk to be presented at the Sandia Research Colloquium Wednesday, June 3. Speaker will be Dr. Robert Lelevier of RAND Corporation, Santa Monica, Calif., whose talk is based on data collected by Sandia during Operation Hardtack.

Frank Biggs (5112) will talk on "X-rays from Nuclear Bursts" at a meeting of the Colloquium Wednesday, June 10.

Both meetings will require tickets to attend and will begin at 9:30 a. m. in the basement conference room of Bldg. 802.

## Livermore Valedictorian

Joanne C. Watkins, daughter of Dick Watkins (8162-1), has been chosen valedictorian of her graduating Livermore high school class June 12.

Chosen as "outstanding student of the year," Joanne received a \$100 award last week, a medallion, and is eligible to enter a statewide essay contest to compete with other outstanding seniors for five \$1000 scholarships.

## Electric Eye Adds, Subtracts to Keep Tab on Tech Library Use

The pair of "eyes" that patrons of the technical library in Bldg. 802 have passed by during May belongs to an electric eye counting system.

Lee Parman, Technical Library Division supervisor, wanted to know the number of people using the library and the peak period.

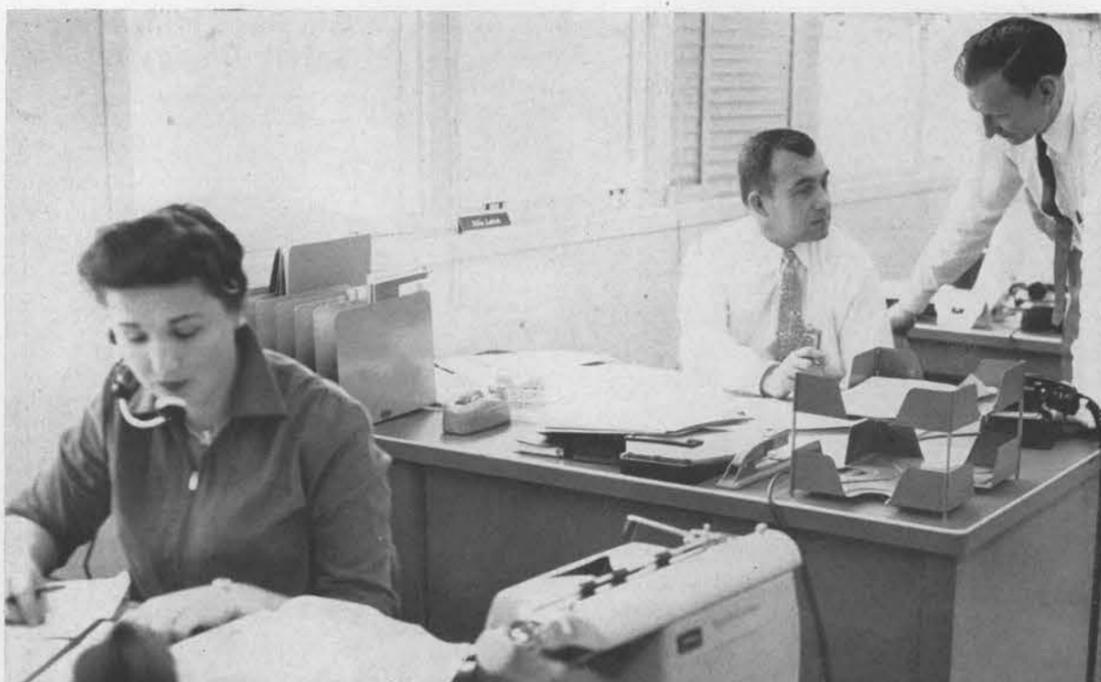
A system was developed which automatically records the total number of people entering the library and also the number of people in the library at any given time. Both of these numbers are recorded at five minute intervals for the 23 hours each day that the library is open. The design and building of the system was

undertaken by Ron Grosch, Galt Bowen and Andy Walker of the Automated Data Devices Division 1522.

Preliminary data showed that an average of 600 people use the tech library each day. The greatest number of people in the library at any given time was 29 and 11 a.m. seemed to be the most popular time for "book-worming."



PATENT ADVISER, recently assigned to the AEC's ALO Office of the Patent Attorney, is Robert G. Peter. He transferred from the United States Patent Office in Washington, D. C.



AN OFFICE CONFERENCE goes on between Mike Lettrich and Chandler Smith, buyers assistants, while Travel Clerk Lorraine George handles air flight reservations for employees on business trips.

## \$6,500,000 Last Year

# Livermore Purchases from 525 Suppliers in Single Month

About three times a week a grey company car noses out of the parking lot next to the Livermore Laboratory and turns toward San Francisco. At the wheel is J. R. "Perk" Perkowski (8211-1), the Laboratory's cash buyer, off on another shopping tour.

Unlike many women shoppers, Perk is not an "impulse" buyer. Most housewives could learn a lot from Perk's shopping methods. An energetic man with an air of spry alertness, Perk knows exactly where he's going, what he's going to buy, and how much it costs before he even starts on one of his trips. What's more, he makes sure in advance that what's he's going to buy will be there waiting when he arrives.

