



PRESIDENT OF BELLCOMM, INC., Dr. John Hornbeck, left, is shown with R. W. Henderson, Vice President, Weapon Programs, during a visit to Sandia Laboratory, Oct. 15. He attended a briefing on reliability and quality control operations at Sandia. He also spoke on "Bellcomm and the Apollo Program" during the Banquet Session of the 5th Annual ASME Symposium (N. Mex. Section), held in Albuquerque, Oct. 15-17.

ECP Drive Reaches New All-Time Record

At the close of the 1964 Employees' Contribution Plan Fund Drive, a total of \$218,313 has been given by Sandia Laboratory Employees. "The figure sets a new record," R. W. DeVore, Chairman of the 1964 ECP Committee, comments. "We can be gratified that, as Sandia employees, we have solidly established the practice of fair-share giving through ECP. Our fair-share percentage is over 60 percent. While we did not make our goal of 100 per cent fair-share, this year's giving represented a giant step toward this goal."

The new figure shows an increase of \$35,653 over last year's total of \$182,660. There are 2368 Sandians now fair-share (one hour's pay or more per month) members of ECP, of these 129 are one-percenters. A total of 1,558 Sandians became fair-share givers during the 1964 Fund Drive.

Some 281 new members have joined ECP this drive. The average gift per contributor this year is \$36.78 compared to \$29.79 last year.

Funds collected by the ECP are divided on a percentage basis among the Albuquerque United Community Fund and seven other health and welfare agencies. These agencies will receive allocations based on their fund raising activities in the local area.

"At the conclusion of the 1964 drive," Mr. DeVore continues, "it's worth noting that \$99,000 was raised in the first ECP drive seven years ago. To date, over \$1,171,620 has been raised in the ECP campaigns. The steady increase of contributions over the years indicates that Sandia employees continue to accept their responsibilities as members of the community."

Feature Name Band At Coronado Club Saturday, Nov. 7



A special dance at the Coronado Club on Saturday, Nov. 7, will feature Johnny Long and his orchestra, one of the most copied "big bands" in the country.

The orchestra is known for its ability to please any audience, whether primarily listeners or dancers. The group is credited with many "firsts" in the music business, among them "five lyrics" set to well known tunes; background vocals by the band; muted clarinets; and other new sounds.

Guest vocalist will be Daisy Bernier who has recorded for all the major recording companies and has appeared in many TV shows. She has been with the Johnny Long band for two years.

Early reservations for this special dance are urged.



SANDIA CORPORATION

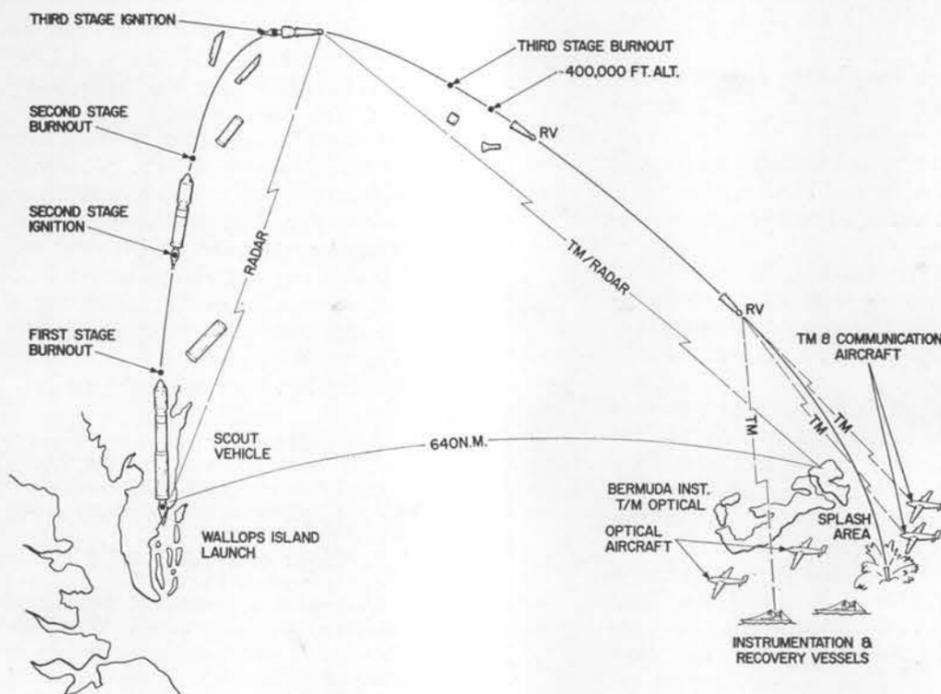
PRIME CONTRACTOR TO THE ATOMIC ENERGY COMMISSION

ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

LAB NEWS

VOL. 16, NO. 22 / OCTOBER 23, 1964

RFD-2 Experiment Complete Success; Rocket Fired into Atlantic Near Bermuda



RFD-2 SAFETY FLIGHT TEST was conducted last week. Launching of the Scout rocket was from Wallops Island, Va., and impact area was some 200 miles southeast of Bermuda. The RFD-2 was the second of a series of operational safety flights of SNAP (Systems for Nuclear Auxiliary Power) units conducted by Sandia Corporation.

A non-radioactive mockup of a nuclear isotopic generator (atomic battery) made a 750-mile suborbital flight last week from Wallops Island, Va., to an impact point below Bermuda.

"The flight was completely successful," says V. E. Blake, Jr., manager of Aerospace Nuclear Safety Department. "We obtained all the data that we were after. Both telemetry and optical data are excellent."

The test was conducted by Sandia Laboratory's Aerospace Programs Organization. It was designated Reentry Flight Demonstration-2 (RFD-2), and is a part of a continuing program, including exhaustive ground studies, to acquire all necessary data to evaluate the operational safety of isotopic power sources for space applications. The primary objective of RFD-2 was to acquire data on generator disassembly and fuel capsule burnup rate for use in advanced generator designs.

To aid visual observation of brightly burning tracer elements in the fuel capsules, the test was conducted during the dark of the moon. The isotope heat sources in the fuel capsules were replaced by non-radioactive tracer elements which burned brightly and provided optical evidence of generator disassembly and fuel capsule burnup during reentry. Optical instrumentation and telemetry were used to observe the test and to gather data.

