

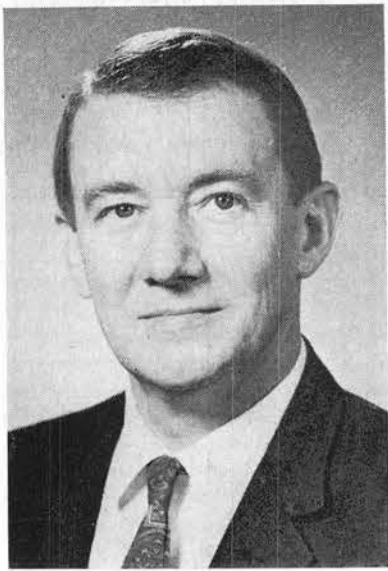
Linn Named Director of Tech Information and Publications

Max K. Linn has been appointed Director of Technical Information and Publications 3400, a position vacated by the transfer of W. C. Scrivner to head Sandia's new Computing organization (7600).

Mr. Linn has been manager of Technical Information Department 3420 since April 1957.

A Sandia employee since 1952, Mr. Linn was promoted to section supervisor in January 1953, and division supervisor a year and a half later. His assignments have been in the Technical Information Department except for nearly three years in other administrative organizations.

Mr. Linn previously taught English for four years at the State University of Iowa while working toward a doctorate degree. He studied engineering at Carnegie Institute of Technology and holds a BA degree in English from Westminster College in Pennsylvania.



Max K. Linn

He is a member of the steering committee for the AEC Technical Information Panel.

AEC Quality Managers Meet At Sandia Laboratory Dec. 3-5

The AEC Integrated Contractors Quality Managers' Meeting will be held at Sandia Laboratory Dec. 3-5 with Sandia officials presenting talks on a variety of subjects.

J. R. Sublett, manager of Manufacturing Development Quality Control Department 2560, is the official company representative on the Quality Managers group, and is making arrangements for the meeting. The sessions will be in Bldg. 892.

The welcoming addresses on Tuesday, Dec. 3, will be given by W. Lee Hancock, Manager, Sandia Area Office, AEC, and R. A. Bice, Vice President, Engineering for Manufacture, 2000. This will be followed by remarks from Mr. Sublett and L. E. Davies, manager of Engineering Support Department 8110 at Livermore Laboratory, and reports on latest developments by the various representatives.

After lunch there will be a tour of the military liaison training area, arranged by I. M. Moore, manager of Weapon Training Department 2310, and a continuation of the morning's discussions.

H. E. Lenander, Director, Manufacturing Development 2500, will serve as host for Tuesday's dinner at the Coronado Club at which G. A. Fowler, Vice President, Development 7000, will discuss "Developments in Aerospace Activities."

The Wednesday morning session will include the following talks: "Design Agency Reliability Considerations," by J. M. Wiesen, manager of Reliability Department 1440; "Developments in Quality Control Engineering," by L. E. Snodgrass, supervisor of Quality Control Division I, 2561; and "Product Data System Program," by E. L. Devor, supervisor of Product Data Division 2563.

In the afternoon, R. H. Schultz, manager of Environmental Research and Operations Department 7320, has arranged a tour of Sandia's Environmental Testing Areas. At 3:30 p.m. Mr. Davies and Mr. Sublett will discuss the status of the product definition study.

The Thursday morning meeting will open with a talk by D. W.

Bldg. 892 Will Be Remodeled for Use By Division 7253

The Atomic Energy Commission will invite bids about Nov. 26 for a modification to Bldg. 892. Some 2400 sq. ft. of the building's interior will be remodeled to house Device Engineering Division 7253. The mezzanine area was formerly an equipment room for a painting shop.

R. G. Piper (4543-2) is the Plant Engineering Department project engineer.

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Cobalt-60 Sources Being Used In Calibration of Instruments

Personnel from Nuclear Radiation Standards Section 2411-3, from Health Physics Section 3311-2, and from other Sandia Laboratory groups are using three Cobalt-60 sources for calibration of nuclear-radiation-sensitive instruments such as film badges, scintillometers, photo-diodes, etc.

The sources are part of a testing facility at Sandia Laboratory known as the Vertical Gamma Range. The range's construction allows only vertical passage of the gamma beam from the sources, making it possible for workers to operate safely close to the range, and to use sources with fluxes of high intensity to calibrate instruments.

By assuring that the radiation-sensitive instruments used at Sandia are accurately calibrated, the range provides an important service to the Laboratory.

"Essentially, there are two types of situations requiring use of nu-

clear radiation measuring instruments," M. C. Jones, supervisor of Radiation Standards Section 2411-3, explained. "One type is the controlled situation, such as a radiation experiment, in which certain levels of radiation are expected and prepared for.

Quick Measurements

"The other type is the situation involving a reactor excursion. Such situations involve urgency in determining radiation intensities, so that personnel and materiel can be protected. The range provides calibration of instruments for both controlled and uncontrolled situations."

The range consists of three vertical shafts 25 ft. in depth, each housing a small tray which can be raised and lowered by means of a metal tape attached to it, and upon which the radioactive source rides. The three Co60 sources, .023, 2, and 100 curies in strength, provide the following range of

fluxes: 1 to 200 milliroentgens per hour; .05 to 9 Roentgens per hour; and 3 to 900 Roentgens per hour.

The facility also includes a 250 curie Cesium-137 source located in a horizontal range, which can provide a flux of comparable intensity to the other three sources, but of a different energy (Co60 emits two gamma rays, with energies of 1.17 and 1.33 million electron volts—abbreviated "Mev"; whereas Cs137 emits primarily gamma rays of .662 Mev).

"The vertical range design is similar to that of a range at Los Alamos Scientific Laboratory," Mr. Jones continued. "However, we made some changes in the source transport system of the Sandia Range."

The source transport system, which is used to raise and lower each source in its vertical shaft, is operated manually. Power outages have no effect upon it, its adjustment and alignment are positive and fast, and it contains no mechanical linkages which decrease accuracy in getting a specific flux from each source.

Lights and Alarms

"A system of warning lights and alarms provide radiation warning from the operator and for personnel in the vicinity of the range," H. L. Rarrick, supervisor of Health Physics Section 3311-2, continued. "A radiation counter located near the operator's position monitors the amount of radiation to which he's exposed."

During a typical calibration, the item to be calibrated is placed in a cart which rides a set of rails over the tops of the three vertical shafts in such a way that it may be positioned directly over the top of each shaft. After the item is in position over the shaft—whose source will provide a flux of gamma radiation to calibrate it—the source is raised to a specific height (the tapes which raise each tray are etched with a centimeter scale). Each source provides a specific intensity for a given height.

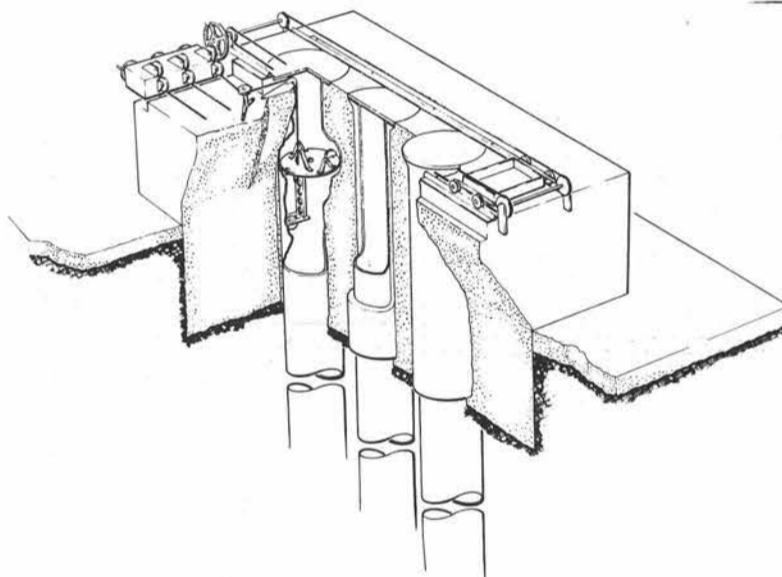
Readings are made by means of a small telescope through which the operator sights the readout dial of the instrument being calibrated; by means of telemetered signals transmitted from missile "packages" being calibrated; by means of hard wire transmission of such signals; or by direct reading of a dial on the instrument or package.

The vertical shaft for each source is lined with aluminum and is collared with lead. The lead collar reduces gamma scatter as the source tray nears the top of the shaft, although the tray cannot be raised entirely to the top.

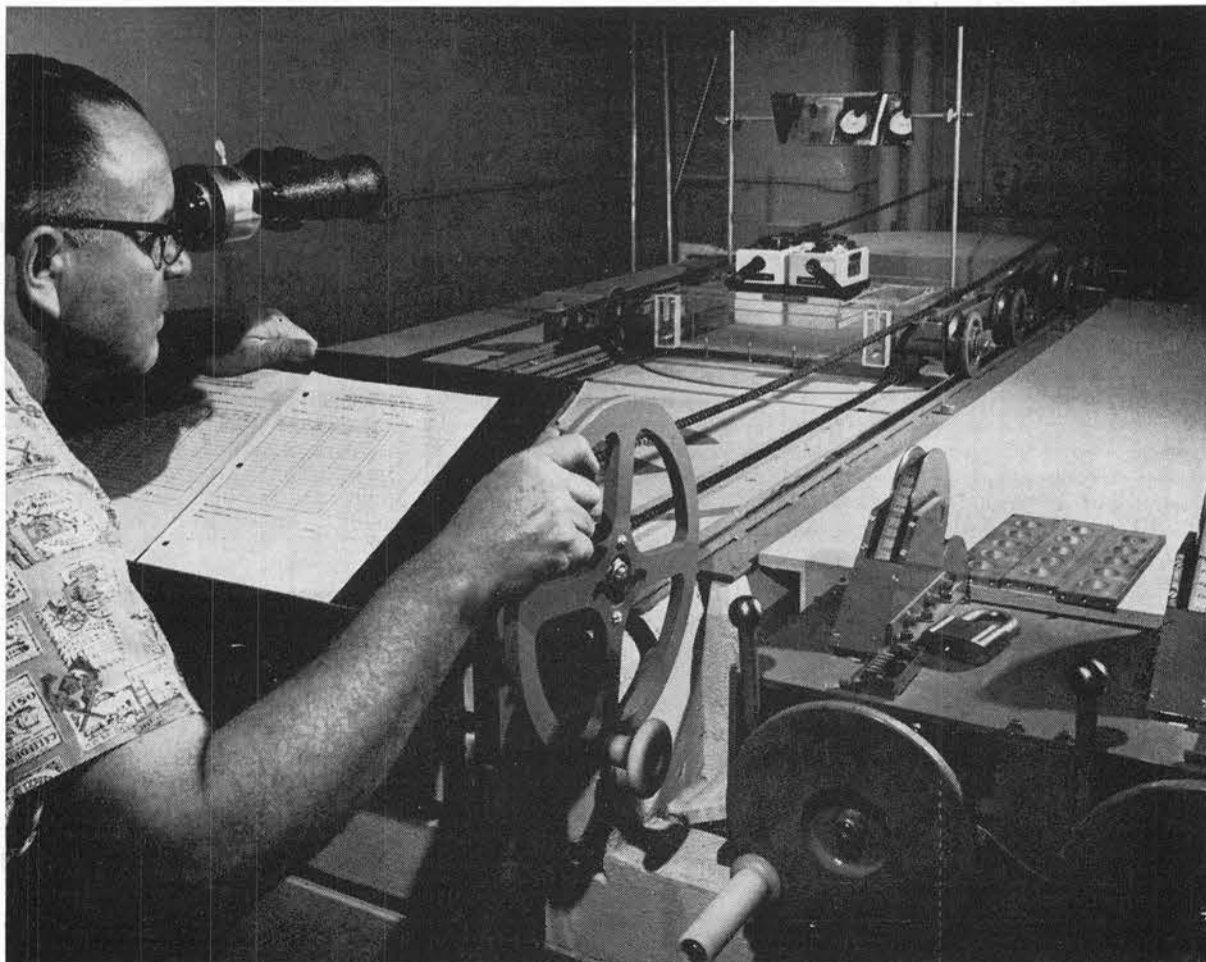
Sandia Employees Help Raise Funds to Purchase Emergency Vehicle

The members of the Paradise Hills Volunteer Fire Department are sponsoring a spaghetti dinner at the St. Joseph's College Cafeteria, Dec. 14, from 5-8 p.m. Proceeds from the dinner will go toward the purchase of an emergency vehicle for the department.