Although Perk makes up to 15 purchases on each trip, and drives over 20,000 miles a year back and forth to Livermore, Pleasanton, San Francisco or Oakland, his purchases represent only a small part of the orders placed by the Purchasing Division (8211) last year.

## Busy Month

Last December alone, the division, which is headed by W. T. Ryan, placed 525 orders worth \$332,339. The division deals with over 1,500 suppliers. Although 85 per cent of the orders are placed on the West Coast, suppliers are located all over the country, from Albany, Oregon, to Skaneateles, New York.

But while Perk's purchases are usually comparatively small in value, they are almost always items that are needed in a hurry, such as the requisition for 50 dozen ping pong balls. Even Perk, who is used to variety in his business, was somewhat taken aback by this one. It turned out that the ping pong balls were needed for some experimental work in plastic materials.

## Bridge Tragedy

Perk's trips to and from San Francisco are usually pretty uneventful, but one day he witnessed something that left him shaken.

"I was driving back across the Bay Bridge toward Oakland," he recalled, "when a small car about a quarter of a mile ahead pulled to the curb. A man jumped from the car and vaulted the rail. He was gone, just like that."

"That night I read in the newspaper that the Coast Guard had found the body."

This is the only tragedy he has seen in the year and a half he has been making thrice-weekly buying trips.

Perk usually eats his lunch in either San Francisco or Oakland and has become quite an authority on excellent off-the-beaten path restaurants.

"The suppliers tip me off to



OFF SHOPPING goes "Perk" Perkowski, Livermore Laboratory cash buyer, who makes several trips each week to San Francisco, Oakland, Livermore and other surrounding communities.



A MAJOR PURCHASE may be under discussion here. Talking it over are (L to R) Charles Anderson, Bill Ryan and Jim Grady (all 8211). Such a conference once resulted in \$1,500,000 in surplus shop equipment being bought at the bargain price of \$800,000.

their favorite spots," he said. "In San Francisco I often eat at Polo's, an Italian restaurant on Mason Street, and in Oakland I like Frency's on West 13th Street."

Since coming to Sandia in 1951, Perk has been engaged in supply work. A graduate of the University of Houston with a degree in business administration, he worked in supply procurement with a logistics group for 14 months, then spent two years in Las Vegas, Nev., as a supply coordinator. He transferred to Livermore in October 1956.

At that time the Livermore Laboratory was just getting started. Since then it has grown to the point where the Purchasing Division does a heavy volume of business.

For instance, in one impressive bargain purchase this year, 8211 bought \$1,500,000 worth of surplus machine shop equipment for about \$800,000. They buy everything from transistors weighing a few grams to a 22-ton boring mill, from hardware costing a few cents to a \$122,000 vibration device.

In addition to equipment pur-

chases, the division sub-contracts development work which may result in a vital technical report. The contracts for janitorial and security guard services are also handled by the division as well as sub-contracts for such things as wiring the new buildings. Traffic Clerk Lorraine George makes hotel and travel reservations.

All purchase work handled by section supervisors Jim Grady (8211-1) and Charles Anderson (8211-2) or buyers assistants Chandler Smith (8211-1) and Mike Lettrich (8211-2) is on a competitive basis. Potential suppliers are checked through the financial organization at Albuquerque against a Dun and Bradstreet or other credit rating service and, if they are not listed, financial statements are requested before a purchase order is placed.

Perk's work also involves making sure he is dealing with a reliable supplier, as well as checking on quality and correct quantity of the order.

But this is all in a day's work. As Perk says, "Shopping is my business."

## Calendar Scientific and Technical Meetings

May 29 - June 13

Council of Technical and Scientific Societies  
Monday, June 1  
UNM Warehouse Building Conference Room  
7:30 p.m.

Illuminating Engineering Society  
Saturday, June 13  
La Placita Inn, Santa Fe  
2:15 p.m.  
Special: Ladies Day (Dinner and Dance)  
Technical Session: New IES Recommended  
Footcandle Levels  
For more information contact Stan Johnston,  
AX 9-0775

Sandia Base Radio Club  
Tuesday, June 9  
Bldg. T1319, Sandia Base  
8 p.m.  
Program: Discussion of Field Day Plans

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

15  
YEAR  
AWARD



Robert W. Henderson  
1000  
June 1, 1944

Five Year Pins  
May 30-June 12

Neilan B. Botsford 1231, Laurence D. Olson 1247, Wilson Brown 1218, Thomas L. Pace 5221, Della Mae Jelski 4623, May North Ward 2231.  
Elfego G. Sanchez 2243, Richard L. Shaum 5222, Eric R. Steinig 4412, John G. Wimpling 2713, Richard G. Jones 5548, Eugene F. Schroeder 1452, Pablo J. Garcia 2711.

Two Year Certificates  
May 30-June 5

M. B. Paredes 8212, S. P. Schwartz 100, Janet R. Gober 4111, Merle C. Richard 8122, John P. Johnson 5233, V. M. Cornelison 4333, Grady T. Gatlin 2251, Betty J. Mathews 4623, Jack C. Brady 5143, Donald R. Leisey 4412, Roger N. Baldness 1218, Ira B. White 1282, Ramon L. Balonado 5322, Albert D. Catuna 2713, Doris K. Edwards 4623, Frank F. Norris 4541.

