



Message From AEC Chairman

Glenn T. Seaborg

To S. P. Schwartz, President, Sandia Corporation, Albuquerque, New Mexico

At this time, following the initiation of the atmospheric test series on April 25, I wish to express on behalf of the Commissioners, General Manager and Director, Division of Military Application, our appreciation and gratitude for the competence and diligence demonstrated by you, your staff, and other Laboratory personnel in making the necessary preparations for the test series. I recognize that this has been a most difficult task, aggravated by the short time available for preparations and the realization from the beginning that there was a chance that your efforts might never realize fruition.

It is because of the technical competence, ingenuity, perseverance and hard work of scientists, technicians and support personnel at the weapons laboratories that we enjoy our present advanced security. I am sure that you share to our national expectation that the results of the current tests will provide a significant advance in our nuclear weapons technology.

I wish for every success in the execution of the test series and again express my sincere appreciation for your efforts in making possible within a few months another meaningful, balanced and progressive test program.

Glenn T. Seaborg, Chairman
U. S. Atomic Energy Commission

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OFFICERS attending meeting of Region VIII, American Society of Mechanical Engineers, held May 2-3, included (l to r) E. H. Draper, Sandia Corporation Vice President, Development and vice president, Region VIII; J. W. McKiernan (7147), secretary, Region VIII; C. H. Shumaker, national president-elect, American Society of Mechanical Engineers; and O. B. Schier, national secretary.

Sandia Field Rep in New York Area Nominated for 1962 Statistics Award

George Cosden of the New York Area (2341-1) field inspection office has been nominated for the American Statistical Association Award for 1962.

The award is given to the student at Hofstra College, Hempstead, N. Y., who has an A average in two or more Statistics classes,

and the highest over-all college average. The honor includes cash and an honorary membership in the American Statistical Association for a year.

George has been with Sandia Corporation since January 1955 and attends Hofstra as a part-time student.

Manned Space Flight Discussed By Institute of Aerospace Sciences

William N. Caudle (7131) chairman for the New Mexico Section of the Institute of Aerospace Sciences, attended the ISA Central Regional Advisory meeting in St. Louis, Mo., recently.

The meeting was followed Apr. 30-May 2 by the national meeting on Manned Space Flight, conducted jointly by IAS and the Na-

tional Aeronautics and Space Administration.

Presentations were made by astronaut John Glenn, Gen. Bernard Shriever, Commander of Air Force Systems Command, and Robert R. Gilruth, Director of the Manned Spacecraft Center for NASA.

There were general discussions on all of the manned space flight programs (current and future) and up-to-date reports on Project Mercury; spacecraft design; crew safety; flight simulation, guidance and control; environmental control systems; and launch vehicle technology. The primary was a discussion pertaining to the development of very large boosters with thrust levels up to 8,000,000 lbs.

E. G. Franzak Article To Be in 'Physical Review'

Physical Review will include an article by E. G. Franzak (5152) in the issue of June 15.

Entitled "Multi-Phonon Processes Occurring in First Order Perturbation Theory," the technical article is based upon Mr. Franzak's doctoral thesis while at Northwestern University and material added after his employment at Sandia last July.

Sandia Speakers Active Presenting Several Technical Papers, Talks

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

L. W. Rook (1443-2), "A Method for Incorporation of Human Error in System Analysis," Ninth Military Operations Research Symposium, Fort Monroe, Va., Apr. 24-25.

ASME Administrative Committee Meeting Held in Albuquerque

E. H. Draper, Sandia Corporation Vice President - Development, presided at an annual regional administrative committee meeting hosted by the New Mexico section of the Region VIII American Society of Mechanical Engineers. The meeting was held May 2-3 at the Western Skies Hotel.

Mr. Draper is vice president of ASME Region VIII, which includes Idaho, Montana, Utah, Wyoming, Colorado, and the western counties of Texas. Secretary of Region VIII is J. W. McKiernan (7147). Chairman of the New Mexico section is Don Williams, Jr. (7311), and A. J. Clark, Jr. (7125) is chair and A of the regional administrative committee. Arrangements for the meeting were made by W. A. Adams (7125-2), H. E. Schildknecht (1331-2), E. K. Gardner (3451-2), and Don Spatz (7145-1).

The current ASME national president, William H. Byrne, attended the meeting. Featured speaker at a banquet at the Coronado Club May 2 was Professor C. H. Shumaker of Southern Methodist University, who is the national ASME president-elect. He discussed "The Role of the ASME in an Era of Expanding Technology."



RECENT VISITOR to Sandia Laboratory was Representative W. B. Widnall (R) of New Jersey (center), a member of the Joint Congressional Committee on Defense Production, who toured Areas I and III and the Weapons Museum on Apr.

27. He is flanked by (l to r) R. W. Henderson, Vice President, Weapon Programs; S. P. Schwartz, President; K. F. Hertford, Manager, Albuquerque Operations Office, AEC; and W. L. Hancock, Manager, Sandia Area Office of Albuquerque Operations.

Dorris M. Hankins (5112), "Observations from Some Gnome Seismograms," Seismological Society of America, University of Southern California, Los Angeles, Calif., Apr. 16.

W. J. Whitfield (2564-2), "Industrial Clean Rooms," Naval Reserve Unit, Albuquerque, May 16.

Editorial

What's New in Business

Not all events in the business and industrial world today are earthshaking. But news does emanate steadily from the work-a-day routine of the free enterprise system. Here are a few items which could be classified as miscellaneous — but indicative that these are days of change and progress.

A latter-day gold rush may be ahead for Nome, famed Alaskan mining camp of '98. Prospectors have filed claims for 32,318 acres in the shallows of Norton Sound . . . The American Bankers Association says home buyers shouldn't buy a house costing more than 2½ times their annual income before taxes . . . Fatalities resulting from fire in the nation last year totaled 117,000 (for your calendar: Fire Prevention Week will be observed Oct. 7-13) . . . The idea of using auto seat belts must be catching on. One automobile manufacturer reported that belt installments are up more than 200 per cent over last year.

There are more than three million U. S. and more than four million foreign patents on file in the U. S. Patent Office in Washington . . . A U. S. child born today probably will never see a steam locomotive highballing down the track. A decade ago, 21,200 steam locomotives were in business. Now the big lines own less than 80 . . . Spacemen would need only six hours of sleep per day, according to a recent study performed by Air Force scientists.



OFFICIAL TRAVEL ORDERS for a year's study in Brazil under a Fulbright scholarship are happily checked by Pam Dempsey (4623) and her parents Jack (4153) and Dorothy (3462). Pam will leave for the University of Bahia sometime around mid-July.

'Pam' Dempsey Awarded Fulbright Scholarship to University in Brazil

From Sandia's Receiving Division to the University of Bahia in Brazil seems like a long jump. Pamela Dempsey will make that change in mid-July.

"Pam" has been awarded a Fulbright scholarship to study Brazilian literature for a year. She graduated last June from the University of New Mexico with a major in Latin American studies. While at the University she studied Portuguese, which will be indispensable in Brazil.

Before leaving this country, Pam will spend several days in Washington attending briefings by representatives of the Institute of International Education. They will be followed by two weeks of orientation in Rio de Janeiro before going on to Bahia, Brazil's fourth largest city. The University is one of the oldest in the country.

Pam has been at Sandia since last June and is presently assigned to Division 4623. She is the daughter of Dorothy (3462) and John T. Dempsey (4153). The Dempseys also have a 16-year-old son.

Welcome Newcomers

Apr. 23-May 4

- Albuquerque
- Carole A. Barnfield 4333
- Bonita I. Bryant 3421
- Linda M. Bureau 3126
- David B. Davis 3444
- Olive B. Grimes 3452
- Henry L. Hall 4314
- *James E. Hare 3126
- Barbara B. Harvi 3441
- Ada E. Kozlowski 3126
- Rosanna C. McClellan 3126
- Nita R. Ward 4113
- William M. Whalen 3126
- Betty J. Worley 4333
- Patricia Z. Zazzara 4333
- Illinois
- Robert F. Rieden, Chicago 1314
- S. Joanne Myers 2446
- Myna S. Shinn 3641
- LaRae Y. Smith 4613

Seeking Students Who Qualify As Polio Pioneers

Many Corporation employees have celebrities in their families. These modest teen-age heroes are the Polio Pioneers, who underwent tests of the Salk polio vaccine when they were in third grade, and proved that the serum was effective. At that time they received a little card and pin attesting that they had participated in the nation-wide program, which was conducted in some 200 cities, but no record is available in Albuquerque of just who those youngsters were.

Readers of the Lab News are asked to urge their sophomore-age youngsters to register at their high school in the student activities office, if they are Polio Pioneers. Bulletin Board notices have been posted in all high schools. A Bernalillo County chapter of the organization is being formed and a mass meeting will be held Saturday, May 19, to launch the club. Mrs. F. F. Eichert, whose husband is manager of Design Definition Dept. 4410, is coordinating the activity, as chairman of the Youth Activities committee of the Salk Institute Building Fund drive. Chairman of the Bernalillo County campaign is T. B. Sherwin (3431). The young people are planning to take part in the fund drive next month.

Sympathy

To R. W. McConkie (2441) for the death of his father in Las Cruces, N. M., Apr. 21.

To William J. Smith (4574) for the death of his brother in Mangum, Okla., May 1.

To Vern N. Sowards (4253-2) for the death of his father-in-law in Los Lunas, Apr. 26.

To Kenneth W. Butler (4253-3) for the death of his brother-in-law in Hartford, Conn., Apr. 14.

Names of Sandia Employees to Appear On November Ballot

In the primary elections held May 8, a number of Sandia employees sought nomination to state and county offices. Three sought nomination as State Representatives; three others were seeking nomination to the County Commission; one was filing for the post of school superintendent. Sandia employee primary winners are as follows:

A. H. "John" Archuleta (2643), Democrat, won the race to have his name appear on the November ballot as candidate for Bernalillo County Commission.

William A. Gardner (3424), Republican candidate for State Representative, Position 1, was nominated without opposition.

Charles J. Mauck (7214) won nomination as candidate for school superintendent on the Republican ticket.

John P. Mitchell, Jr. (3121), Republican, won nomination as State Representative, Position 5.



Judith Jones (3126/1414)

Take a Memo, Please

The underlying cause of many mishaps is the improper use of tools and methods. Accidents love broken safety rules.

Sandian's Father Celebrates 100th Birthday With All 13 Children

On Apr. 21, Mark A. Martegane of Patrol Division 3242 attended the 100th-birthday celebration of his father in Rockford, Ill.

"It was the first time my father had seen his 13 children together," Mark explained. "The oldest child had left home in Italy before the youngest was born."

Mr. Martegani—the name has since been anglicized—was born Apr. 25, 1862 in Gallarate, a suburb of Milan. He fought with the Italian army in Africa from 1880-1884. From 1884-1890, he managed a coffee plantation in Buenos Aires. Then he came to America.

