



— Frank P. Hudson —

Scientist to Continue Sandia Research at Swedish University

As a result of extensive work on a research project concerned with a quantum mechanical theory of chemical reactions, Frank P. Hudson, of Theory and Analysis Division 5411, has been invited by Professor Per Olov Lowdin, Head of the Quantum Chemistry Department at Sweden's University of Uppsala, to work as a guest scientist in quantum chemistry at the University.

Frank describes the project as a study of bimolecular reactions both as very low energy rearrangement collisions, and, more abstractly, as a "time dependent formulation in the interaction picture, using an evolution operator formalism."

Frank began work in Sweden on June 1 and will continue until May 1965. The Uppsala group under Professor Lowdin has become the world center of advanced theor-

etical work in atomic and molecular quantum mechanics. Presently there are about 35 scientists on the staff, including visitors from 8 to 10 countries.

He feels that the assignment provides an excellent opportunity to continue his present work under the stimulus and guidance of one of the world's great scientists and with a working group which is outstanding in the theoretical areas most important to his work.

While continuing to work on his research project, Frank has also been invited by Professor Lowdin to present a series of lectures on his project at the University.

Frank has been at Sandia for 11 years, and has been a member of Division 5411 for the past year and a half.

SANDIA
CORPORATION

LAB NEWS

PRIME CONTRACTOR TO THE ATOMIC ENERGY COMMISSION / ALBUQUERQUE, NEW MEXICO / LIVERMORE, CALIFORNIA

VOL. 16, NO. 13 / JUNE 19, 1964



Nuclear Engineering Grad Studying Here Under Fellowship

Jerry J. Koelling, a graduate student in nuclear engineering at the University of New Mexico, has been awarded an Atomic Energy Commission-Associated Rocky Mountain Universities Fellowship. His Fellowship, which began early this month, will consist of a three-month study program in the field of reactor engineering. He'll participate in research which employs the reactor facilities of Sandia Laboratory under the general direction of Professor G. A. Whan of the University of New Mexico and Paul D. O'Brien, supervisor of Reactor Engineering and Operations Division 5332.

Jerry is the first graduate student to undertake study under the AEC-ARMU Fellowship program within the AEC's Albuquerque Operations complex. "The program enables me to carry on research which will have specific applications to my studies for the Sc.D. degree," he said.

Jerry is participating in research at the Sandia Engineering Reactor Facility.

He holds both the Bachelor's and Master's degrees in physics from the Missouri School of Mines and Metallurgy, and the Bachelor of Science degree in aeronautical



— Jerry J. Koelling —

engineering from St. Louis University. He began studies for his doctorate at UNM in September 1963. He's a member of the following honorary societies: Kappa Mu Epsilon (mathematics), Sigma Pi Sigma (physics), and Sigma Xi (scientific research).

"Thorough" - - - Word For Sandia's Radioactive Waste Disposal

Disposal of radioactive waste is one of the most thorough operations at Sandia Laboratory. Generated in the reactor areas, radioisotope labs, test areas, and accelerator areas, radioactive waste is carefully packaged, collected, recorded, and buried at a special site in Area III.

Except for a few special items, the great bulk of the radioactive waste is made up of towels, rags, and cleaning materials, according to Harold Rarrick, supervisor of Environmental Health Division 3312. These are contaminated at a very low level but are removed from work areas rapidly.

"All contaminated material is tightly packaged in plastic bags," Harold says. "It is stored in marked and controlled areas near its origination point until collected by Division 3312 personnel. Collections are made regularly—about three times a week—but a call to our office will bring a man immediately to remove any contaminated material."

Low-level waste is measured at less than 10 curies per cu. ft. Intermediate level is from 10 to 1000 curies and high level is over 1000 curies per cu. ft. of material. The AEC requires that complete records be kept of all waste.

Sandia's current generation of radioactive waste is about 1600 cu. ft. per year, Harold says. About 95 per cent of this is low level radioactive waste. It is packaged in plastic bags and buried about 15 to 20 ft. underground. It is allowed to accumulate in a deep trench and, when the trench is full, it is covered using a bulldozer.

Intermediate and high-level radioactive wastes call for a different procedure. The waste is placed inside specially prepared metal drums which have been lined with concrete. These are dropped into deep pits at the disposal area. The pits are capped with concrete when filled.

Selection of the disposal site was made after a careful survey of the water table and the structure of the intervening earth. At the Area III disposal site, the water level is about 600 ft. beneath the surface with many layers of caliche and rock in

between. There is no possibility that radioactivity, contained in plastic bags and metal and concrete drums, could penetrate to the water table.

The reactor drain field is constructed in the same kind of terrain, 600 ft. above the water table. Radioactive waste from all laboratory drains in Area V empties into the drain field. It consists of a 2000-gal. tank, a 6000-gal. tank, and a 12,500-gal. underground chamber of sewer pipe and gravel.

Water cools the SERF reactor but this coolant is not emptied into the drain field. It is part of a closed-loop system and is continually circulated. The coolant does pass through a "de-mineralizer" system, and this de-mineralizer requires flushing occasionally. This water does flow into the drain field.

The drain field is constantly sampled and checked for radioactivity.

Decay rate of the Area V liquid waste is very rapid. Trapped in the two smaller tanks for up to eight hours, the waste is at an extremely low level by the time it is pumped into the larger chamber. Studies have shown that the flow rate for liquid in the drain field down to the water table is about one ft. per year. Six hundred years against the rapid decay rate provide an extremely good safety factor.

"Providing the extra safety factor in all activities concerned with radioactivity is our job," Harold says. "We insist on rigid procedures, records, and continuous monitoring. We keep all areas clean of radioactive waste as a matter of strict policy."

HEALTH PHYSICS PERSONNEL, Seferino Sanchez (left) and William D. Burnett, dump tightly-packaged radioactive waste behind locked fence at disposal site in Area III. Regulations require that complete records be kept of waste and that two men be present.



Editorial Comment

The Reason for A Change

Perhaps those who are faithful readers of the **Sandia Lab News** have noticed a change in the paper over the past few years. And perhaps some readers have not understood this change and therefore don't like it.

The **Lab News** exists to do more than entertain readers. Even if we tried, we'd lose out to more formidable competition. In an entertainment race, this publication is no match for TV, news magazines, picture magazines, or even carpool conversation.

But we do feel an obligation to bring you certain information which no competitor can bring. This is the story of Sandia Corporation. The information is presented to readers with the feeling that they are more than idly interested or simply curious. It is our firm opinion that Sandia employees have a deep and lasting interest in the welfare of the Company because the strength of Sandia Corporation measures the security offered not only employees but millions of Americans. The **Lab News** feels Sandia employees want to work in the best interests of Sandia. Thus, we write more and more of the company and the people who make it go. Maybe we entertain less. It is hoped that we inform more.



L. P. Gise



K. F. Hertford

**K. F. Hertford Will Retire;
L. P. Gise to Be ALO Manager**

A. R. Luedecke, General Manager of the Atomic Energy Commission, has announced the retirement on July 31 of Kenner F. Hertford, Manager of the Commission's Albuquerque Operations Office since 1955, and the appointment of Lawrence P. Gise to succeed him. Mr. Gise is now Deputy Manager of Albuquerque Operations.

Mr. Hertford retired from the Army as a Major General on July 31, 1955 to accept the Albuquerque position on Oct. 1 of that year. In this position, he has had basic responsibilities in the fields of nuclear weapons research, testing, development, and production, and in peacetime applications of nuclear energy. He supervises the administration and coordination of an extensive organization of laboratories and of production plants.

In August 1960, he was presented the Commission's Distinguished Service Award, the highest recognition that the Commission can bestow on its employees. The citation included: "Shortly after taking over his responsibilities, Mr. Hertford reorganized the Albuquerque Operations and instituted new methods for coordinating all activities of his tremendous research, test, and production complex. These actions have led to an ability of the complex to respond more rapidly to changing needs, to a greater efficiency, and to a greater capacity. His personal leadership and understanding have built an outstanding AEC contractor trust and the highest morale within his own staff and subordinate offices."

Mr. and Mrs. Hertford and their daughter, Anita, will move this summer to their home in Placitas.

Mr. Gise became Deputy Manager for Albuquerque Operations on April 1, 1961.

Born in Laredo, Texas, April 23, 1915, he is a graduate of Columbus University

(Bachelor's degree, Commercial Science) and in 1940 of Strayer College (Master's degree, Commercial Science), both in Washington, D.C. He was a Lt. Commander in the Navy from 1942 to 1946, served briefly with the Veterans Administration, then returned to the Navy Department as Deputy Chief of the Estimates and Analysis Division, Budget Office. In October 1949 he went to the AEC's Finance Division. Subsequently, he transferred to the Division of Military Application in the AEC, becoming Assistant Director in 1955.

In 1958, he went to the Advanced Research Projects Agency of the Department of Defense, where he served until 1961, progressively in the position of Director of Program Control and Administration, Assistant Director and then Deputy Director.

**Sandian Takes Time
From Vacation to Give
Talk at U. of Vienna**

Personnel representative Mary Yager (3152) combined business with pleasure during a recent European vacation. She spoke on "Personnel Trends in Large American Industry" before a graduate seminar in sociology May 12 at the University of Vienna.

Her appearance before the students in Austria's capital city was arranged through friends who are living there during a sabbatical from the University of New Mexico.

Mary's first European trip included stops in Italy, Switzerland, Germany, France, and Belgium, but the highlight was an all-day boat trip down the Danube River from Linz in Central Austria to Vienna.



MEET AIRPLANE—Sandia Laboratory officials were on hand last week to greet the arrival of a leased DC-7. The aircraft will be fitted with cameras and other optical instrumentation to record the forthcoming RFD-2 flight test. The Sandia-designed reentry vehicle will make possible the study of a SNAP 19-series nuclear generator during reentry disassembly and fuel capsule burnup without creating a radiological safety hazard. From left are Gene Harris, chief pilot for Avco Corporation; A. E. Bentz, supervisor of Aerospace Nuclear Safety Division 7413; G. A. Fowler, Vice President, Development; and V. E. Blake, Jr., manager of Aerospace Nuclear Safety Department 7410.