Prices are adults, \$1; children, 50 cents. Four Sandia employees are members of the department; tickets are available from them: Owen Berg (4431-2), tel. 898-2100; Ray Holesinger (1332-1), 898-2296; Sandy Markowitz (2423), 898-2991; and Vern Simmons (1554-2), 898-2489.



CUTAWAY view shows arrangement of three lead-collared vertical shafts, with cart (to immediate right of top of the right-hand shaft) which is used to transport instruments to be calibrated over the top of each shaft. Left-hand shaft contains tray upon which the radioactive source rides. Facility operator would stand at the wheel system at far left.



SIGHTING through small telescope, A. A. Barrett (3311) reads mirrored images of two radiation meters

calibrated at Sandia's Vertical Gamma Range. Wheel at his right hand is used to move cart over the tops.

Editorial Comment

It's A Sandia Custom

It might as well be known as Operation Santa Claus. The custom is well established at both Sandia Laboratory and Livermore Laboratory. Instead of sending Christmas cards to friends we see almost daily, the money which would be spent for cards and postage is used to provide a Christmas for those who otherwise would not have one.

That's where the fun begins. Reports to the Lab News assure us that it's great sport to collect Christmas presents for the needy. It's almost more gratifying than shopping for your own youngsters. Some families would have little in Christmas festivities if it were not for these Sandians who are saving their Christmas card greetings for friends far away.

Perhaps the most remarkable thing in this Operation Santa Claus is that it was and still is spontaneous. Just where and how it started at Sandia we are not sure.

The Spirit of Christmas took over several years ago and today Operation Santa Claus is in full operation.

Operation Santa Claus is Christmas giving at its best.

At Sandia Peak

You'll Have Good Care When Ski Patrol Carries You Out

The ski patrolman bringing an injured person down the mountain on a toboggan at Sandia Peak this winter may be a Sandian.

John Shunny (3422) will head the Sandia Peak (formerly La Madera) volunteer Ski Patrol this season assisted by 34 patrolmen and four physicians. The patrol roster includes Sandians Ross Beach (1552), Dave Begeal (5313), Zelma Beisinger (5426), Bob Dunlap (3421), Marie Gilpin (7240), Ray Harrison (7223), Charles Klutts (2453), James Manweller (1543), Gurdon Miller (3423), Kevin Moriarty (4121), Bill Schutz (7244), Pete Stirbis (1542), and Hup Wallis (2331).

With construction of the longest double chair lift in the country (7400 ft.) at the area near Albuquerque, increased popularity of this sports area is expected to keep the Ski Patrol busy.

Being a patrolman involves giving up spare time even before the winter's first snowfall. All applicants must initially complete the Red Cross Standard First Aid Course and an additional 16-hour advanced course geared toward situations encountered on the ski slopes.

M. G. "Red" Young (7523) taught the standard course this fall and several patrolmen are teaching the advanced course. After the snow falls, candidates must pass a skiing proficiency test demonstrating several methods of ascent, and controlled descent in packed snow, in unpacked snow, on an "expert" slope, and with a loaded toboggan.

Women candidates are not required to handle a toboggan, but are expected to be able to splint a possibly fractured arm or leg, and recognize when a patient is in

shock or has suffered frostbite. Every year the National Ski Patrol System requires that patrolmen take a refresher course in first aid (minimum eight hours) and four hours of orientation at the local ski area.

"This year the patrol will have to cover three times the hill area previously in use," John Shunny said. "We're especially concerned about getting injured skiers off the slope as soon as possible so we've had to become more systemized. We have a duty roster drawn up for this winter with a leader and assistant leader assigned for each Saturday and Sunday.

"We are also distributing to each patrolman a map of the area so there can be no mistake in describing where an injured skier is located," he said.

John describes the end-of-the-day "sweep" of all trails as one of the patrol's most important activities. "Conditions are frequently hazardous: flat light, icy slopes. The skiers are tired. If an accident is not discovered during the 'sweep,' the injured person could easily freeze to death overnight," John pointed out. This is also one of the reasons the patrol heartily encourages the "buddy system" among skiers; don't ski alone on little-used trails.

The National Ski Patrol was organized in 1938 and, on a nationwide basis, has more than 5000 registered volunteers. The United States and Canada are probably the only countries where there is no charge for transporting an injured skier off the mountain by toboggan. And to make sure the ride isn't too wild, patrolmen occasionally play "victim" to see how it feels to be that close to the snow.

J. W. Ransom Retires From Sandia on 15th Service Anniversary

Nov. 30 will be a special day for John W. Ransom. He'll mark his 15th service anniversary with Sandia Corporation and it is the day his retirement becomes effective.

Mr. Ransom has worked in Packaging Section 4624-2 most of the time he has been at Sandia. During the same period he has also been very active in church work. "Between my job and church activities (and I also like to fish), I've been run to death," he said.

With retirement, Mr. Ransom plans to spend full-time assisting the pastor at Rio Grande Baptist Church. He already is chairman of the deacons and superintendent of the extension department in the church school. The latter involves distributing literature to persons disabled or otherwise not able to attend the regular Sunday services. "I won't be preaching," Mr. Ransom said, "but I'll be working for the Lord in other ways."

Mr. and Mrs. Ransom enjoy raising vegetables and growing flowers at their home at 3621 Santa Anita Road SW. Their son is John J. Ransom, supervisor of Office Machine Repair Section 4516-2. They also have a daughter in California.

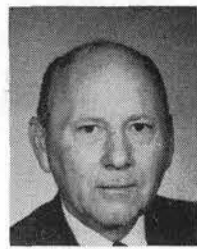
Beulah Sutherland To Retire Nov. 29; Has 15 Years Service

Beulah H. Sutherland, supervisor of Data Control Section 7241-4, will retire the end of November after 15 years with Sandia Corporation.

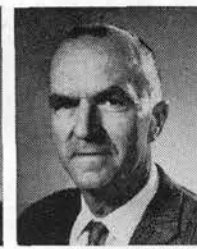
Mrs. Sutherland has been assigned to the same organization the whole time and has been a section supervisor since

April 1952. As soon as she "gets organized" at home, Mrs. Sutherland and her husband plan to spend a week in Denver, and in the spring, visit San Francisco. Their home is at 222 Amherst NE, but eventually they hope to move to the Bay City to be near their son and three grandchildren.

"There are several things I want to do with my leisure time," Mrs. Sutherland said. "I've always wanted to try designing clothes, and I plan to go back to painting landscapes in oil. That gives me something to do while my husband follows his hobby of rock collecting."



Herbert L. Adams 8214 Nov. 23, 1948



P. R. Palmer 7222 Nov. 23, 1948



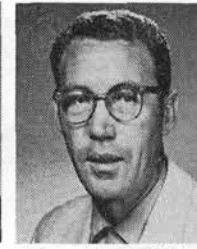
James A. Rhodes 3451 Nov. 23, 1948



Jennings C. Conant 5332 Nov. 26, 1948



Howard F. Devaney 1332 Nov. 26, 1948



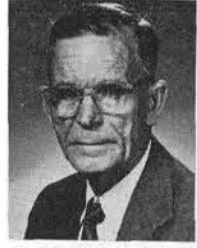
George W. Duffield 7254 Nov. 26, 1948



Leroy Hassobroek 4441 Nov. 26, 1948



Robert A. Matthews 3465 Nov. 29, 1948



John W. Ransom 4624 Nov. 30, 1948



Anthony E. Astorga 7323 Dec. 1, 1948



Bernard J. Burrell 2343 Dec. 2, 1948



Roy C. Hansen 4221 Dec. 2, 1948



Virgie H. Haverty 4212 Dec. 2, 1948



William M. O'Neill 1120 Dec. 2, 1948



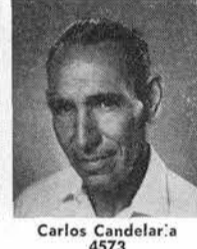
Roy R. Boyd 4542 Dec. 3, 1948



Len E. Mahuron 3450 Dec. 3, 1948



George W. Rodgers 1420 Dec. 3, 1948



Carlos Candela 4573 Dec. 6, 1948

10 Year Pins

Dec. 1-31
A. W. Snyder 5320, Amado F. Salazar 4613, Hugh H. Howe 3421, Neile L. Hensinger 2412, Charlie N. Eden 3427, A. Margaret Smith 7241, W. E. Henry 2343, Marie E. Dillon 2624.
Thomas M. Bozone, Jr. 7521, Wynona H. Durham 3210, Leoma B. McMillan 4432, John H. Findlay 1400, Arthur R. Hopper 8241, Irene E. Leyba 2621, Juan R. Abeita 4412, Sarah V. Long 6021, and William E. Meahl 7521.

AEC to Modify Two Buildings in Sandia Laboratory Technical Area

The Albuquerque Operations Office of the AEC will invite bids soon for two modification projects involving Sandia Laboratory buildings.

Bids for modification of air conditioning in Bldg. 802, estimated to cost \$80,000 to \$120,000, will be invited today and are scheduled to be opened Dec. 19. Work, to be completed within 120 days after the contractor receives notice to proceed, includes installation of a 125-ton water chiller, a circulating pump, air cooled condensers, and associated electrical and structural equipment.

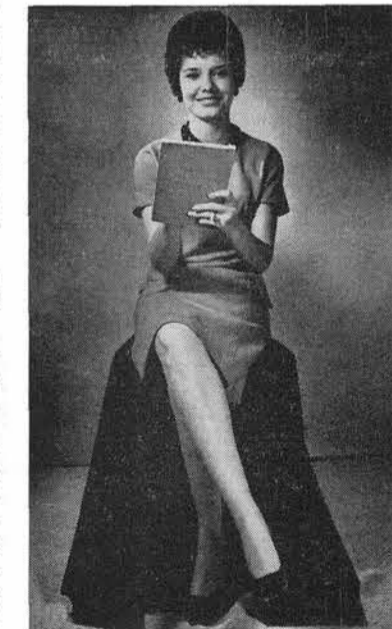
Plant Engineering Department project engineer for the project is T. W. Eglinton (4543-2).

Bids for modification to Bldgs. 6530 and 6590, both in Area III, will be issued about Nov. 26, and will be opened about Dec. 13.

Modifications to Bldg. 6530 include installation of a concrete slab, steel wall and roofing, and installation and relocation of related electrical and mechanical equipment. Plant Engineering Department project engineer for this part of the project is G. W. Dwyer (4543-2).

Work on Bldg. 6590 will include installation of wood and aluminum subframing on walls and ceiling. An existing floor will be modified, and installation of

shielding to an electric-driven lead reactor shield will be included. Plant Engineering Department project engineer is V. E. Kerr (4543-3).



Fran Montoya (2643)

Take a Memo, Please

Think before you drive, and while you drive.



BRIEFING SESSION for Sandia Corporation recruiters was led last week by J. K. Merillat of Employment Division 3151. About 48 recruiters will visit 90 cam-

pus this year to interest 210 new graduates in employment with Sandia. The briefing session was held at the University; one more meeting is scheduled.

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Sandia-Designed Hygrometer Uses Small Pool of Mercury



POOL OF MERCURY is placed over surface of thermocouple in a new hygrometer developed by John L. Hartley of Environmental Standards Division 2411-2. Thermocouple makes accurate dew-point measurements from moisture formed on surface of the small pool of mercury.

A new kind of inexpensive, easy-to-make hygrometer which measures relative humidity with extreme accuracy has been developed by John L. Hartley of Environmental Standards Section 2411-2. Applications of the device range from making humidity measurements in special assembly and production areas to use as a standard to calibrate other instruments.

Unique feature of the hygrometer is a thermocouple which makes dew-point temperature measurements from moisture formed on the surface of a small pool of mercury. Conventional hygrometers use a solid metal mirror.

Dew-point measurements are made by the thermocouple which is located just below the surface of the mercury pool. Accuracy ranges from 0.5 degree C to 0.2 C, an accuracy range comparable to that of more expensive, solid-surface hygrometers.

Construction of the hygrometer is described this way by Mr. Hartley:

The thermocouple is inserted through a hole drilled the full length of a copper rod. A rubber stopper is used to hold the thermocouple in position and to form the bottom of the mercury reservoir. The rod is screwed into a copper assembly block soldered at a right angle to a 1/2-in. copper rod 10 in. long.

The end of the 10-in. rod is placed in a container of alcohol and dry ice to produce the cooling necessary to produce dew on the surface of the mercury. Two lengths of resistance wire wrapped around the copper rods serve as heaters to control the temperature of the rods, which are insulated and encased in a 2-in. brass tube.