"He settled in Rockford, Ill., and he's been there ever since," Mark explained. "He became a bricklayer, and he's outlasted some of the buildings he worked on in Rockford. He's very proud of his excellent health and the fact that he required a doctor's

Congratulations

Mr. and Mrs. R. A. Hayenga (2441) a son, Kirk Irwin, on Apr. 16.

Mr. and Mrs. Larry Verzi (2642), an adopted daughter, Michelle Marie, born Apr. 16.

Mr. and Mrs. Jerry Donaldson (2441), a daughter, Sandra Kay, on Apr. 30.



REPLICA of award presented each member of the New Mexico-West Texas Army Reserve Rifle Team, which recently won top honors at Fort Hood, Tex., is displayed by Security Sgt. J. S. Hinson (3242-5). He is also holder of other marksman awards.

J. S. Hinson Adds More Trophies to Already Impressive Award Collection

Security Sgt. James S. Hinson (3242-5) returned from rifle matches in Fort Hood, Tex., recently with more marksmanship trophies to attest to his steady hand and sharp eye.

Jim was one of the six firing members of the New Mexico-West Texas Army Reserve Rifle Team which won first place as a team in competition with similar groups from within the five states

which comprise the Fourth Army area.

The team placed second in the rapid-fire match. In the slow-fire match the team came in third.

The winning team was coached this year by D. M. Ellett (7182-1).

Jim has been shooting for about 20 years and has participated in military team competition since 1957.

Although he has 27 trophies, Jim is proudest of a knife and three silver spoons which were his awards for placing third in the Navy Cup match, 11th in the Marine Corps Cup match, fourth in the Wimbledon match, and sixth in the Leech Cup match—all national competition. The M-1 rifle is used in all meets.

Jim will be shooting next on the Fourth Army Team at Camp Perry, O., on Aug. 6.

J. D. Anderson Dies After Short Illness

James D. Anderson, a machinist in Millwright and Machine Service Division 4512, died Apr. 24 after a short illness. He was 55.

Mr. Anderson had been a resident of Albuquerque for 17 years and had worked for Sandia Corporation for 11 years.

Survivors include his widow, a niece and nephew in Albuquerque, and a sister in Clovis.



Christmas-Time Spirit Extended Throughout Year by Sandians

Christmas in May sounds strange, but many members of Design Services Organization 4400 feel that charitable acts usually associated with the holiday season should be extended throughout the year.

In December a group of Sandians in 4400 "adopted" a mother and her three daughters. Frances Schaeffer, Alice Preist, and Leroy Hassebrook (all 4423) helped gather the canned goods, clothing and money to be delivered to the family. The canned goods and staples lasted until mid-March. At that time the Sandians found the family was still in need of assistance, so they started another collection.

At Easter the family received more food and clothing and money to be used to purchase shoes.

The collection boxes are being left in the various offices and there probably will be another delivery of needed items before school begins in the Fall.

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W. C. Scrivner Named to Post In UCF Drive

W. C. Scrivner, Personnel Director (3100), has been appointed to head the Schools, Colleges and Hospitals Section for the 1962 United Community Fund campaign in Albuquerque. The announcement was made by F. C. Childs, 1962 campaign vice chairman in charge of Soliciting Division No. II.

Mr. Scrivner had the responsibility last year for the Schools-Colleges Section which attained 110.7% of its goal. In this year's campaign, hospitals have been added to his section.

When asked to commit on this fall's campaign, Mr. Scrivner said, "Albuquerqueans have contributed more each year, but not enough to meet the ever increasing need. We've fallen short of our realistic goals for the past four years. Other cities have topped their goals consistently and I have no doubts that Albuquerque can do it too in '62."

Born in Tatum, N. Mex., he grew up in the state, and was graduated from the University of New Mexico in 1944 with a degree in Civil Engineering.

From 1944 to 1947 he was a research assistant at the New Mexico Institute of Mining and Technology. During this period he served for five months as an associate professor of mathematics at the University of New Mexico.

He joined Sandia Laboratory in 1947 as an assistant engineer and became a supervisor in 1950. From 1957 through June 1959 he was Manager of Product Development at Sandia's Livermore Laboratory in Livermore, Calif. In July 1959 he was named Director of Inspection for Sandia Laboratory, Albuquerque. He assumed his present position Feb. 1, 1961.

He is a member of New Mexico Society of Professional Engineers.

Supervisory Appointments

BRUCE H. VAN DOMELEN to supervisor of Metallurgical Development Section 1121-1, Metallurgy Division.



Bruce has been working in Microcircuitry Section 7223-1 since he came to Sandia

in August 1960.

Previously he received his PhD and MA degrees in physics from the University of Wisconsin, and a BA degree from Kalamazoo College.

While at the University of Wisconsin Bruce was a teaching assistant for two years and a research assistant the remainder of the time.

He is a member of Sigma Xi, research honorary.

RALPH E. HAMPY to supervisor of Thin Film Components Section 1432-3, Electronic Components Division.



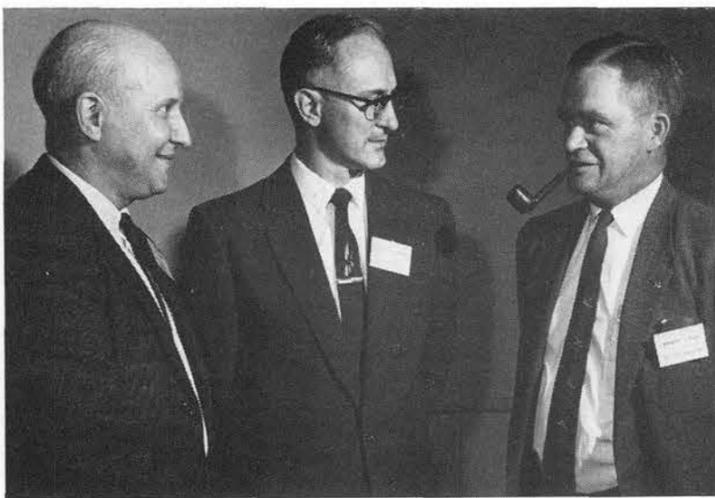
Ralph came to Sandia in June 1953, left in September 1960, and returned a year and a half later.

He has been assigned to the same organization through the years and previously served as supervisor of Section 1432-3 for two years although it since has changed function.

During the time he was away from Sandia Lab, Ralph worked as a project engineer for Curtiss Wright Corporation in Albuquerque and as a project chief for Consolidated Systems Corporation in Monrovia, Calif.

Ralph received his BS degree in electrical engineering from the University of Colorado and has done some graduate work at the University of New Mexico. He is a member of the IRE.

During World War II, he served two years in the Army.



NOMINATED FOR OFFICES of the local chapter of the American Ordnance Association, (1 to r) **L. R. Ordinance** (4330), director; **K. G. Overbury** (2411), president; and **N. J. Elch** (1111), 2nd vice president, discuss organization of the Association. Members will vote for new Association officers at a meeting to be held May 16.

Optical Systems Work Group Holds Seminar at Tonopah

Tonopah Test Range (Nev.) has been the scene of several important tours during the past several weeks.

These tours were conducted to familiarize Sandia personnel, as well as personnel from outside agencies, as to the purpose and capabilities of the Test Range in view of the present and future programs. The majority of the visitors are surprised at the scope of the Range.

Sandia Corporation sponsored a three-day seminar at Tonopah in early April for the Optical Systems Working Group. This committee includes representatives of test ranges located in all parts of the United States. One day of the seminar was devoted to a tour of the Range conducted by R. N. Browne (7224). The committee was able to observe optical instrumentation developed by Sandia Corporation in actual test operations.

Those attending this seminar included representatives from Naval Ordnance Test Station, Pt. Mugu, White Sands Missile Range, Edwards AFB, Ft. Huachuca, Pan

American Airways (Patrick AFB), National Aeronautics and Space Administration, Space Technology Laboratories, Holloman AFB, Defense Atomic Support Agency, Air Proving Ground, Vitro Labs, Air Photo Charting Service, and U.S. Naval Underwater Ordnance Center.

George Randle (7122) on Apr. 18 conducted a tour of Sandians together with military personnel from Naval Weapons Evaluation Force and DASA. During the tour a weapon drop was observed. Two of the spectators were Navy pilots who have often seen the range from the air during operations but never before from the ground.

Five Parking Lots Around Tech Area I Will Receive Paving

The Atomic Energy Commission invited bids last week to pave five parking areas around Sandia Laboratory Tech Area I. Paving for about 830 vehicles will be provided in the project.

The areas are located west of Bldg. 806 and north of Bldg. 610, two lots west of Main St. between G and I sts., south of Bldgs. 882

and 883, and east of Bldg. 887 north of K St.

Bids are scheduled to be opened May 25. Work is to be completed within 90 days after the contractor receives notice to proceed from the AEC.

Plant Engineering Department project engineer is R. G. Piper (4543-3).

"Calculation of Atmospheric Refraction of Sonic Boom Waves" by J. W. Reed (5114), *Aerospace Engineering*, March 1962; "Calibration of Leak Standards by Constant Pressure-Change in Volume Techniques" by M. K. Laufer (2411), *Proceedings of the American Vacuum Society*; "Direct Identification of X-Ray Spectra" by E. J. Graeber (1122), *Applied Spectroscopy*, March 1962; "Fall of Small Particles through the Upper Atmosphere; Air Analytic Treatment" by K. D. Granzow (5152), *The Physics of Fluids*, February 1962.

"A Low Temperature Filtration Device and Method for the Purification of Crude Nitrogen Trifluoride" by C. W. Schoenfelder (8115), *Journal of Scientific Instruments*, February 1962; "Low Temperature Length Change Measurements of Electron Irradiated Germanium and Silicon" by F. L. Vook (5314), *The Physical Review*, Feb. 1, 1962.

"Nuclear Magnetic Relaxation in the Presence of Paramagnetic Ions" by J. S. Dohnanyi (5132), *The Physical Review*, Mar. 15, 1962; "A Phase Diagram Study of the System Ammonium Perchlorate" by A. G. Whittaker and D. C. Barham (both 5151), *The Journal of Physical Chemistry*, February 1962.

"Production Leak Testing of Large Pressure Vessels" by J. G.

King (2564), *Proceedings of the American Vacuum Society*, October 1961; "Removal of the Log Factor in the Asymptotic Estimates of Polygonal Membrane Eigenvalues" by P. B. Bailey (5421) and F. H. Brownell, University of Washington, *Journal of Mathematical Analysis and Applications*, January 1962; "Revolution in Training: Programmed Instructions in Industry" by R. F. Utter (3132), *AMA Management Report Series*, March 1962.