**Welcome
Newcomers**

June 1-12

Albuquerque	
Joseph P. Abbin, Jr.	1331
Peggy Jo Brown	3126
*Betty D. Cummings	3126
Benjamin Garcia	3413
Charles C. Harner	7622
*Lily A. Katzenstein	3126
Illinois	
David H. Johnson, Chicago	7421
*M. Kent Parsons, Evanston	5132
Indiana	
Russell K. Mitchell, Beech Grove	4411
Mississippi	
Virgil L. Dugan, Columbus	2423
Edward D. Graham, Jr., Clarksdale	7331
Preston B. Herrington, Jr., Columbus	7431
New Mexico	
*Gilbert L. Cano, Las Cruces	5414
North Carolina	
Winger E. Alexander, Columbia	2344
Ohio	
Thomas G. Maull, Dayton	2543
Oklahoma	
Doyle Cook, Stillwater	7325
Jerry G. Lamb, Stillwater	2632
John W. Long, Marland	7311
Ray E. Lovett, Stillwater	4411
Texas	
Calvin C. Smith, Arlington	1314
Temporary Summer Hires	
Sylvester A. Baca, Albuquerque	2442
Lee J. Bain, Rolla, Mo.	2112
Stephen D. Ban, Cleveland Heights, Ohio	7411
John H. Bartholdi, Albuquerque	7224
Thomas F. Bridgland, Columbia, S. C.	5421
Richard V. Cadman, West Lafayette, Ind.	7324
Allan M. Carstens, Albuquerque	5426
Aaron Cox, Jr., Albuquerque	5411
*Jerome N. Deverman, Lafayette, Ind.	1443
John R. Donaldson, Albuquerque	3311
John M. Fitts, Midland, Tex.	1313
Paul M. Geissler, Albuquerque	1323
*David L. Hanson, Columbia, Mo.	5420
Guy W. Haynes, Austin, Tex.	1433
Robert E. Healey, Lincoln, Neb.	1513
James T. Hood, Austin, Tex.	4122
*George W. Hoyle, Raleigh, N. C.	7432
George W. Hudson, Albuquerque	7620
Warren C. Jackson, Columbia, Mo.	5310
Jack G. Kay, Albuquerque	5414
Dermot Kelleher, Albuquerque	7412
*Arthur A. Key, Albuquerque	1114
*James I. Latham, Rolla, Mo.	1433
Millard S. McVay, Urbana, Ill.	2420
Rolf S. Melhorn, Berkeley, Calif.	5411
*Manuel P. Olguin, Albuquerque	1121
*Duane F. Rost, Ames, Iowa	1413
*Edward M. Shoemaker, Urbana, Ill.	5152
*Martin L. Silverstein, Philadelphia, Pa.	5420
Marvin C. Smith, Jr., Norman, Okla.	1111
Thomas E. Smith, Jr., Champaign, Ill.	5152
Charles C. Stewart, Stillwater, Okla.	1440
Clayborne D. Taylor, El Paso, Tex.	1425
James P. Toler, III, Albuquerque	7620
*Wayne H. Trump, Stillwater, Okla.	3132
William F. Walker, Stillwater, Okla.	7421
Anthony W. Warren, Albuquerque	5426
William H. Weihofen, Albuquerque	5152
*David L. Wright, Albuquerque	1113
*Ralph R. Wright, Blacksburg, Va.	1322

**Two Sandians Participate
In Group Discussion
On 'Southeast Asia'**

Max K. Linn, Director of Technical Information and Publications 3400, participated in a television panel recently. He discussed "Southeast Asia" on KNME-TV's Shirtsleeve Session program. Moderator of the program is R. C. Colgan (3465). The show is telecast on Thursdays at 7:30 p.m. on Channel 5 and Sundays at 2 p.m. on Channel 4.



Darleen Byfield (8212-3)

Take a Memo, Please

Good safety habits are not inherited; they are acquired.

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JUNE 19, 1964

SANDIA CORPORATION

LAB NEWS

ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

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Second VE Workshop Underway at Sandia

June 15 marked the beginning date for the second workshop in Sandia Corporation's Value Engineering Education Program (VEEP). Thirty-eight participants from various Sandia organizations began work on eight Value Engineering projects in workshop facilities located in Bldg. 817.

In July, a three-hour orientation workshop in Value Engineering will be initiated for Sandia supervisors at the division level and above. These sessions will be held concurrently with 44-hr. VE training program. It's expected that most Sandia supervisors will have an opportunity to participate in the VE "Short Shop" by November 1964.

The first workshop in Value Engineering was completed May 15. Project teams at the first sessions applied Value Engineering disciplines to various pieces of Sandia hardware in an effort to achieve economy in the cost of the hardware without compromising its reliability, quality, or safety.

"While the major objective of the workshop is depth training in the Value Engineering process, the results of the team projects at the first session indicate that substantial savings can be derived by following up the team recommendations," Elmer Devor, supervisor of Product Data Division 2563 and a member of the Value Engineering training group, reported.

The Value Engineering course is conducted on a workshop-lecture basis, with half of the 44-hour training program spent in each area. Workshops are conducted on a five-man-team basis. "The teams at the first session recognized the need for close liaison with design, manufacturing development, engineering, purchasing, and cost accounting personnel during their work on the projects," Mr. Devor continued. "They frequently consulted these personnel during their project work. The participants, although on a 40-hour training program, responded with sufficient interest in their projects to spend as much as 80 hours to conclude their recommendations."

Participants in the current VE program include the following: 1100: A. J. Quant,

L. K. Jones; 1300: J. O. Harris, Jr., J. A. St. Clair, R. W. Crain; 1400: H. J. Gerwin; 1500: T. P. Krein, C. F. Magnuson; 2300: H. B. Evans; 2400: L. J. O'Connell, J. R. Guth, G. W. Howard; 2500: Lee Stinnett, W. R. Dameron, J. T. Geohagan, J. E. McCreight, J. H. Morgan, D. C. Schultz;

2600: H. E. Christenson, D. E. Robertson; 4100: R. E. Bertrand, F. Martinez; 4200: S. H. Neff; 4300: J. W. Justus, R. Lassiter, R. J. Walter, E. J. Krapf; 4400: F. R. Emig, R. J. Neibel; 7200: L. L. Lathrop, R. S. Howard; 7300: R. G. Hamilton, J. D. Patrick; 7400: J. M. May, T. C. Looney; 7600: L. E. West, M. D. Hodge; AEC/ALO: D. Losa; AEC/SAO: F. X. Murray; ACF: R. A. Exley.

The next Value Engineering training program in July will include participation by personnel from Livermore Laboratory. The Livermore personnel will return to Livermore, where they will select five VE projects. The VE training contingent from Albuquerque will then present several training workshops at Livermore.

Financial Department Tellers' Windows Open At 10 a.m. on July 1

Tellers' windows in Financial Department 6020 will be closed Wednesday, July 1, until approximately 10 a.m. This is necessary due to year-end closing activities, reports C. Olajos, department manager.

NEW FLAVOR—Sandia's Sphere of Science is offered as a Sundae Special by Linda Ward of Community Relations Division 3143. Open House for employees and their families will be held Sunday afternoon, June 21, from 2 to 5 p.m. In addition to the technical and scientific exhibits on display, the "Sandia Story" movie will be shown at 2:15, 3, 3:45, and 4:30 p.m.



Once in a Lifetime

Andy Chacon Joins Peace Corps For Two Years' Work in Peru

"In the lifetime of each one of us, the opportunity to do something really constructive for mankind comes perhaps only once. This occasion has apparently arrived in my life. I have been invited to participate in one of the most interesting and important peaceful revolutions of our time."

In this way J. A. "Andy" Chacon of Administrative Programs Division (7623) expressed his desire to spend two years with the Peace Corps in Peru. He will be in charge of the activities of about 150 Peace Corps volunteers.

This new Peace Corps program, called "Coopernacion Popular," is designed to encourage community action in rural areas and to raise the standard of living. The volunteers will provide both technical and material assistance.

Mr. Chacon was interviewed in person by Peace Corps Director Sargent Shriver before being offered the staff position. He returned to Washington last week for administrative orientation. Later this month, Mr. Chacon will spend three weeks in Peru before joining the volunteers at Los Angeles State College, where he will audit the last phases of their training, administer part of it, and participate in the final screening of volunteers.

"All of the volunteers for this particular

program have college degrees, most of them coming directly from college campuses. There are four with law degrees, one mechanical engineer, and a retired school teacher," he said. The final training (living in a Latin American environment) will be in Puerto Rico in late August. While there, Mr. Chacon will be expected to learn Quecha, an Indian language spoken in many remote parts of Peru.

In early October, Mr. and Mrs. Chacon and their two daughters, aged five and 11, will leave for Lima. The entire family is fluent in Spanish. Mrs. Chacon, an elementary school teacher, will be an unpaid Peace Corps consultant during their stay in Peru.

In administering the program, Mr. Chacon will spend considerable time visiting the volunteers located in 60 provinces. The volunteers will be helping to improve production, setting up marketing co-operatives, and establishing credit unions. A large American mail-order house has agreed to send marketing experts to Peru after the production co-ops are formed. They will suggest ways to make products more saleable, and the firm will eventually market the items internationally.

Mr. Chacon has worked in Quality Assurance and Purchasing organizations during his 10 years at Sandia and has been given a leave of absence. He is a member of the State Public Welfare Board, the Cuban Refugee Committee, and is on the Executive Committee for the Bernalillo County Democrats.

Sandia Authors

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

A. T. Fromhold, Jr. (5151), "The Parabolic Growth Law for Coherent Oxides," July 15 issue, *Journal of Chemical Physics*.