Ray D. Mitchell 4252, Roger L. Kurtz 1611, George E. Ingram 5132, George W. Dyckes 1625, Robert B. Foster, Jr. 1651, David M. Morrison 2551, R. W. Sargent 1217, J. Calvin Belote 1592.

Emilio R. Baca 4764, Robert M. Halsey 1282, Edward T. Ronan 1282, Frank Biggs 5113, James J. Ridinger 5521, William J. Barlow 1411, Charles E. Bates 1451, Joseph S. Brown 2562.

June 6-June 12

Helen S. Greer 4623, R. J. Hart 1225, Richard M. Simmons 4543, Leland F. McCall 8122, Myron R. Schellhase 1284, Harriet D. Kenny 8132, Joseph R. Vieira 8162, Karl E. Tucker 8213, Robert H. Johnson 8162.

Richard O. Sundahl 8123, Kenneth W. Butler 4253, William T. Smith 4335, Charles L. Votaw 1451, Carl O. Duimstra 1472, D. Raymond Hinds 1542, Frank W. Clinard, Jr. 1621, Thomas E. Reyman, Jr. 4622, Haskell N. Woodall 1626.

Everett F. Massey 5511, W. R. Armstrong 1471, Austin C. Arthur 1474, Joseph P. Keiner 5522, P. L. Higginbotham 2713, Donald K. Franklin 2541, Donald J. Roth 1222, Harold R. Spahr, Jr. 5142, Glen W. Goodloe 4111.

Janet H. Lovell 4623, Marvin E. Holcomb 2551, Earl M. Aldred 2542, Jose E. Suazo 5143, Felipe L. Chavez, Jr. 1455, Dorothy L. Allen 5112, Paul A. Fjelseth 1245, G. H. Brockmoller 4551, Richard V. Tullar 5251.

Jack R. Kidd 4751, John E. Vick 1262, Frank W. Muller 1592, William F. Osborn 2723, William L. Brown 1541, Herman S. Levine 5150, William C. Womack 1284, Eunice S. Johnson 4423, Elaine M. Cooper 4623.

Eulogio G. Sanchez 4764, John S. Anderson 8162, Milton T. Kane 5141, William R. Long 1411, Vernon H. Henderson 1247, Miles L. Dawson 2531, John C. Ludington 8161, Dorothy E. Linehan 5549.

Wins Bowling Honors

Irmal "Brownie" Brown (8116-2) bowled her way to the top of the Women's Mixed Handicap League at Livermore April 23 with a score of 221. Other members of the team, known as the Sandi-Anns, are Barbara Cardoza (8116-2), Mary Lenning (8234-1) and Estra Hill (8212-2).

TEN YEAR PINS



Bryan E. Arthur  
2543  
June 1, 1949



LaRue W. Watson  
5511  
June 1, 1949



Clarence E. Muchow  
5523  
June 2, 1949



Leroy H. Stradford  
2555  
June 3, 1949



Jess R. Adkins  
4333  
June 6, 1949



Willie B. Baca  
2243  
June 6, 1949



Nicholas Sannella  
1422  
June 7, 1949



Howard H. Cole  
8123  
June 9, 1949



Walter B. Howerton  
5254  
June 10, 1949

Livermore Bowlers Meet Top Teams From West Coast

Five Sandia keglers will represent the Livermore Lanex next month in San Francisco where they will be bowling in a semi-final elimination against other top-scoring western regional teams.

The team moved into the semi-finals after a three-game elimination series. Dave Hurley (8231) topped the list with a three-game total of 673. Next in line for honors was R. E. "Smoky" Maxwell (8224-1) followed closely by Bill Gantrum (8142-1) with a total of 610. John Bryson (8223) bowled a score of 567 and Joe Genoni (8223-1) added 570, to give a total of 3044 teams point.

The semi-final competition, sponsored annually by the Bowling Proprietors Association of America, meets from May 16 through June 21. Winners will go to Chicago for the national BPAA finals this summer.

Losers Defeat Winners In 1200 Table Tennis

A grand upset marked the finals of the 1200 table tennis tournament last week.

Standings went topsy-turvy when "Blitz" Krieger (1261-1) and Casey Kassens (1247-2), winners of the winners division, met J. A. Johnson (1265-1) and H. E. Morris (1265-2), winners of the losers division. The Johnson-Morris duet won.