"A Procedure for Scheduling Supplier Surveys" by D. L. Field (7513), *Industrial Distribution*, February 1962; and "A Technique for Studying Piezoelectricity Under Transient High Stress Conditions" by R. A. Graham (5133), *The Review of Scientific Instruments*, December 1961.

"Magnetic Susceptibility of the Cubic Sodium Tungsten Bronzes" by Duane Wallace (5150), John Greiner and Howard Shanks (both of the Institute for Atomic Research, Iowa State University), *Journal of Chemical Physics*, February 1962.

"Integrating the Quality Control Contribution in Research and Development Operations" by L. E. Snodgrass (2561), *Industrial Quality Control*, May 1962.

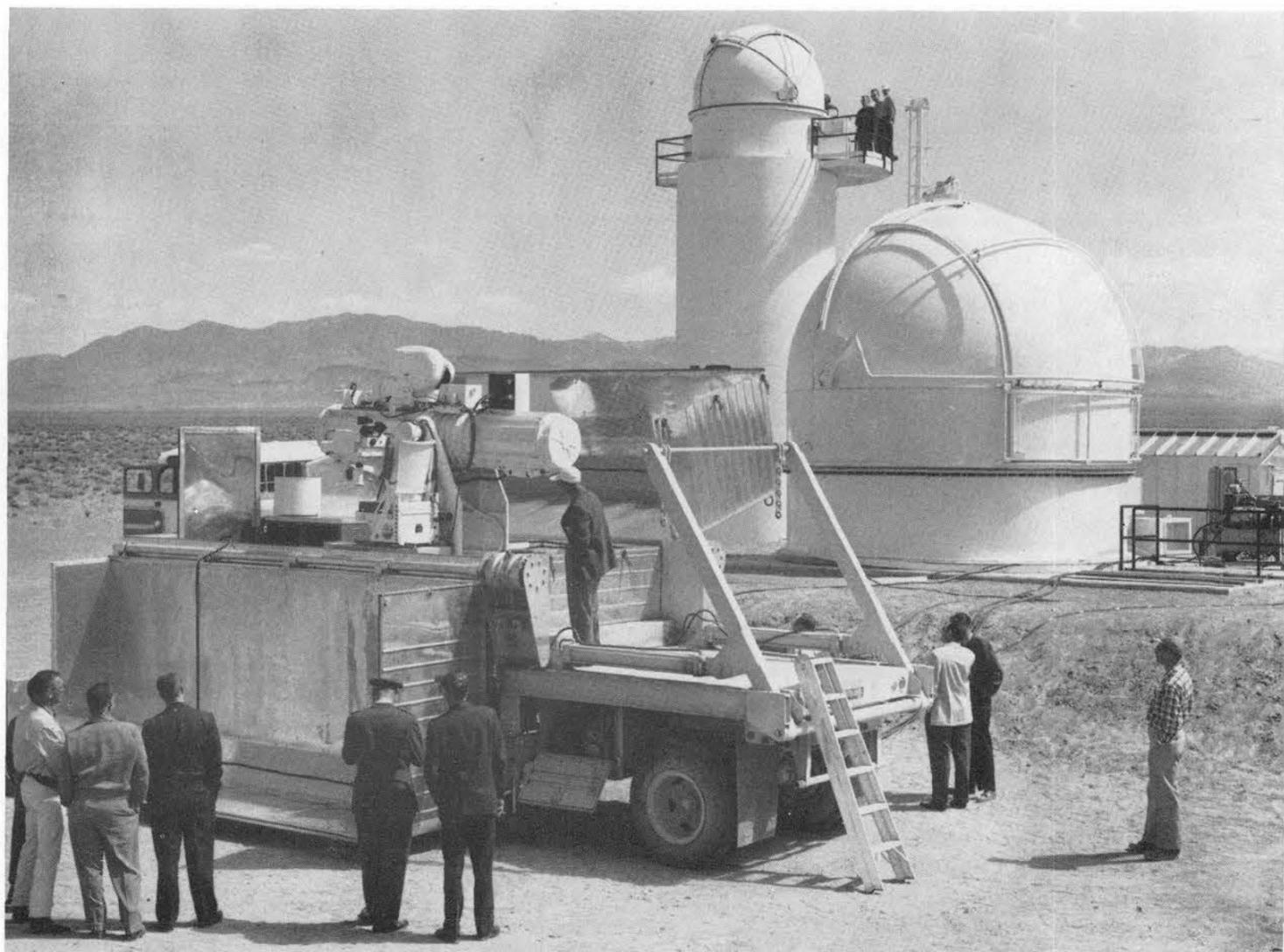
Patent Granted AEC For Voltage Regulator Work of Former Sandians

A patent for a voltage regulator has been assigned to the Atomic Energy Commission in the name of Robert L. von Eschen and Paul F. Scheele, former Sandians. Work on the regulator was carried out while the men were assigned to Division 5232, now part of Nuclear Test Department 7250.

The device is a transistor series voltage regulator for providing a regulated output voltage from an unregulated input voltage.

Mr. von Eschen was at Sandia Laboratory from April 1956-60; Mr. Scheele was with the Corporation from July 1952 to April 1959.

The patent is number 3,031,608, filed July 28, 1958.



OPTICAL SYSTEMS WORKING GROUP, comprised of representatives of test ranges across the country, saw ME-16 telescope trailer with protective cover, ME-16 telescope dome, and Contraves theo-

dolite camera during recent tour of Tonopah Test Range. The ME-16 telescope camera combines one of world's finest optical features to provide sharp colored pictures of distant airborne events.

4100 Organization Aids Sandia Corporation Scientific Achievement



IN-PLANT INVENTORY of photographic lenses used by Technical Photography Section 7244-1 is completed by Walter Schmedt, left, and Joe Costales, Jr. Both are personnel of Plant Accounting Division 4153, whose duty is to account for all equipment, buildings, and service systems at Sandia Lab.



28ASR TELETYPERS are used to transmit purchase requisition data to purchasing organizations through the medium of paper tape. Wanda Cupp and Glenna Mosely, foreground and left, operate Teletype transmitters while Juanita Van Jelgerhuis, center, examines a reply at Teletype receiver.



RESULTS of 1401 computer's preparation of M3695, open commitments report, are checked by Lois Payne of Tabulating Division 4132. Report deals with Sandia's commitments to suppliers, and contains forecasts, requisitions, and method of payments.

Another in the series of articles describing work of Sandia Corporation's general organizations appears here. It is hoped that these non-technical explanations will help all employees better understand the task undertaken by the Corporation. This article concerns the organization headed by R. G. Luckey, Comptroller, 4100.

In a sense 4100, the organization of Comptroller R. G. Luckey, is a coordinating organization in that procedures must be devised that are not only Corporation oriented but cognizant of the needs of the organizations primarily concerned.

It is the purpose of 4100 to help Sandia to operate efficiently with a minimum of regulations. However, there are certain controls needed. For example, after a budget is established for the Corporation, 4100 implements the tools that measure the Corporation per-

formance by issuing the necessary control reports to Management.

Another major area in 4100 involves the paying of Corporation bills, the handling of the payroll, and the recording of transactions of a financial nature for both Sandia and Livermore Laboratories. These tasks are accomplished, along with many others, with a high degree of skill, speed, and accuracy.

Organization 4100 is also involved in the development and implementation of engineering, operations, administrative, personnel, and accounting methods.

Accuracy is a commodity which is vital to the assurance that the Corporation's business activities move forward smoothly and meaningfully. Everyone in the organization makes accuracy his concern. Furthermore, in order to guarantee not only its own but other organizations' compliance with procedures, 4100 has an internal auditing function which coordinates performance. This latter organization also audits Sandia's suppliers as well as making surveys of their accounting systems.

To sum up, Bob Luckey says, "We are interested in all phases of the business side of the Laboratories and in being guardian of their finances."

Budget Planning

Budget Department 4170, managed by Bob Blount, is a coordinating organization. Broadly stated, the budget is a plan for future operations stated in words and

measured in dollars. It is used for requesting funds from the AEC and as a yardstick to measure performance against our internal reporting. "Responsibility for preparing basic budget data and, more important, for accomplishing budgeted goals within approved monetary limits, belongs to the operating organizations," Mr. Blount emphasizes. Putting the budget together is one of the basic tasks of Department 4170.

Once established, a second task comes into being, that of furnishing current information covering each department's progress toward its budget. Adherence to the budget enables Sandia to accomplish its work within set monetary limits. As a vital management tool, it sets up a system for all organizations to plan and control their functions in accordance with a predetermined set of goals. Department 4170 works with other areas in 4100 to furnish control information and analyses in helping to see that the plan is followed.

Homer Pierce (4171) and Carl Ashby (4173) head up divisions responsible for coordinating the budgeting of technical organizations. Burl Duncan (4172-1) coordinates the administrative organizations and summarizes budget data for management and AEC use.

There are other qualities and attributes that are the concern of the various working teams of Organization 4100. The personnel of Business Methods Department 4110, under the guidance of Jim Hook, must call on imagination, foresight, and ingenuity in accomplishing their task. This includes investigation of current business practices and incorporation of the results of such investigation in development of new, comprehensive, efficient ways of doing things. An

important objective of these systems and procedures studies is, of course, to work closely with line organizations to help increase Sandia Corporation's operating efficiency and reduce operating costs.

One study developed a mechanized process for issuing purchase requisitions and orders. Another presently being implemented is involved with the engineers using 35mm film inserted in "windows" in tabulating cards at film bank locations in lieu of the current practice of distributing prints.

Systems and Procedures

Business Methods is working on other systems studies which may result in modification of policies regarding several business procedures. Handling Sandia Corporation's mail is continuing to be studied with an eye toward further modification for increased efficiency. A study of channels of communication within the Corporation is also being carried on, as is development of an expanded and more flexible system of general ledger accounts.

"Systems studies of this kind provide a clear picture of how certain functions of Corporation business are performed," Mr. Hook commented. "They enable the Company to visualize modifications and simplifications which weren't apparent before."

Contrary to a current misconception about the main function of 4110, the organization spends less than a third of its productive hours writing and editing SCT's. The great majority of the department's time is devoted to systems studies and development.

Ed Domme heads 4111, the division involved with engineering and operations methods matters. Division 4112, under Jim Hockett, is responsible for personnel and administrative methods. Accounting methods is the area assigned to 4113, supervised by Bob Cox.

Accurate and on time is the word of the day among members of Disbursements Accounting Department 4130, managed by Dick Dickinson. They pay the bills and the payroll, handle disbursements auditing, provide general tabulating service, and perform such special projects as maintaining contact with Bell System locations and preparing a history of Sandia Corporation.