A Scout rocket carried the non-radioactive full-scale mockup from the National Aeronautics and Space Administration's facility at Wallops Island to an impact point about 200 miles southeast of Bermuda. It was the second of a series of operational safety units conducted by Sandia Corporation, responsible for independent assessment of aerospace nuclear safety for the AEC.

A. E. Bentz, supervisor of Aerospace Nuclear Safety Division II, was Mission Director for the RFD-2 flight.

The first test of the series, RFD-1, was successfully conducted in May 1963 along the same Bermuda path. In that test, a non-radioactive model of a SNAP-10A nuclear reactor was subjected to reentry into the earth's atmosphere while the more recent flight tested an isotopic generator. RFD-1 demonstrated that space reactors can be designed to melt down and disassemble upon reentry into the atmosphere. This is an important consideration in preventing nuclear accidents.

(Turn to page three, please)

Livermore Laboratory Host For AEC Quality Managers Meeting

The 12th meeting of the AEC Integrated Contractors' Quality Managers was held at Livermore Laboratory Oct. 6-7. This was the first time Livermore Laboratory served as host for this group, which meets semi-annually. About 25 representatives from within the atomic weapons complex attended the two-day program.

The group is composed of quality managers representing AEC operating contractors. These managers are responsible for the manufacturing functions relating to the quality of the product assigned to the contractor. They must provide the assurance that their product is of satisfactory quality and conforms to design intent. During these meetings, improved methods and new techniques are discussed and questions or problems of mutual interest are resolved.

Leo Gutierrez, Director of Systems Development at Livermore Laboratory, welcomed the group. Paul Ager, AEC/ALO resident representative at Livermore, made the opening address. Mr. Ager reviewed the history of quality control and quality assurance, stressing that our constant quality surveillance through the stockpile sampling program has reaped great reward.

Dr. Harold Furth, LRL, briefed the group on the Sherwood program, which involves controlled thermonuclear reactions, and escorted them through the LRL Sherwood facilities.

On Tuesday evening, a dinner session at the Castlewood Country Club featured guest speaker Dr. Gary H. Higgins, group leader from LRL in the Plowshare program. He discussed briefly "Plowshare Progress." Dr. Higgins also discussed the alternate routes that have been examined for a new Panama Canal, then presented some of the details of Project Carryall. Project Carryall involves the possible use

of nuclear explosives to excavate a cut in lieu of digging a tunnel through the Bristol Mountains north of Amboy, Calif. This is a project for improving the routing of U.S. Highway 66 (Interstate 40) and realigning the Santa Fe Railroad.

Sandia speakers included Jay Gilson, who spoke on "Numerical Description and Product Definition," and Dick Cook, who presented "Single Drawing Set and Product Record."

The next meeting of the quality managers will be held in the spring at ACF Industries, Inc., Albuquerque.

New Mexico Section of American Ceramic Society Gets Charter

The recently-organized New Mexico Section of the American Ceramic Society will receive its official charter during a meeting in Santa Fe Saturday, Oct. 31.

The charter will be presented by Dr. Norbert J. Kreidl, trustee of the technical society's glass division. Dr. Kreidl has been with Bausch & Lomb Optical Company, Rochester, N. Y., for more than 20 years and is at present Director of Material Research. At the dinner meeting he will speak on "Radiation Effects in Glass."

The local section was formed six months ago and has 25 members, mainly ceramic engineers and scientists from Sandia Corporation, Gulton Industries, and Los Alamos Scientific Laboratory.

At a recent meeting, the following officers were elected: Robert Dungan, supervisor of Ceramics Section, president; Robert Cowan of LASL, vice president; Robert Lefever, supervisor of Materials Research Division, secretary-treasurer; and Steve Stoddard of LASL, councilor.

Reservations for the dinner meeting at La Fonda in Santa Fe should be made by Oct. 26 with Charles Hall of Ceramics Section. Guests are invited. A social hour will start at 6:30 p.m., followed by dinner at 7:30.

NEW OFFICERS of the recently organized New Mexico Section, American Ceramics Society—Robert Lefever, secretary-treasurer, and (right) Robert Dungan, president—look over one of the technical society's publications.



(Editorial Comment)

All We Have To Do Is Vote

Everyone remembers Washington and Lincoln. But what about those patriots who signed the Declaration of Independence?

Five signers were captured by the British as traitors and tortured before they died. Twelve had their homes ransacked and burned, two lost their sons in the Revolutionary Army, and two others had their sons captured. Nine of the 56 fought and died from wounds or hardships of the war.

What kind of men were they? Twenty-four were lawyers and jurists. Eleven were merchants, nine were farmers. They were men of means, well educated men, but they signed the Declaration of Independence knowing full well that the penalty would be death if they were caught.

They signed and they pledged their lives, their fortunes, and their sacred honor.

Carter Braxton of Virginia, a wealthy planter, saw his ships swept from the seas by the British Navy. He sold his home and properties to pay his debts and died in rags.

Thomas McKeam was so hounded by the British that he was forced to move almost constantly. He served in Congress without pay and his family was kept in hiding. Poverty was his reward.

At the battle of Yorktown, Thomas Nelson, Jr. noted that the British had taken over the Nelson home as their headquarters. The owner quietly urged General Washington to open fire, which he did. The home was destroyed and Nelson died bankrupt.

John Hart was driven from his wife's bedside as she was dying. Their 13 children fled, his fields and mill were laid waste. For more than a year he lived in forests and caves, returning home after the war to find his wife dead and his children gone. He died a week later from exhaustion and a broken heart. Norris and Livingston suffered similar fates.

Such were the stories and sacrifices of the American Revolution. These were not wide-eyed, rabble-rousing ruffians. They were soft-spoken men of means and education. They had security, but they valued liberty more. Standing erect, they had pledged: "For the support of this declaration, with a firm reliance on the protection of the Divine Providence, we mutually pledge to each other, our lives, our fortunes, and our sacred honor."

They gave us an independent America.
And something else, too.

They left us, along with a heritage of individual freedom, the responsibility to preserve that freedom so bravely fought for and so gallantly paid for in tears and blood and personal sacrifices.

In a few weeks, we will have an opportunity to demonstrate that we are worthy of that trust by casting our ballots to elect men to represent us in the perpetuation of this free America.

Surely, if the founding fathers were willing to make such noble sacrifices to give us our freedom, we can find time to cast our individual vote to insure its continuance.

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In The Interest of Safety

Efforts of 8000 people on the lookout for unsafe conditions and practices could have remarkable results.