The extending leads from the thermocouple are brought out of the rod assembly through a retaining gland in the bottom of the brass tube. The gland anchors the thermocouple so that its position in the mercury pool remains unchanged.

Mr. Hartley lists the advantages of the new hygrometer:

1. It can be easily fabricated from inexpensive materials, since it does not require a highly polished, solid-surface mirror.

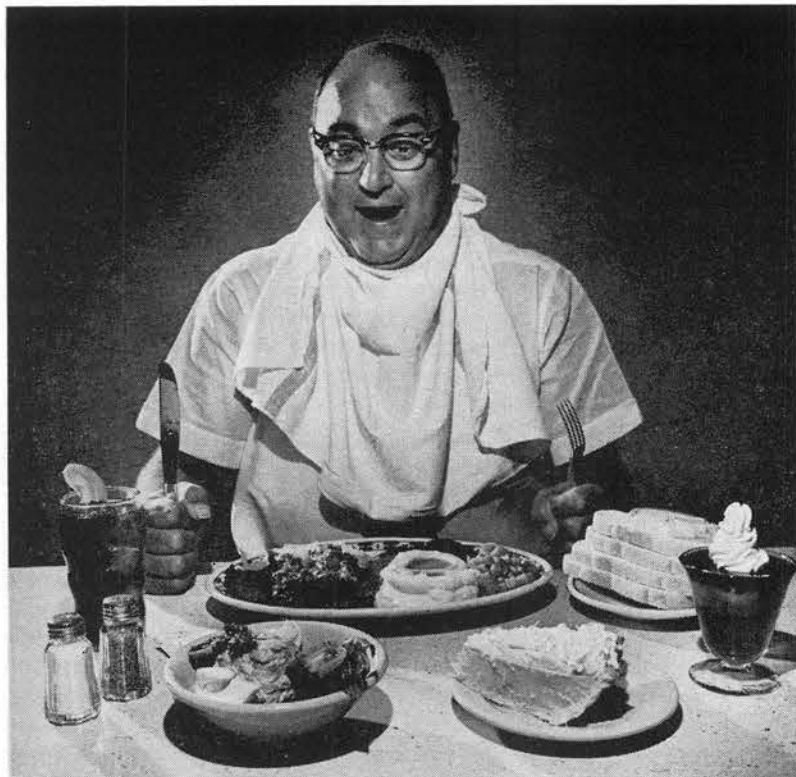
2. The temperature-measuring probe can easily be removed for recalibration. Thermocouples in most solid-surface hygrometers are difficult or impossible to remove without damage.

3. The probe may be located immediately under the surface upon which the dew is formed, thus permitting a more direct, and perhaps a more accurate measurement of the surface temperature. It is almost impossible to locate the probe of a solid-surface hygrometer so near the surface.

4. Surface contamination may be easily removed from the mercury to provide a clean surface for detecting the dew formations, although it must be cleaned every one to two hours. Polished mirrors are extremely difficult to clean, but do not require frequent cleaning.

5. The probe, when immersed in the mercury, is in intimate contact with a medium of high thermal conductivity; thus, temperatures sensed by the probe are not greatly influenced by surrounding temperature gradients.

Mr. Hartley has been at Sandia Laboratory seven years, coming here after graduation from Southern Technical Institute, Marietta, Ga., in 1956. He earned an Associate in Science degree. He is currently attending the University of New Mexico under Sandia's Educational Aids Program. He is a junior majoring in electrical engineering.



HOLIDAY "HONGRIES" won't bother our happy gourmet, but there's a good chance his heart may make a mighty protest against over-eating. Bernalillo County Heart Association advises temperance in eating the year 'round. Doctors don't worry too much about weight gained between Christmas and New Year's, but they do worry about the weight added the rest of the year — between New Year's and Christmas.

'Tis Season to Be Jolly But You Needn't Stuff Yourself

This is the time of year when holidays begin to pile up on us. And, as any 10-year-old can tell you, the highlight of a holiday is the feast. The word "feast," according to Webster, "suggests rich and abundant viands."

For persons in good health, an occasional splurge a la Webster at holiday time won't do any great harm — provided they cultivate a year-round respect for calories and what they can do to our waistlines. As one doctor has put it: It isn't the weight gained between Christmas and New Year's that becomes a medical problem—it's the weight gained between New Year's and Christmas.

But even if the doctor has prescribed a low-calorie diet for one or more members of the family, the cook need not despair. She can still put luxurious and interesting feasts on the holiday table if she has a few tricks up her sleeve, the Bernalillo County Heart Association says. And everyone can benefit by using these tricks year-round, since overweight is probably the most widespread health hazard in the U.S.

Calories Creep In

There are three essential steps to every meal: buying, preparing and serving the food. Excess calories can creep in anywhere along the way. Here are some suggestions from Bernalillo County Heart Association to help you keep calories in check.

The wide variety of foods available in grocery stores and meat markets gives the housewife a broad range of possibilities. If she plans her menus and shopping list carefully, she can start with foods that are lower than others in calories and still provide an almost limitless diversity in family meals.

In the meat department, learn the advantages and qualities of the different cuts. At the beef counter, eye of round, top and bottom round, lean ground round, lean rump and tenderloin will have less built-in, calorie-loaded fat than fat-marbled steaks and rib roasts. For more variety in low-fat, low-calorie cuts, choose well-trimmed leg of lamb, lean loin of pork, well-trimmed ham.

Poultry Section

In the poultry section, remember that duck and goose are rich in fat; otherwise you're free as—uh—a bird.

Even among vegetables and fruits, you have a wide choice, some higher, some lower in calories.

Now comes the preparation of the foods which have been care-

fully selected to be on the light side calorie-wise. Keep them that way. After choosing lean meats, trim off excess fat. Cook out more of the fat by broiling, roasting, or baking. Don't baste with drippings: if basting is needed, try consomme, fruit juice, or wine, to lend moisture and subtle flavor too.

Avoid rich sauces and heavy dressings. Instead of creamed soups, serve consomme or tomato juice. Try using lemon juice on green vegetables. Vary herbs and spices to add a maximum of flavor with a minimum of calories.

More Pitfalls

Serving the food can present some serious pitfalls. The generous housewife often wants to heap her husband's plate, then coax him into second and third helpings. The answer is: Don't. A leaner husband is a healthier one.

Serve adequate portions attractively. Smaller plates, will make servings seem larger. So will adding a few garnishes, like sprigs of parsley, pickle slices, celery, green pepper sticks, carrot curls and lettuce beds. Slice meat thin: three ounces of London broil looks like twice as much as three ounces of solid sirloin.

Finally, remember that meal times should be fun times for the family. If someone in the family has to watch his weight for medical reasons, you can help by controlling the calories in the kitchen. That way everyone can relax at the table.

Christmas Seal Sale Raising Funds to Fight Tuberculosis

Annual Christmas Seal Campaign of the Bernalillo County Tuberculosis Association started last week with the mailing of seals to residents in the County. Campaign goal is to raise \$35,000 to further the Society's work in detecting respiratory diseases in individuals.

The Society also supports a County Chest Clinic and performs an extensive public health education program.

William T. Moffat, manager of Test Range Department 7220, is president of the Society. Charles M. Clendenin, supervisor of Scientific Computer Section 7242-3, is secretary of the organization. Glenn A. Fowler, Vice President, Development, is a member of the Board of Directors.

In Some Accidents No One's Hurt But Only Because Luck Intervened

There is but a narrow dividing line between the serious injury and the minor injury—a split second, a fraction of an inch, a matter of force, or just plain luck.

Likewise, there is little margin between these accidents and those which carry a high potential for an injury, but none occurs. Don Rost, supervisor of Safety Engineering Division 3211, describes these as accidents where the same basic causes exist and, under slightly different circumstances, an employee could be hurt.

In recent years the number of injuries has remained relatively consistent, but in recent months, there has been an increase in the number of accidents with high potential involved.

Examples of these are: a new floating lamp for use with drawing boards arced upon being plugged in. Investigation disclosed that an internal wire had shorted to the metal lamp, which was not grounded. As a result of the accident, all lamps of this type are being rewired.

In another instance, an internal short apparently caused the temperature and pressure to rise rapidly in a small sealed thermal battery being tested on a heated platen. Flaming gas was released when the cell ruptured at the seal. The test operator was not injured; the direction of the flame was away from him. As a result of this accident, all such operations are being barricaded to prevent the possibility of anyone being hurt.

The Safety organization asks that a "Supervisors Accident Report" (SC 2050-I) be filled out to report these accidents, even if there is no injury.

"When there is a similarity of causes," Mr. Rost said, "we can sometimes draw conclusions about how such accidents can be prevented. We also like to publicize corrective action which was taken (or will be taken to prevent a recurrence) and to increase awareness of the hazard."

The rise in the number

of injuries seemingly hasn't increased here in proportion with the more widespread use of exotic or hazardous materials in the research and development laboratories. "I believe this is because these materials are recognized as having hazardous properties and employees realize the need for taking protective measures," Mr. Rost said.

New advances in technology often present new safety problems. "In the case of lasers," he explained, "lenses with special optical characteristics had to be developed by optical glass companies to protect workers' eyes from the light energy sources." Sandia is continually supplying the latest in protective equipment to its employees.

Sandia Lab Soccer Players Compete in Metropolitan League

A Sandia Laboratory soccer team is participating in the Metropolitan Soccer League sponsored by the University of New Mexico. Four University teams, composed primarily of foreign students, compete with Sandia, Kirtland, St. Joseph's College, and the Albuquerque Boys Academy.

The Sandia team schedule calls for games each Sunday afternoon at 2:30 p.m. at Zimmerman Field through Jan. 19, 1964. No games will be played during the last two weeks of December. The games are open to the public.

Captain of the Sandia team is John Souza (1551). Team members include Augie Apodaca (7241), Bob Balthaser (7521), Ron Bump (7521), Bob Courtney (1112), Jack Deveneau (4361), George Kupper (4372), Larry Lang (1112), Dave Newcomer (7324), Bruce Reich (4412), Norris Rose (3122), Dave Schultz (1332), Andy Stark (1124), Seyfred Toledo (3122), and Nels Umble (3425).

Environmental Test Data Recording Due for Speed-up At Sandia Lab

In the "early days" of environmental testing (eight or 10 years ago), test data was gathered by hand. For example, a test technician would observe a series of meters and record their indications on a data sheet, a slow process and subject to human error.

"Even 10 years ago, such manual procedures caused problems," T. E. Smart, supervisor of Magnetic Tape Playback Section 7331-4, says. "Although we still find some use for the manual method, the trend is toward use of automatic recording devices which produce either punched tape—for use with IBM data handling equipment; or magnetic tape—for use in gathering analog data which can be replayed to duplicate the entire test sequence.

Work is nearing completion on a new magnetic tape playback facility in Area III, which reduces and presents analog data with accuracy and speed. "These factors have always been important in handling test data," Ted points out. "Using the new facility, we've been able to speed up the playback process so that part of a test can be played back before engineers move on to another part."

Recorded on Tape

Analog test data is recorded on magnetic tape one in. wide. The recorded signal is a transducer-measured voltage analog (in most cases) of whatever response is being measured: velocity, acceleration, temperature, displacement, etc. The tape carries 14 channels of such analog response.

The tape facility is set up to handle three types of test data, with special emphasis on speed and convenience. One area handles sine-wave vibration data via two systems. One of these will play back all 14 channels of the tape at once. It is a dual-pen system; each of the 14 graphs records both the vibration input and the vibration response in the test item. A second part of the sine-wave area is a "quick-look" system capable of producing a quick four-channel playback of test data. The graph paper for use in these systems is of special design, facilitating the test engineer's notation of test data pertinent to the graph itself.

"The sine-wave area enables us

to play back a single 14-channel tape from an entire test in about 15 minutes—about the same length of time it often takes to run the test," Ted comments. "Of course, this assumes that no change in set-up is required, and it doesn't take into account any backlog we may have."

Another area in the facility is used for playback of random vibration data. "Since the signal from this type of testing is random, we use a statistical method of reducing it," Ted explains. The magnetic tape is threaded in a series of loops, and a band-pass filter is swept through the frequency spectrum present on the tape. Output is plotted on graph paper, either in power-spectral density (RMS g^2 per cps) or amplitude density (RMS g per square root of cps). The response is plotted on a three-channel system. As a back-up, a single-channel system with a variable band-pass filter is used.

Transient Response

The third area in the playback facility handles transient response data from Sandia's shock, drop tower, track, and gun facilities. This area employs tape playback equipment in conjunction with an oscillograph which records playback on a paper strip in a visual presentation. This record is usually processed further by Data and Information Handling Section 7331-2.