L. S. Nelson (5414), A. M. Bass (National Bureau of Standards), and N. A. Kuebler (Bell Telephone Laboratories), "Observation of FeO in Absorption by Flash Heating and Kinetic Spectroscopy," May issue, *Journal of Chemical Physics*.

L. H. Koopmans (5425), "Tolerance Limits for the Class of Distributions with Increasing Hazard Rates," March issue, *Annals of Mathematical Statistics*.

L. H. Koopmans (5425), D. B. Owen, and J. I. Rosenblatt (both Sandia consultants), "Confidence Intervals for the Coefficient of Variation for the Normal and Log Normal Distributions," June issue, *Biometrika*.

L. H. Koopmans (5425), "On the Coefficient of Coherence for Weakly Stationary Stochastic Processes," June issue, *Annals of Mathematical Statistics*.

E. H. Copeland (7331), "The Engineer and the Technological Revolution," August issue, *Mechanical Engineering*.

E. H. Beckner and J. R. Banister (both 5153), "Observations of Early Plasma Rotation in a Slow Theta Pinch," June issue, *Physics Letters*.

R. C. Heckman (1124) and D. D. Glower (formerly of Sandia), "Conduction—Ionic or Electronic—in BaTiO₃," Aug. 1 issue, *Journal of Chemical Physics*.

Nicholas J. DeLollis (1121), "Keeping Out of Trouble in Bonding Plastic Parts," June issue, *Assembly Engineering*.

PhD Degree Conferred On Martin Tierney



Martin S. Tierney of Systems Analysis Division I, 5422, received his PhD degree in Physics at the University of New Mexico this month.

His doctorate dissertation was entitled, "On the General Magnetic

Field of the Sun and the Limit of Co-Rotation of the Corona."

His BS and MS degrees were also conferred at UNM. He has been at Sandia 16 months.

Sandians Present Tech Papers at Denver Meeting

A number of technical papers by Sandians will be presented at the American Physical Society meeting to be held June 25-27 in Denver, Colo.

The papers and their authors are: "Electron Emission from Tungsten under Proton Bombardment" by R. I. Ewing (5152).

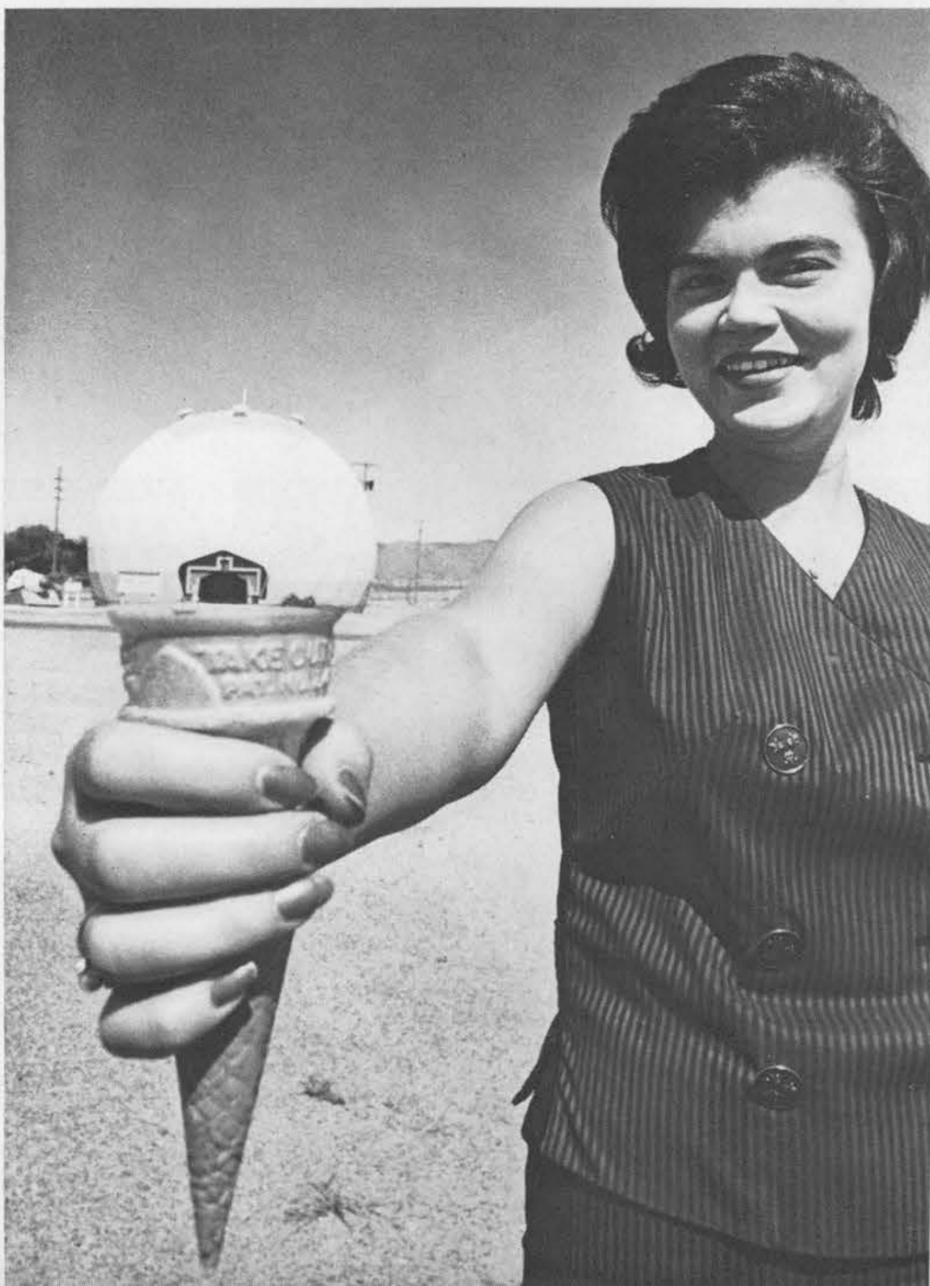
"Collision of Polarized Plasmas" by E. H. Beckner (5153).

"Shock-Induced Demagnetization of 30 Per Cent Nickel Iron Alloys" by R. A. Graham (5133), D. H. Anderson (5132), and J. R. Holland (5135). Mr. Graham will make the presentation.

PAGE THREE

LAB NEWS

JUNE 19, 1964



Business Schools Should Build Character . . .

AT&T Board Chairman Frederick R. Kappel expressed the hope recently that "schools of business will turn out graduates who are strong in motive and wide in outlook, who want to be builders of great businesses, and who will measure success not alone in personal rewards."

The responsibility of education, Mr. Kappel said, is not only to help students acquire knowledge but to build character as well.

Speaking at the dedication of Uris Hall, the new home of the Graduate School of Business of Columbia University, Mr. Kappel, a trustee of Columbia, said that "the future of our economy, and of our country, calls for increased depth and breadth of business management ability. We need quality management in quantity—people by the thousands who have the urge to be good managers and can develop the talents required."

Mr. Kappel said that he was not thinking of skills alone, although skills are very important. "Even more so, however," he said, "are the attributes of character and stature, of ethical determination, of largeness of mind. It is necessary to have some vision of the future, an instinct for building, a drive to do the kind of job that is intrinsically first class. After all, business and industry supply the economic foundations of our society. Opportunities for education, for productive leisure, for cultivation of the arts, all depend on how we in business meet our responsibilities. The character of business people, therefore, and our will to do the best possible job—these are matters of great social importance."

"You may ask—is it the function of a school of business to build character?" Mr. Kappel said. "And I would answer this way—that it seems to me this is in large measure the function of education, and that every school of business is therefore under just such responsibility."

He pointed out that "corporate enterprise today is the focal point of technological and organizational change, and the ability to manage, in this atmosphere, all the factors of engineering, finance, law, marketing, and person-to-person human relations, not to mention relations with unions and relations with government—this takes a lot of doing by first-class people. And the point I make here is simply that an outstanding school . . . can have tremendous influence in orienting first-class people toward business careers. Needless to say, this is primarily the responsibility of business itself. If we in business do not make a good record, good people will not come our way. But responsible, dedicated business organizations, plus top-quality schools of business, together can do wonders."

Mr. Kappel noted that "Columbia's Graduate School of Business has already made important contributions to the development of business leadership and the progress of industry." And he concluded, "Surely we may expect that the value and influence of this institution will steadily grow to the advantage of the nation."

East Bay Chapter Nat'l Safety Council Presents Award to Livermore Lab

A top safety award was presented to Livermore Laboratory at the annual California Safety Congress held May 27-28 in San Francisco.

An engraved plaque was presented by the East Bay Chapter of the National Safety Council. It was accepted on behalf of the Corporation by Leo Gutierrez, Director of Systems Development 8100.

The plaque was awarded to Livermore Laboratory for having worked the 1963 calendar year with the lowest injury frequency rate for East Bay plants in its division. Livermore Laboratory is grouped with plants in the chemical and allied industry division that work over 400,000 man hours a year. A total of 147 firms in the nine East Bay counties participate in the safety program.

During the second day of the Congress, Gil Rhodes, Safety Engineering and Environmental Health Division 8242, served as chairman of the afternoon industrial session at which Herb Zenger (8242) spoke on "Super Gas Pressure."

Take Note . . .

On May 27, C. E. Cockerleas (3412) was commissioned Lieutenant, Junior Grade in the U. S. Naval Reserve. He is a member of Naval Reserve Intelligence Unit 8-1-7, commanded by LCDR J. M. Zanetti, Jr. (3412).

During the Korean conflict, he served in the Air Force with Headquarters, Far Eastern Air Force, in Tokyo, Japan.

Friends of William H. Cross, 7332 division supervisor who died May 4, have decided to provide a memorial trophy to

be presented each year at the New Mexico Indoor Small-Bore Rifle Championships.

The traveling trophy will be presented to the junior marksman who records the highest score at the match. Mr. Cross was an avid shooter and was active in developing the interest of youngsters in this sport.