The latest move against on-the-job accidents was announced a few days ago in a bulletin asking each employee to help search out and report unsafe acts and conditions. Thousands of sets of eyes on the alert for possible "accident-causers" should produce spectacular results.

They will be spectacular, not in the sense of reports and statistics, but in the absence of pain and suffering which are legacies of injuries.

To be successful, the campaign calls for "eagle eyes" and good judgment and quick action. It's worth the effort. No one knows when an accident will be a terribly personal thing.

Take Note . . .

Sandia Base Thrift Shop management notifies the *Lab News* that at the present time the Shop does not have room for military uniforms, fur coats, books, and ladies' shoes. There is limited space for large items such as furniture. It is requested that a telephone call be made to the Thrift Shop (264-3072) before bringing in large items.

Seven Sandians, members of the Sandia Archers, participated in the 1964 National Industrial Recreation Association Archery Tournament recently. B. W. Duggin of Systems Shock Testing Section took fifth place.

Other Sandians participating included F. H. Deiber, F. R. Emig, R. C. Holt, C. H. Kinsey, H. S. Seltzer, and C. W. Tucker.

Participants in the tourney shot 80 arrows weekly at a local archery range.

The 1964 Inter-Base Flag Football Championship Playoffs will be held Nov. 2-6. Games will be played at 6:30 p.m. on the Sandia Base football field.

Host base for the tourney is Sandia Laboratory. Other bases participating include Kirtland AFB, Manzano Base, and Sandia Base.

The Sandia Corporation Employees Bridge Association is presently conducting noon hour duplicate bridge tournaments

Sandia Speakers

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

C. A. Trauth, Jr., of Computer Mathematics Division, "A Decomposition Theorem for Automata," Association for Computing Machinery meeting, Oct. 1-2, Albuquerque.

L. F. Shampine of Computer Mathematics Division, "The Bottleneck Assignment Problem," Association for Computing Machinery meeting, Oct. 1-2, Albuquerque.

M. D. Fimple of Applications Oriented Systems Division, "Survey of Nonlinear Regression Methods," Association for Computing Machinery meeting, Oct. 1-2, Albuquerque.

E. G. Thuman of Administrative Programs Division, "Personnel Data Processing," Association for Computing Machinery meeting, Oct. 1-2, Albuquerque.

D. R. Anderson and J. M. Holovka, both of Polymer Chemistry Section, "Thermally Stable Polymers," New Mexico Academy of Science meeting, Oct. 22-23, Albuquerque. Mr. Anderson will make the presentation.

J. O. Wear and J. R. Armijo, both of Plasmas and Kinetics Research, "Complexing of Np(VI) with Phenolphthalein," New Mexico Academy of Science meeting, Oct. 22-23, Albuquerque. Mr. Wear will make the presentation.

T. W. H. Caffey of Ordnance Test Projects Division I, "An Ultrasonic Transducer with a Biconical Pattern," 1964 IEEE Sonics and Ultrasonics Symposium, Oct. 14-16, Santa Monica, Calif.

W. C. Hunter of Physical and Electrical Standards Department, "Contract Calibration," 19th annual Instrument Society of America meeting, Oct. 12, New York City.

R. E. McCallum of Electrical Standards Division, "Interlaboratory Comparisons of Electrical Quantities," 19th annual Instrument Society of America meeting, Oct. 12, New York City.

J. W. Reed of Aerospace Physics Division, "Instrumenting a 1500-ft. Tower at Nevada Test Site," American Meteorological Society National Conference on Micrometeorology, Oct. 13, Salt Lake City, Ut.

Hugh W. Church of Aerospace Physics Division and D. M. C. Thomas of Atomic Weapons Research Establishment, Aldermaston, England, "Operation Roller Coaster Micrometeorological Measurements" and "Experimental and Theoretical Dispersion of Explosively-Released Radioactive Particles," American Meteorological Society National Conference on Micrometeorology, Oct. 13, Salt Lake City, Ut. Mr. Thomas presented both papers.

J. D. Kennedy and W. B. Benedick, both of Dynamic Stress Research Division, "Shock Induced Polymorphic Phase Transformation in CdS," American Physical Society meeting, Oct. 23-24, Chicago, Ill.

L. S. Nelson of Aerospace Physics Division, "Combustion of Zirconium Droplets Ignited by Flash Heating," 1964 fall meeting of the Western States Section, The Combustion Institute, Oct. 26-27, Salt Lake City, Ut.

R. T. Meyer of Plasma Physics and Chemical Kinetics Division, "Flash Photolysis and Time Resolved Mass Spectrometry: Detection of the Hydroxyl Radical in the Nitrogen Dioxide Sensitized Reaction of Hydrogen and Oxygen," New Mexico Academy of Science meeting, Oct. 22-23, Albuquerque.

W. J. Meikle and D. J. Gould, both of Advanced Development Division, "Structure of Robinson's Thiadiazole," New Mexico Academy of Science meeting, Oct. 22-23, Albuquerque.

in various buildings throughout Sandia Laboratory.

This play will qualify teams-of-four for the championship tournament to be held at the Coronado Club Thursday evening, Nov. 12.

Bridge players, who have not previously qualified for the tournament, may attend a qualifying bridge session at the Coronado Club on Thursday evening, Nov. 5, according to association president J. K. Nakayama.

The Sanado Women's Club has formed a new tennis interest group, and is seeking new members for it. Members of the Sanado Club or others interested in joining may contact Mrs. J. W. McDowell, tel. 244-9292, for more information.



TRIO OF GOLF CHAMPS—Rosalie Crawford, low net on short course; Rose Hainlen, low gross; and Dorothy Hummer, low net (top to bottom), pose with their respective trophies. Pat Anderson, low gross winner on short course, was not present.

Women Golfers Awarded Trophies At Season's Close

The Sandia Laboratory Women's Golf Association completed its fourth season of play with a banquet this month honoring the winners of the two fall tournaments.

Trophies were awarded Rose Hainlen for low gross and Dorothy Hummer for low net in the 36-hole tournament played on the Los Altos course. A second tourney, played on the Los Altos "short" course, resulted in a low gross win for Pat Anderson and a three-way tie between Rosalie Crawford, Sybil Milligan, and Eileen Zemka for the low net trophy. Rosalie was winner of the 36-hole playoff.

Numerous other prizes were presented during the banquet, including an award for "most improved player" to Kay Ogden and a ringer trophy to Pat Anderson.