A fourth area in the facility houses an analog-to-digital conversion system. This is a very recent acquisition and is not yet fully operational. "With it, we can put our analog records on digital tape," Ted continues. Such tapes can be computer-processed in several ways—plots of velocity vs. time, displacement vs. time, shock spectra, etc. Computer programs, however, must be prepared for such handling; personnel of the Sandia computer center are preparing them.

Although the facility is nearing completion after two years of design and construction, it will not, according to Ted, retain its present form for long. "Environmental testing techniques, as well as those of data handling, are constantly changing," he points out. "We expect to stay abreast of changes."

Sandia Organizations Invited to Take Part in Operation Santa Claus

As November slips by, families invariably start thinking about the coming Christmas season with its traditional festivities and exchange of cards and gifts.

In past years Sandia Laboratory employees, in lieu of exchanging greeting cards among co-workers, have donated money, food, clothing, and toys to the charity of their choice, or to needy families.

There have been food baskets for needy families living in nearby mountain villages, shoes for children attending Riverview Elementary School, and gifts and a Christmas party for patients at

a nursing and convalescent home, as well as cash donations to the All Faiths Home, St. Anthony Home for Boys, Bernalillo County Office of the Department of Public Welfare, the Volunteer Services organization at Bernalillo County-Indian Hospital, the Child Study Center for Retarded Children, and both Protestant and Catholic churches.

If your organization is planning such a Christmas charity project, please call the **Lab News**, tel. 264-7841, so that your activity may be listed in reports on "Operation Santa Claus" in forthcoming issues of the newspaper.



BANKS OF INSTRUMENTS are part of nearly-complete Magnetic Tape Playback Facility in Sandia Laboratory's

Area III. Personnel include (l to r) R. E. Fairley, C. A. Fletcher, and R. D. Macavoy, all of Section 7331-4.

G. L. Rhodes Named Head of National Veterans of Safety

Gilbert L. Rhodes, supervisor of Safety Engineering and Environmental Health Division 8142, has been elected president of the Veterans of Safety, a national safety organization.



The organization is made up of more than 1000 professional safety engineers, directors, and counselors who have spent at least 15 years at their profession.

As president, Gil will head a three-pronged program aimed at further developing the profession of safety engineering, the improvement of safety measures involving school buses, and the standardization of emergency telephone numbers nation-wide.

The school bus program, dubbed "Our Most Precious Cargo" by the organization, was prompted by reports of more than 10,000

school bus accidents in 1961. "We hope to encourage the improvement of driver training and school bus equipment in an effort to reduce these accident statistics," Gil said.

Gil joined Sandia Corporation in Livermore in 1957. His experience in the safety profession dates back to 1941 when he was licensed as an industrial safety inspector with the State of California Industrial Accident Commission.

He is a member and past national officer in the American Society of Safety Engineers, past president of the Northern and Southern California Industrial Safety Societies, and a former board member of the Los Angeles and East Bay chapters of the National Safety Council. He is currently a member of the American Public Health Association.

Gil has been a member of the Veterans of Safety since 1955, serving as national vice president in 1962.

Sandia Speakers

Following is a list of speakers, titles, and places of presentation for recent talks by members of Sandia Corporation.

G. M. Wing (5421), "Transport Theory and the Method of Invariant Imbedding," University of California, Oct. 21, Berkeley.

D. B. Owen (5425), "Nonparametric Upper Confidence Bounds for $Pr(Y \text{ is less than } X)$ and Tests and Confidence Limits for $Pr(Y \text{ is less than } X)$ When X and Y are Normal," Probability and Statistics Seminar at International Business Machines, Oct. 7, Yorktown Heights, N. Y.

M. M. Robertson (1122), "Spectroscopy, Photometry, and Event Photography on RFD-1 of the SNAP Program," Spectroscopy Club, Physics Department, University of Wisconsin, Oct. 16, Madison, Wisc.

G. W. Rolloson (7434), "Personal Experiences During Nuclear Weapon Testing," Albuquerque Lodge of B'nai B'rith, Oct. 28.

G. H. Donaldson (2453), "Data Handling System for an Accelerometer Switch," Eighth Annual Interworks Test Engineering Conference, Oct. 30-Nov. 1, Princeton, N. J.

C. E. Land, G. W. Smith and C. R. Westgate (all 5136), "The Dependence of the Small-Signal Parameters of Ferroelectric Cera-

mic Resonators upon State of Polarization," 1963 Ultrasonics Symposium sponsored by the IEEE Professional Group on Ultrasonics Engineering, Dec. 4-6, Washington, D. C. Mr. Land will make the presentation.

D. M. Carlton (1111), R. H. Genz (1113), and D. K. McCarthy (1111), "The Effect of Structure on the Electrical Conductivity of Organic Compounds. I. Polyzobenzophenyls," Southwest Regional Meeting of the American Chemical Society, Dec. 5-7, Houston, Tex. Mr. Carlton will make the presentation.

K. L. Goin, "A Vibrating Wire Pressure Transducer for Measurement of Low Pressure," to be included in a bound volume of papers for the 20th Supersonic Tunnel Association meeting, Nov. 5-7, Burbank, Calif.

J. O. Wear (5153), "Kinetics of the Oxidation of U(IV) by Tl(III)," Southwest Regional Meeting of the American Chemical Society, Dec. 5-7, Houston, Tex.

G. J. Simmons and L. W. Rook (both 9101), "Some Results from Studies with Neuron Models," annual meeting of the New Mexico Society for Biological and Medical Research, Nov. 16, Albuquerque. Mr. Simmons made the presentation.

R. C. Heckman Defines Terms for New Dictionary

Richard C. Heckman, of Films and Solid State Section 1124-3, has been reading and analyzing the definitions of over 2000 words, all of them concerning the subject of physics or subjects related to physics.

He recently completed a period helping the G. & C. Merriam Co., publishers of Webster's Third New International Dictionary of the English Language—Unabridged. "The work involved a study of all of the physics related words in the 'N' through 'Z' sections of the dictionary," Dick explains. "Later, I went back for a look at some of the physics-related words in the 'A' through 'N' sections."

Much of the work collating the definitions of certain groups of words—comparing the definitions to see that the words are not defined in their own terms, thus avoiding "cyclical" definitions. The definitions Dick provided were edited by the Merriam staff to create a uniformity of style.

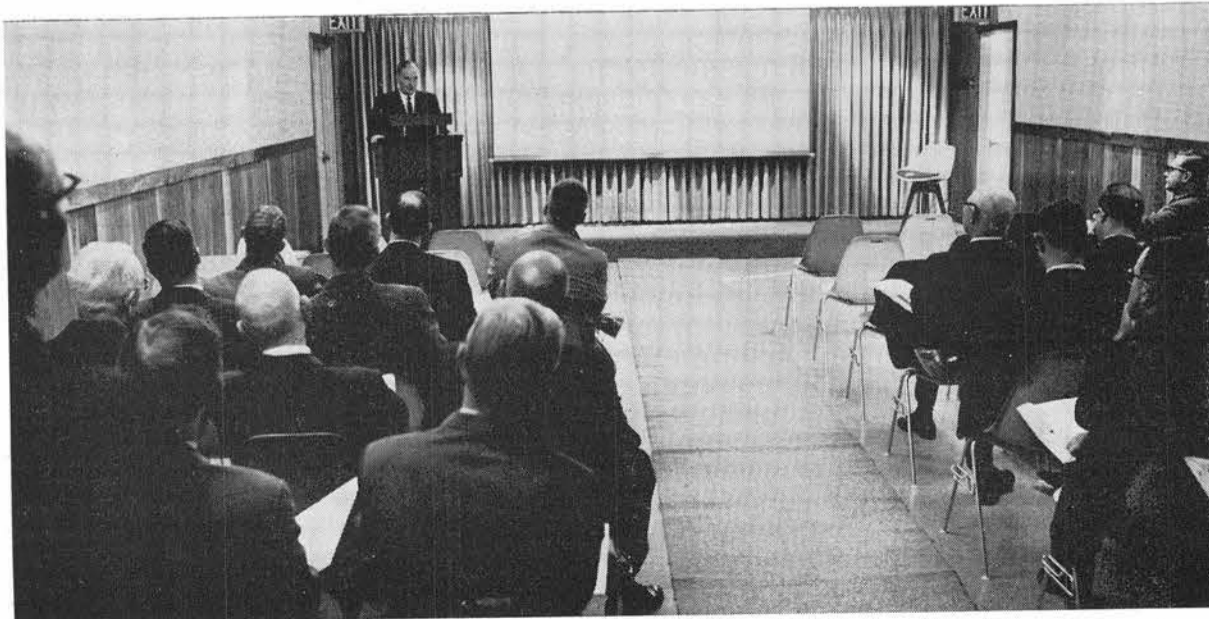
He did the work on his own time over a period of several years, beginning before he started his employment at Sandia Laboratory in February 1961.

Sympathy

To Homer H. Wilhelm (4518-1) for the death of his mother in Virginia, Nov. 5.

To Ila Johnson (3126) for the death of her husband, Howard, Oct. 10. Mr. Johnson was a retired college professor.

To Claudine di Guiseppi (4542) for the death of her mother, Nov. 14, in Albuquerque.



"THE MISSION, History, and Staff of Sandia Corporation" was presented by S. P. Schwartz, Sandia Corporation president, to members of the Albuquerque

Ministerial Alliance who visited Sandia Laboratory last week. The group viewed exhibits in Sandia's Sphere of Science, saw the film, "The Sandia Story."

Two Women Preside Over Wind Tunnel Data Reduction

When a "whoosh" indicates a test run in one of Sandia's wind tunnels, or a rocket is launched in the Pacific, two data reduction clerks know exactly what part they have played in the activity.

The work performed by Ann E. McIntyre (7422-1) and Laurene Dubuque (7422-3) is similar to that of other data reduction clerks at Sandia Laboratory; the "unusual" factor is that they are the only such clerks assigned to Aero- and Thermodynamics Department 7420.

Ann assists aerodynamics engineers in preparation for actual missile, rocket, and weapon tests, while Laurene's work is with data obtained from test runs of models in the hypersonic and trisonic wind tunnels.

Briefly, the girls are given data (by the engineers) which they punch on computer cards. These cards are combined with existing programs. The resulting "deck" is fed into one of Sandia's computers (Ann utilizes the IBM 7090 and Laurene, the CDC 1604). The printed tab run may indicate to the engineers any number of changing factors.

Simulated Dry Runs

In Ann's case there may be 40 to 50 simulated "dry" runs on the computer before an actual flight test takes place. On these computer runs the velocity, acceleration, altitude, range and other vehicle flight characteristics are calculated. The effect of winds on the azimuth and elevation angular settings of the rocket launcher are also calculated.

In addition to working on rocket trajectory programs, Ann has assisted on projects for inert objects dropped from altitude, and a program to determine the flow of heat through missile skin due to aerodynamic heating.

Her supervisor, W. T. Botner, remarked, "Ann can see things happen here and know where she is putting her effort."

This effort has included work on the STRYPI rocket launched during the Operation Dominic test series last year, trajectories on the system for Sampling Aerospace Nuclear Debris (SAND), and work on Systems for Nuclear Auxiliary Power (SNAP) including the SNAP-9 and 10 vehicle and RFD-2.

"At times the air around my desk crackles with tension when a test is being conducted in the Pacific or at Tonopah Test Range," Ann said. "It's much more exciting than when I visited Alamogordo to see an actual rocket launching; the first attempt was cancelled and the following day the rocket fizzled in flight."

Out-of-Hours Study

Ann has been at Sandia nearly 12 years, first as a comptometer operator in Vouchering, but the majority of the time in Statistical Research Division 5425. In-hours training has assisted her in her job as well as algebra and trigonometry courses offered in Sandia's Out-of-Hours Training Program.

She occasionally does simple programs for the 1604 using Fortran, she may draw graphs, or do hand computing. In general, "I've had few boring days," she said.

Laurene began work for Sandia five years ago as a calculator machine operator and transferred to her present job two years ago. She, too, has studied algebra "out-of-hours" and has always liked to work with mathematics. "My work is varied and I have never had a job I liked better," she said.