Persons desiring to donate toward the trophy may contact Andy Jackson (7332), tel. 264-4848 or 264-6405.

The MIT Club of New Mexico elected new officers during its annual meeting June 11. Included were Fred I. Magee

(7613), president; George H. Bradley (2113), vice-president; and William R. Perret (5412), regional representative.

T. B. Cook, Jr. (5400) and W. A. Gardner (7300) were elected directors of the Albuquerque Post, American Ordnance Association, during a meeting at Kirtland Officers Club June 10. They will serve two years.

Hold-over officers include Directors R. A. Bice (2000) and W. G. Overbury (2411), and N. J. Eich (1111), first vice-president.

Sandians Receive Advanced Degrees

Degrees were conferred on a large number of Sandia Laboratory employees during the recent commencement exercises at the University of New Mexico and the College of St. Joseph.

Most of these student-employees attended the universities under Sandia's Educational Aids Program.

In addition to those graduates previously mentioned in the *Lab News*, a BS degree in mechanical engineering was awarded Eugene W. Kenderdine (1321) at UNM, and Bachelor of Business Administration degrees from the College of St. Joseph were given Robert R. Bailey (2132), Lloyd E. Barnes (2621), Serafice D. Carrillo (6021), Manuel G. Chavez (4151), and Joseph E. Magruder (4361).

Those receiving Master's degrees are pictured on this page.



E. A. Aronson
5423
Electrical Engineering



B. E. Bader
1541
Mechanical Engineering



D. R. Brown
3152
Business Administration



F. L. Chavez, Jr.
1425
Mechanical Engineering



R. C. Cranfill
2344
Mechanical Engineering



B. R. Emrick
2442
Electrical Engineering



R. L. Ewing
1421
Electrical Engineering



Mary T. Harrison
3133
Guidance & Counseling



D. R. Hinds
2422
Electrical Engineering



J. A. Hood
1433
Electrical Engineering



R. L. Hughen
1521
Electrical Engineering



L. C. Jeffers
7245
Mechanical Engineering



R. M. Jefferson
5332
Business Administration



W. R. Kampfe
7323
Mechanical Engineering



L. J. Keck
7413
Electrical Engineering



P. L. Kirby
3415
Industrial Administration



J. C. Mason
2451
Electrical Engineering



R. G. Meier
2442
Electrical Engineering



D. W. Miko
7435
Electrical Engineering



B. B. Reinman
2452
Electrical Engineering



D. K. Reitzel
2441
Electrical Engineering



C. L. Schuster, II
7212
Electrical Engineering



N. F. Siska
2453
Electrical Engineering



Simon C. Steely
7432
Electrical Engineering



T. F. Steely
7253
Electrical Engineering



P. P. Stirbis
1542
Mechanical Engineering



L. A. Suber, Jr.
1512
Mechanical Engineering



A. M. Torneby
4121
Business Administration



D. C. Wunsch
7245
Electrical Engineering



"There was never a time with a greater technical challenge than today" — R. W. Henderson



49 Employees Complete TDP Program

"The company has made quite an investment in you," R. W. Henderson, Vice President, Weapon Programs, told a group of 49 Technical Development Program students at a luncheon recently. "And we are well satisfied with our investment," he continued.

The men had just completed two years of advanced work at the University of New Mexico. The TDP program emphasizes mathematics, statistics, and modern analytical methods as well as calling for advanced work in mechanical and electrical engineering.

TDP students divide their time between classes at UNM and work assignments at Sandia Laboratory. The '64 class is the third to complete the Technical Development Program. TDP is administered by Personnel Research, Training and Education Department 3130 in cooperation with the University of New Mexico.

Mr. Henderson told the group that Sandia Corporation's technical reputation rested on sound achievement, but that the company could not stand still. "The Department of Defense is looking to us to come forward with ideas," he said, "to insure the nation's fighting power and the continued viability of the stockpile.

"The future of this laboratory rests with you and the men you work with," he said. "There was never a time with a greater technical challenge than today."

Members of the '64 TDP class are: Bobby J. Abel (1532), John C. Bagg, Jr., (1314), Friend K. Bechtel (7252), Samuel C. Berry, Jr. (2541), Dale R. Breeding (7252), Kenneth E. Buitla (1511), George E. Clark (1331), William L. Craver (1542), Johnny L. Duncan (1432), Roger N. Ev-

rett (7422), John A. Finger (7311), Charles M. Greenwood (7432), John R. Guth (2453), Jack W. Hickman (1523), David B. Holt (7413), E. E. Hollingsworth (1333).

Donald D. Isett (7245), Everett L. Johnson (7245), Larry W. Karkela (1533), Kenneth B. Kimball (7245), James G. Kohl (1314), Lester W. Lathrop (1553), Dallas D. Laumbach (7311), Elmer N. Leslie (7253), Larry F. Lind (2421), Royce D. Lindsey (1513), Paul A. Longmire (1443), Denis E. Lowry (1513), Ronald M. Madsen (7434), Nels D. Magnuson (1442), Joseph F. Metrailler (1443).

Jerry D. Moore (7418), Palmer N. Nelson (7246), Gerald A. Nigg (7435), Kazuo Oishi (7334), Frank E. Perusich (7222), Kenneth R. Prestwich (5413), James L. Rea (7254), Raymond E. Rink (1413), Wesley W. Roberts (2561), Ramon S. Satterwhite (1414), David R. Schafer (7214), George H. Schnetzer (1432), Peter S. Schroeder (7223), David G. Skogmo (1433), Ralph E. D. Stewart (1322), Keith R. Treece (2453), Lucien Van Blaricum (7435), and Thomas J. Young (1313).

CONGRATULATIONS, R. W. Henderson, Vice President, Weapon Programs, told 49 graduates of the Technical Development Program at a luncheon at the Coronado Club last week. The TDP students had completed two years of additional study beyond a Bachelor's degree at UNM while performing staff jobs at Sandia Laboratory.



Supervisory Appointments



HOWARD R. SHELTON to supervisor of University Relations Division 3134, Personnel Research, Training and Education Department.

He has been with Sandia more than 11 years and was assigned to the Quality Assurance organization the first seven years. Since joining Department 3130, he has helped set up a technical institute training program and was promoted to supervisor of Technical Training and Education Section 3132-1 in January 1961.

Before coming to Sandia, Howard taught math and science for three years at a junior high school in Austin, Tex.

Howard received his BS in math and Master's degree in administrative education from Southwest Texas State Teachers' College, and completed some work toward a PhD degree at the University of Texas.

He served three years in the Marine Corps during World War II.



EARL H. WILSON to supervisor of Staff Training and Education Division 3131, Personnel Research, Training and Education Department.

Earl has been at Sandia eight years, working the first year as a personnel representative. Since joining Department 3130, he has been in charge of the staff training program, Educational Aids Program, and Technical Development Program. He was promoted to section supervisor in 1957.

Previously, he had been at Montana State College in Bozeman for 10 years serving as Placement Director.

Earl has a Bachelor's degree in psychology from the University of Wisconsin and a Master's in the same field from Washington State College.

He served three years in the Army.

R. G. Luckey New President of New Mexico Sons of Revolution

New president of the New Mexico Society of the Sons of The American Revolution is R. G. Luckey, Comptroller 4100. Second vice president is Llewellyn T. Savage, Jr. (2123), Robert E. Willis (AEC) is treasurer, and James M. Caller (1432) is secretary. H. W. Maglidt (3460) is the retiring president.

Installation of the new officers was part of a program honoring Flag Day held June 14 at the Western Skies Hotel.

Sympathy

To D. L. Hurt (2313) for the death of his father in Casey, Ill., on June 4.

To W. B. Goldrick (7432) for the death of his father in Pendleton, Ind., on June 8.

To Jose B. Jojola (4513) for the death of his brother-in-law in Albuquerque on June 7.

To W. C. Myre (7432) for the death of his father in El Paso, Tex., last week.

To B. G. Duncan (4137) for the death of his father in Oliver Springs, Tenn., on June 11.

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LAB NEWS

JUNE 19, 1964



ALPHONSE R. IACOLETTI to supervisor of Mathematical Computing Services Division 7622, Programming Department.

Al has been at Sandia about 10 years and has worked as both a math analyst and com-

puter programmer. Two years ago he was promoted to supervisor of Programming Section I, 7622-1.

He received his BS degree in mathematics from the University of New Mexico in 1954, and completed work and received his MS degree after coming to work at Sandia.

Al is a member of Kappa Mu Epsilon, math honorary society, and the Association for Computing Machinery.



JOHN E. McDONALD to supervisor of Films and Interfaces Division 1123, Materials and Process Department II.

John came to Sandia three years ago from Purdue University, where he had a part-time teaching fellowship while working toward his doctorate which he received in physical chemistry. He also has a BS in chemistry from Purdue.

While serving four years in the Air Force, John was stationed part of the time at Sandia Base and Kirtland AFB doing work related to the weapons program.

He is a member of the American Chemical Society, American Vacuum Society, Sigma Xi, and Phi Lambda Upsilon, honorary societies.



JOHN E. WESTBROOK to supervisor of Operations Division 7611, Data Center & Operations Department.

Jack has been at Sandia 12 years and was a quality control analyst in the inspection organization before transferring to the computing organization. A year ago, he was promoted to supervisor of 7090 Operations Section I, 7611-1.

His previous experience includes a year as credit manager for B. F. Goodrich in Albuquerque, and five years of operating his own business.

During World War II, Jack served five and a half years in the Army.

He studied economics at the University of Illinois and the University of New Mexico.



HOW TO BUY \$15,852—Have \$37.50 deducted from your paycheck each month to purchase a \$50 E Bond. Keep it up for 17¾ years (E Bonds continue to earn 10 years beyond maturity) and you'll have Bonds worth \$11,175. At this time switch into H bonds, adding enough to round out the total to \$11,500. During the next 10 years, you collect interest twice a year, mailed to your house. After 27¾ years, you own \$11,500 worth of Bonds, you've collected interest checks of \$4352.75, and you've realized a total of \$15,852.75 at a cost of \$8,312.50. All this time you were building your security, Uncle Sam was putting your dollars to work, helping keep the world as free for your golden retirement years as it was during your younger ones.