This season's league play included nine holes on the Los Altos "short" course each Tuesday evening, and 18 holes on the regular Los Altos course every other Saturday. All association members are employed at Sandia Laboratory or AEC/ALO. Tournaments were played at Belen, Socorro, and Los Alamos. Rosalie Crawford served as tournament chairman.

The new officers elected during the Oct. 6 banquet at the Sandia Base Officers Club were: Ann Michele, president; Dorothy Hummer, vice president; and Alma Mischke, secretary-treasurer. Eileen Zemka was appointed tournament chairman, and Kay Ogden will serve as ringer and handicap chairman.

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LAB NEWS

OCTOBER 23, 1964

SANDIA CORPORATION LAB NEWS



ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

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Twin Satellites Still Setting Records After Year in Earth Orbit

Four orbiting Vela Detection Satellites continue to set new performance records. The first set of twin satellites was launched Oct. 16, 1963, and has performed for more than a year. The second set, launched last July 17, has been in orbit for more than three months.

Designed to measure x-rays, neutrons, and gamma rays, the sensors on board the satellites can detect nuclear bursts in space. The Logics systems on the satellites, designed by Sandia Laboratory, are essentially special purpose digital computers. Their functions are to correlate and compare detector outputs in a way which permits the satellites to differentiate known natural background radiation from radiation associated with nuclear bursts. The logics systems also convert pertinent background radiation and spacecraft "state-of-health" data to a form suitable for transmission to the ground.

The logics systems on board the first set of satellites have now logged more than 43 million transistor hours without a failure. More than eight billion bits of information have been transmitted from the satellites and recorded by a world wide network of Air Force ground stations. The data is relayed to Sandia Laboratory, where more than 700 reels of magnetic tape have been received. Preliminary processing is performed by Sandia's CDC 160A and 1604 computers. After this processing, records are sent to Los Alamos Scientific Laboratory for final analysis.

The second set of satellites has transmitted more than 200 reels of data.

"These are remarkable records," says William C. Myre, supervisor of Space Projects Division I and Sandia's project leader for the Vela Detection Satellite program. "There are more than 23,000 parts in the logics systems in the first set and 25,000 in the logics

systems of the second set. They survived rocket launch shocks, separation from the rocket carrier, transfer into a circular orbit, and are operating continuously in the environment of deep space."

The satellites are performing their function as planned—providing a capability of detecting nuclear explosions in space—and are also contributing new scientific knowledge.

Physicists of Los Alamos Scientific Laboratory, Group P-4, are responsible for the overall scientific objectives of the program and performed sensor design and fabrication. Group P-4 released the following statement to the **Lab News**:

"In the first several weeks after launch one, many solar x-ray events were seen. Some, but not all, of these were well-correlated to solar flares seen from earth. One of the new instruments on the launch two spacecraft is used to further monitor solar x-ray activity. Both sets of spacecraft have shown the presence of energetic electrons (energy greater than 40 kilovolts) on the dark side of the earth's magnetosphere. There is a tendency for these electrons to be found near the earth's magnetic equatorial plane. The new instrumentation on the launch two spacecraft has made it possible to measure the intensity, variations with time, energy spectrum, and to some extent the direction of flow of these electrons relative to the sun-spacecraft line.

"Another of the new launch two instruments, the electrostatic analyzer, is capable of making intensity and energy spectrum measurements on either electrons or protons in the energy range from 0.3 to 20 kilovolts. Many interesting observations of the solar wind have been made which show how the direction and energy spectrum of the solar wind protons change with time."

The Vela Detection Satellite program is the responsibility of the Advanced Research Projects Agency of the Department of Defense. Air Force participation in the program is concerned with the development of the spacecraft, launch operations, and control of the satellites in orbit. Management of this effort is under the Air Force Systems Command's Space Systems Division.

Sandia's responsibilities included design, development, manufacturing engineering, reliability, and quality assurance activities for the logics systems and associated ground testing equipment.

In a letter to S. P. Schwartz, Sandia Corporation President, Brig. Gen. Delmar L. Crowson, Director of the Atomic Energy Commission's Division of Military Application, congratulated Sandia Laboratory for its achievement on the Vela Detection Satellite program.

The letter said in part: "Congratulations and appreciation have been expressed recently by a number of persons for the exceptional efforts and successful results relating to the Vela Satellite Detection Program. These are in addition to past expressions of congratulations for substantial contributions to the program. . .

"I am highly gratified by the success of this program and realize the vital role that your laboratory has played and continues to play in its success. Again I wish to express my personal appreciation to you and your laboratory for the professional technical skills, hard work, and cooperative spirit that have all led to the outstanding results of the program."



UNION AGREEMENTS were discussed by W. L. Martin (center rear), supervisor of Labor Relations Division, at a recent organization guidelines conference for supervisors of the Plant Maintenance Department and Transportation and Services Department. The conference was developed by Howard E. Frankel, Staff and Management Development Division.

Supervisors of Two Departments Study 'Organization Guidelines'

A three-and-one-half day meeting, "Organization Guidelines Conference," has been held for all section and division supervisors of Plant Maintenance Department and Transportation and Services Department. The meeting was held in two sessions, the first Sept. 29-Oct. 2, the second Oct. 6-9.

R. W. Clark of Hourly Job Evaluation Section led an eight-hour session which provided additional knowledge to use when establishing goals and assignments in graded jobs.

W. L. Martin, supervisor of Labor Relations Division, discussed specific items in Sandia Union Agreements. The conferees participated in a sickness absenteeism study led by S. T. Mancuso, supervisor of Medical Administration Division.

The last sessions, led by J. R. Garcia,

supervisor of Personnel Research and Testing Division, were concerned with employee motivation and performance evaluation.

R. E. Hopper, Director of Plant Engineering and Maintenance, met with the group on three separate occasions during the conference and encouraged back-on-the-job application of the training.

"The Conference was extremely valuable," Mr. Hopper said. "We dealt with practical supervisory skills necessary in our day-to-day operations. We discussed the resources available to supervisors to achieve good physical plant service and ways to increase this capability."

The conference was developed by Howard E. Frankel, Staff and Management Development Division.

Mrs. Kennedy Thanks Sandia Employees for Gifts to Library

Sandia Corporation employees received official "thanks" recently from Mrs. John F. Kennedy for contributions made in July for the Kennedy Memorial Library.