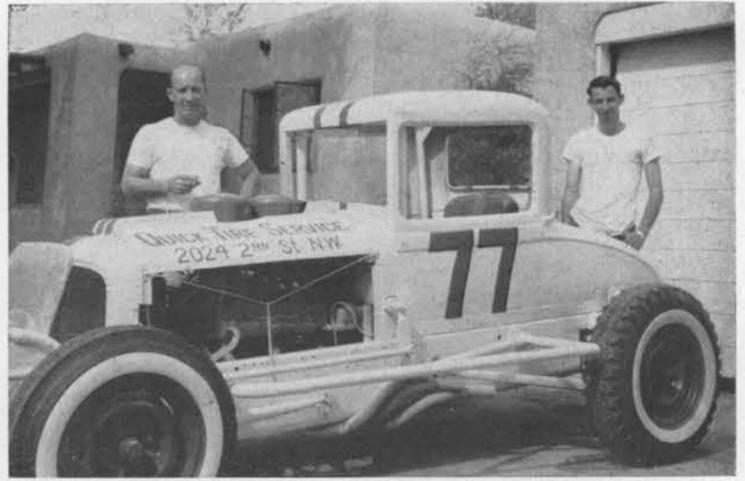
Winner of the single matches for 1200 was also H. E. Morris.

All four will represent 1200 against the other organizations to determine the grand champions among Sandia players.

Free Swimming Lessons at Club For Youngsters

Free swimming instructions will be offered this season at the Coronado Club for children of members. The lessons will be offered each weekday beginning at 8 a.m.

The lessons will be offered on a "first come, first served" basis to all children holding swimming tickets. The tickets are on sale at the Coronado Club swimming pool office today.



BUILDING AND RACING is the hobby of Jim and Bud Leonard. The souped up speedsters are designed by Jim and driven by Bud.

Father-Son Team Puts Mechanical Talents Into Hand-Made Racing Car

What do Sandians do with their spare time? Well, this father and son combination builds racing cars.

This is the third car in as many years that Jim Leonard (2242) and his son, Bud (4764-2), have created. The project started right after New Year's Day and was completed on Easter Sunday. They used a Model A frame and body which were later disassembled, shortened and narrowed. All parts were hand designed on the spot. The running gear was converted with the use of arc and acetylene welders, plus a grinder.

Jim does the supervising and welding—his 10 years as an aircraft company welding supervisor prior to coming to Sandia qualifies him for this work. Young Bud does the chauffering and lends a helping hand in the building and maintenance. He

also pilots the finished product in competition. He presently leads in point standing in racing competition at Speedway Park in his division.

Kermit Cooper Tops Field in Tournament

Three-time golf trophy winner Kermit Cooper (8114-1) recently swung his way to the top place in the Radiation Laboratory Recreation Association's Spring Valley Country Club tournament. With a 25-stroke handicap, "Coop" grossed 90 points, with a net 65.

He was closely followed by three other winning Sandia golfers: Bob Finlayson (8151-2), Al Alford (8234-2) and Jack Bonetti (8234-1).

The Sandia golfers took five out of a possible 16 prizes that day.

The next RLRA tournament, open to any member, will be played at the Almaden Golf Course on May 16, starting at 10:30 a.m.

Livermore Golf

A 40-golfer limit has been set for the Rad Lab Recreation Association's next golf tournament at Tilden on June 6 at 10 a.m. The \$3 green fees are to be paid in advance. Bryon Morgan, LRL Ext. 8471 is available for further information.

SHOPPING CENTER

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

16" WHEEL Tricycle. Chaffee, AL 5-5721 after 5 p.m.  
WHITE RATS, female, almost full grown, accustomed to handling, 75 cents each. Taylor, AL 6-3774.  
DROPLEAF TABLE, mahogany Duncan Phyfe, \$50 or best offer; 24" bicycles, \$15 and \$20; 2 occasional chairs, \$10 each. Wagner, AX 9-2347.  
JEEPSTER, needs paint, \$450. Pritchard, AL 6-5667.  
'50 SPARTAN housetrailer, parked in mountain trailer court beside living room w/large fireplace, \$1500. Souder, Ext. 34161.  
BABY JUMPER, almost new, \$4. Webb, AL 6-6626.  
WASHING MACHINE, wringer type, \$15; hand lawn mower, \$8; RME DB-23 Pre-selector, \$35. Stueber, AX 9-2414.  
AUTOMATIC WASHER, Maytag, \$50. Sandlin, CH 2-5837 after 5, 103 Columbia SE.  
RACER, quarter midget, custom built, complete w/trailer. Waldorf, DI 4-1017, 6903 4th NW.  
LIONEL O-27 gauge train, two engines, track cleaner, track switches, sawmill, icing station, will sell separately; used toys. Costello, AL 6-9702.  
PORTABLE TYPEWRITER, Underwood, \$35. Poteet, DI 4-5877.  
3 BRM HOME, den, air-conditioning, carpeting, wall, sprinklers, storage place, large patio, landscaped, \$15,950. Massey, AM 8-1660.  
STEREO COMBINATION Magnavox, cherrywood, \$350; Everett spinet piano, mahogany, \$500; chest, night stand, twin-size bed, Italian Provincial, \$230. Smith, DI 4-0126.  
SEWING MACHINE, Singer portable; dress form, new. Long, AX 9-1416.