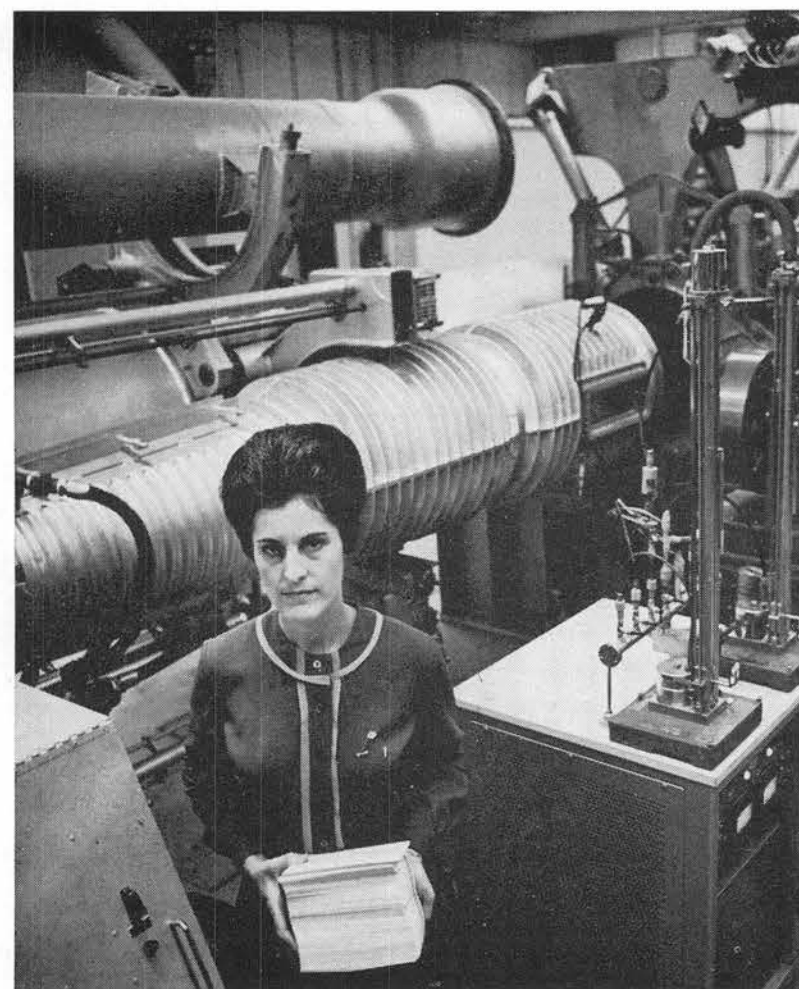
When a model of a missile or rocket is tested in one of the wind tunnels, data obtained during the run is printed directly on IBM cards. Laurene combines this data with a variety of computer programs to provide the engineer with information pertaining to the behavior of the full scale missile or rocket in flight at Mach numbers of 0.5 to 7.5. Some tests may in-

volve as many as 500 runs in the wind tunnel before a missile or rocket shape having the desired behavior is obtained.

Laurene's activities also include hand-plotting graphs, hand calculating and finish detail work on machine-plotted graphs.



DATA REDUCTION CLERK Ann E. McIntyre (7422-1) goes over tabulated data with mathematician Floyd Forsythe of Experimental Aerodynamics Division 7422. Ann assists in preparations for actual missile, rocket, and weapon tests. Sometimes 50 computer runs precede an actual flight test.



DATA OBTAINED during "flight" of a model in one of Sandia's wind tunnels is combined by Laurene Dubuque (7422-3) with appropriate program for use by test engineer. Computer programs can indicate behavior of missile or rocket in flight at Mach numbers of 0.5 to 7.5.

Supervisory Appointments

LEE F. PARMAN to manager of Technical Libraries Department 3420.



Lee has been with Sandia since March 1953 and has been assigned to either the Technical Information Division or Technical Library Division.

In September 1954, he was promoted to section supervisor, and in June 1956, became a division supervisor.

He has a BA degree in mathematics from the State College of Iowa, and a Master's degree in English from the State University of Iowa. Before coming to Sandia, Lee was teaching English at the State University of Iowa while working toward a PhD degree.

He is a member of the New Mexico Libraries Association and is president-elect of the Rio Grande Chapter of the Special Libraries Association.

JOHN L. TISCHHAUSER to manager of Programming Department 7620.



"Jack" has been at Sandia since Apr. 1951, being promoted to section supervisor in 1957, and division supervisor three years later. He has been assigned to the Field Testing organization the entire time and has worked with Sandia Laboratory's computers since they were first installed.

Before coming here, Jack received his BS degree in physics at St. Louis University and has since taken graduate course work in mathematics at the University of New Mexico.

He served a year and a half in the Marine Corps.

Jack is a member of the Association for Computing Machinery.

DALE A. YOUNG to supervisor of Systems Programming Division 7621, Programming Department.



Dale has been at Sandia Laboratory since Mar. 1952 and has been assigned to the Mathematical Research Department the entire time. Last May he was named supervisor of Programming Section 5426-1.

He came to Sandia from the Pasadena, Calif., annex of the Naval Ordnance Test Station where he had worked for eight months with analog computers used as hydrodynamic simulators.

In 1951 Dale received a BS degree in mathematics from Colorado State University, and has since taken graduate courses at the University of New Mexico.

He is a member of Kappa Mu Epsilon, honorary society.

WILLIAM F. CARSTENS to manager of Technical Information Department 3410.



Bill has been with Sandia's technical information organization since he came here in February 1955. He was promoted to section supervisor in 1957 and to division supervisor a year later.

Previously he taught English for nine years at the State University of Iowa. Bill has continued to teach part-time at the University of New Mexico since moving to Albuquerque.

He has both Bachelor's and PhD degrees in English from the State University of Iowa.

During World War II, Bill served in the Signal Corps and was with the U. S. Military Government in Germany immediately after the surrender.

He is a member of Theta Alpha Phi, drama honorary.

JAY D. GILSON to supervisor of Special Projects Section II, 8152-2, Special Projects Division, Livermore Laboratory.



Jay joined Sandia at Albuquerque in June 1955 as a project engineer. He transferred to Livermore Laboratory in April

1959, where he was assigned to a project engineering organization. Since December 1960, he has been involved in acceptance equipment work.

A graduate of the Illinois Institute of Technology at Chicago, Jay received his BS degree in mechanical engineering in 1955, with a minor in management. He has taken graduate courses in math and engineering at the University of California at Berkeley, and at Alameda State College, Hayward, Calif.

He is a member of Pi Tau Sigma, honorary engineering society, and Sigma Iota Epsilon, honorary and professional engineering management society.

JOHN P. WEBER to supervisor of Explosives Component Development Section 1312-1, Special Devices Department.

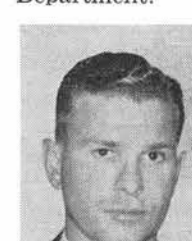


John has worked in one of the 1310 component development divisions since he came to Sandia three years ago.

Previously he had been with Armour Research Foundation in Chicago for five years in explosives research.

He has a BS degree in chemical engineering from the University of Wisconsin, and served two years in the Air Force.

FRANCIS G. HIGGINS to Electrical Buyer 4361-1, Commercial Department.



"Frank" has worked in the Purchasing organization since he was hired by Sandia in June 1958. During the past year he has been an assistant buyer

(4371-1) in Subcontract Department IV.

He received a Bachelor's of Business Administration degree from the University of New Mexico and is presently taking graduate work there.

From 1952-56, Frank served in the Air Force.

Congratulations

Mr. and Mrs. Ronald M. Oelsner (2451), a son, Kurt Alexander, Oct. 12.

Mr. and Mrs. George Schnetzer (1432), a son, Everett Eugene, Oct. 14.

Mr. and Mrs. Don Greenwoll (7222), a daughter, Nancy Kay, Oct. 15.

Mr. and Mrs. Ronald Bump (7523), a son, Gregory Paul, Oct. 16.

Mr. and Mrs. Orval Talley (4231-3), a daughter, Norine Joan, Oct. 18.

Mr. and Mrs. Clarence Calder (7412), a son, Brian Andrew, Oct. 21.

Mr. and Mrs. Andrew M. Jackson (7332), a daughter, Lee Ann,

Oct. 23.

Mr. and Mrs. Ted R. Garcia (3421-4), a son, Ted Ralph, Oct. 25.

Mr. and Mrs. J. D. Jones (2642-1), a son, Brian Anthony, Oct. 25.

Mr. and Mrs. William M. Sundt (1442), a son, David Ernest, Oct. 26.

Mr. and Mrs. Robert P. Wemple (4421), a son, Jeffrey Allen, Oct. 26.

Mr. and Mrs. D. E. Duran (4362-2), a son, Douglas Alan, Oct. 28.

Mr. and Mrs. Richard L. Cook (1124-2), a son, Gary Daniel, Oct. 28.

Mr. and Mrs. R. T. Jankowski (2541), a son, Bryan Christopher, Oct. 31.

Mr. and Mrs. James C. Warmkessel (4254-2), a daughter, Bonnie Louise, Nov. 4.

Mr. and Mrs. Daniel A. Murphy (1523-1), a daughter, Rebecca Lynn, Oct. 31.

Mr. and Mrs. E. D. Sutherland, Jr. (4254-2), a son, Edwin D. III, Nov. 7.

Mr. and Mrs. Thomas R. Gardner (1322), a daughter, Sherri Kathleen, Oct. 15.

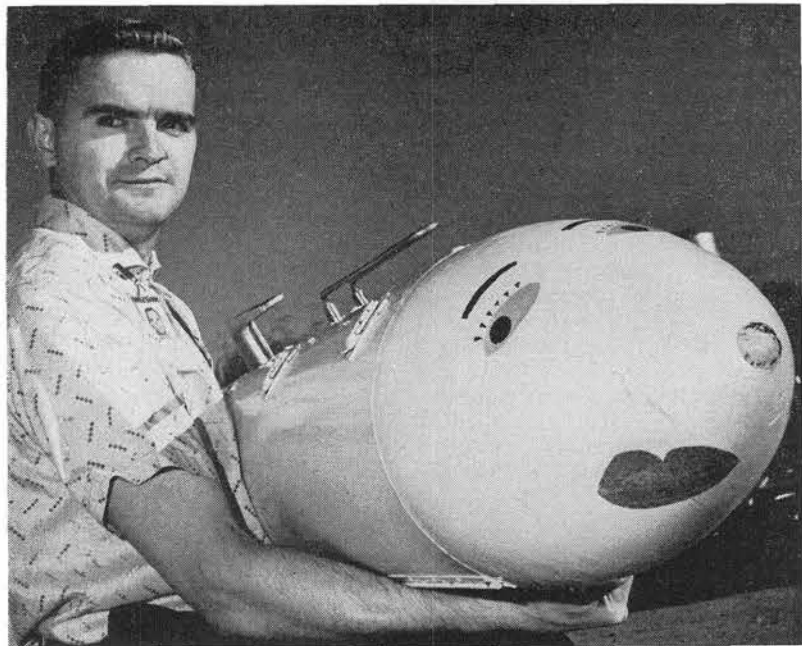
Mr. and Mrs. Thomas R. Thompson (2641), a son, Thomas Michael, Oct. 25.

Mr. and Mrs. C. F. Wilson, Jr. (7244), a daughter, Carol Jean, Oct. 15.

Mr. and Mrs. B. J. Thorne (7242), a son, Jeffrey Joe, Nov. 11.

Seen on the Sandia Scene

The Lab News camera records events and places; some important, some interesting, but all help make history.



BABY-FACED TRANSPONDER, a device carried on a light plane to help check a tracking system under development at Tonopah Test Range, is held by Gary West (7222-1). Gary developed the device and added the face for personality. It was recently shipped to Sandia for overhaul.