The note said, "The President's family and I wish to express our deep appreciation for your contribution to the John Fitzgerald Kennedy Library. The reality of this Library will serve as a perpetual memorial to the President and we are grateful for your support."

The \$10-million library on the banks of the Charles River in Boston, Mass., will be financed by voluntary contributions and will include a museum and an archive.

(Continued from Page One)

RFD-2 Test Completely Successful

ing any radiological hazard to the earth's population.

SNAP is part of the extensive AEC program to develop nuclear power for space applications. One of the basic considerations in designing these power sources is that there be no undue nuclear radiation hazard during fabrication, handling, and operation of the system.

Earlier testing has shown that the heat created during reentry can be used to burn up the isotopic generator, leaving very minute particles which would then be dispersed at high altitudes by atmospheric currents, eliminating any radiation danger.

The non-radioactive mockup in RFD-2, built by the Nuclear Division of the Martin Company, Baltimore, is a model of an isotopic-thermoelectric generator that would be capable of producing approximately 20 watts of electrical power for operational periods greater than three years. The fuel capsule has already been subjected to considerable safety testing.

Basketball Season Starts in December For Sandia Teams

Plans are being made to organize the Sandia Laboratory Basketball Association for the 1964-65 season, according to O. J. Foster of Benefits and Services Division.

The basketball season will start around Dec. 1. A meeting will be held at 9 a.m. Oct. 26 in the southwest room of Bldg. 610, during which Basketball Association officers will be elected, a schedule will be compiled, and organizations will be combined into teams.

DIRECTOR OF CABINET, Ministry of National Defense for the Republic of Upper Volta, Emmanuel Sidiki Keita (left) visited Sandia Laboratory on Oct. 5, during a tour of the United States as a guest of the Department of State. He was escorted at Sandia by C. C. Hudson of Theory and Analysis Division, right. Mr. Keita toured the Sphere of Science and saw the films, "The Sandia Story" and "Environmental Testing." Mr. Keita, who was born in Ouahigouya (at the time, part of the French Sudan) in 1925, is a citizen of Upper Volta and a member of the Mossi Tribe.

Sandia Corporation Employees Make Good Use of EAP

There are 342 Sandia Corporation employees currently taking college and university courses for credit under the Educational Aids Program.

According to University Relations Division at Sandia Laboratory, 296 employees are registered at the University of New Mexico, and 29 are enrolled at St. Joseph's College.

The total figure includes 50 seeking doctorate degrees; 68 working toward Master's degrees; 23 graduate students in non-degree status; 55 juniors and seniors; 100 freshmen and sophomores; three taking courses toward a second Bachelor's degree; and 26 undergraduates in non-degree status.

One employee at a site, William H. Carter of Systems Test Section, is enrolled this semester at San Antonio College.

At Livermore Laboratory, 16 employees are taking courses under EAP. There are four at San Jose College, one is attending the University of California at Davis, five go to classes at the University of California Davis at Livermore, three attend the University of California at Berkeley, one attends Stanford University, and two are at California State College at Hayward.

Five employees at Livermore Laboratory are seeking doctorate degrees, six are studying toward Master's degrees, three are taking coursework for Bachelor's degrees, and two are in a non-degree status.

In addition to employees studying under EAP, there are 97 employees enrolled at UNM and three enrolled at the University of California Davis at Livermore under Sandia's Technical Development Program.

Death



Michael Sollecito, a Sandia employee for nearly nine years, died Oct. 13. He was 40.

Mr. Sollecito was a draftsman in Design Definition Division C.

Survivors include his widow and four small children. Burial was at his former home in Rhode Island.

Nuclear Radiation

— what is it?

Spectacular improvements are made possible by use of nuclear radiation. Discussed here are nuclear batteries, tracer applications, neutron activation analysis, and power from radiation. This is the second in a series of three articles which relate man's conquest of nuclear radiation.

PART II

One of most dramatic improvements made possible by the use of nuclear radiation has to do with batteries.

As everyone knows, even the best of chemical batteries will lose its power after a time, especially under prolonged and constant use.

But now nuclear radiation has come forward with a solution to this problem.

Here is how a nuclear battery works. Radioisotopes give off heat which can be turned into a steady and long-lasting supply of electric current by means of a device known as a thermocouple.

Thousands of navigational buoys in bays, rivers, and harbors are operated by chemical batteries which need constant recharging and replacement.

But electric current from radiation-heated thermocouples can be used to continuously recharge such conventional batteries and eliminate the need for frequent attention.

A 36-watt navigational buoy recently placed in Baltimore Harbor, for example, is operated by just such an arrangement.

Its radiation-recharged battery is now expected to operate a flashing light every five seconds for many years without attention or replacement!

Nuclear batteries also have been used to operate unmanned and unattended weather stations which have automatically recorded and transmitted weather data from remote points near the North and South Poles for long periods without attention.

Recently, a floating automatic weather station powered by a similar nuclear battery was established on a barge anchored at a remote site in the Gulf of Mexico.

Meanwhile, the world's first nuclear-powered lighthouse, operated by a radiation-powered isotopic generator that keeps recharging an energy storage system, has been placed on duty in Chesapeake Bay. The lighthouse generator, designed to operate for 10 years without attention, replaces chemical batteries that had to be removed every year. It also eliminates the need for a lighthouse crew of three men!

Electricity from radiation-heated thermocouples also can be used directly without first being fed into conventional batteries. This is the case with two navigation satellites launched by the United States in 1963 in which power from radiation-heated thermocouples was used directly to transmit signals to earth. The design life of these nuclear batteries is a minimum of five years.

Radioactive Detectives

Tracer applications are good examples of new achievements made possible by the use of nuclear radiation. A simple illustration will show how tracing works.

In medicine, patients with thyroid trouble may be given an "atomic cocktail"—a solution containing a small amount of the radioactive isotope, iodine 131. Since the thyroid concentrates iodine, the radioisotope is promptly lodged in that gland in harmless amounts. The radiation is then detected by a scanning device and its spread through the gland is traced.

Scans of a normal thyroid that has absorbed iodine 131 show a butterfly outline of radiation. But if the gland is ailing, this pattern is distorted.

By studying these distortions, physicians are able both to detect and to identify the disease or deficiency present and to indicate the treatment that is necessary.

Recent improvements in scanning and

other detection devices have led to greater and greater use of radiation tracing in medicine.