SHOPPING CENTER

GUINEA PIG, female, with own 2 room house, nice pet, \$2. Breslin, AX 9-6625 after 6 p.m.  
3 BRM HOME, Inez brick, 1 3/4 bath, w-w carpet, drapes, forced air heat, air-conditioner, sprinklers, soft water, many extras, \$2700 down. McCullar, AX 9-0638.  
ELECTRIC RANGE, Hotpoint, new price \$239.50, 1 1/2 years old, sell for \$135. Hoglund, AL 6-9452.  
OUTBOARD MOTOR, 25 hp Johnson, \$245; boat trailer, \$65; two pendulum clocks, \$30 each; six knapsacks, 50 cents each, sell or trade. Allison, AX 9-1400.  
HI FI Pre-amplifier, Eico Model HF-65, \$19.50; oscilloscope, Heath, 5 inch model, plus spare 5 inch CR tube, \$15. Sinnott, AX 9-1300.  
CONCRETE MIXER, electric, 2 1/2 cu. ft., pneumatic tires, towing tongue, \$75. Hamlet, AX 9-5124.  
'58 MOTORCYCLE, Harley-Davidson Model 165, crash bars, windshield, buddy seat, \$295. Padilla, CH 2-4984.  
REFRIGERATOR and gas stove, apartment size, clean, \$45 and \$20. Moore, 1715 Tomasita NE, AX 9-2781.  
3 BRM HOME, 1 1/4 baths, American Builders, air-conditioned, private patio, view, FHA or cash to 4 1/2% loan, \$14,700. Abraham, AL 5-6615, 3225 Palomas NE.  
WOOL RUG, 9 x 13 1/2 ft., green, w/pad, recently cleaned, \$20. Peterson, AL 6-7514.  
EVAPORATIVE COOLER, 1500 cfm, portable, w/recirculating pump, \$25. Higgins, AX 9-2285.  
'48 INDIAN CHIEF motorcycle, recent overhaul, \$150; '39 FORD coupe, '48 engine, high compression heads, \$150. Netz, AX 9-7036.  
OLDS TRUMPET, \$50. Reese, AL 5-4288.  
ACCORDION, 120 bass, \$75. Fenstermacher, AX 9-0200.  
'57 NASH Metropolitan, pink and white, 13,000 actual miles. Anaya, AL 6-0051 or AL 6-6462.  
FOR COLLECTORS: very old ivory chess set, \$50; old buttons, badges, pencils, pens, coins, currency, tokens, pocket knives. Jones, AL 5-3390.  
DROPLEAF TABLE, blond Philippine mahogany, two shrimp upholstered chairs, \$30. Roth, CH 3-0522.  
CAR CARRIER, 36x36", light weight; 16" fan w/protective frame, can sit on floor or can be installed in window. Moore, AL 6-2748.  
2 1/4" x 3 1/2" Graflex 4 cut film holders, film pack adapter, roll film holder, remote control, light meter, \$80. Ramirez, AL 5-2144.  
COUCH, innerspring mattress, \$15; leather rocking chair and ottoman, \$15. Littrell, 2820 California NE, AL 5-4620.

SHOPPING CENTER

NEXT  
DEADLINE  
FOR SHOPPING CENTER ADS  
Friday Noon, June 5

'49 STUDEBAKER, Commander, deluxe Starlight coupe, 5-passenger, R&H, overdrive, one owner car, economical, \$225. Brion, Ext. 48168.  
'46 FORD V-8 sedan, fair transportation. Moritz, AL 6-2362.  
'62 NASH RAMBLER. Baco, DI 4-0181.  
COLT 45, single action w/shells, \$95. Burbidge, Ext. 32288.  
'46 FORD Tudor, 10,000 miles on rebuilt motor, new brakes, good transportation, hunting, fishing car, \$150 or best offer. Beaudet, AX 9-0849.  
'57 RENAULT sport model, two-tone, 4-door, 2 rear-view mirrors, R&H, see to appreciate. Edwards, AX 9-1618, 8905 Shoshone Rd. NE.  
SWING SET, two swings and glider, \$7; baby parakeets, all colors, banded. Robinson, AX 9-0971.  
'57 KARMANN GHIA, Andrews, AL 6-6062 or DI 4-6106.  
'56 MERCURY Montclair, 2-door, Merc-o-matic, power steering and brakes, R&H, tutone, ww tires, EZI glass, original owner. Daut, AL 5-2529.  
2 BRM HOME, den, hardwood floors, fireplace, garage, patio, large lot walled and landscaped, NE, \$2000 down Rosenberg, AL 5-9928.  
'50 NASH RAMBLER, R&H, new seat covers, \$300. Salazar, CH 3-9740.  
3 BRM HOME, Dell Lawrence, 1 1/4 baths, dishwasher, fireplace, newly decorated, lawn, shade trees, sprinklers, extensive paving. Lynes, AX 9-5028.  
2 BRM HOME, zoned R-2, near Central, churches, schools and Sandia Base, space for two or three rental units, \$11,000. Stephenson, AL 5-9822.  
'53 PICKUP, International; 10x13 umbrella tent, 3-burner camp stove; jig saw, hi-fi enclosure and AM-FM radio, Admiral TV. Kirtley, AL 6-0637.  
K-22 PISTOL, Smith & Wesson, w/rug, holster, 500 rounds ammo, \$50; 120 watt phone transmitter, 20-40-80 meters, \$35. Myers, Ext. 46290 after 5.  
'51 HUDSON Pacemaker, \$175; R&H, 4-door sedan, overdrive. Norwood, AL 5-4639, after 6 p.m.  
3 BRM HOME, Mossman, h/w floors, fireplace, patio, existing 4 1/2% GI loan. Holloway, AL 5-0144 or AM 8-1517.