The almost 7900 employees of Sandia and Livermore Laboratories receive some 200,000 paychecks each year, amounting to a gross payroll of \$64,000,000. Division 4131, Bob Yoder, handles the payroll operation. "We strive for as much accuracy as it's possible to attain," Mr. Yoder explained. "Everyone is paid on time. Our task is compounded by the fact that employees are located in 20 different states, nine of which have withholding for state income tax or for disability plans. From the 200,000 payments made each year, some 600,000 authorized deductions are made. Paychecks are presented on time to new employees, even though they may have worked only two or three days for the Corporation. The payroll has never been late in the 13 years since the Corporation was organized in 1949."

Records of rates of pay, attendance, and authorized deductions for each employee are also maintained. Master rate cards, supported by attendance records, provide the basis for employees' pay which is computed on the IBM 7090 in Organization 3450, although payroll personnel are charged with the accuracy of payments. The machine printout is reviewed manually before checks are released.

In addition Division 4131 performs disbursements auditing, which involves the verification of the accuracy of all non-payroll payments by the Corporation; invoices, freight bills, and employee vouchers are included.

In Tabulating Division 4132, supervised by Charley Katzenburger, the IBM 1401 electronic computer as well as other equipment is used to prepare accounting and administrative reports for various Sandia organizations.

An example of the reports processed is the M-3695, open commitments, which deals with the Corporation's outstanding commitments to suppliers and also contains forecasts, requisitions, and payments. The 1401 computer enables them to prepare it with maximum speed and minimum difficulty.

Pay Suppliers

Division 4132 also prepares payments to suppliers as well as related reports and journal entries.

Further, the division prepares and tabulates job analyses, programs the 1401, and writes various computing procedures. An important function of this organization is the preparation of periodic rate review information including the preliminary survey material computed for the Wage Practices Organization.

Vouchering Division 4135, Mal Snyder, pays out approximately \$70,000,000 annually in orders for commercial suppliers and handles the accounting for these payments by making the necessary journal entries for reporting to the accounting system. It is also concerned with preparation of the M-3695 report. "The report is prepared by our organization and tabulated by Division 4132," Mr. Snyder stated. "In addition we serve as the bookkeeper for suppliers' and employees' accounts and prepare a variety of reports for distribution at both Sandia and Livermore Laboratories."

Division 4135 functions with great accuracy. In making the 70 millions of dollars in payments referred to above, the total value of discounts lost in 1961 amounted to only \$334.44, less than a thousandth of a per cent of the payments.

Sandia History

The 4100 organization has undertaken a special assignment which is concerned with writing and preservation of the Sandia history. Special Projects Division 4133, under Ted Alexander, is now working on a project of prime importance—a comprehensive history of the origin and development of the Sandia Laboratory from its founding to the present. "Actually the history begins with Sandia man, a pre-historic cave dweller whose concern with weapons development probably equaled ours," he commented recently.

Mr. Alexander's interest in Sandia history led him into some fascinating byways in search of information and the finished product will be engaging reading. "We hope to start releasing the history soon," he continued. "It, as well as information developed in the future, should be useful in a variety of ways."

Cost and Accounting Department 4150, managed by Marty Grothe, analyzes and reports the actual costs incurred for control and billing purposes.

The monthly M-3600, Cost-Budget Report, is a widely distributed part of the work of Haddon Redding's Division 4151. Processed on the IBM 7090, this is a prime source of information to each or-

ganization, comparing cost incurred with budget. Based on this report and the M-3695, Open Commitment Report, brief comments are provided each month to the Small Staff with highlights of significant deviations from budget to pinpoint exceptions of importance.

Cost Division 4152, under Bill Colborne, handles the internal costing of material, labor, and indirect costs as well as the accounting for transactions with other AEC contractors and government agencies. Changes in design, fabrication, and scheduling now require constant review of prices to recover costs. To facilitate this review, 4152 is developing an improved system for pricing products and testers sold to other AEC contractors.

Accounting for equipment, buildings, and service systems is the function of Plant Accounting Division 4153, supervised by Lou Aragon. Reports to AEC on Sandia's expenditures for equipment and construction are originated here and the ledger accounts are verified on a three-year cycle by physical inventory teams in cooperation with line organizations responsible for the equipment.

Department 4150 conducts studies of accounting procedures in conjunction with Business Methods Department 4110, for improvement of operations. Currently, a new system of accounting classification numbers is being planned by Department 4110 for installation on July 1, 1962. The present system of numbers which has been in use since the Corporation's inception can no longer contain today's operation within the limits of the numbers available.

Auditing

Professional competence, objectivity, and sound judgment are the prime requisites of the personnel of Auditing Department 4120, managed by Pete Shonka. Their major tasks involve working both in the field with Sandia's contractors and within Sandia to see that the Corporation's prescribed policies are followed, and that accounting and statistical data supplied to Management are reliable.

"Perhaps imagination is the quality which profits the auditor most," Mr. Shonka said. "He must use it in understanding the problems which confront him in carrying out his duties. It enables him to see beneath the surface of things, and to understand their significance. The auditor must possess persistence and persuasion for use in his association with people both within the Corporation and in the field. The formula for

successful auditing consists of a large portion of horse sense, combined with a thorough knowledge of accounting and a generous measure of tact."

The people in the two Supplier Audits Divisions, 4121 and 4122, supervised by Bill Prekker and Duane Hillard, travel to the offices of some 175 Sandia contractors to either make pre-order surveys of accounting systems or to audit their books. The auditors maintain active contacts with their accounting people. By doing so, they are able to spot potential areas of trouble, and thereby avoid future problems. "Audits of these suppliers involve over 700 open orders representing \$100,000,000 in cost type contracts," said Mr. Prekker. Substantial savings in cost to the Corporation result from these activities.

Ordinarily two-man teams handle an external audit assignment. Commenting on this, Mr. Hillard said, "Such a combination adds perspective to what is done, and permits an on-the-spot approach to problem-solving, and a quicker, more efficient audit. These assignments provide the auditors with a liberal education in the various accounting systems used by industry and give them an opportunity to develop a better understanding of the manufacturing procedures."

Internal Audits

Internal audits consist mainly of the constructive appraisal of accounting and other business procedures at both Laboratories. Records and practices are reviewed to determine whether procedures are being employed as management intends. In light of the reviews, changes in policy and practices are often recommended to provide more economical and efficient operation and improved controls. "However, it should be pointed out that the auditors do not make policy, nor are they the final judge of the wisdom of a particular policy," Ken Seaver, supervisor of Internal Audits Division 4123, commented. "We try to provide independent and completely objective evaluations."

In carrying out the Corporation's mission, the 4100 directorate must carefully coordinate many inter-related functions: new systems studies, improved business methods, the handling of financial transactions, processing accounting and control statistics, stabilized costing procedures, and accurate internal and external auditing. To best serve all locations and organizations interests, these functions are accomplished with a minimum of bias.



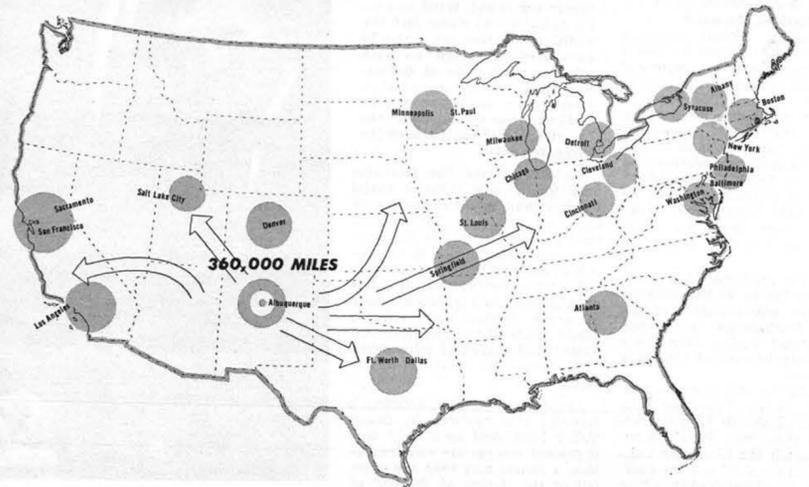
MARY ANN YAPLE (4132-3) inspects a paper tape, carrying purchase commitment report data, before tape-to-card machine converts it into cards.



PART of invoice processing assembly line that suppliers is illustrated here. Jeanne Jolly (at desk foreground) explains purchase order terms to Gloria Gonzales (standing), while Betty Sherred works with tabulating cards at next desk.



MORE EFFICIENT open file system which replaced cabinets in the file of standard costs maintained by Cost Division 4152 is easily accessible for reference by Betty White (4152).



AUDITORS from Organization 4100 travel over 360,000 miles yearly—one and one-half times the distance to the moon—to perform audits of Sandia Corporation contractors in locations noted on map.



ISOLATED RECORDING STATION in Badwater, California, has obtained important temperature data indicating that it is located on the hottest spot in North America. The data is being used in studies aiming at establishing the highest temperatures nuclear weapons have to withstand in desert storage environments.

Death Valley Thermometer Reports Tale of Most Blistering Heat

For the past three years, a pen has been scratching away at an isolated temperature recording station in a desolate part of Death Valley, Calif. Unattended except for sand flies and an occasional lizard, the recording station stands in the heat while the pen moves silently, recording variations in temperature.

Once a week, a National Park Service ranger makes a trip from Greenland Ranch, 18 miles away, to change the ink in the pen and recover the recorded temperature readings.

The temperature recordings, recovered week by week and pieced together into a continuous record, tell a story that makes all the labor of retrieving them worth while. The site of the recording station is Badwater, Death Valley, 282 ft. below sea level—probably the hottest spot in North America.

The recording station was established by T. W. Robinson, a research engineer for the General Hydrology Branch of the U.S. Geological Survey, Department of the Interior. Mr. Robinson, who was interested in obtaining data for a hydrology study, established the station in 1959 and prevailed upon friends in the National Park Service to provide the minimum maintenance necessary.

But the temperature readings are also of interest to Sandia, for they help to establish the highest temperature that atomic weapons may be called on to withstand.

The existence of the Badwater records was discovered by Carlton Scott, an engineer with Structural Analysis Section 8116-1 at Livermore Laboratory. Scotty, who performs environmental studies and keeps the environmental data bank at Livermore Laboratory, was examining temperature records for the North American continent in connection with a study of desert environments.

Highest Recorded

The official records indicated that Greenland Ranch in Death Valley consistently experienced the highest recorded temperatures in North America. For example, the mean maximum temperature in July, the hottest month, is about 116° for Greenland Ranch. And the highest temperature ever recorded in North America, 134°, occurred at Greenland Ranch on July 10, 1913. This is only 2 degrees less than the world record recorded in Libya in September 1922.

Since the published data indicated that Death Valley temperatures were representative of the highest temperature a weapon might expect during desert storage, Scotty intensified his study of this area.

Normally the only records available for Death Valley are the maximum-minimum temperatures taken at Greenland Ranch. However, through the Livermore Laboratory library staff and the California state climatologist's office in San Francisco, Scotty learned of Mr. Robinson's records. These records, which Mr.