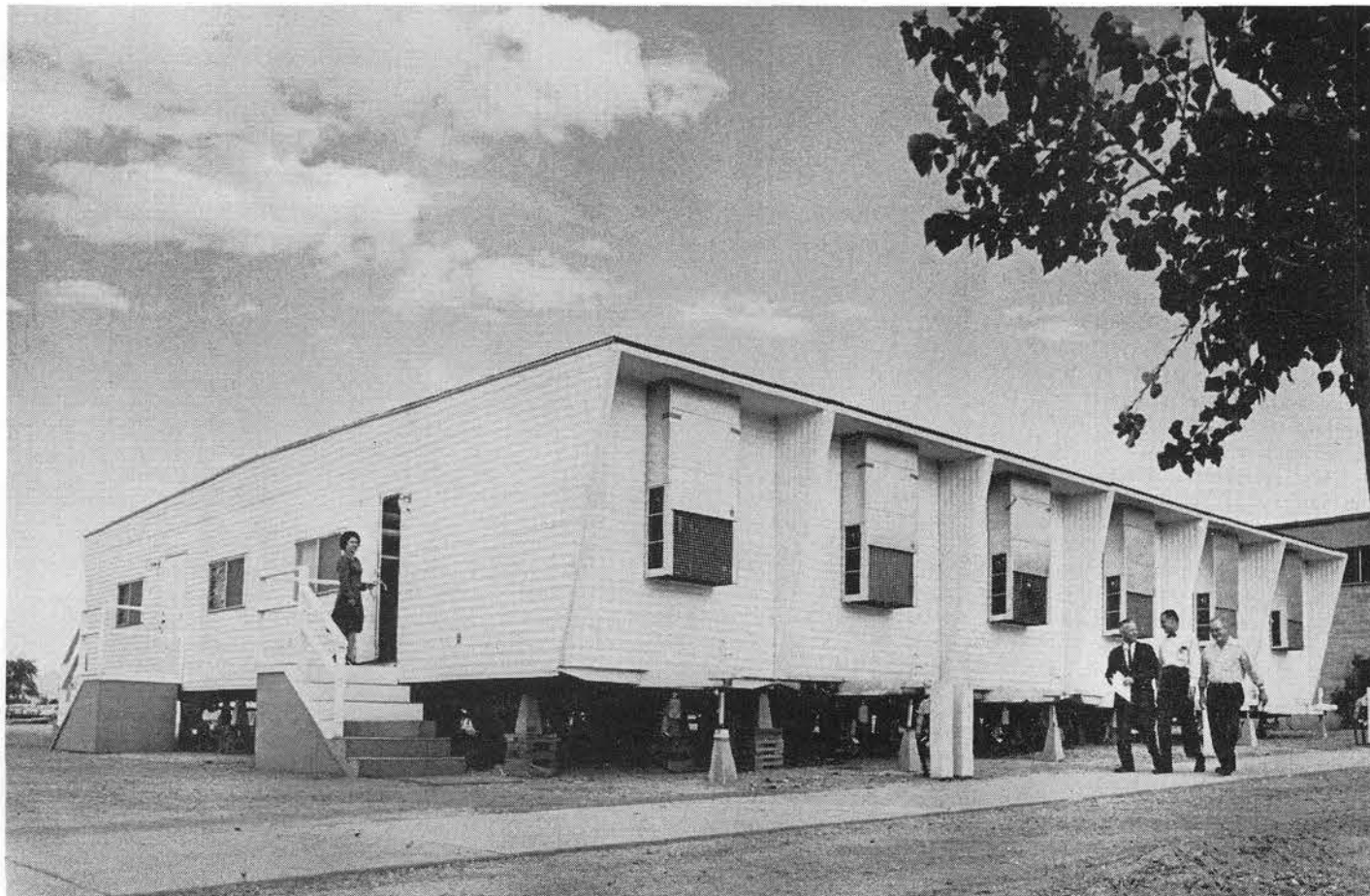


INSIDE VIEW of new mobile office complex shows attractive office area. The units provide approximately 2800 sq. ft. of office space. In January, several

mobile office units from Area III will be moved next to Bldg. 880 to provide more space for the reorganized and expanded mission of Field Test organization.



PIPE-DREAMING Sandians speculate about possible uses of scrap pipe and other fixtures at Sandia's Salvage Yard. Such material has enabled many a do-it-yourselfer to inexpensively finish projects.



NEW MOBILE OFFICE COMPLEX, located on the west side of Bldg. 880, is Sandia Laboratory's newest plant addition. The six units form one large interior space to house personnel of Divi-

sions 7431, 7433, and 2643. When work is completed, the space around the base of the trailers will be closed in, sidewalks will be placed, and storm entrances will be added to the exterior.



INTER-BASE CHAMPIONS — Sandia Laboratory's All-Star flag football team won three straight to take the recent Inter-Base tournament. In the double elimination event, Sandia downed Kirtland Air Force Base 42-0, Sandia 36-6, and Manzano Base 54-0. In the front row are, from left, Don Lundergan (1113), coach, Bob Henderson (7311), Charles Salazar (4254), Jerry Williams (7324), Norris Rose (3122), Phil Lopez (AEC), Cliff Kinabrew (7534), John Otts (7324), and Carl Cron (1122). Standing are Bob Gardner (3446), Ron Martell (1521), Bob Dosch (1122), Bill Emrick (2442), Sam Berry (2541), Don Smith (1124), John Robertson (3111), Larry Ferree (3111), Pete Thoma (1112), and Dale Brautigam (3111). The victory makes two championships in two years for the Sandia Laboratory team.



CHAMPS — The 1100-4200-AEC team walked off with the league championship of the Sandia Laboratory flag football association with a one lost, nine won record. In the first row are Gordon Cummings (4254), Gary Lloyd (AEC), Pete Thoma (1112), Larry Lang (1112), Joe Dal Porto (1121), and Charles Salazar (4354). Standing are Tom Towne (1113), Don Smith (1124), Carl Cron (1122), Bob Dosch (1122), Charles Hills (1124), Philip Lopez (AEC), Bob Courtney (1112), and Don Lundergan (1113), team coach. Not shown are team members Olden Burchett (1113) and Brooke Anderson (1112). Six teams competed in league.

Plate Glass Doors Are Major Home Hazard Sandian Finds

When you walk through a plate glass door, it sounds like a brick hitting a store's display window.

"I was scared to death," Charles E. Runyan (4220) said, "but was fortunately not seriously injured. It makes you feel mighty stupid, but maybe relating my experience will prevent someone else from doing the same thing."

The glass door in the Runyan home is between the living room and a large screened porch. The Runyan children were in the kitchen fixing dinner; Mrs. Runyan was visiting in Indianapolis. It was almost twilight. Mr. Runyan opened the sliding glass door to let the dog out. During the summer he customarily left the door open, but perhaps it felt chill that evening. Unconsciously he slid the door almost closed behind him, wheeled around, after letting the dog out, and lunged through the glass. It shattered into hundreds of pieces, some fragments flying 15 to 20 ft. The only pieces left in the 3-ft. x 6-ft. 8-in. frame were in the top corners. One sword-shaped piece was embedded in the rug beside his foot.

Mr. Runyan received cuts on his cheek and nose, and on his right leg. One piece grazed the right lens of the glasses he was wearing. His 18-year-old son drove him to the hospital, where stitches were required to close two of the cuts and clamps were used on others. Then began the clean-up job — a month later the Runyans are still finding bits of glass in the living room and porch.

"You can't predict such an ac-

cident," Mr. Runyan said, "but you should be aware of the danger and think before acting. A metal cross bar or screening permanently fastened to the door probably would have prevented the accident."

Accidents due to this cause were the subject of an article in the Fall issue of **Family Safety**, the National Safety Council publication. It is reported that 75 per cent of such accidents happen in a person's own home. Don't let it happen to you.

Sturdy Psychologist Recalls Strenuous Stint With Rangers

S. H. "Woody" Peres, an industrial psychologist in Division 3133, was surprised when he picked up a local paper last week to find his past had caught up with him.

An Associated Press story dated Dahleno, Ga., described the training given U. S. Army Rangers. It also mentioned that Woody had accompanied a class through the rigorous course several years ago (in 1959) to study "fighter prediction."

Woody is the only civilian to have taken the training, and his enrollment (as a Civil Service employee) required approval by the

Wanted: Talent Good Enough to Make Kids Laugh

If you have any tricks up your sleeve, or if you can entertain a group of children 6 to 12 years old, your help is needed.

Tony N. Chavez (4631-2), entertainment chairman for a group of Sandia Laboratory employees planning the annual Christmas Party for students at the Riverview Elementary School, is seeking volunteers. "We need magicians, comedians, musicians, or any act that would appeal to a group of youngsters," Tony reports.

If you have a talent for making young people laugh and enjoy themselves, contact Tony at ext. 264-1950.

Secretary of the Army. His report was based on comments which he tape-recorded every night whether in swamp or at the mountain camp and is still required reading for all Ranger students.

"I'd never go through that again," Woody says, "but it was a chance in a lifetime. Details seem as clear today as four years ago. It knocked the academic trivia out of my mind and taught me to approach things from a practical or basic level. Of course, being the only civilian, I had tremendous motivation to finish the course."

Boy Scouts Seek Counselors For Atomic Energy Badge

Sandia Corporation scientists are being invited to serve as counselors for the Boy Scout Atomic Energy merit badge.

The Atomic Energy merit badge was announced by the Boy Scouts in October. The first of these merit badges was presented by AEC Chairman Glenn T. Seaborg at a meeting of the American Nuclear Society Nov. 20.

In many areas prospective candidates for the badge are handicapped by the current lack of an official pamphlet on the subject. As a result, the Division of Technical Information at Oak Ridge has prepared a packet of material to assist advisors and the Scouts seeking the badge. The packet, which will be available until a pamphlet is prepared, is provided at no cost to persons who write for it.

The Atomic Energy Commission

Coronado Club Will Provide Football Game Bus Service to Members

The Coronado Club will again sponsor bus service from the Club to the UNM-Brigham Young University football game on Nov. 30.

The busses will leave the club about one-half hour before game time the afternoon of Nov. 30, and will make the return trip to the Club after the game. The Club snack bar will be open after the game for members and guests.

helped the Boy Scouts of America develop this merit badge in the hope that it would help encourage candidate scouts and their families to better understand the basic nuclear sciences and applications.

Persons interested in working as counselors for this merit badge may volunteer their services by contacting Albuquerque district Scout Executive:

Sandia District, John C. Clewlow; Rio Grande District, Arthur V. Cauger; Manzano District, H. Frank Sowers. Office telephone number for each is 255-7502.

To secure the AEC packet write: U.S. Atomic Energy Commission, Division of Technical Information Extension, Educational Materials Section, P. O. Box 62, Oak Ridge, Tenn. 37831.

Mountain Club Members To Explore Lava Beds West of Albuquerque

Here's a chance to keep in shape. New Mexico Mountain Club members and guests will hike over the lava bed near Grants on Sunday, Nov. 24. The meeting place is Nob Hill shopping center at 8 a.m.

Reputedly there is an 800-year-old abandoned pueblo somewhere in the vast flow. Hikers will definitely see gas vent holes and lava molds of trees, and maybe ice caves once used by the soldiers at old Fort Wingate.

Stout boots or heavy shoes are a "must" as the lava is very sharp.

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

RULES

1. Limit: 20 words
2. One ad per issue per person
3. Must be submitted in writing
4. Use home telephone numbers
5. For Sandia Corporation and AEC employees only
6. No commercial ads, please
7. Include name and organization

FOR SALE

'57 ENGLISH FORD, heater, 4-dr., \$300. Sharp, 299-3745.

TRAILER HITCH, \$5; helper springs, \$5; training wheels, \$2.75; set 4 small wheels, \$1.50. Bradshaw, 268-8708.

3-BDR., separate dining room, heated workroom, aluminum and permastone, 506 Bryn Mawr Dr., SE. Rudeau, 256-2380.

'59 T-Bird, best offer. Finn, 268-9183.

LIONEL TRAIN SET on a ply-board, 3 engines, 12 cars, remote switching, will fit under double bed. Inglat, 877-1146 after 6 p.m.

CIVIL WAR cap and boll musket, 1845 Springfield, \$65; trade for hand gun. Smitha, 8607 Manual, 299-1096.

ONE PAIR DRAPES, pale green, lined, 140"x87", \$25. Smith, 256-0375.

PAIR antiqued nite stands, \$5; blond dining room table, \$10; 300-wt. ham rig, \$100; MOD-26 teletype w/TU, \$100. Banks, AL 5-2544.

GIRL'S BICYCLE, 16" Murray, \$10; 20" Schwinn, \$15. Fligner, 256-6721.

SOFA, 9' long, foam rubber cushions, brown and pink tweed upholstery; Glenwood Hills lot, Group I, 80'x155'. Schonberg, AX 9-9437.

LARGE DOG HOUSE, electrically heated w/thermostat, constructed of 3/4" plywood, measures 44"x32"x25" high, \$25. Hill, CH 3-3493.

MATERNITY CLOTHES, size 14, green corduroy jumper suit, green shirt, black corduroy and tan cotton slacks, \$12 for all. Nelson, AX 9-0884.

'58 CADILLAC 4-dr., R&H, all power, seat belts, a/c, new tires. Hare, 299-7137.

KODAK TWIN LENS REFLEX, w/3.5 lens, flash, case, \$25. Laskar, 299-1024.

3-BDR, 1 1/2 bath, hw/floors, dining room, SE near schools, churches, buses, make offer on down payment, \$90 month. Kent, 265-4109.