ECP Contributions Reach \$95,526 Total

Members of the Employees Contribution Plan have given a total of \$95,526 to the United Community Fund and seven other agencies this year. As the May checks—totaling \$14,361—were mailed last week, the following distribution had been made:

	Year to Date	Year to Date
United Community Fund	\$11,704	\$77,190
American Cancer Society	718	4,813
Bernalillo County Heart Association	588	3,996
National Arthritis and Rheumatism Foundation	186	1,249
New Mexico Society for Crippled Children and Adults	531	3,522
National Multiple Sclerosis Society of Bernalillo County	186	1,249
Muscular Dystrophy Association of America	201	1,335
Reserve Fund	143	945
	\$14,361	\$95,526

Detection Satellites Talk Given at Science Seminar For High School Students

George Elliott (3151) spoke recently at the Ohio College of Applied Science sponsored Science Seminar '64. Aimed at interesting high school students in scientific careers, George discussed "Sounds from Space," a review of information telemetry from space craft. He used Sandia's contribution to the twin nuclear burst detection satellites now orbiting as an illustration.

Former Kansans to Meet

Former residents of the State of Kansas will join for a picnic in Bataan Park, July 5 at 1 p.m. Attendees should bring a potluck dinner and table service. Coffee, cokes and prizes will be furnished. The park is on Lomas just west of Carlisle.

Service Awards

15 Year Pins



Virginia Potter
100
June 6, 1949



W. B. Howerton
7215
June 10, 1949

C. S. Cox, Jr.
7223
June 20, 1949



R. L. Hatcher
4221
June 21, 1949

K. L. Wiley
2132
June 22, 1949



W. F. Peay, Jr.
4252
June 23, 1949

K. C. Shinn
2643
June 23, 1949



A. J. Trujillo
4152
June 24, 1949

S. C. Waldorf
4224
June 24, 1949

10 Year Pins

June 19-July 3

James L. Wentz 1113, Richard P. Guilford 1313, C. Raymond Alls 1422, Jimmy B. House 2113, Robert H. Hilltunen 3242, Louis F. Jacot 6010, James L. Griscom 2453.
Richard A. Kavet 1513, Thomas W. Hoover 1543, Arthur Brown 4254, William J. Poole 7252, Alfred D. Vogt 1522, Lillian P. Bowers 4152, Charles V. Ladig, Jr. 4252.
Anthon J. Petersen 7252, Dwayne L. Mozey 1523, L. Eloise Perry 8225, William F. Nielsen III 1425, Charles C. Klutts 2453, Robert F. Utter 3132, Stephen Farrelly 7226.
Morgan L. Kramm 7433, Jack L. Wilson 8122, Charles C. Burks 1532, Glen M. Haines 4224, W. M. Winfrey, Sr. 7221, Keith R. Baltz 7252, and Robert E. Thorne 7612.



C. M. Frantz
2121
June 28, 1949

Charles Crider, Jr.
4232
June 29, 1949

Retiring



Mary S. Williams will retire June 30 after 13 and a half years with Sandia Corporation. All except two of those years have been spent in Personnel Research, Training and Education Department 3130.

Although her future plans aren't definite, Mrs. Williams intends to remain in Albuquerque for the present. She lives at 319 Princeton Dr. SE.

In the past, she has enjoyed painting and hopes to devote more time to that hobby. She has been interested in studying and reading about world religions for the past 10 or 12 years, and hopes to further that study at the University of New Mexico.

"I've also been studying Spanish on KNME-TV and hope to improve so that I can converse with my daughter-in-law, who is from Madrid, Spain," she said. Mrs. Williams has four married children.



A. C. "Toke" Harshman will start his second retirement when he leaves Sandia June 30—he already is retired from the Navy.

He has been with Sandia 13 and a half years as a representative in Employment Division 3151.

Mr. and Mrs. Harshman intend to leave Albuquerque immediately for Europe where they will spend two months touring. They will visit friends and relatives in Paris, then continue to Barcelona and Spain's Costa Brava. They will pass through Rome and down the coast of Yugoslavia en route to Athens where they will board a ship for a week's cruise among the Greek Islands and to Istanbul. Their return route will take them through Austria and Holland.

The couple will continue to reside at 926 11th NW upon their return. Mrs. Harshman is a teacher at the Sandia Base Elementary School.

In addition to traveling and golf, Mr. Harshman says he may work a little in real estate, "but nothing that will keep me busy from 8 a.m. to 5 p.m."

Promotions

Ronald E. Day (3132) to Staff Member-Administrative
Paul E. Benson (4632) to Staff Assistant-Technical
Florenio J. Mora (4575) to Laborer
Jim F. Sanchez (4611) to Stockkeeper
Forney D. Carpenter (4512) to Millwright
Kenneth O. Bloodworth (8214) to Stockkeeper
Billie J. Hensley (8116) to Secretarial Typist
Winford E. Watson (7433) to Staff Associate-Technical
F. K. MacPherson (3421) to Staff Associate-Administrative
Jean P. Naughton (3421) to Staff Associate-Administrative
Cornelius N. Visbeck (4411) to Staff Associate-Designer
Wilbur F. Stearns (1112) to Staff Assistant-Technical
Dalls H. Jensen (1411) to Staff Assistant-Technical
William C. Randolph (4631) to Staff Assistant-Technical
George Yanes, Jr. (8123) to Staff Assistant-Technical
Wayne W. Graving (3465) to Staff Assistant-Administrative
William B. Nelson (4411) to Staff Assistant-Draftsman
Cecil W. Tucker (4411) to Staff Assistant-Draftsman
Amos D. Alire (4512) to Millwright
Glenn M. Haycock (4518) to Millwright
Donna M. Yapple (3126) to Typist Clerk
Mary A. Kruger (3126) to Typist Clerk
Sharon K. Moore (3126) to Typist Clerk
Bertha M. Oliver (4431) to Senior Clerk
Pearl H. Sarthory (4431) to Senior Clerk
Billie A. Hayes (2563) to Data Reduction Clerk
Alfred Montoya (4573) to Transportation Dispatcher
Ernest J. Bennett (8232) to Reproduction Equipment Operator
Le Ora F. Church (8143) to Secretarial Typist
Nancy M. Martin (8212) to Secretarial Typist
Janet L. Dunaway (8212) to Typist
Jacquelin J. Garrett (8121) to Record Clerk
Charles A. Hannes (8232) to Mail Clerk
Janie D. Bailey (8232) to Switchboard Operator
Helen G. Locke (8243) to Travel Clerk
W. G. Sandusky (6000) to Executive Secretary
C. M. Encinias (4518) to Laborer
Larry Wilmer Eden (4573) to Heavy Equipment Operator
Benita J. Gonzales (3126) to Typist Clerk
Beverly D. Conner (3126) to Secretarial Typist
Joseph E. Trujillo (3413) to Message Center Equipment Operator
Luther J. Otero (6021) to Paymaster
Dana J. Drannon (4432) to Laboratory Equipment Operator
Judith L. Thompson (4431) to Service Clerk
Floyd G. Shaw (4432) to Senior Clerk
Ruth D. Derrick (2624) to Senior Clerk
Marcella C. Noble (8232) to Production Release Clerk
Elizabeth A. Walker (8243) to Service Clerk
Clara H. Hewitt (8144) to Data Processing Clerk
Willard H. Farness (4542) to Staff Assistant-Technical
Ponciano Barala (4623) to Material Handler
Dennis R. Benedict (4613) to Stockkeeper
Phillip R. Vouterin (4611) to Stockkeeper
Basil Herrera (4512) to Helper-Trades
Stephen R. Zdunek (4518) to Helper-Trades
Donald R. Giusti (8222) to Utility Operator
Phyllis J. Nagel (4361) to Stenographic Clerk
Alice R. Miner (4432) to Editing Clerk
Jo Ann Aiken (2563) to Data Reduction Clerk
A. Margaret Smith (1442) to Data Reduction Clerk
Lois D. Calkins (1411) to Computer Facility Operator
S. D. Carrillo (2642) to Property Clerk
Seyfred R. Toledo (2641) to Property Clerk
Peter Olguin (4631) to Control Clerk
Benjamin M. Cordova (4573) to Transportation Dispatcher
James R. Bennetts (3465) to Photographic Printer
Carl E. Wersonick (3465) to Photographic Printer
Patsy E. Long (8243) to Steno Clerk
James P. Romero (4413) to Draftsman

E. M. Shonka, who last November marked 35 years of service with Western Electric Co., will retire June 30. He had transferred to Sandia Corporation as manager of Auditing Department 4120 in 1959.



Mr. and Mrs. Shonka already plan a leisurely trip to the East to visit their two daughters and five grandchildren. Upon their return, they hope to move from Tres Pinos Canyon into the city.

"I haven't settled down yet," Mr. Shonka said, "but I'm doing what I want to do." He enjoys writing and admits to having been a police reporter for two years in Lincoln, Neb., "way back when."

"My liking for the back west goes back to World War I when I was stationed near Deming, N. M.," he said.

Ruby Groll will retire June 30 after 13 years at Sandia. She is a photo lithographic composer in Reproduction Division 3462.



Retirement will be a busy period for her. "I have lots of things to do around home," she said as she started listing her special interests: gardening (especially growing flowers), quilting, rug braiding, crocheting, and oil painting.

But Mrs. Groll also intends to learn how to drive, "so I won't have to stay at home." Her home is at 5023 12th NW. One daughter, Mildred Akers (a former Sandia employee), lives next door. Her other two children also live in Albuquerque; Malcolm H. Groll (4151) and Mrs. John Piri (whose husband works at Sandia). Five grandchildren will also enliven the hours.