Robinson generously made available, showed that as high as Greenland Ranch temperatures were, the temperatures at Badwater were consistently three degrees or more higher. A convincing case can therefore be made for Badwater as the hottest spot on the North American continent.

How hot is the hottest spot? Well, in July 1959, the peak temperature was 115° or more for 30 of the 31 days, and for 20 consecutive days during this period it was over 120°. July 1960 was somewhat cooler—the temperature was under 115° for 2 of the 31 days. And July 1961, despite the loss of some data because the pen dried up, was more of the same.

Continuous Readings

The Badwater data is particularly valuable because it is continuous, rather than composed of simple maximum-minimum readings. This permits variations in the temperature cycle to be studied carefully, with some surprising results. For instance, it is popularly believed that all deserts grow hot by day and cold by night. Badwater records prove that this is not necessarily true: Badwater often gets hot and stays hot for several days and nights at a time, with minimum temperatures of about 90° being attained early in the morning. The longest hot spell during the three-year period lasted for six days. During this time the temperature cycled between 90° and 128°.

Relative humidity, measured along with temperature, was uniformly low. Even when air temperature dropped to its minimum values in the early morning hours, relative humidity remained in the neighborhood of 15 per cent.

The temperature and relative humidity data alone are not sufficient to determine the effect of desert storage on a weapon, Scotty points out. Wind and solar radiation, to name just two additional factors, must also be considered. Although no such readings were made at Badwater, wind and solar radiation observations made at nearby stations or for similar areas can be extrapolated for use with the Badwater data.

Scotty has used the Badwater data to derive a climatic model for describing desert climates with high temperatures. He believes that the model provides the basis for analytical studies and will result in more realistic and economical environmental tests. He has already published a similar study of arctic temperatures, entitled "Cold Temperatures and Standard Tests," and studies of other types of climatological areas are in the offing.

In the meantime, Mr. Robinson's recorder still swelters in Death Valley heat. And some July day, if present records are any indication, a ranger may take the drum out of the station at the end of the week and discover yet another Badwater first—a new world record temperature.

J. M. Haines Completes Machinist Apprentice Program of Sandia Lab

The most recent graduate of Sandia Laboratory's Machinist Apprentice Program is James M. Haines, presently assigned to Heavy Machine Section 4251-1 as a journeyman machinist.

Jim has worked in the Development Shops since he came to Sandia in August 1955. In May 1957 he went on leave of absence to serve two years in the Marine Corps. Upon his return he started his apprenticeship training in Apprentice Machine Shop Section 4254-2. He was given 18 months credit for previous on-the-job training.

Jim is the son of Bea (4112) and Glen Haines (4224) and is the husband of Nathana Haines (3126).

O. E. Jones to Present Paper at Acoustical Meeting in New York

O. E. Jones (5133) will present a technical paper at the 63rd meeting of the Acoustical Society of America to be held in New York City May 23-26.

His paper is entitled "Transient Cross-Sectional Strain and Stress Distribution in Longitudinally-Loaded Cylindrical Bars."

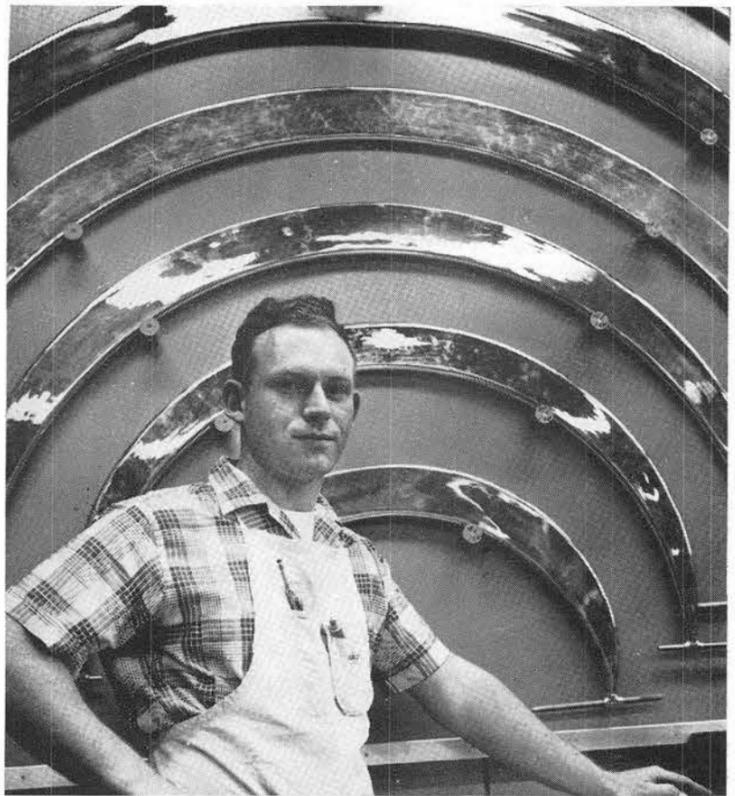
AIIE Elects John M. Hueter New President

Several Sandia Corporation employees were elected to chapter offices during last month's election by the American Institute of Industrial Engineers, Albuquerque area.

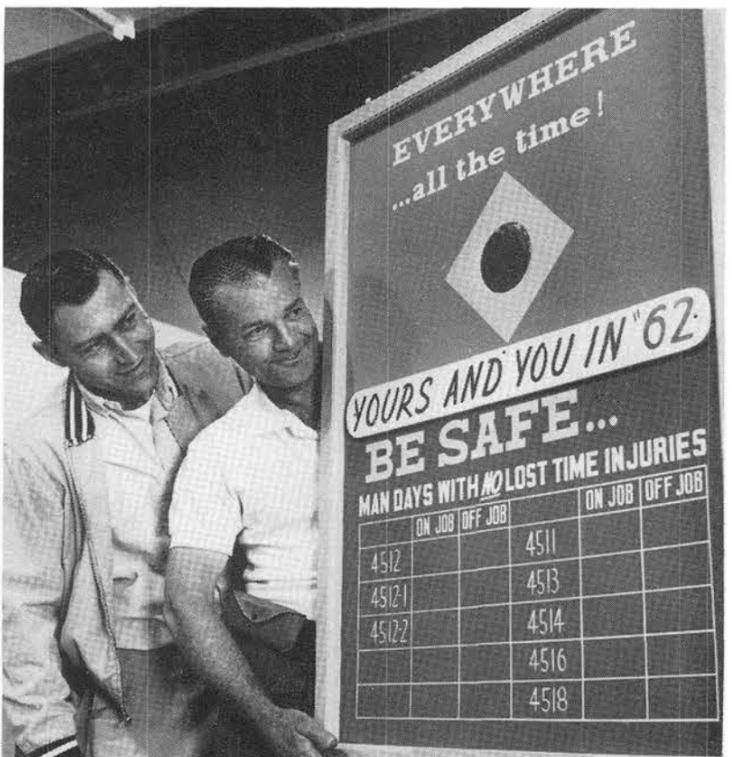
The new officers are: John M. Hueter (2563-1), president; D. W. Arquette (1423-3), vice president; J. W. Moyer (7513-2), secretary; R. A. Keen (2543-2), treasurer; and A. E. Kaping (4332-1), director. C. J. Ricker (3111-2), the outgoing president, will also begin a one-year term as a member of the Board of Directors.

The AIIE is a national technical society dedicated to the service of the professional industrial engineer and to the advancement of the art and science of industrial engineering. It has 106 senior chapters, 46 student chapters, and approximately 10,000 members.

The Albuquerque chapter represents all industrial engineers in the State of New Mexico. It is a member of the Council of Technical and Scientific Societies in Albuquerque and the National Engineers' Joint Council.



VERY LARGE precision micrometers are some of the aids that James Haines of Heavy Machine Section 4251-1 uses in his work.



NEW SAFETY REMINDERS, being placed in every shop within Plant Maintenance Department 4510, are given a close look by J. M. Winter (left), supervisor of Millwright Section 4512-1, and K. B. Stiver (4513-3), who painted the boards. J. C. Hart, 4510 department manager, designed the safety boards.



NEW OFFICERS for the Albuquerque area chapter, American Institute of Industrial Engineers are all Sandians. They are (l to r) D. W. Arquette

(1423), vice president; R. A. Keen (2543), treasurer; A. E. Kaping (4332), director; J. W. Moyer (7513), secretary; J. M. Hueter (1563), president.

Sandia Laboratory Using New Krypton-85 Leak Detection Device in Testing Sealed Components

An unusual leak detection system is being used by Sandia Corporation's Environmental Testing Organization 7300.

The new device, which tests by radiation, will be used for both qualitative and quantitative testing of sealed components.

Three personnel of Organization 7300 will operate the testing equipment. H. R. Bowers, Albert R. Elwell, and John L. Hutton (all 7322) have been trained in techniques of operation and handling of components to be tested.

They recently completed a radiological safety course presented by Health Physics Section 3311-2, and taught by W. D. Burnett, G. E. Harwood, and G. E. Tucker. They have also been trained by a representative of the manufacturer of the testing equipment. John C. Dresser (7311) was engineer for installation of the new equipment.

The system utilizes a sealed pressure vessel to impregnate leaking components with Krypton-85, an inert, non-toxic, radioactive gas. The system, according to R. W. Mottern, supervisor of Radiography Section 7322-2, will be used to test sealing methods used on a variety of components.

"The new device will enable us to test much more accurately than was formerly possible with other types of equipment," he said. "It promises to be a useful tool in a number of different ways."

The basic parts of the test equipment are a lead-lined, hydraulically-sealed container in which components to be tested are "soaked" in Kr-85 gas for a pre-determined period, a lead-shielded tank in which the Kr-85 gas is stored and from which it flows into the soak container, and a programming and control system which is safety-interlocked,

and which controls the soaking and air-washing procedure. An inspection station, consisting of scintillation counters and a read-out system, completes the test unit.

"A typical testing set-up would involve seven steps," Mr.

Elwell commented. "The testing apparatus is programmed with the correct soaking time, and with other steps in the testing sequence. Then components to be tested are put into the soak container."

Air in the container is evacuated



LEAD-LINED TANK, which later will be filled with Kr-85 gas, is part of new leak-detection apparatus. John L. Hutton (7322) and A. R. Elwell (7323) load tank with components to undergo test.

and Kr-85 gas is pumped in. Under a pressure of up to 13 atmospheres (191.1 pounds per square inch), tell-tale molecules of radioactive gas enter any leaks in the components. After the prescribed soaking time, the Kr-85 is automatically pumped back into its lead-lined tank for re-use, leaving gas molecules captive only in the leaking components.

Next, an air wash is circulated over components to remove all radioactive material from external surfaces. Leaking components retain radioactive atoms, which emit a known amount of gamma radiation. Components are then removed from the activation unit and are sent to the inspection station.