MARBERRY HOME, 3-bdr., 1 1/4 bath, ceramic tiled, den, fireplace, utility room, landscaped, 8' gate in back. Stuart, 299-9190.

'63 COUNTRY SQUIRE, 390, all power, factory air, other extras, \$3450. Chandler, 256-6415.

'60 1/2-ton INTERNATIONAL, 4-speed, large bed, overload bed, overload springs, hitch, mud tires, 22,000 miles, one owner, \$1125. Laycock, 299-7524.

WILL GIVE AWAY a large swing set frame — frame only, come pick up. Daily, 255-2690.

WHITE SOFA, \$120; casement window, 50"x69"; 2 folding lounge chairs, \$15/ea.; movie camera, \$10; fiberglass table, chairs, \$45. Frye, AL 5-8364.

GOSSIP BENCH, walnut finish, \$5; dinette table, extra leaf, gray formica top, \$10. Neff, 299-1413.

2-BDR. HOUSE, attached garage, freshly painted, new carpeting installed in March, \$10,800, no down, \$86/mo, 705 Valencia SE. McCormick, AL 6-3645.

MAGNUS CHORD ORGAN w/bench and sheet music, \$95; highchair, pink, \$5; child's rocker, unfinished, \$3. Adams, 299-0454.

STURDY GYM SET, 2 swings, rings, glide-ride, etc., \$10. Blackmon, 298-2095.

'54 CHEVY 2-dr. sedan, leatherette upholstery, R&H, snow tires, \$250. 1129 Glorieta NE. Lilly, 298-2560.

3-BDR. HOUSE w/fireplace, near shopping center, bus line, schools, and churches, SW Valley, \$13,800, \$500 down. Sanchez, 242-8769.

SEWING MACHINE; cedar chest; dresser; metal twin bed; Indian jewelry. Perdue, 299-0705 after 5:30 p.m.

SKI BOOTS, size 7, single boot construction, \$4. Winter, 299-4746.

'50 STUDE convertible, motor out of car, \$50 or trade. Pritchard, 268-9618.

3-BDR. HOUSE NE, landscaped, walled, w/w carpet, built-in range-oven, matching refrigerator, \$13,450, new FHA loan, 1506 Erbbe NE. Farner, 299-6007.

'60 FALCON 2-dr., R&H, standard transmission; umbrella-type clothesline; Early American lamp; rose rug w/pad; portable washer. Clark, 299-6410.

TETHERBALL AND POLE \$5. Thoyer, 1424 Hoffman Dr. NE, 299-3127.

SELL OR RENT, 3-bdr., family room, 2 fireplaces, central heating, near Grant Los Altos School, hw/floors, immediate occupancy. Maciolek, 299-1696.

OAK BED FRAME; unfinished gate-leg table, chairs; many 78 RPM classical record albums; 2/3 box acoustical tile. Frankel, 298-6265.

'60 TRIUMPH TIGER CUB, \$300. Officer, AL 5-6089.

'63 17-ft. ARISTOCRAT TRAILER, self-contained, mileage 150, hitch, brake control, \$2400, will consider smaller trailer in trade. Asturias, 299-4173.

21" CONSOLE TV, maple cabinet, \$45; small Go-Cart w/Briggs & Stratton engine, \$40; regular Go-Cart, Clinton engine, racing slicks, \$75. Kraft, AX 9-2157.

THOR GLADIRON MANGLE, folds to 18" square storage space, \$25; 40 Armstrong acoustic tiles 12x12, "Classic" design, \$8. Windham, 256-9455.

'61 BSA GOLDEN FLASH MOTORCYCLE, 650 cc Twin, w/extras, Barsic, CH 3-5846.

'59 CONVERTIBLE TR-3 Sebring white roadster, \$1050, OD, tonneau cover, new windows in top, tuned and winterized. Kobs, 247-1913.

'58 MGA, wire wheels, tonneau, sliding curtains, \$900; freezer, small chest type, \$50. Doyle, 299-9331.

COTTON RUG, 10'x14", turquoise, \$15. Burrell, 299-0233 after 5 p.m.

MODIFIED KLIPSCH w/12" speaker, \$35; 8mm B&H movie camera, \$20; 8 mm B&H projector, \$40; 2x2 B&H slide projector w/14 trays, \$30. Hamlet, AX 9-5124.

2 1/2 ACRES w/cabin in the Manzanos, near Skyland, \$4000 or best offer. Clark, AM 8-7414.

3-BDR, carpets, a/c, walled yard, gates, landscaped, \$12,250 total, \$650 down. Hawn, 1720 Maxine NE, 299-7835.

ENGLANDER SOFA HIDE-A-BED, \$50; old-fashioned kitchen sink, \$7; old dresser w/large oval mirror. Stuart, 299-9190.

'60 CUSHMAN SUPER EAGLE, 1 owner, many extras. Irving, 299-1969.

THREE-PIECE SECTIONAL, light pink nylon cover, \$150. Kennedy, 2912 Aliso Dr. NE, 268-6063.

NEXT DEADLINE
FOR SHOPPING CENTER ADS
Friday Noon, Nov. 29

REFRIGERATOR, Kelvinator 11 cu. ft. capacity, 32" w, 56" h, 27" d, white, \$35. Davis, AL 5-1050.

NEW 67-piece setting Higning china, Dragon Flower design, terms considered. Carter, DI 4-6563.

VACANT, 3-bdr., Carlisle Plaza, patio, below appraisal, trade \$5300 equity for R-1 lot, NE or SE, refinance. Sanchez, 243-2032 evenings.

TWO hollow core doors varnished w/hardware; 3-piece sectional; Magnavox TV. Wilson, 255-8528.

BOY'S 24" bicycle, Firestone, \$15; girl's 26" bicycle, J. C. Higgins; 12" TV table model, operating, \$15. Overbury, 255-7788.

'57 CHEVY BELAIR 4-dr., a/t, w/w, R&H, \$600, low mileage; George Steck studio piano, walnut, 3 months old. Starrett, 256-0862.

GO-KART Simplex, live axle, racing slicks, West Bend 5 port engine, \$100 or make offer. Schulze, 243-8388.

KELVINATOR 1-ton refrigeration type air conditioner, \$125; infant's folding aluminum car bed, to age 2 1/2 years, \$5. Stewart, 298-6246.

KENMORE AUTOMATIC WASHER, \$50; accordion, 120 bass, \$80; elec. hot plate, \$10; folding clothesline, \$5; child's safety bed rail, \$2.50. Sisson, 299-4217.

'54 OLDS 98, PS, PB, R&H, automatic transmission, \$295. Thompson, 299-9053.

MAPLE SINGLE BED, mattress and box springs. Williams, AX 8-2671.

9 CU. FT. Sears Coldspot chest type deep freezer, \$50. Wilson, 299-1721.

'60 CHEV. Kingswood station wagon, 9-pass., V8, 180 hp, Std. trans., many extras, \$1575. Simon, DI 4-4465.

'60 MERCEDES BENZ 220SE 4-dr., 30,000 miles, no trades, \$2400. Matthews, 604 Princeton SE, 242-6285.

'46 MERCURY COUPE, radio, new brakes, \$125. Weber, 298-3266.

2-TON CHAIN HOIST; 30-06; 2000 watt electric plant; furniture; misc. to sell or trade. Aaron, 282-3124.

DANISH MODERN, walnut finish double dresser, chest, twin bed, box spring, mattress; misc. household items. Blair, 226 Amherst Dr. NE, AL 6-6414.

CAMPING STOVE w/oven, tank regulator, \$40; trombone, \$35; tire chains 760-16, \$5; 2 children's sleds, \$3/ea. Reed, 299-1684.

'57 BUICK CENTURY 2-dr. HT Sport Coupe; large double-oven, 4-burner gas range. Capaldi, 2036 LaVeta NE.

FREEZER, 19 cu. ft. upright, \$60; 2 steel folding cots, \$4/ea. Hawk, 1821 Florida NE, 256-6264.

'57 FORD FAIRLANE 500 HT, PS, Ford-a transmission, radio, T-Bird engine, \$400 or best offer. Chavez, 299-5102.

GIBSON ELECTRIC GUITAR, model ES-125 w/complete PA system, \$90. Ezell, 268-4845.

WOOD SCREEN DOOR, 36"x6'8" w/hardware and ornamental grill. Fisher, 265-0626.

2-BDR., den, NE, covered patio w/enclosed storage, garage, low down, low monthly payments; '58 VW sedan, one owner. Carlson, 268-8138.

REGISTERED AKC French Poodle puppies, championship blood lines, 5900 Ponderosa, NE after 5 p.m. McKay, 298-6541.

BICYCLE, boy's 26", thornproof, \$15; scooter bike type, 2-wheeler for 5-7 age. Stixrud, 298-0478.

AMERICAN FLYER TRAINS, Frontiersman, diesel switcher, about 9 freight cars, approx. 4'x7" table, 2 remote switches, misc. accessories. Clark, AX 9-4819.

'63 THUNDERBIRD, power equipped, \$3750. Buchanan, 242-5066.

'61 CHEVROLET convertible, 4-spd., 411 Posi., big engine; '55 Chevrolet Sports Coupe, floor shift, rebuilt engine. Fisher, 256-2891.

WEED TIRE CHAINS for 7.60x15 or 8.50x14, used 2 hours, \$6; ski rack for convertible, \$4. Weydert, 299-6211.

TWO-WHEEL utility trailer, 4 by 7 oak body w/steel fittings, wired for lights and turn signals, coil and leaf springs. Roberts, 299-2212.

2-HORSE TRAILER, wired, \$250. Harker, 282-3435.

TR-3 SIDECURTAINS, new, \$20; nitro-methane, castor oil, alky, model airplane engines and supplies, new and used. Svenson, DI 4-7700.

WESTINGHOUSE AUTOMATIC WASHING MACHINE, \$50; baby crib and mattress; buggy and pad; stroller, \$7.50 ea. Holmes, 299-1510.

HOTPOINT AUTOMATIC WASHER, \$25. Houghton, 1413 Guaymas Pl., NE, AX 9-3386.

'54 CHRYSLER New Yorker Deluxe, AT, PS, PB, radio, one-owner, 80,000 miles, always garaged. Burger, 299-8626.

'63 DODGE Polara convertible, 4-speed; '58 MGA, wire wheels, R&H, luggage rack, \$550. Zimmerman, 344-3243.

FACTORY HARDTOP for 4-seat Austin Healy 3000. Schultz, 298-2731.

2-BDR., corner lot, a/c, carpets, drapes, walking distance Sandia, no qualifying necessary, assume \$71 payments. Harley, 401 Dallas NE, AM 8-4992.

'57 FORD convert., \$475. Updegrave, 268-7122.

'55 PONTIAC HT Coupe, R&H, w/w, \$325. Wilson, 298-0049.

VIOLIN, 3/4, w/case, \$45. Range, 299-2971 after 5:30 p.m.

DRESS, light blue wool jersey, worn once, size 38; light blue coat, women's size 16, \$35 for both. Kraft, 299-1278.

SMITH-CORONA standard typewriter, \$60. Perdue, 299-0705 after 5:30 p.m.

ENGLANDER DOUBLE MATTRESS and box spring set; roll-a-way bed, 3/4 size; play pen w/pad. Randall, 256-1853.

'63 GE automatic dishwasher, Mobile Maid, power shower, \$120. Isidoro, 299-7495.

24" BOY'S BIKE, \$10; 2 large size scooters, \$6 for both; adjustable dress form and stand, \$7. Duvall, 299-8744.

NEW ASSEMBLED HAM RADIO, Heathkit, HW-30 2-meter transceiver, 5 watts, crystal for 143 to 149 MC, cost \$48, make offer. Mikkelsen, 268-1485.

'59 PLYMOUTH 4-dr. station wagon, OD, gas-turboized ignition, R&H, \$850. Gustafson, 1920 Saint St., NE, AX 9-3270.

WEBCOR ROYALITE HI FI tape recorder; electric guitar and amplifier; Polaroid camera, model 80, flash attachment, light meter. Rothwell, 243-7532.

ARGUS 35MM slide projector w/30 slide magazine plus 3 extra magazines, \$25. Riggins, 299-7778.

'59 IMPALA 4-dr., completely equipped, no trade. Knapp, AX 9-4029.

8" CRAFTSMAN TABLE SAW w/stand and 2 blades, \$40; 28" wood lathe, \$10; 22 cal. revolver, 9 shot cap., \$25. Passmore, 299-5172 after 6 p.m.

SLIDE RULE K&E Duplex Vector; Keystone 8 mm movie camera w/Wollensok-Delur & Walz lenses; umbrella tent, 7x7, floor. Gazdiz, 256-7870.