Injecting and tracing radioactive carbon 14, which is chemically identical with the carbon in body compounds such as sugar, fats, and amino acids, have enabled researchers to make many helpful studies within the body of the metabolic process underlying such diseases as diabetes, gout, and anemia.

Numerous studies of the blood, using radioactive iron, have disclosed the effect of hormones on red cell production, the effect of altitude on blood cell count and, as an aid in severe cases of anemia, the distribution of red cell-producing marrow in the body.

Other radioisotopes are used to determine the amount of blood being pumped by the heart, to trace kidney circulation, to outline the location and contour of the liver, or to locate tumor tissue in the brain.

In a typical industrial tracer application, a radioisotope is incorporated with piston ring metal and the rings are built into a test automotive engine. Metal worn from the rings then can quickly and easily be traced, because of its radioactivity, and measured as the motor operates.

Both the automotive and petroleum industries use this radio tracer method to study various engine designs and materials or the efficacy of oils and additives. The system avoids tearing down an engine to examine its parts after a test run and has enabled researchers to learn facts about engine construction and wear in hours instead of days or weeks.

In agriculture, the use of tracer radiation has led to more efficient and economical ways to use fertilizer. Radiation also has been used to develop better diets for farm animals, to study animal and plant diseases, and to develop new and improved strains of food plants and grains.

Was Napoleon Murdered?

One of the most astonishing developments to come from the use of radiation has been a new, supersensitive crime detection technique called "neutron activation analysis."

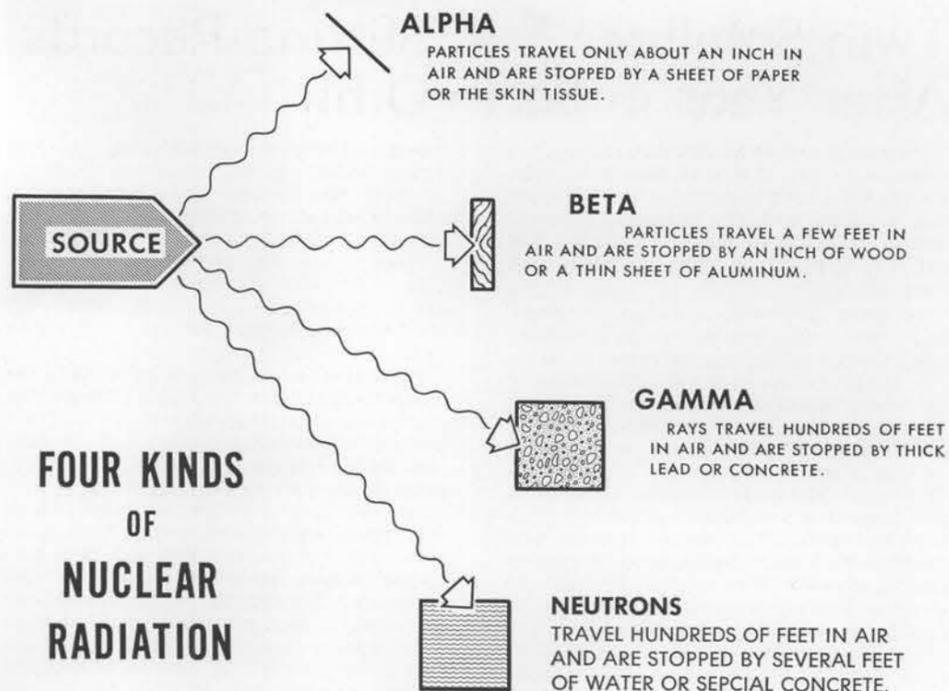
Under this technique, which has many and various uses, material to be examined is placed in a reactor so that it can be bombarded by neutrons. Under this bombardment, some atoms of each chemical element present in the material become radioactive.

Then, through the use of instruments, it is possible to identify each element in the substance being examined by noting its characteristic radio energy wave length.

By taking "smears" from the hands of a suspect, for example, it is possible in many cases to determine whether an individual has fired a gun recently, the type of ammunition used, the number of shots fired, and which hand held the gun. The reason is the uncanny ability of radiation analysis to locate and identify sub-microscopic traces of irradiated mineral elements.

Neutron activation analysis also has been used to trace the origin of illicit opium and marijuana, to compare grease spots, specks of dirt and flakes of paint too small to see, and to identify trace element constituents of hair, blood, finger nails, etc.

One celebrated use of the method had to do with irradiation of a bit of Napoleon's hair to check on a rumor that the Emperor was murdered while in exile in 1821. British scientists who conducted the



test discovered that an unusual amount of arsenic had been present in the hair sample, leading to the conclusion that Napoleon might have been slowly poisoned to death. Others believe, however, that the arsenic may have been in medicines used to treat him.

Police departments throughout the country are showing considerable interest in the new detection method because of its extreme sensitivity.

Nuclear radiation also has the unique ability to change the molecular structure of matter. This ability already has been put to work in industry, particularly in the field of plastics.

Plastics irradiated by a high-energy nuclear radiation source can be made stronger, more heat resistant and easier to dye. Many household plastic products now in use have undergone this treatment.

Now, in a new development holding special promise for future consumer products, high-level gamma radiation has been used to irradiate wood which has been impregnated with a simple plastic. The small molecules of the plastic are changed, under the intense radiation, to larger ones in such a way that a solid wood-plastic material is produced.

The resulting product is up to 700 per cent stronger than ordinary wood, is harder, bonds better, and is more resistant to warping. Hundreds of uses are foreseen for this improved product.

More Power from Radiation

Neutrons are the kind of radiation by which a continuing chain fissioning process is kept up in nuclear fuel for the production of heat and power.

More than one million kilowatts of electric power for homes, businesses, industries, churches, and schools are being generated in the U. S. today by nuclear power plants using this process, and many times this amount of power is expected from nuclear radiation within the next few decades.

Besides saving oil, coal, and gas for other, non-fuel purposes, the use of nuclear power is expected to lower the cost of electricity in all high-cost fuel areas of this country and help other areas to compete economically with traditionally low-cost fuel areas. One important reason is the low transportation cost for the highly compact, long-lasting nuclear fuel as compared to costs for the bulkier, quickly-burned conventional fuels.

Because nuclear fuels are long lasting as well as compact, they offer ideal characteristics for many types of propulsive power, particularly for ships and spacecraft.

One evidence of this is the success of the U. S. Navy with nuclear submarines. Nuclear power also is expected to permit merchant vessels to sail farther and faster on a single load of fuel than ever possible heretofore.