At the inspection station, each component is placed in a scintillation counter. Each "leaker" betrays, through the indicated intensity of radiation, the number of atoms which have leaked in. Radiation intensity, related to gas pressure and time of immersion in the gas, establishes leak rate.

"While the system will be useful in testing quality of components," Mr. Mottern explained, "our major interest will be in testing for leak quantity." Sandia's development organizations are concerned with perfecting long-duration seals which permit no leakage, and the new testing system will be invaluable in research and development of such seals.

"We'll be able to detect extremely small leaks," Mr. Elwell pointed out. "We'll use the system as a research tool and, at certain times, as a production tool. But our greatest interest at present is in its ability to tell us what it can about leak quantity. Its versatility in this respect will make it a valuable aid to many Sandia organizations."

Jewelette League Elects Officers At Banquet

New officers were elected during the annual Jewelette League bowling banquet held at the Coronado Club Apr. 24.

The in-coming officers are: Alice Woodley (1431), president; Louise Di Santi (2643), vice president; Mina Carnicom (3311), secretary-treasurer; Phoebe Adams (wife of Frank Adams, 4152), sergeant-at-arms; Barbara Vandenberg (3421), 200 Club representative; and Arlene Held (wife of AEC employee), public relations.

During the banquet a trophy was awarded to the first place team, the Zircons, comprised of Cynthia Kelly (3113), Shirley Kelly (wife of Tommy Kelly, 2442), Nancy Duhigg (3126), and Marion Sliwinski (7147). Other trophies went to Diane Martin (5132) for high individual game scratch (228), and Lillimae Sanchez (7160) for high individual series scratch (572).

Mixed Bowling League Starts Play May 17

The Sandia Corporation Mixed Handicap Bowling League is scheduled to begin play on May 17, according to Neal Carpenter (1413-2), league coordinator. The league will continue for 11 weeks, until June 26. Play will be at the Holiday Bowl.

Teams for the league are currently being formed. "We have need of team members and substitutes," Neal says. "One member of each team should be a Corporation employee."

Games are scheduled to be played Thursdays at 6:30 p.m. at the Holiday Bowl. Further information is available from Neal at ext. 26231.

SHOPPING CENTER

CLASSIFIED ADVERTISING

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

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

- 3-BDR HOUSE, a/c, fenced yard, patio, near base, 528 Rhode Island, SE, Arning, AL 6-9229.
- TIRE, 7.10x15, almost new, \$15. Apodaca, 8309A Decatur SE, Lynn Lee Apts.
- SELL OR LEASE w/option to buy, part of monthly payment applying on down payment, 2-bdr, garage, patio, fruit trees, extras. Knight, AX 9-3783.
- TWO 760:15 w/w tires, tubes and wheels for late model Chevrolet; two truck mufflers for '56 Chevy. Wilson, AX 8-0049.
- 3 OLD wooden wagon wheels, \$5 each or the 3 for \$11.2. Padilla, 808 Riverside Rd., TR 7-2116.
- 3-BDR ROBERSON, many extras, \$18,500, Eubank north to Comanche, 2 blocks west, 3417 Espejo. Guist, AX 9-9060.
- 8' REFRIGERATOR, 3-years-old. Temple, CH 2-9092.
- '55 OLDSMOBILE 88 Holiday 2 dr., 60,000 miles, Frigair cooler, PS, PB, Seiberling tires, V8 engine, \$550. Weir, AX 9-1160.
- BASSETT HOUND, male, 1 1/2 yrs. old, brown and white, AKC registered, \$100. Jenkins, AL 6-1923.
- PHOTO LIGHT BAR, holds 4 flood lights and camera in place, folds into compact metal carrying case, \$5. Doyle, AL 5-1483.
- BOY'S 24" Bicycle, \$7.50; girl's 26" bicycle, \$12.50; air lifts '59 Ford, \$12.50. Peterson, Monday AL 5-7995.
- '59 BUICK ELECTRA 225, has all option equip. available for Buick. Obrien, 299-0788 after 6 p.m.
- '58 VW SEDAN. Hannah, AM 8-1932.
- CHIHUAHUA PUPS, semi-long hair, blond, good house pets. Baker, DI 4-6985.
- 5-STRING BANJO, like new, w/strap. Snyder, AX 8-1408 after 4:30 p.m.
- 3-PC. SECTIONAL, \$20; Venetian blinds, 39 1/2" wd., 10 @ \$1.50; 2 cornices, 12" w/rods @ \$3. Officer, AL 6-0337.
- FREEZER, 20 cu. ft. like new, \$200; maple dining room set, \$75; small tricycle, new, \$5. Libby, 299-5948.
- SELL OR TRADE, 3-bdr., 1 1/2 baths, paneled den, fireplace, h/w/f carpet, central heat, a/c, sprinklers, \$16,000, \$900 down, \$118/mo. Smith, AL 5-6478.
- FREE TO good home, females and young puppies. Gragg, AX 8-0267.

- 4 TO 9 variable power rifle scope w/lens caps, \$30. Klett, DI 4-9021.
- 21" RCA TV console, \$60. Newman, 298-2323.
- TYPEWRITER, Remington upright, \$25. Dunn, AL 5-9213.
- CUSTOM TRAILER HITCH for '53, '54 Chevrolet, \$4. Cienney, UN 4-8394 after 6 p.m.
- '59 WHITE AH SPRITE. Randle, Placitas.
- '56 MERCURY, R&H, OD, will accept older car in trade. Wittwer, AX 9-0311.
- RECORD PLAYER, 4-speed, combination AM radio, like new. Gragg, AX 9-0311.
- '56 FORD Country Sedan, one owner. Bowen, AL 6-6759.
- STUDIO COUCH, green, \$20. Fox, AL 6-2606.
- ELECTRIC STOVE, Hotpoint, 39", \$60. Rutherford, 298-0773.
- SCOTT'S fertilizer spreader, \$7.50; new 5-room cabin in Manzanos w/about 700 sq. ft., fully insulated, furnished, \$6750. Kane, 299-0382.
- CAMPERS TOILET, \$5; portable ironing board, \$4. Rayner, AM 8-1705.
- DANISH MODERN sofa, chair, walnut w/white plastic upholstery, \$60; walnut end table, coffee table, \$10 each; lamp, \$10. Harden, AM 8-3108.
- STEEL CASEMENT WINDOW, style 2313L, 6 panes, \$5. Ellington, AX 9-4056.
- KENMORE WASHER, 5-yrs.-old, \$50. Lawrence, AL 6-2613.
- BIRGGS AND STRATTON 2 1/2 HP gasoline engine, \$20. Driscoll, 298-4641.
- AWNING for 54" window, canvas, green w/white stripe, like new, \$8; headboard, mahogany panel, twin size, \$6. Skidmore, 256-4567.
- INEZ BRICK, 3-bdr., 1 1/4 baths, completely carpeted, drapes, sprinklers, dishwasher, \$1100 down FHA to new loan, 7722 Leah, NE. Scott, AX 9-7893.
- HOTPOINT WASHER, \$30; TV, \$65; divan, chair, \$60; chest-of-drawers, \$5; swivel chair, \$5; 5-piece dinette set, \$10. Jolley, 298-5182.
- FOUR HILLS 3-BDR house, w/w carpeting, fully landscaped, dbl. garage, trade considered, financing at \$129/mo. Hunter, 1110 Warm Sands Dr. SE, AX 9-1089.
- MOVIE CAMERA, Bell & Howell 8mm, magazine load, with carrying case. Kodak projector and screen. Nelson, AL 6-6300.
- AIR-CONDITIONER, refrigerant window type, Coldspot, 220 volt, practically new, \$125. Bergquist, AM 8-6909.
- '60 ZUNDAPP motorcycle, 250cc., \$200. Gonzales, CH 7-2667.
- '55 FORD V-8, 2-dr., blue-white, auto. trans., R&H, \$395. Cooper, AX 9-7157.
- 3-BDR, activity room, fp, 1 1/4 bath, central heat, h/w/floors, landscaped, patio, sprinklers, halled, Zia-Fatima district, \$18,500. 828 Truman NE, Groll, AL 5-9638.
- CAMPING TRAILER, 18', \$500, sleeps six adults, ice/electric refrigerator, shower/toilet stall, vented heater, two gas bottles. Stixrud, DI 4-7873.
- 3-BDR MANKIN, no qualifying, immediate poss., built-in GE dishwasher, central heat, AC, patio, landscaped, near Los Altos golf course. Fry, AX 8-1613.

NEXT DEADLINE FOR SHOPPING CENTER ADS Friday Noon, May 18

- HEATHKIT APACHE 35' tower and cubicle quad, \$300; go-kart, home made with small motor, \$50. Dobias, 256-7476.
- OLD COLT .45 Frontier pistol, \$45, will trade. Also old Mexican and Canadian coins to trade for U. S. coins. Zaluga, 344-1564.
- 2-WHEEL TRAILER, \$30; golf clubs, bag, 2, 5, 7, 9 irons, putter and 2 woods, \$20; squirrel cage fan, \$7.50; window fan, \$7.50. Thimm, AX 9-1844.
- BABY STROLLER, bathinette, both for \$7. Coughenour, 299-0914.
- FOLDING TABLE, metal, never used, opens to 40"x48", \$6; maple bed with coil springs, 39" width, \$20. Hill, CH 3-3493.
- BELOW FHA, \$450 down, early Mossman, \$14,500 total, 17 trees, 3-BDR, den, 1 1/2 bath, extras, new school 1/2 block. Bailing, AX 9-1346.
- '53 CHEVROLET, Powerglide, 4-dr., needs work on motor, \$75. Skelley, Rt. 1, Box 618, Bosque Farm, Albuquerque.
- CAMP TRAILER, folding canvas top, all metal body, sleeps 4-6, 75 lb. ice box, licenses, \$250. Ingram, DI 4-5756.
- GAS RANGE, Hardwick, clean, \$15. Harris, 299-0213.
- 3/4 CHEV. panel truck, 4-speed trans., R&H, \$250; communication receiver NC 173, \$75; swap junk ham gear for what have you. Shane, AL 5-5673.
- REFRIGERATOR with freezer chest, Coldspot, 5 years old, \$85. Buchanan, CH 2-1865.
- BUNGALOW UPRIGHT piano. Hainlen, AL 5-6988.
- WHEELCHAIR, like new, best model, lightweight folding type with leg rest. Dunsforth, 243-4364.
- '51 NASH Rambler, radio, heater, OD, \$149.50. Sutton, AX 9-0384.
- POWER MOWER, 18" rotary, Craftsman, 2 cycle engine, extra blade, \$25. Smith, AX 9-1264.
- '54 PLYMOUTH station wagon with over-drive. Gies, AL 5-3034.
- .30 CAL. M-1 carbine ammunition, 1080 rounds, \$40. Mattox, 268-5554.
- JOINER, 4" Craftsman, \$40 w/o motor; bicycle, \$15; 2 ea. motors, electric, \$10, \$12. Pitti, AL 6-1629.
- '61 VOLKSWAGEN, sunroof, 6800 miles, radio, w/w, leatherette, seat belts, trip speedometer, \$1525. Small, AX 9-0023.
- '49 FORD, 2-dr. sedan, running condition, \$50. Abbott, AL 5-6179.
- SWIMMING POOL ladders, steel; four tread, \$25; three tread, \$20. Claassen, AL 5-4347.
- MOBILE TRANSMITTER, AF-67 Multi-Elmac, with dash rack, no power supply, \$85. Bauhs, see at 1216 Elizabeth NE.
- FREEZER, chest type, \$40; Willys Aero 4-dr. sedan, overdrive, good tires, new battery, best offer. Fackelman, AX 9-8258.