FREE FILL DIRT, about 25 yards, you haul. Orr, 440 Tenn. SE, 255-6219.

ICE HOCKEY SKATES, size 11, \$4.50; 10x50 Monocular, \$9; Silhouette exerciser w/timer, \$75; grinder, heavy duty, \$7.50. Welker, 299-1179.

3-BDR. OLD ADOBE, beam ceilings, fireplaces, south valley location, assume GI loan, no qualifying, near schools. Barnes, 877-2061.

'37 PLYMOUTH 4-dr. sedan w/'52 Dodge engine, was involved in recent minor accident, some damage, make offer. McFarling, 299-8554.

TWO LIONEL O-gauge diesel train sets, plus six remote switches, operating cars w/loaders, transformer, lots of track, \$60. Kramm, 268-5078.

WANTED

RIDE vicinity of Morningside and Hilton NE to 892. Candelaria, 344-9028.

REAR BUMPER for Chevrolet pickup, 1959-64. Lotz, 299-2804.

TO TRADE BOOKS, you've read yours, I've read mine, let's swap for a new library; novels, mysteries, Reader's Digest; hard back books. Revels, 344-3033.

OWNER'S manual for 1961 VW truck or bus; also standard factory tool kit. Baxter, 1610 Bayita Lane NW, DI 4-7601.

PAIR of 10-lb. dumbbells. Hayes, 298-4682.

STEPHENS P-15 Driver and 800 cycle eight cell horn for cash or will trade English 10" co-ax or other gear. Blackmon, 298-2095.

TRADE FOR WHAT HAVE YOU: Bryant 30-gal. electric hot water heater. Galbreath, 898-0644.

PASTURE, corral or stall for young horse, near Adobe Acres, SW Valley. Cooper, 877-4674 after 6 p.m. or weekends.

RIDE from vicinity of Arvilla and San Pedro NE to any one of the Tech Area I gates. Simpson, AL 6-0381.

HOMES FOR KITTENS, will deliver, housebroken, weaned. Tatum, 877-0997.

RIDE from Mossman Star Dust Skies addition, Dellwood and Louisiana NE to bldg. 880. Grotberg, AX 9-1704.

PENTAX 35mm S-3 or H-3. Browning, AX 9-6384.

RIDE from Candelaria and Manzano NE 2900 block to bldg. 880. James, 256-7891.

RIDE from vicinity Manzano and Roma NE to bldg. 802. Wheeler, 268-1030.

CHILD CARE in my home hours, day or week. Gonzales, 298-4963.

CHILDREN'S BOOKS for Yucca Elementary School Library, any books in fair condition will be appreciated. Weir, AX 9-1160.

RIDE, vicinity of Adams and Lomas to Bldg. 860. Huelsewede, AM 5-0969.

SKIS: child's size, boots, size 5-7 for boys. Stixrud, 298-0478.

USED WESTERN SADDLE, good condition. Frost, ext. 264-7875.

FOR RENT

SMALL 2-bdr. house in Princess Jeanne, one bath, one-car garage, available Dec. 1, \$105 plus utilities. Bump, AX 9-8960.

2-BDR new unfurnished: stove, ref. \$70, without stove and ref. \$10 discount first mo. Trumbull SE. Villella, 256-9674.



AUTHOR of a continuing program enabling IBM 7090 Computer to print with upper and lower case letters, italics, and special punctuation marks is D. K. Robbins, supervisor of Consultants and Training Division 7624. Calcomp Plotter draws letters from signals on magnetic tape.

Keypunch Language Gives Lab Computer 'Writing' Skill

"Numbers are the language of science," someone has observed. But part of the product of computers — the legmen of our technology — appears in alphabetical form.

Until now, alphabetical language printed out by such giants as the IBM 7090 appeared only in upper case letters. Now, thanks to a continuing project by D. K. Robbins, supervisor of Consultants and Training Division 7624, the 7090 can be programmed to print alphabetically in upper or lower case letters, to change the size of letters, and to justify the right hand margin, such as newspaper typesetting equipment does.

The computer's printing abilities were limited to 47 characters: numbers from zero to nine, the 26-character alphabet (all capitals), and 11 special symbols. Communication with the computer, by means of the keypunch machine, also has this character set.

However, if the keypunch "language" is supplemented with special notation for upper and lower case, for characters such as the question mark and the exclamation point, and for character size (in effect, a sub-program of "printing instructions"), it can be used to prepare a computer program which will result in a handsomely printed product.

This enrichment of the keypunch alphabet is accomplished

by combining characters: thus "=" stands for semicolon, "A" stands for capitalize the A, "\$X" stands for exclamation point, etc. Likewise, special mnemonic (memory-assisting) symbols are used to communicate printing instructions to the computer.

Don's program takes the keypunched input — with its special notations for upper and lower case, etc. — and creates a master magnetic tape. "The tape can be edited until a good final tape is produced," he continues. "This tape is then processed through another program to prepare the output for plotting on the Calcomp Plotter, which draws the characters of the message on commands from the magnetic tape."

The tape carries magnetic traces of the letters in the message to be printed, and of all the printing functions necessary to produce the message on paper. When we write on the typewriter, for example, all we have to worry about is the ordering of letters to form the message; the typewriter takes care of certain "printing" functions which it has been "pre-programmed" to perform: spacing, margin width, ribbon color, etc.

The computer, on the other hand, must be taught to perform these functions. It doesn't have preconception, for example, about page size. "We start," Don points out, "with blank space. We must

define it for the computer as, say, an eight-by-eleven-in. rectangle, in which the message will be printed."

Some functions haven't yet been resolved for the computer. "Hyphenation is something we haven't worked out yet," Don explains. "But there are several ways to solve the problem."

The computer must be pre-programmed to produce the letters of the type face desired. "Each letter," Don continues, "is plotted on an XY axis arrangement so that its coordinates can be fed to the computer in percentages of the total X axis and Y axis. With such pre-programming, the computer can be commanded to form such letters through the keypunch language."

The computer prints out a "working" version of the input data, which can be used for proof-reading. This all-capital version enables the proof-reader to locate the position of an error by locating its line number and its numerical position among the characters in the line. These coordinate positions, along with the correction, are then fed to the computer to produce a corrected version of the input data.

The program offers a way to augment the computer's ability to present its output not only more attractively, but also more intelligibly.

Sandia-Written Papers Presented Before American Physical Society

Seven technical papers authored by eleven Sandians will be presented at a meeting of the American Physical Society to be held in Pasadena, Calif., Dec. 19-21.

"Radiation Damage in Single Crystal Barium Titanate," by D. L. Hester, D. D. Glower, and L. J. Overton (all 5322) will be presented at the meeting by Mr. Hester.

"Determination of Unloading Behavior of Uniaxially Strained 6061-T6 Aluminum From Residual Strain Measurements" will be presented at the meeting by its author, W. F. Hartman (1113).

L. M. Barker (1113) will present "Dynamic Response of Aluminum" at the meeting. It was co-authored by C. D. Lundergan (1113) and W. Herrmann, MIT.

"Influence of Work Hardening

on the Dynamic Stress-Strain Curves of 4340 Steel" will be presented by B. M. Butcher (1113). It was co-authored by J. R. Cannon, formerly a Sandia employee.

A. T. Fromhold (5151) will present a paper he co-authored with Albert Narath (5151) titled "Transient NMR Study of the Conduction Band of Metallic Na₂WO₃."

"Mechanism of Conduction in PZT" will be presented by R. C. Heckman (1124). Co-authors are D. D. Glower (5322) and C. R. Hills (1124).

D. D. Glower will present "Effects of Radiation Damage on the Mechanism of Ferroelectric Ca_{0.1}Ba_{0.9}TiO₃." It was co-authored by D. L. Hester (5322) and R. C. Heckman (1124).

R. A. Bice to Serve As Board Member in Chamber of Commerce

R. A. Bice, Vice President, Engineering for Manufacture 2000, was elected a director of the Albuquerque Chamber of Commerce during voting by members last week.



Twenty men were nominated for the 10 director vacancies. The terms are for three years, starting Jan. 1, 1964. There are 20 hold-over members of the Chamber's board.

Mr. Bice has been with Sandia Laboratory since its establishment, and was an elected member of the Albuquerque City Commission from 1954 to 1962.

Sandia Authors

Current or forthcoming articles by Sandia authors in technical journals include the following:

D. K. Robbins (7624) and W. E. Taylor (2411), "Digital Computer Determination of Alpha Source Activity," January 1964 issue, *Communications of the Association for Computing Machinery*.

P. A. Nicovich (4412), "The Projected Tolerance Zone," November issue, *Graphic Science*.

S. Thunborg, Jr. (5131), G. E. Ingram (5133), and R. A. Graham (5133), "Compressed Gas Gun for Controlled Planar Impacts over a Wide Velocity Range," January 1964 issue, *The Review of Scientific Instruments*.

G. H. Haertling (5132), "Physical and Electrical Properties of Hot-Pressed Ceramics," November issue, *Journal of the American Ceramic Society*.

R. O. Brooks (7325), "The Use of Graphical Techniques to Analyze Shock Motions of Lightly Damped Linear Spring Mass Systems," *The Bulletin of the 33rd Symposium on Shock, Vibration and Associated Environments*.

D. E. Amos (5421), "Additional Percentage Points for the Incomplete Beta Distribution," December issue, *Biometrika*; "Table of Percentage Points of Pearson Curves, For Given Square Root of Beta 1 and Beta 2, Expressed in Standard Measure," December issue, *Biometrika*, co-authors are N. L. Johnson and Eric Nixon, with an introduction by E. S. Pearson, all of the University of London, England.

Sphere of Science Open to Employees, Families Nov. 23

The Sphere of Science will be open Saturday, Nov. 23, for employees and families, according to Community Relations Division 3143. The exhibit will be open from 9 a.m. until noon.

A film, "The Sandia Story," will be shown at 9:15, 11:00, 10:45, and 11:30 a.m.

Welcome Newcomers

Nov. 4-15

Albuquerque	
John E. Arnold	3427
Maria M. Chacon	4432
Janet C. Davis	4624
Ruth M. Farmer	4333
Howard L. Hodges	7411
L. Estelle Huff	3126
Judith E. Kelly	3126
Michael J. Kmatz	4413
Mary A. Kruger	3126
Barbara H. Lawrence	4325
C. Catherine Plante	3126
Schirlee K. Stahmann	3152
Kip A. Stanley	3462
E. John Sutton	7325
Blanche P. Vines	4152
Donna M. Yaple	3126
Returned from Leave	
Patricio Sanchez	3427

Sandia Staffers Doubling As UNM Instructors in Evening

About 20 Sandia Laboratory employees can be found some evening during the week lecturing before a class of students at the University of New Mexico.

The majority of the part-time teachers are instructors in English, but there are also classes in business administration, mathematics, chemistry, nuclear engineering, and psychology.

The Sandia instructors and the courses they are teaching for fall semester include: M. T. Abegg (1311), "Chemical Thermodynamics"; C. A. Anderson, Jr. (5331), "Nuclear Reactor Theory"; Stoughton Bell and Richard C. Hildner (both 5422), "Calculus and Analytic Geometry"; Rosa M. Bodenhamer (3451), "Records Control"; William F. Carstens (3423) and Robert S. Gillespie (3142), "Informative Writing";

Jim L. Fife (3427), "American Literature";

William N. Dehon (3142), Harvey Frauenglass, Thomas B. Heaphy, Clinton F. Hurley and Jerry G. Wallace (all 3423), and Lee F. Parman (3421), English I "Writing With Readings in Exposition"; S. McAlees, Jr. (7421), "Contemporary Problems in Aerodynamics (Fundamentals of Aerodynamic Heating)";

Fred I. Magee (3453), "Intermediate Algebra"; Paul D. O'Brien (5332), "Introduction to Nuclear Engineering"; S. H. Peres (3133), "Personnel Management for Small Business"; Donald F. Rauber and Clinton F. Hurley (both 3423), English II, "Writing With Readings in Literature"; Alan D. Swain (1443), "Elementary Psychology"; and Paul Waltman (5421), "Advanced Calculus for Engineers."

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HERE'S A SAMPLE of printing by the IBM 7090 Computer and Calcomp Plotter, prepared by Sandia's Consultants and Training Division.

Sandia's Safety Record

Sandia Laboratory HAS WORKED

2,215,000 MAN HOURS OR 63 DAYS WITHOUT A DISABLING INJURY

Livermore Laboratory HAS WORKED

1,077,000 MAN HOURS OR 208 DAYS WITHOUT A DISABLING INJURY