The U. S. has built the N.S. Savannah, the world's first nuclear-powered cargo-passenger ship, to show the way to this development.

On its single fuel loading of 17,000 lbs. of enriched uranium fuel, the Savannah could make 14 trips around the world without a stop, or run for three-and-a-

half years before taking on fuel again.

A conventional vessel would have to carry 90,000 tons of fuel oil to match this performance.

In space, nuclear energy is expected to become essential as man gropes farther and farther from earth.

On a hypothetical manned trip to Mars, for instance, the weight of a nuclear spaceship that would have to be assembled in orbit for the journey would be only one-tenth of that of a chemically-powered spaceship.

Such a difference in weight undoubtedly would decide whether such a journey would ever be feasible. Scientists, in fact, see nuclear power as the only practical answer to inter-planetary missions.

In another promising development which is now winning increasing world attention, nuclear power may also be the practical answer to realizing man's age-old dream of turning salt water into fresh, drinkable water.

It now looks as if giant nuclear reactors, part of whose heat would be used to produce electric power, may prove to be the means of desalting large quantities of water at costs which are economically feasible.

This combination of plentiful power and copious supplies of fresh water would have a double benefit for many power-short and waterless areas of the world.

The final article in this series tells of the dangers of radiation, how man has controlled them, and the success of his efforts to safely use nuclear radiation.

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LAB NEWS
OCTOBER 23, 1964

E. C. Mould Will Retire From Sandia With 14 Years Service



E. C. Mould, Sr., will retire Oct. 31 after 14 years at Sandia. He is presently an order analyst in Procurement Services Division, but has previously worked in Fabrication and Inspection organizations.

Mr. and Mrs. Mould live at 504 California SE. They have two sons and seven grandchildren.

Both are natives of England, and resided in Pittsburgh for 20 years before coming to Albuquerque.

Immediate plans call for fishing and probably a trip to Arizona to be on hand for the golden wedding anniversary of a couple the Moulds have known for 35 years.

Sandia-A.T.&T. College Employment Workshop Scheduled for Oct. 26-30

Sandia Corporation, in conjunction with the University of New Mexico will conduct a College Employment Workshop sponsored by the American Telephone and Telegraph Company Oct. 26-30. Purpose of the workshop is to indoctrinate attendees in policies and procedures of the team method in Bell System recruiting. Attending the workshop will be Sandia personnel from Albuquerque and Livermore, as well as personnel from other AT&T companies throughout the United States and Canada.

"This year's workshop will be the second such AT&T conference conducted at Sandia," W. A. Doyle, Sandia coordinator for the workshop, comments. "For the past three years, the Bell System, under the direction of AT&T Headquarters, has been conducting these workshops at various locations throughout the country. To date, 29 workshops have been held, and some 334 Bell System personnel have been

trained through them, including 31 Sandians."

The training sessions are sponsored by the College Relations Department of AT&T, and are conducted by Robert N. Ford, AT&T management training supervisor, with assistance by other AT&T staff members.

Roy Walters, AT&T Director of College Employment, will again visit the workshop, and will again participate with Mr. Ford in a discussion of recruiting during one of the workshop sessions.

D. J. Jenkins, Manager of Sandia's Employee Research, Training, and Education Department, will serve as a coach for the workshop.

Sandians participating as conferees will include Larry D. Ferree, employment representative at Sandia Laboratory; and J. S. Anderson of Section 2, Project Engineering Division, Livermore Laboratory.

Senior Life Saving Instructor Has Trained 200 Persons in Course

Increased interest in boating, swimming, and other water sports necessitates additional training in water safety and life saving. Richard J. Baughman of Materials Research Division is active in such instruction.

Dick, who is the volunteer chairman of Water Safety, Bernalillo County Chapter of the American Red Cross, has been a water safety instructor since 1950 and a water safety instructor trainer for the past six years. There are only two instructor trainers in New Mexico.

He estimates that he has "graduated" about 200 persons in the senior life saving course and about 100 persons in the instructor's course. Students for the senior life saving course must be at least 16 years old. The course requires a minimum of 17 hours to complete—Dick usually gives it as a 20-hour course. For the water safety instructors' course, the swimmer must be at least 18 years old and already have completed the senior life saving course. This course requires a minimum of 30 hours instruction.

The American Red Cross established both courses and issues certificates upon their successful completion. Swimming pool con-

cerns and private clubs customarily sponsor the courses.

Dick used to live on a lake and has known how to swim most of his life. He has taught swimming since 1950, mainly in Cleveland, O.

"I feel anyone in contact with water could benefit from the senior life saving course," Dick said, "since it develops awareness of the dangers present in and around water."

It includes instruction in: how to save a person in danger of drowning by using available equipment; how to make a swimming rescue; how to protect yourself during a swimming rescue; administering artificial respiration; and care of a person after rescue.

"If you do not learn such actions properly, you could endanger your own life as well as the lives of others," he cautioned.

Dick considers swimming in unprotected (or undesignated) areas, and swimming alone as the most hazardous conditions connected with water sports.

Sandia employees interested in becoming water safety instructors are invited to contact Dick for further information.

AT&T Board Chairman F. R. Kappel Receives Medal of Freedom Award

"A creative leader of business, he synthesizes the skills of management with a far-sighted appreciation of how technology and communications may better serve our country."

With this citation, President Lyndon Johnson presented a Medal of Freedom award to AT&T Board Chairman Frederick

R. Kappel in ceremonies at the White House. Mr. Kappel was one of 30 individuals, 25 men and five women, who had been named to receive the 1964 award. All of the recipients are persons who have distinguished themselves in public affairs, education, science, medicine, journalism, business, or the arts.

As members of the Cabinet, the Congress, the Supreme Court, and others looked on, each of the honored individuals stepped forward to receive the gold medal and a handshake from the President.

At the end of the ceremony, Mr. Johnson said, "Our glory is peace, not war; our greatness is people, not power. The history of America is a history of outstanding achievement by individuals." The President also told the group that, although the society may be changing, "... the value of individual is unchanging. Our trust must and does continue to rest on the individual." It was this belief in the individual, said Mr. Johnson, that led President Kennedy to establish the annual Medal of Freedom award in February 1963.