- BOY'S BIKE, English, lightweight, 26", \$10. Bureta, 429 Montclair SE, AL 6-1833.
- POWER MOWER, Sunbeam rotary, cost new \$150, sell for \$50, best offer or trade. Wagner, AX 9-2347.
- KITCHEN SINK, double, with double faucets, \$20. Fisher, 265-0626.
- '58 VOLKSWAGEN sedan, low mileage, one owner, \$995 or best offer. Pratt, AX 9-1559 after 5 p.m. or weekends.
- 2 BDR, attached garage, near Sandia Base, \$400 down, \$85 a month. Pope, AL 5-6702.
- BAND SAW w/stnd, motor and blades, like new, \$60. Reese, 4207 Marquette NE, AL 5-4288.
- CARTOP CAMPER, fits 1955, '56 and '57 Chevrolet. Could be modified to fit other models, \$20. Weston, 256-3701.
- '55 CHEVROLET station wagon, original owner, \$450. Brady, 243-2760.
- MATCHING CORNER and end-step tables, limed oak finish with formica tops, \$25. Dieter, AL 5-8056.
- 21" TV, RCA-Rivco, older model but in operating condition; Frigidaire refrigerator; sofa—needs upholstery or slipcover. Rucker, AL 5-4395.
- CUTTING TORCH and band saw. Hendren, CH 3-2647 after 5:30 p.m.
- TWO RUGS, leaf pattern, with pads: 9'x12', \$15; 9'x10', \$20. Batchelor, AX 9-4831.
- NATIONAL BEDDING 4" foam rubber mattress and box springs, complete with legs, \$25. Overbury, AL 5-7788.
- LARGE TENT, 16'x16', ideal for hunting, fishing, families, \$75. Breitenbach, 268-7900.
- SHOPSMITH Mkv w/jigsaw, stand on casters, dust cover and other accessories, \$250. Plagge, AL 5-1801.
- ORIGINAL OWNER, '55 Oldsmobile 98 hardtop, full power and air, 57,000 miles, \$550. Balfour, AL 6-3424.
- SX-71 general communications receiver, 560 KC-34MC plus 6 meter, Grundig speaker, \$100. Kelley, 344-2248 after 5:30 p.m.
- YOUTH BED with linens and custom-made mattress, \$25; Hays insecticide sprayer, 6 gal. size, \$5. Loemker, DI 4-0278.
- MOSSMAN 4 BDR., den, 1 3/4 bath, steel fallout shelter, other desirable features. Delnick, AM 8-2530.
- 3 BDR, 1 1/2 baths, attached garage, large walled-in yard, covered patio, convenient location, 2 blocks to grade school. Wolfe, AX 9-5308.
- SHOTGUN PUMP Marlin 12 gauge; .44 cal; trumpet; bullet casting set; corral kit; exposure meter. Sell or trade. Schowers, AL 5-9279.
- '59 METROPOLITAN, tura, 3 white, 16,000 actual miles; Polaroid model 300 w/wink lite and case. Trumble, AX 8-3397.
- '57 FORD, 6 cyl, 2-dr. sedan, R&H, overdrive, very economical with only 38,000 miles, make perfect second car, \$550. Higgins, AX 9-5149.

WANTED

- HOMES for kittens, 6 weeks old. Osterby, AX 9-4606.
- TO SHARE RIDE San Pedro-Constitution area to bldg. 800. Tays, DI 6-6273.
- CHILD'S "Jungle Jim" yard set. Volk, AX 9-1702.

- RIDE from 4307 Marquette NE to gate 3. Ellsworth, AM 8-2559.
- RIDE from San Jacinto and Betts to bldg. 800 via Sandia Base nursery. Grimes, 299-5277 after 5:30 p.m.
- USED hand powered lawn mower. Prairie, AX 9-1431.
- MALE DRIVER to join car pool, route between gate 7 and vicinity of Morris and Menaul Sts. NE. Smith, AX 9-1264.
- CHILD CARE in my home. Moritz, AL 6-2362.
- HOUSEWORK, care of 15th and Ch 3 couple. Frances, 909-15th NW, CLY 3-4844.
- 1 DOZ. well-rooted yellow-white climbing honeysuckle. Hill, CH 3-3493.
- RIDE IN car pool from vicinity of 300 block Gen. Arnold NE to Area 3. Bishop, 299-8782.
- RIDE or will join car pool from vicinity Indian School Rd. and Girard to Bldg. 800 or 802. Miller, 1832 Richmond Dr. NE, AL 5-1324.
- RELIABLE LADY to live in, see one child off to school, keep house. For details call Mrs. Boyd, AX 9-9375 after 5:30 p.m.
- TO JOIN or form car pool from Mesa Arriba Addition to Gate 3 or 4. Hurley, AX 8-5250.
- GOLF BAG with set of clubs. Will pay reasonable price. Colgan, CH 3-4882 after 5:30 p.m.
- TRUCK CAMPER to rent for 15 days starting May 26. References. Montoya, TR 7-1779.
- TEMPORARY RIDE from Eubank and Indian School to Bldg. 800. Grimes, 299-5277.
- HOMES FOR free puppies, five weeks old today, mother Weimaraner, now ready for pickup or delivery. Weber, AX 8-1564.
- TO BUY Zoysia sod. Hayes, 298-4682.
- CHILD CARE in my home. NE heights, licensed. Brazda, AX 9-0971.
- TO RENT—furnished houses and apartments, 1, 2, 3 and 4 bdrs from June until Sept. for Sandia Corporation summer employees. AL 6-4411, ext. 26149.

FOR RENT

- 2 BDR, attached garage, landscaped, \$85. Perea, 298-4273.
- 1 BDR APT., furnished, fireplace, planters, sliding glass doors to concrete patio, \$90. Rabel, AM 8-6923 after 5 p.m.
- MOSSMAN HOME, unfurnished, 3 bdr, air conditioned, carpeted, near schools and shopping. Grab, AX 9-0015.
- FURNISHED HOUSE, 2 bdr, convenient location Southeast Heights. Henderson, AL 5-2869.
- 2 BDR HOUSE, N.E. stove furnished, close to bus and schools, \$90. Martin, 7117 Veranda Rd., AX 9-7045.
- FURNISHED ROOM, pine paneled, carpeted, walk-in closet, private bath and entrance, close to Base, gentlemen preferred. Joseph, AM 8-5414.
- 3 BDR, dining room, carpet, drapes, AC, circular drive, lease by year \$100 per month, water paid, NE area near Winrock and Hoffmantown, available May 15. Smith, AX 8-0767.

Diversity of Special Skills Used by Sandia Laboratory's Electroplating Section 4221-3 in the Processing of Metals

At Sandia Laboratory's plating shop, the emphasis is on diversity. Sandia's Plating Section 4221-3, supervised by Jesse V. Parker, uses a number of processes to deposit coatings of metals and metallic oxides on a variety of metal surfaces.

"Much of our work involves the deposition of copper, nickel, chrome, tin-lead alloy, cadmium, and tin by electroplating," Jesse says. "An electric current is used in the deposition of the metal. The material to be plated is submerged in a chemical bath, and is made the negative pole or cathode for an electric current passing through the bath from a positive pole or anode. The anode, in most cases, is made of the metal which composes the plate.

"We use the electroplating process with some of the precious metals, too," Jesse continues. "We apply gold, silver, rhodium, platinum, and palladium. To deposit some of these precious metals, we use stainless steel tanks as the anodes, and the plating metal is present as a metallic salt in the tank solution."

In other plating processes, metallic nickel, copper, or gold is deposited on base surfaces without the use of an applied electric current. "But electroplating is our most-often-used plating process," Jesse says.

Used in Printed Circuits

A major use of electroplating is in the preparation of printed circuit boards. A copper-plated plastic board with a sensitized surface receives a photographic image of the circuit. This image is later converted to an etch resist, protecting the circuit image from an etching bath which removes all copper except that comprising the circuit. This circuit can then be plated with gold, silver, or other desired metals.

"We've worked with other Sandia organizations in preparing the first krypton 85 nuclear cells," Jesse continues. "And we performed the anodizing work on an aluminum-oxide humidity sensor developed recently at Sandia Lab."

In the anodizing process, a coat of aluminum oxide is deposited on an aluminum base. The thickness and density of the coating can be varied by varying temperature, current density, and time.

"Anodizing is popular in preparing aluminum products for commercial use," Jesse explains. "Many aluminum utensils on the market have anodized surfaces. Aniline dyes are used for the dyeing of the anodized aluminum. At Sandia, we use colored anodizing to aid identification of components. We find that in some cases a colored surface diffuses light efficiently and is easier to photograph than a plain surface." In addition to aiding identification, colored anodizing adds an unusual beauty to many aluminum components produced at Sandia Laboratory.

Another electroplating process involves use of a soft metal mandrel which is plated with a heavy layer of a harder metal. The mandrel core is then melted out. This process is called "electroforming," and produces a hollow, seamless, uniform replica of the mandrel shape.

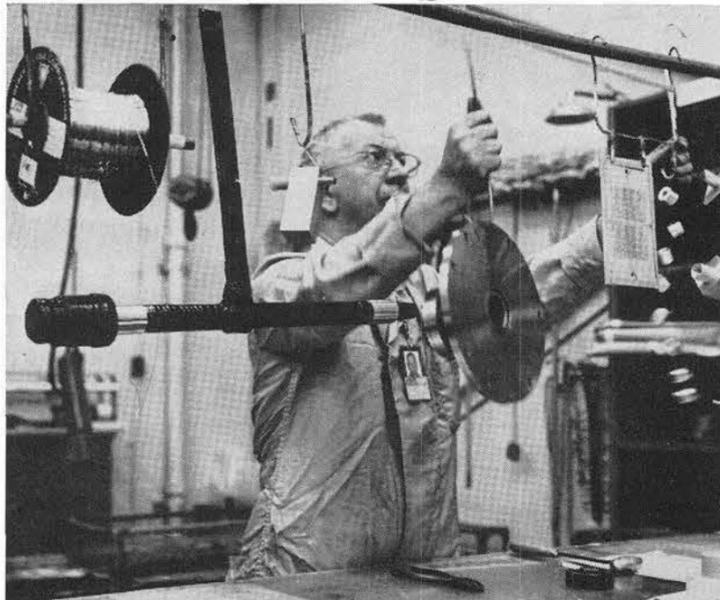
Carefully Vented

The shop's plating room contains rows of metal tanks, each containing a separate plating or cleaning bath. Some solutions are strongly corrosive, and many of them produce corrosive fumes. Fresh air entering the room through the ceiling flows to the floor and vents the fumes into carry-off ducts below the tanks. The system permits work in the room without use of protective breathing equipment.