SHOPPING CENTER

GAS STOVE, 4 burners w/center grill, \$100; large youth bed w/mattress, \$25. Whitford, AX 9-1122.  
SPEED GRAPHIC, 4x4 w/F 4.5 Raptor 162mm lens, Solenoid, flash and 4 holders. Hall, AX 9-6689.  
BOY'S BIKE, Schwinn, \$10. Thompson, AL 5-5282, 817 Amherst Dr.  
AIR CONDITIONER, portable, White's store, 4,000 cfm, used 1 week, cost \$85, asking \$40 or good typewriter. White, AL 5-9479.  
'55 FORD Fairlane, 4-door sedan, all power, automatic shift, R&H, \$700. Cesarz, AX 9-0038.  
'54 MERCURY, hardtop, overdrive, R&H. Blomberg, AX 9-7404 after 5.  
3 BRM HOME, brick, 27' living room, fireplace, carpeted, landscaped, sprinklers, \$1900 down FHA. Norville, AL 5-1725.  
AIR CONDITIONER, 2500 cfm Packard-Bell horizontal, evaporative w/recirculating pump, \$55; hardwood drop leaf table w/chairs. Duren, DI 4-8343.  
LINED DRAPES, 2 pair; Universal gas stove; 11 x 20 grey rug, other smaller rugs. Abbott, AL 6-3810.  
VOLKSWAGEN top carrier w/canvas cover, \$22.50. Stuckey, AL 5-2442.  
3 BRM HOME, Roberson, den, fireplace, patio, louver doors, air-conditioned, carpet, drapes, landscaped, 4 1/2% GI, low payments. Grape, 2132 Altez NE, AX 9-7037.  
'54 CHEVROLET, 4-door sedan, R&H, priced for quick sale. Gatlin, AL 5-5391 after 6.  
AIR CONDITIONER, 6000 cfm, new pads, pump, rebuilt motor, thermostatically controlled, \$100; phono and radio combo, 3-speed, \$60. Vetter, AL 6-7786 after 5:30.  
BABY BED, \$5, 2 sets electric trains and track, \$12; 2 burner Westinghouse electric hot plate, \$7.50. McMullen, CH 3-9825.  
'53 PONTIAC 6, 4-door, R&H, new brakes, recent valve job, standard transmission. Blaine, AX 9-1036.  
2 BRM HOME, den, SE neighborhood, walled, landscaped, attached garage, close to Bases. Carlson, AM 8-8138.  
3 BRM HOME, Hoffman Royal, 1 1/4 baths, den, garage, circular drive, drapes, shades, carpeting, disposal, dishwasher. Preston, AX 9-1948 after 5 and weekends.  
CAMPING LAMP, Coleman, \$10; 2-burner gas camp stove, \$12; car top luggage rack, \$10. Preston, AL 6-9326.  
DOUBLE GARAGE DOOR w/mounting hardware, \$50. Welsh, AX 9-3555.

SHOPPING CENTER

HARVEY WELLS TBS-50 transmitter, w/115 VAC power supply, bandmaster V.F.O., \$95, will consider trade on DX-100 or similar transmitter. Bauer, AL 5-7774.  
DRILL PRESS milling attachment, \$15. Goris, AX 9-2924.  
AM-FM RADIO, combination, w/3 speed automatic changer, console model w/walnut finish, best offer. Sandgren, AX 9-5007.  
'53 JAGUAR MK-VII Sport Sedan, stick shift, \$1050. Howard, AX 9-7540.  
GREEN RUG, 12'x18' w/3'x9' runner, \$35; lined drapes, 100x82 and 55x82, \$20; dropleaf table, 4 chairs, \$7.50. Anderson, AM 8-4188 after 5.  
SEWING MACHINE, White Electric, walnut cabinet model w/attachments, \$25 or best reasonable offer; hand lawnmower w/catcher, \$10. Hoagland, AX 9-7097.  
FREE LOCKS, front end parts for '51 Willys. Lancharich, AX 9-0835.  
**WANTED**  
BABY SITTING by day or hour by 13 year old girl. Rollosan, AL 6-1259.  
HOMES FOR KITTENS. Heartbroken, housebroken, unbroken kittens, fond of kids, various sexes and colors. Bussey, Ext. 28280.  
CHILD CARE in my home, \$10 per week. Carlson, 2507 Alvarado NE, AM 8-8138.  
**LOST AND FOUND**  
LOST—Lady's brown bifocal glasses w/rhinestones in corner; wallet w/ID of Juan Zuni; nitroglycerine tablets in aluminum case; sun glasses w/metal frame; B&L Ray Ban sunglasses w/gold rim in tan leather case; black cardigan sweater.  
FOUND—Auto key w/lead disc; lady's straw hat. LOST AND FOUND, Ext. 26149.  
**FOR RENT**  
CEMENT MIXER, electric; table saw 8" tilting arbor, skill saw, 6 1/2". Vilella, AL 6-1881 evenings.  
2 BRM APT in new duplex; birch cabinets, stainless steel sinks, air-conditioned, carpeted, refrigerator, range; water, garbage paid, \$95. Petrone, Ext. 45194 after 5.  
UNFURNISHED APARTMENT, new, two bedroom brick, air-conditioned, storage, near bases, \$93.50. Hunter, AX 9-1089.  
**LIVERMORE—FOR SALE**  
TWO TWIN BEDS, Hollywood set, foam rubber mattress w/matching box springs, \$75. Richards, HI 7-4389.