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Congratulations

Mr. and Mrs. R. S. Ruppert, Jr. (4431), a son, Stanley Dean, Apr. 16.
 Mr. and Mrs. D. K. Reitzel (2441), a daughter, Kevin Elaine, Apr. 18.
 Mr. and Mrs. George Kinoshita (1533), a daughter, Crystal, Apr. 23.
 Mr. and Mrs. Jerry Cole (4252), a son, Allan Glenn, Apr. 25.
 Mr. and Mrs. W. M. Hanks (4413), a son, Joseph Michael, Apr. 26.
 Mr. and Mrs. M. L. Reichenbach (2452), a daughter, Tamara Kay, Apr. 24.
 Mr. and Mrs. J. W. Allen, Jr. (7246), a son, James Lee, Apr. 27.
 Mr. and Mrs. R. W. Seavey (2423), a daughter, Catherine Ann, Apr. 30.
 Mr. and Mrs. H. O. Armijo (4511), a son, Michael Anthony, May 1.
 Mr. and Mrs. G. D. Arnold (4254), a daughter, Jeanne Marie, May 1.
 Mr. and Mrs. J. H. Barnett (1333), a son, Allan Hall, May 24.
 Mr. and Mrs. A. V. McFarland (2625), a daughter, Reva Joy, May 26.
 Mr. and Mrs. J. D. Henderson (4411), a daughter, Debbie Gay, May 30.
 Mr. and Mrs. M. N. Cravens (9130), a daughter, Carol Elizabeth, May 31.
 Mr. and Mrs. Marvin Causey (1542), a daughter, Michele Marie, May 18.
 Mr. and Mrs. S. D. Spray (1533), a daughter, Shelley Denise, May 26.
 Mr. and Mrs. W. R. Drake (7223), a daughter, Amanda Jo, May 31.
 Mr. and Mrs. T. D. Donham (2453), a son, Craig Scott, Apr. 17.

Jeep Herders Promote Recreation, Conservation In Southwest

If you like the thrill of back-country driving, but feel such excitement is more enjoyable shared with others, membership in the Albuquerque Jeep Herders Club, Inc. is for you.

Purposes of the club are: to promote pleasure trips in association with other four-wheel-drive vehicle owners; to help preserve our national forests, wilderness areas, and all outdoor recreational areas; and to cooperate and assist any state and civic organizations in their campaigns to keep highways and recreational areas clean.

The club meets the first and third Wednesday of each month at the clubhouse, located at Bridge and Atrisco Streets SW.

An all-day trip is taken one Sunday each month, with an occasional longer camp-out. A Memorial Day trip this year was made to Clear Creek campground, 11 miles east of Cuba. Arrangements are now being made for a three-day trip over the Fourth of July holiday.

Further information may be obtained from Lois Swayze (4131), home tel. 268-5222, or Jim Palmer (7435), home tel. 344-5342.



BACKWOODS country is always the destination for members of the Albuquerque Jeep Herders Club, Inc.

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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
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

FOR SALE

LARGE 3-BDR., w/b fireplace, on 3/4 acre, S.W. Valley, near schools and shopping centers. Shoemaker, 877-2053.
 LOT, 160' x 154', Cena Roca Subdivision, Lot 2, Block B, North of Western Skies. Davis, 299-8698 after 4:30.
 SCHWINN 10-speed touring bicycle, sell or trade for set of golf clubs. Ferrel, 268-3539 evenings and weekends.
 CHILD'S SWING, heavy construction, 2 swings, ladder, trapeze, \$10. Zimmermann, 255-7955 after 5.
 BASSET PUPPIES, males, AKC registered, excellent papers, champion backgrounds, \$75. Stahner, 299-6897.
 '61 FALCON 2-dr., light blue, low mileage, little cash and take up \$42/mo. payments. Villella, 299-6261 after 4:30.
 '57 VOLVO, new rebuilt engine, \$395. Wilson, 298-0049.
 DINING ROOM SET, solid mahogany, table opens to 120", custom pads, 6 chairs, large buffet, \$125. Anderholm, 299-0482.
 ALL BAND MOSLEY V-4-6 verticals; 1 new in original box, \$25; 1 slightly damaged, electrically sound, easily repaired, \$15. Hughes, 299-7827.
 LARGE 3000 CFM window air conditioner, used one season, speed and air control. Dow, 268-5468 or 268-3243 after 5.
 EICO 40 watt integrated stereo amplifier, has AM, FM, multiplex, tape, and phono inputs, 16, 8, and 4 ohm outputs, \$50. Tassia, 256-3161.
 TYPEWRITER, Remington, office, \$30; feeding table, \$8; bathinette, \$8. Mandell, AX 9-4158.
 MOVIE CAMERA, 8mm Kodak, \$9; .22 bolt action rifle, clip feed; 9 x 11 umbrella tent; sell or trade. Schowers, 255-9279.
 21" PHILCO TV, table model, \$50. Clay, AX 9-1769.
 CLUB CHAIR, overstuffed, T-cushioned, narrow armed, beige colored, \$27.50. Petersen, 299-3941.
 STEREO SPEAKERS, 2 modified Klipsch corner enclosures w/12" coaxial speakers, solid walnut trim, \$120 pair. Stirbis, 299-5363.
 ENCYCLOPEDIA BRITANNICA, JR., \$50; Childcraft, \$50. McKelvey, 256-9787.
 '62 VOLKSWAGEN SEDAN, white w/red interior, 16,000 miles, \$1450. Thorp, 298-6030.
 SW VALLEY-3 bdr., den, 26' LR w/vigas, 2 fireplaces, carpeted, 1 1/2 bath, double carport w/storage, 2000 sq. ft., less than FHA \$18,300. Roth, CH 3-7049.
 2-BDR. HOME w/den 14 x 25 w/fp, completely walled in and landscaped, \$300 down. Vigil, 298-6518.
 UPRIGHT PIANO w/bench, \$175; antique pump organ, \$100. Harper, 299-3820.
 ROLL-AWAY BED, price new \$60, used 6 times, selling price \$35; 20" boy's bicycle, \$15. Scott, 1438 Wellesley NE, 256-0818.

3-BDR, 2 bath home, 6 months old, \$550 down, no qualifying. Galbraith, 299-6037.
 RELOADING DIES, 6.5 x 55 mm, used on only 100 cartridges, \$6. Taylor, AL 6-3774.
 2 R-1 LOTS 60 x 120, Chelwood Pkwy. N.E., paved street, utilities, near Manzano High School, \$2000 ea. Miller, 344-8253 after 5.
 GOLD PROVINCIAL CHAIR, \$25; brown lounge chair w/foot rest, \$25; GE stove, \$75; GE refrigerator, \$75. Noel, 298-2142 after 5.
 MEYER Z52 Zoysia sod, 3c per plug. Zachmann, 299-6871.
 ACCORDIAN, 120 bass, 5 treble shifts, 3 bass shifts, large keyboard, will accept any reasonable offer. Sisson, 299-4217.
 ELEC. STOVE, \$30; ref., \$75; auto. washing machine, \$75; '51 Rambler, \$125. Nash, 298-4910.
 '59 MERCEDES BENZ 220S, below book; canvas, bows for short narrow Chev. PU, \$30, 8 HP outboard, \$75. Pliner, 256-1907.
 '60 VW deluxe w/radio, leaving town, must sell. Abbott, AX 9-9017.
 '64 HONDA, 150 cc, 4500 miles w/windshield and accessories; '62 Honda, 50 cc sport, recently overhauled. Seeley, 298-2402.
 '55 CHEV. 2-dr., R&H, std. tr., orig. owner, \$250. Walston, AM 8-0628 after 5.
 '61 FORD GALAXIE, R&H, wsw, 19,000 miles, one owner. Urquhart, AL 5-8226.
 USED 24" balloon tire girl's bicycle, \$10; used 24" 3-speed girl's bicycle, \$20; used bathroom lavatory w/fittings and legs, \$10. Roberts, AL 5-9527.
 GOLF CLUBS, 4 Wilson staff woods, Haig ultra irons, 2 thru 9 plus pitching wedge, \$160. Blund, 268-4913.
 3-BDR. HOUSE, den, 1 1/2 bath, lots of closets and storage, fireplace, carpet, carport, sprinklers, near Winrock, schools, buses. Welsh, 299-3555.
 HEATHKIT MODEL GR-91 receiver, four bands AM to 30 MC, manual included. Evans, 298-7816.
 NORTH VALLEY, 4-bdr., den 2 fireplaces, carpeted, FHA appraisal \$17,000, \$700 down. Sanchez, 2430 Iris Rd. NW 243-2032.
 ROBERSON 3-bdr., den, 1 1/2 bath, double garage, a/c, all built-ins, sprinklers front and back, FHA appraised. Hare, 1821 June NE, 299-7137.
 POWER LAWNMOWER, rotary, used two years, \$25. Reynolds, 299-5157.
 LADIES GOLF CLUBS, Jackie Pung—Irons 3,4,5,6,7,8,9 and 1,2,3 woods. Michele, 243-5174 after 5.
 '51 CADILLAC 4-dr. Fleetwood, \$225. Trujillo, CH 2-3827.
 '59 VW 1/2-ton pickup w/3/4 bed canvas cover, \$795. Goodman, 344-2954.
 '57 CHEVROLET 4-dr. sedan, std. trans, \$310. Grier, 299-8835.
 INEZ BRICK, by owner, 3-bdr., 1 1/2 bath, large study, large screened porch, 2409 Hendola NE. Hardee, 298-5724.
 COUCH, tan vinyl, bolster back, \$18. Hart, AL 6-2811.
 2-PIECE CORNER SECTIONAL, longest dimensions 5'9" each piece, burnt orange and brown woven upholstery, \$30. Atkisson, 265-4158.
 TWIN BEDS, springs, \$30; vanity and chair, \$25; bunk beds, \$30; chest, drapes, child's furniture, misc; Louise Suggs clubs, \$75. Copeland, AL 5-4688.
 CHEST-TYPE FREEZER, 8 cu. ft. International Harvester, \$45; automatic washer, Westinghouse front loading, \$20. Brownlow, 299-2584 after 5.
 5-YR.-OLD GREY MARE, well trained, 1/2 Arabian and 1/2 Quarter Horse, bred to registered stud, \$235. Drannon, 877-9144.
 POLAROID LAND CAMERA "100" newest model, color and black and white, bought Dec. '63, used 3 times, \$100. Simpson, AX 9-3891 after 5:30.