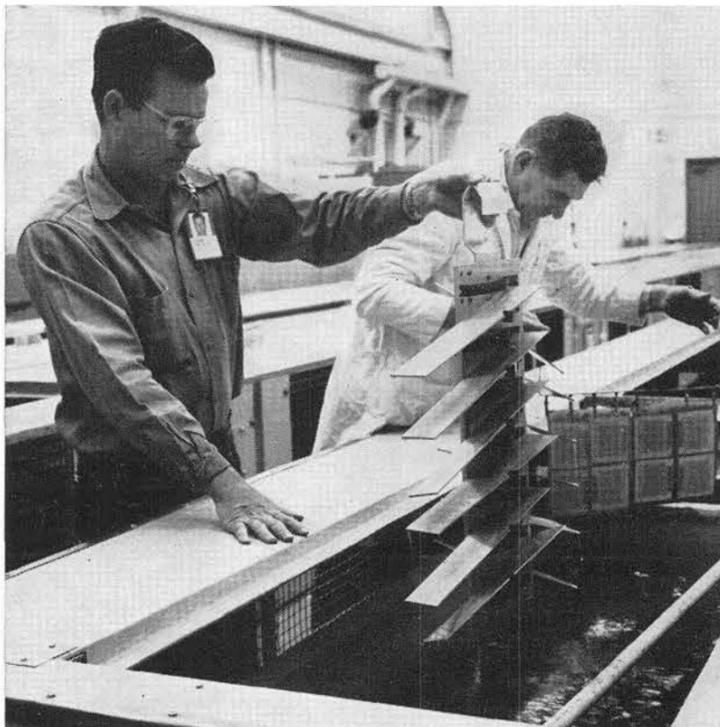
A walled corner of the plating room houses laboratory equipment used in analyses of metals and solutions.

"In addition to electroplating, anodizing, and electroforming of common materials, we provide other services as well," Jesse continues. "We plate onto stainless steel, invar, and kovar — three 'difficult' metals. We coat steel and copper with a black oxide surface similar to the bluing found on gun barrels. The plating processes often involve buffing, polishing, cutting, and etching, all of which we perform at the shop, as well as detailed chemical analyses of plating materials and plating solutions."

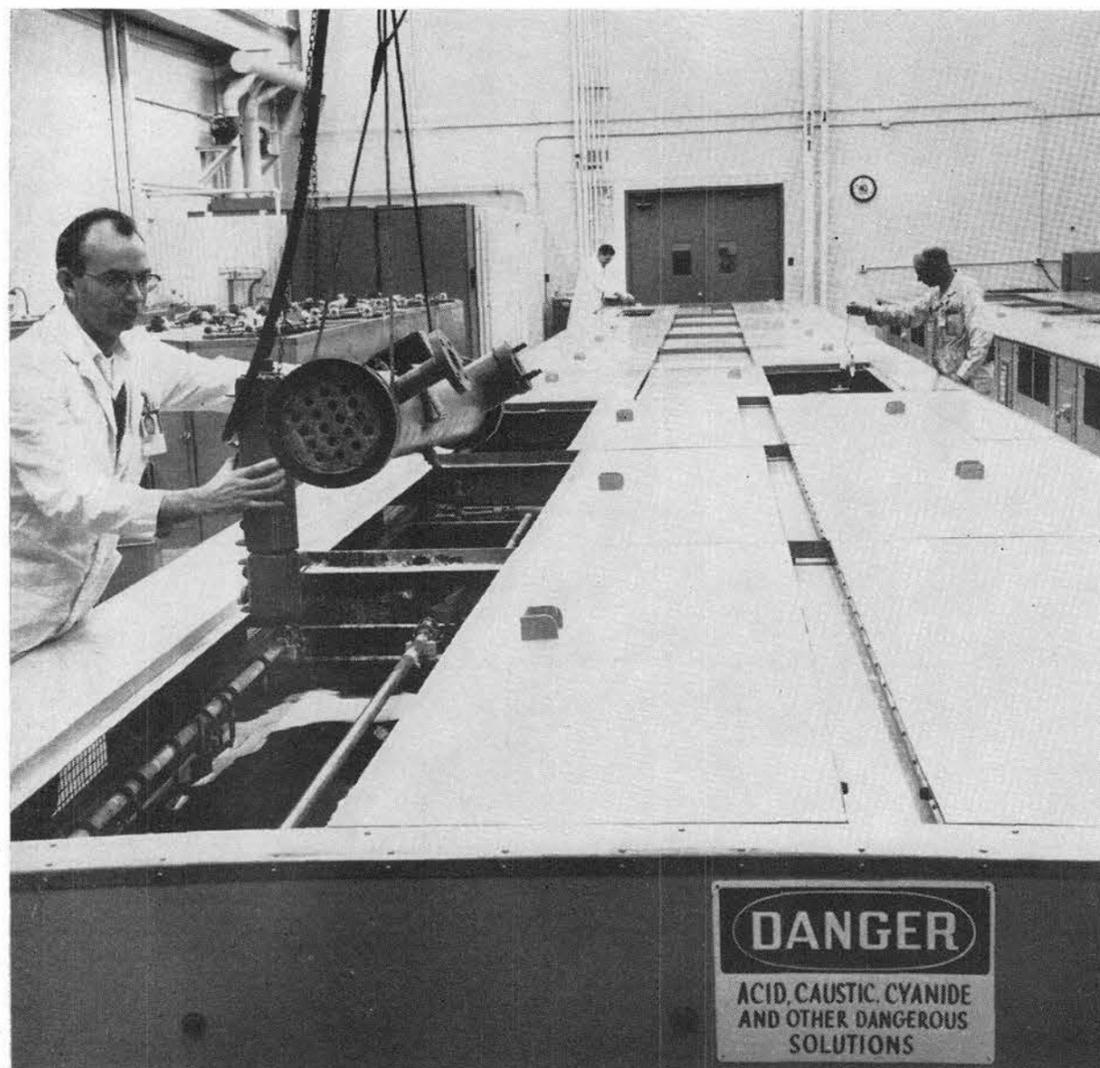
The variety of operations performed at the plating shop keeps the employees of Section 4221-3 busy. "But that's the way we like it," Jesse concludes.



TYPICAL objects which receive treatment at Plating Shop are removed from hangar by F. H. Sanders, Jr. (4221-3). The shop handles a variety of plating, etching, anodizing, cleaning operations.



PLATED components, suspended from hangers, are removed from plating bath by John Hinson, left, and Pete Ferketich, both 4221-3. Rows of tanks contain a variety of solutions for different plating.



BEAM hoist suspends a component over tank of operates controls. Roy Hanson, right, and Pete cleaning solution as R. R. Hatcher (4221-3), left, Ferketich, remove plated components from tanks.

New Supper Club Announced by Coronado Club

A new entertainment concept for Coronado Club members and their guests will be offered beginning May 23 when the Club opens its Supper Club.

The Supper Club will feature table service for dinner and cocktails in a dining area opening onto the lounge.

During the Supper Club hours (6 p.m.-1 a.m. on the 23rd and 24th; 6 p.m.-2 a.m. on the 24th and 25th) the cafeteria line will be screened-off from the dining area, and the glass-wall partition separating the dining area from the bar area will be removed.

A band stand and dance floor will be located on the north side of the dining area.

Featured during the four-day opening of the Supper Club will be the "TV Varieties." This group of entertainers includes Everett E. Everett, a comedian from "Car 54, Where Are You?"; the Val Perry Trio, which has appeared on the Ed Sullivan TV show; and Virgil Bennett and his orchestra, who have played at leading night clubs and hotels throughout the nation.

The menu, with nominal food prices, will include dinner and a la carte selections of steak, chicken, lobster tails, shrimp, and lamb chops.

During the opening four nights, Supper Club diners may enter the Supper Club Name Contest. Prize will be a free evening for two at the Supper Club.

During the day cafeteria service will be resumed, and the bar-lounge will be walled-off from the dining room.

Reservations are not required, but are now being accepted at the Club's office for the mid-May opening. After the 26th, the Supper Club will be open Friday and Saturday nights and for special occasions.

Jingle Pays Off

James E. Breitenbach (7323-2) won third prize in a National Safety Council jingle contest recently.

Jim supplied the last line of a limerick to illustrate using safety seat belts in automobiles. The limerick is as follows:

"You're a careful, sharp driver, you say?
You can use this advice anyway:
You need not be scared
But be always prepared.
Buckle down to safe driving today!"

Appropriately, Jim is going to use the prize money to purchase seat belts for his car.

Might As Well Secede

Lessons in geography — it's the only answer.

C. A. Sandoval (1111-1) received a package from a firm in New Jersey recently. The package was addressed to "Abburguerque, New Mexico" but to make things even worse, the parcel bore a U. S. Customs Declaration.

Service Awards

15 Year Pins



William Pawley
3463
May 19, 1947

10 Year Pins

May 11-25

E. P. Cave, Jr. 3113, E. W. Lehmann 4252, W. G. Levy 1332, J. W. Mitchell 4253, K. T. Moriarty 4121, W. K. Valley 7246, L. A. Baca 3242, F. D. Carpenter 4518, R. W. Cruzen 3242.
T. O. Meyer 2541, Federico Martinez 4151, W. E. Neitzel 7118, H. C. Frahm 4511, J. C. Vincent 4511, W. A. Adamek 4511, F. C. Chavez 4573, C. E. Dahl 2634.
Dilia Fernandez 4321, R. C. Maydew 7132, Charles Reed, Jr. 7233, F. G. Armijo 4511, D. E. Larson 7511, F. S. Shea 4514, L. B. Strauch 2642.

No job is so important and no service is so urgent that we cannot take time to perform our work safely.

Sandia's Safety Record

Sandia Laboratory HAS WORKED 175,000 MAN HOURS OR 5 DAYS WITHOUT A DISABLING INJURY

Livermore Laboratory HAS WORKED 982,000 MAN HOURS OR 167 DAYS WITHOUT A DISABLING INJURY