# Mock Testing at Modest Cost Done With Mathematical Model



SYSTEMS ANALYSIS TEAM discuss factors in an air defense problem in front of a blackboard—the favorite media for expressing thought. Working in teams assures considering the multitudes of possibilities that arise in every systems study. From left are Richard C. Hildner, Stoughton Bell and William F. Roherty.

Behind the name "Systems Analysis" lies some of the most valuable abstract, and yet the most down-to-earth, thinking performed in the nuclear weapons program. To a layman the concept of building a "mathematical model" of a proposed nuclear weapons system is difficult to comprehend.

Yet, constructing mathematical models is an exciting adventure of the mind for the Systems Analysis Department 5120. Their enthusiasm when talking about their work is contagious.

An example of the Department's work is their part in developing the MB-1 "Genie" air-to-air rocket. The concept was first explored by the Systems Analysis Department and its findings were utilized in the final design of the weapon.

Numerical values are given to the model. For instance, the weapon carrier and delivery aircraft have performance figures—speed, weight, rate of climb, turning radius. The environment in which the weapon will operate has values—winds, altitude, pressure, resistance and air density. The rocket will have known values—length to fit the aircraft, compatible weight, projected speed and thrust, ballistic characteristics, yield of the weapon.

Then the delivery operation itself will have dimensions—approaching speed of the target, altitude, intercept course, distance, safe escape curves and distances.

### Known Accuracy

From this mass of data and the data of all other contributing factors, the systems analyst computes performance of the proposed weapon system, with an accuracy that is known. In other words, he can say "I have a 90 per cent confidence in my findings."

Monte Carlo, a famous casino featuring games of chance, is the name given to a method for predicting probability. Its basis is the selection of random numbers and it is made possible by the development of high speed computers to perform the unbelievable number of computations involved.

A simplified example is a dice game. Using a single die, the probability of throwing the number five would be one in six. This can be verified by throwing the die one thousand times and the number five will appear on an average of 167 times, every thousand throws.

The Systems Analyst regularly works with much more complex probability models than this example. Sandia's 704 computer, which 5120 shares with the Test Data Department 5240, performs

the "throwing" instead of physically selecting random numbers or their rates of occurrence.

The great value of Systems Analysis is that it makes possible "testing" of systems, components and even military missions without building a single piece of hardware. It becomes possible to prove a weapon design long before it reaches a drawing board. Flaws in proposed systems can be found and valuable new concepts arise during the process of analysis. The results of the analysis provide specific requirements to design engineers to use in systems and component development.

### Constructs Model

In describing the work of a systems analyst, W. W. Bledsoe, 5120 Department Manager, said:

The systems analyst often works on a problem at the request of a design and development group, but sometimes the problem is generated within the department. He starts with a concept and gathers all the information that would bear on the concept. He "constructs his model"—the parameters of its environment and mission and the estimate of its performance.

Next, he defines his problem and determines the answers that he wants his model to provide. Then he "works" his model. With the model programmed for the 704 he can vary the factors influencing his model and use the same program to run hundreds of different tests.

A mass of data is gathered. The analyst must decide upon the significant data and present them in a way that is easily understandable.

"A mathematician relies on numbers to express his thoughts," Mr. Bledsoe said, "and these must be translated into charts, graphs and words."

The work is performed in Systems Analysis Division A 5121, under M. J. Norris, and Division B 5122, under J. W. Weihe.

Under D. B. Owen, the Statistical Division 5125 performs studies on statistical methods for reliability and consults with staff members throughout the Corporation on statistical problems.

In these studies 5125 works closely with the Statistics and Evaluation Division 1592, which is concerned with the sampling procedures and reliability of components in production.

The Computer and Numerical Analysis Division 5126, under D. R. Morrison, performs research into techniques for using computers and provides a consulting service to other Sandia groups on scientific and engineering prob-



WATCHING READOUT of a Systems Analysis problem from the IBM 704 computer is Don Morrison (5126). Some problems take as little as three minutes while other systems problems require as much as 200 hours.



FALLOUT PROBLEM receives the intense concentration of Joe Weihe, supervisor of Systems Analysis Division B 5122. The complex problem is typical of those studied by the Division.

lems requiring mathematical and numerical analysis.

### Devise New Ways

The Department also conducts research to advance the mathematical and statistical methods used in its work. New ways to do the job are continually being devised. The Department is composed mainly of mathematicians and statisticians, many of whom hold the PhD degree. Accordingly difficult and complex mathematical problems which arise throughout the lab are brought to 5120 for consultation and aid in solution.