NEXT DEADLINE FOR SHOPPING CENTER ADS Thursday Noon, June 25

NORTHWEST PAT HURLEY PARK AREA, 3-bdr., dining, den, 2 baths, double garage, carpeting, fireplace, built-ins, dishwasher, a/c, \$1000 under FHA. Johnson, 242-8758.
 GE AUTOMATIC WASHER, cost \$300, sell \$125; Sunbeam electric mower and edger, \$60. Gregory, 256-2718 or 255-1419 after 5.
 LINED DRAPES, modern design, various sizes. Gurule, 344-0130.
 '55 MERCURY 2-dr. V-8, stick, \$125 cash, Wilheim, 637 Mesilla SE, Apt. C, 256-1053.
 NEW Magnovox AM-FM stereo table radio, large cherry wood cabinet, make reasonable offer. Harrison, AL 6-0216.
 '59 MERCEDES, 220S, a/c, wsw tires, R&H. Harshman, CH 3-4369.
 MOSSMAN STARDUST SKIES 3-bdr., den, sell for FHA appraisal and include dishwasher, stove, carpeting, many extras, August occupancy. Mobie, 298-1535.
 26" ENGLISH BICYCLE, \$10. Luna, AX 9-2488.
 INTERNATIONAL SCOUT, PU, '62, 14,000 miles, Warn hubs, \$1400. Nixon, AL 5-4118.
 24" AIRCRAFT construction Streamline trailer, fully self-contained, 4 yrs. old, dual axle. Montgomery, AM 8-2960.
 14" ALUMINUM BOAT w/35HP electric motor, trailer, all accessories; Perfection electric range; metal cabinet base and top. Glover, 298-7302.
 BABY CRIB w/mattress; polyethylene potty chair; 3-bdr, 1 1/2 bath, separate DR, fireplace, built-ins, a/c, walled, sprinklers, landscaped, cash to 4 1/2% loan or new FHA. Karkalik, 299-8769.
 '63 VOLKSWAGEN, black, \$1550. Stang, 255-0693.
 .35 Cal. MARLIN lever action carbine, \$60. Farmer, 1417 Boatright Dr. NE, 299-6007 after 5.
 WHITE ROTARY SEWING MACHINE w/buttonholer and other parts, straight stitch, \$25. Flury, 299-7473.
 AIRPLANE, Taylorcraft, 80 HP, metal prop, 380 SMOH, 1400 TT, new license, always hangered, \$1100 or best offer. Risse, 299-5002 or Lochner, 265-4037.
 BOY'S 24" Schwinn bike, saddlebags and speedometer, \$10. Bild, AL 6-3873.
 LUGER PISTOL w/holster and extra clip, \$45; Colt Frontier 44-40, \$45; Sharps Buffalo rifle, \$100, will trade, want M1 carbine, .45 auto., 30-06 Enfield. Zaluga, 344-1564.
 FEMALE BASSET, 7 months old, AKC registered, \$60. Law, 298-0287.
 2-BDR. HOME, landscaped, walled, attached garage, sell little or no down; new Brothers deluxe zig-zag automatic sewing machine. Brasch, 299-7514.
 CAR COOLER 12-volt, 2-speed, \$17 or trade for comparable 6-volt. Coon, 298-0845.
 BY OWNER, below FHA, 3-bdr., 1 1/2 baths, double garage, fireplace, built-ins, low down. Millard, 299-2039.
 CRAFTSMAN 8" tilting arbor table saw; 4" jointer-planer; 3/4 HP motor, all on steel table, \$65. Bueffel, AX 8-1163.
 .22 AUTOMATIC PISTOL w/holster, \$29; O-gage train set w/2 trains, 2 transformers, \$50; misc. small appliances. Beasley, 298-3398.
 DACHSHUND, w/doghouse, purebred, 4 yrs. old, used to small children, Keck, 344-8719.
 '56 BUICK CONVERT., power, \$400 firm. Haymond, 299-4909.

DOBERMAN PINSCHER, pure bred, \$25. Boyd, 299-4968.
 3-BDR. HOME, 1 1/2 bath, 1475 sq. ft., walled, back, fenced front, sprinklers, landscaping, assume existing mortgage or buy FHA. Post, 298-0481.
 '56 OLDSMOBILE Super 88, 4-dr. Holiday, PB, PS, automatic transmission. Hollis, 299-7209.
 '61 PLYMOUTH station wagon, six, heater, white over blue, new tires. Erwin, 299-2418, a.m.
 COUNTRY LIVING in city, 3/5 acre, horse allowed, 3-bdr. den, 1 1/2 bath, walk to schools, bus, irrigation well, \$18,300. DeHaan, 1851 Calle Los Vecinos NW, 344-4805.
 TRAIL SCOOTER; trailer hitch '59 Chev. \$5. Haines, 299-8683.
 '62 Convertible, Chev. Impala, \$1950, will consider trade; also den furniture. Chandler, 298-5069.
 OPEN HOUSE, small 2-bdr., walking distance university. Blair, 226 Amherst NE.
 NORGE REFRIGERATOR, \$45; Hotpoint Electric pushbutton range, \$65; Kenmore automatic, filter washer, \$35; or will sell all for \$115. Pollett, 298-6534.
 WOOL CARPET, 15' x 12', light green w/pad, used 12 months, best offer. Nokes, 299-8753, after 5.
 HEATH DX-60 transmitter, \$59; Mosley CM-1 receiver, \$95. Hansen, 344-8985.
 500 WATT linear amplifier, all band, \$75. Nagle, 299-3863.
 MAN'S DIAMOND RING, approx. weight 1 1/2 carat, slight color, \$495. Dalesandro, 268-8907 after 4:30.
 MOUNTAIN HOME SANDIA PARK, 4-bdr., big fireplace, paneled living room, 1 1/2 acres, fenced w/barn, \$18,900. Coalson, 298-8074.
 ONE-WHEEL UTILITY TRAILER, \$25, '64 license plates. Timmons, AL 5-5933.
 GOLF BAG, large w/leather trim; car bed; 2 new 8:00 x 15 snow tires; Cadillac wheel. Brooks, 299-1884.
 21" ZENITH CONSOLE TV, blond wood cabinet, \$40. Yngst, AM 8-2896 after 5.
 3-BDR., near schools and shopping, walled, attached garage, \$450 down, FHA \$11,550 total, \$86/mo. Martinez, AX 9-8288.
 SONY TAPE RECORDER #464, records, plays 4-track stereo tapes, retail \$200, sell for \$150. Martinez, 256-1062 after 5.
 ROBERSON 3-BDR. HOME, 3 yrs. old, hw/floors, family room w/fireplace, \$16,900 or make offer. Schultz, 298-2731.
 3HP ROTOTILLER, \$80. Bortniak, 299-8432.
 FREE: 3 female tiger striped tabby cats, 2 black and one gray. Lindsey, 298-0818.
 CHEVROLET PICKUP, reconditioned engine, new paint, trailer hitch, highest offer over \$400 buys. Chavez, AX 8-0674.
 R2 LOT 65 x 135, near base on 200 block Virginia NE, paved, \$45 per foot, \$2925 total. Benischek, AL 6-7869.
 14' ALUMINUM BOAT, trailer, 25HP Johnson motor, \$295; Dejur, turret w/13mm and 36mm lenses, magazine load, 6 speed, fade-o-matic, single frame, \$40. Meire, 298-4698.
 TWO UNUSED kitchen/bar stools w/padded seat and back. Bourgeois, 298-4998.
 BUNK BEDS, \$35; Hi-Fi AM/FM tuner, \$25. Vivian, 299-1785.
 CHAIN LINK FENCE, 130' of 48" fence w/line posts and top rail, make offer. Wardlaw, 298-0613.
 TIJERAS CANYON, 3 acres, large flat area and two rolling hills, 1 mile south of U. S. 66 on N. M. 10, \$5,000. Bailey, 299-1275.
 '61 FALCON, white, R&H, standard transmission, 2-dr., \$825. Mathes, 299-6785.

3-BDR. DEN w/wb/fp, double garage, a/c, carpeting, drapes, many extras, no down payment GI, 9405 Arvada NE. Sander, AX 9-5761.
 TRACTOR FORD 8N w/Wagner front loader and 2 bottom plow, \$995. Patterson, 877-0939.
 MOSSMAN 3-bdr, 1 1/2 bath, double garage, space for den, recently redecorated, new wool carpet, a/c, FA heat. Wheeler, 256-7284.
 4-BDR. HOME, 3000 sq. ft., 3 baths, den, game room, utility, refrigerated air. Porter, 2733 Texas, 299-2788.
 FREE TOMATO PLANTS. Young, 6801 Kiowa NE, 268-9210.
 MUST SELL furnished 3-bdr., 1 1/2 bath home in NE, under FHA appraisal. Workhoven, 282-3246.
 BOAT, Glasspar Lido, 14' fiberglass, Evinrude 40 HP electric starting motor, Gator heavy-duty, tilt type trailer. Rowley, 299-8419.
 DINETTE SET, drop leaf table w/four chairs, \$40 cash. Mantoya, 344-6222.
 FREE: five black kittens, must have new homes by June 25, born May 15, are used to children. Mikkelsen, 268-1485, 3421 Dakota NE.
 PIANO, "upright grand" Behning, \$160. England, 299-0464.
 1936 Chevrolet, heater, motor recently overhauled, \$100. Hirni, 1808 Morris, NE, 299-7061.