## 17-Year-Old Scientist to Be Guest At National Telemetry Conference

"I have been extremely interested in electronics as applied to rockets now for about three years," the letter read. Al Gruer (5210), chairman of the National Telemetry Conference, was impressed.

The letter continued: "I wonder if it would be possible for me to attend this meeting. I am not a member of the American Rocket Society but I hope to join this summer. I am 17 years of age. I have talked with my principal at school and he has agreed that if I could get a written invitation to attend, I could take my semester tests early so as to be in Denver May 25-27. It would truly mean a

lot to me to be able to attend this conference."

Al not only issued an invitation for Ross M. Harp, Jr., of Amarillo, Tex., to attend the National Telemetry Conference but also arranged for the fees to be waived.

"It is a pleasure," Al said, "to encourage such sincere interest in science. It adds to your faith in the future."

## R. E. Poole Named Member for Life Of National AIEE

R. E. Poole, Vice President, Livermore Laboratory, has been named a member for life by the American Institute of Electrical Engineers, according to an announcement by the professional society's headquarters in New York City.

The honor is extended to those with 35 years membership in AIEE.

Mr. Poole joined as an associate on Jan. 19, 1924, and in June 1953 he became a "fellow."

## Civil Defense Movie To Be Shown First 3 Mondays in June

"Flash of Darkness," a civil defense film, will be shown Sandia Corporation employees during the noon hour on the first three Mondays in June. The dates are June 1, 8 and 15.

The movie, starring Richard Boone, tells the story of a doctor during a long desperate night of nuclear attack. It will be shown in Bldg. 849, room 3.

## Harry A. Martin to Retire from Sandia After 5 Years Service

Harry A. Martin will retire today after nearly five years with Sandia Corporation. He is in the Housing Maintenance Division (4518).



Mr. Martin

Mr. Martin and his family came to New Mexico 10 years ago from Ohio where he was a cigar maker by trade and had also worked in the steel mills.

Although Mr. and Mrs. Martin plan at present to continue living in Albuquerque at 8125 Aspen NE, they will make a trip back to Ohio in August to visit two of their married daughters. A third daughter lives here. They also have seven grandchildren.

## W. R. McClurken Retires Today After 11 Years with Sandia

W. R. "Bill" McClurken, a stock-keeper in Section 4212-1, will retire from Sandia Corporation today after nearly 11 years service.



Mr. McClurken

He intends to continue residing in Albuquerque at 1107 Tijeras Ave. NW, Apt. 10, since a brother and sister also live here.

As for future plans Mr. McClurken says, "If to stop work means to begin idleness, the answer is 'Never.' The greatest happiness a man can achieve is in his work—it is my intention to find an interesting occupation to take up most of my time.

"Hobbies? I like all clean sports and bowling is one of my favorites. Sometime soon I intend to polish up my game and bowl a good average."

**SYSTEM PARAMETERS**

- Weapon Yield,  $W$
- Target Size,  $R$
- Target Elements,  $T_i$
- Element Value,  $V_i = (V_1, \dots, V_n)$
- Circular Probable Error,  $C$
- Height of Burst,  $H$
- Height of Burst Distribution,  $\phi$
- Fuzing Philosophy,  $FS_i$

**MONTE CARLO TRIALS**

For  $H_0, \theta_0$  according to  $H_0, \sigma, C$

704 COMPUTATION

$$E_x F(W, R, T_i, C, H, \sigma) = \frac{1}{N} \sum_{i=1}^N \left( \frac{R_0 F(T_i, H_0, \theta_0)}{R} \right)$$

**MEASURES OF EFFECTIVENESS**  
(in terms of target damage)

$$A_v F(W, R, T_i, C, \sigma) = \sum_E [\phi(E) E_x F(W, R, T_i, C, H, \sigma)]$$

(in terms of value of damage)

$$\overline{A_v F}(W, R, V) = \sum_{i=1}^n [V_i A_v F(W, R, T_i, C, \sigma)]$$

**VALUE COMPARISON**

$$A_v F(FS_1) \gg A_v F(FS_2) \Rightarrow (T_1, T_2) \Rightarrow$$

$$\frac{A_v F(V, FS_1)}{A_v F(V, FS_2)} = \frac{V_1 A_v F(FS_1) + V_2 A_v F(FS_2)}{V_2 A_v F(FS_2) + V_1 A_v F(FS_1)}$$

$$\Rightarrow \sqrt{V_1} \gg \sqrt{V_2} \Rightarrow \Delta S = A_v F(FS_1) - A_v F(FS_2)$$

$$\Rightarrow \Delta H = A_v F(FS_2) - A_v F(FS_1)$$

**CONCLUSIONS**

From graphs of type (B) find values of  $V_1, V_2$  for which  $FS_1 \gg FS_2 \gg FS_3$

Recommend Fuzing Philosophy for various yield levels

MATHEMATICAL MODEL—Systems Analyst Dick Dillon (5122) displays a demonstration mathematical model indicative of a type which might be used in "building" a fuzing system. He estimated

that it would take about three months for a three man team to work out such a problem. Some systems studies have required as long as two years to define the problem and work the model.