WANTED

RIDE or car pool from vicinity of Marron Circle NE to Bldg. 880. Sigman, 298-4813.
 CHILD CARE: will baby sit at my home, any age group. Spurgeon, 11006 Snow Heights Blvd. NE, 299-8489.
 TRADE Colonial walnut china cabinet, glass doors, large drawer space for piano in good condition. Smatana, AX 9-6278, 3336 Belts NE.
 SOMEONE TO SHARE DRIVING and expenses to Akron, Ohio, one-way, departing June 23, between 3:30-4:30. Bonk, 256-3161 after 5:30.
 CHILDREN to care for in your home, NE Heights. Eastman, 282-3648.
 WATER PUMP, self-priming, 40GPM, w/motor, 1 1/2" or larger inlet, is used but in good condition. Jercinovic, 255-8027.
 HOME for male beagle, 3 yrs. old, registered, good w/children. Wilson, 298-0049.
 ONE OR TWO RIDERS in car pool from area bounded by Menaul, Constitution, and Wyoming to Bldg. 802. Willis, 299-3697.
 RIDE or join car pool from vicinity Goff and Bridge SE to or near Bldg. 806 Lucero, 242-6582.
 COPIES of Webster's New Collegiate Dictionary, Second Edition. Meland, 345-0141 after 5.
 JOIN car pool from vicinity of Somervell NE between Northeastern Blvd. and Indian School Rd. to either Gate 7 or 10. Smith, 299-1264.
 HOMES for 3 kittens, housebroken, weaned free delivery. Tatum, 877-0997.

FOR RENT

3-BDR. NE, stove-refrigerator furnished, landscaped, walled, attached garage, near schools and shopping. Curkendall, 298-4738.
 3-BDR. HOUSE, carpet, drapes, near schools, shopping and park, no pets, 1128 Westerfield Dr. NE. Erne, 299-0565.
LOST AND FOUND
 LOST—Small black notebook with "Lab News" imprinted in gold on bottom. Langston, 255-0075.
 LOST: Notebook, wallet, silver ring, cross, carved wood pin, double pearl ring, GM car keys. LOST AND FOUND, tel. 264-2757.
 FOUND: Bifocal glasses, carpenter's folding rule, Sheaffer ballpoint pen. LOST AND FOUND, tel. 264-2757.

Visiting Physicians Breathe 'Cleanest Air in World'

Preliminary testing is complete on Sandia Laboratory's latest experimental clean room.

"You're breathing what we believe is the cleanest air in the world," Willis J. Whitfield told a visiting group of physicians as they recently toured the trailer facility. "Filters stop all particles 3/10ths of a micron or larger. Any loose lint, dust, or bacteria that you brought in with you will be driven straight down through the floor. The air flow, down from the ceiling, moves at 100-ft. per minute. Temperature and humidity can be controlled within one degree and two per cent, respectively."

The new facility was designed to be completely portable and flexible. Three trailer units are joined to provide 400 sq. ft. of laboratory space. The facility, latest in the development of a revolutionary clean room concept, provides an ultra-clean environment for fabrication and assembly of electronic components.

The facility would be ideal for use as a portable operating room, medical authorities believe. Lovelace Clinic personnel have shown a high degree of interest in the facility.

In the past, other laminar airflow clean rooms have been tested as operating rooms. The "dirtiest" areas in the laminar airflow rooms contained less bacteria than the best of conventional operating rooms.

The new trailer facility differs from previous clean rooms in the filter arrangement. Other rooms have utilized a "cross-flow" of air. The filter banks were located in one wall of the room and the air flow emptied into floor gratings. In the new facility, the air flow is projected evenly through filters located in the entire ceiling area. The flow is straight down through the floor. Loose particles do not drift in any direction in their forced

WILLIS WHITFIELD demonstrates "down-flow" of the air inside Sandia's newest clean room facility. Ordinarily, smoke created by the smoke generator would float up and disperse throughout a room. Inside the clean room, smoke is rapidly forced straight downward by the 100 ft. per minute air flow from the ceiling to the floor.

journey out of the room.

The new facility has operated as long as two hours without a single particle being detected in the air flow.

"Most bacteria average one micron in size," Willis says. "Some bacteria are as small as 5 or 6/10ths of a micron but our filters stop them. It helps too, that bacteria tend to 'ride' larger particles. At the moment, this trailer provides the most sterile air flow that can be obtained. No available instruments can detect particles less than 3/10ths of a micron in size."

The facility uses nothing new in the way of special devices. Readily available material and components were used in its fabrication. One innovation developed by Advanced Manufacturing Development Division 2564 was a method of leak testing the filters. Filters that do not meet the "absolute" requirements can be detected and replaced.

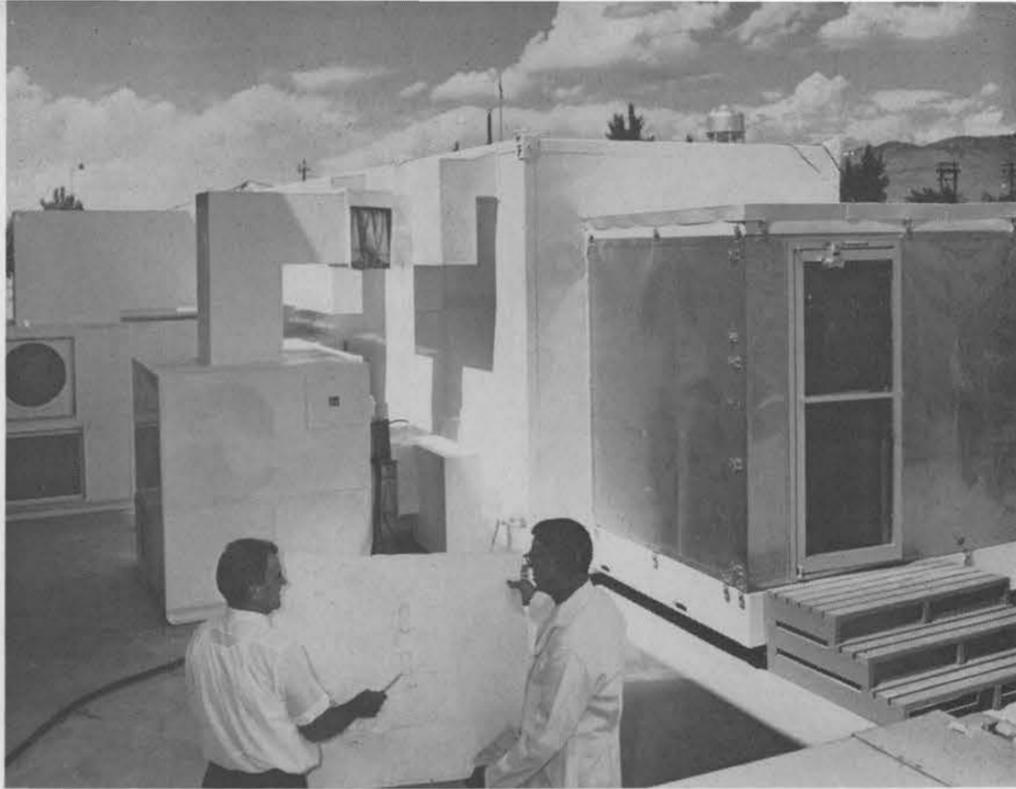
Since the AEC filed for the patent on Mr. Whitfield's laminar flow clean room in 1960, a new industry has come into being to meet the demand for laminar-flow clean rooms, work stations, and portable units. About 30 manufacturers are active in supplying laminar-flow equipment. Thousands of clean work stations have been installed throughout industry and government facilities. Even while Sandia's prototype down-flow trailer was undergoing evaluation, a number of large-scale down-flow clean rooms, up to 19,000 sq. ft. in one instance, were being designed and built on the basis of preliminary information from Sandia.

As electronic devices become smaller and smaller, it is critical that all "contamination" be kept out of fabrication areas. The tiniest of foreign particles could ruin some microcircuitry.

Clean rooms are particularly a necessity for space projects. Before a planetary probe lands on another planet, it will be completely sterilized.

Sandia's new clean room could provide a sterile atmosphere for assembly and storage.

At the moment there is no cleaner working place on earth than a laminar flow clean room.



PORTABLE CLEAN ROOM is fabricated from three trailer units. Conventional components make up the air moving equipment. Willis Whitfield, left, discusses arrangement with James C. Mashburn (both 2564).

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INSIDE NEW CLEAN ROOM is 400 sq. ft. of the cleanest work area in the world. Air flow from the ceiling is filtered so that all particles 3/10ths of a micron or larger are stopped. Air flows out grating in floor carrying away all loose particles brought into room. The facility has operated for as long as two hours without a single particle being detected in the air flow. William C. Neitzel, left, and L. C. Trujillo perform typical clean room fabrication tasks in the facility as part of the Division 2564 evaluation program.

Sandia Speakers

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

H. R. Holmes (1121), "Determination of the Thermoelastic Coefficient of Metallic Diaphragm Materials," 67th Annual Meeting of the American Society for Testing and Materials, June 21-26, Chicago, Ill.

K. J. Touryan (7131), "A Hypersonic Plasma Power Generator," American Institute of Aeronautics and Astronautics Annual Meeting, June 29-July 2, Washington, D. C.

D. E. Fossum (2412), "Recommended Practices for the Standardization of Precision Coaxial Connectors," Conference on Precision Electromagnetic Measurements, June 23-25, Boulder, Colo.

R. L. Schwoebel (5152), "The Condensation of Gold on Gold Single Crystals," International Conference on the Physics and Chemistry of Solid Surfaces, June 21-26, Providence, R. I.

Sandia's Safety Record

Sandia Laboratory
HAS WORKED
1,715,000 MAN HOURS
OR 49 DAYS
WITHOUT A
DISABLING INJURY

Livermore Laboratory
HAS WORKED
68,450 MAN HOURS
OR 13 DAYS
WITHOUT A
DISABLING INJURY