The Medal of Freedom is the highest peacetime award the President can bestow on civilians. Created in 1945, the Medal of Freedom award originally was intended to reward civilian accomplishments in war. In 1952, its scope was broadened to include distinguished contributions to the national security. Then, in 1963, President Kennedy reorganized the program to make it an annual award to citizens who have made outstanding contributions "to the security or national interest of the United States, to world peace, or to cultural or other significant public or private endeavors." President Johnson presented the new medal to the first group of recipients in December 1963.



MRS. FREDERICK R. KAPPEL smiles proudly at her husband who has just received the Medal of Freedom award in ceremonies at the White House. The Medal of Freedom, established as an annual award by President Kennedy in 1963, is the highest honor the President can bestow on a civilian in peacetime. Mr. Kappel was one of 30 recipients of the 1964 award.

Service Awards

20 Years



William E. Caldes
2450
Apr. 1, 1943



John S. Keller
7223
Aug. 9, 1943



Joe Honest
4211
Sept. 27, 1943



Donald S. Dreesen
2122
Oct. 28, 1943



Charles E. Runyan
4220
Oct. 28, 1943



Virgil A. Harris
7223
Nov. 20, 1943



Conrad W. Roeschke
2422
Mar. 17, 1944



Harvey S. North
7241
Apr. 5, 1944



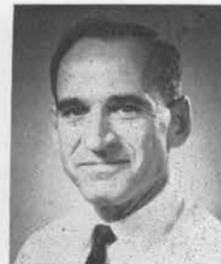
R. W. Henderson
100
June 1, 1944



Ray B. Powell
3000
Oct. 9, 1944



Dale W. Goens
4224
Oct. 24, 1949



James R. Bell
4252
Oct. 31, 1949

15 Years



Richard K. Strome
3463
Oct. 31, 1949



J. Cecil Russell
1114
Nov. 1, 1949



Arthur W. Barth
2441
Nov. 1, 1949



C. W. Dickinson, Jr.
3120
Nov. 1, 1949



John G. Boyes
2524
Nov. 2, 1949



Hazel Vance
7241
Nov. 2, 1949



Edward C. Neidel, Jr.
1422
Nov. 3, 1949



Cecil L. Page
2562
Nov. 4, 1949

10 Years

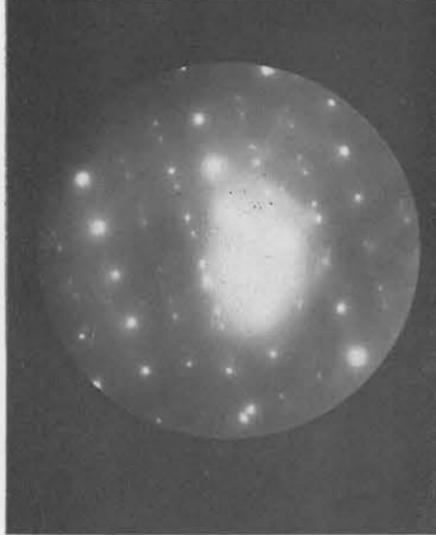
Oct. 24 - Nov. 6

Myrtle E. Mauldin 2112, Claurys I. Pine 4150, George J. Wladika 4422, Joseph W. Weihe 5420, Louis J. Rosnoski 8121, Celso Z. Sanchez 4613, Clarence R. Mehl 5411, John S. Colburn, Jr. 7324, Robert F. Patton 1432, Robert E. Crow 8241, Roger C. Buehler 1424, Doris M. Young 3126, John F. Byrne 7254, Jay C. Wardlow 1611, Charles W. Allen 2313, Charles C. Bates 1431, Richard W. Vivian 2311, and Sverre Johannesen 2512.

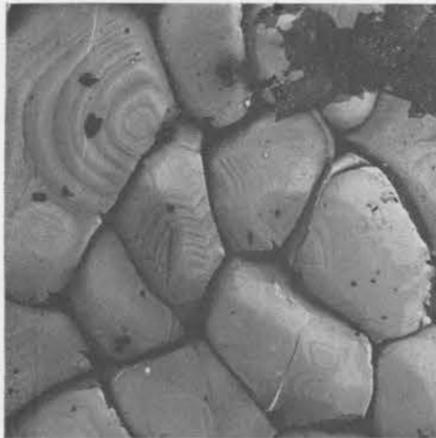
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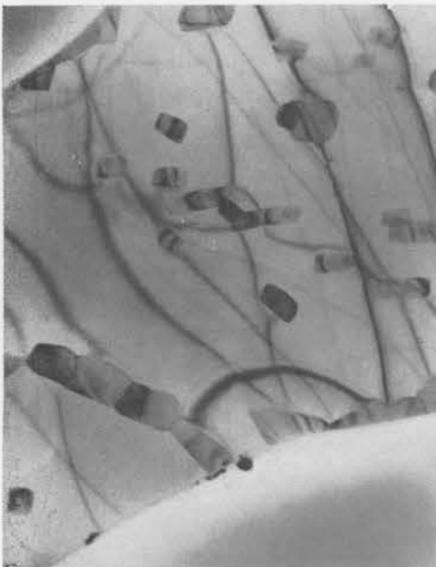
OCTOBER 23, 1964



ELECTRON DIFFRACTION PATTERN of explosively loaded nickel sample shown in accompanying micrograph exhibits "satellite spots" which are associated with the major diffraction spots and which are due to mechanical twins in the sample.



ALUMINUM OXIDE surface, magnified 40,000 times by the electron microscope, shows individual grains of the compound as well as growth habit of the grains.



FOIL OF ALUMINUM 2024 ALLOY about 1,500 Å thick (the Angstrom is equal to one hundred-millionth of a centimeter) is shown magnified 180,000 times. The particles in the electron micrograph are about 100 Å thick; the number of them observed here corresponds to 100,000,000,000,000 particles per cubic centimeter.

SAMPLE OF NICKEL deformed by explosive loading with a peak pressure of 230 kilobars (three million psi) is shown in this micrograph. The dark lines are mechanical twins, regions where the atomic lattice has been sheared to a mirror image of the matrix lattice orientation. Magnification is 125,000 X. The twins are thin platelets which pass through the foil at an angle, the top and bottom sides representing their intersection with the surfaces of the foil.



Man Overcomes His Clumsiness; Able to Look Into Strange World

Scientists of Sandia's Analytical Methods Section II are using electron microscopy to examine a world as different from ours as the landscape of the moon. It's a world whose features until recently were shielded from scrutiny by the relative clumsiness of Man's instruments.

The electron microscope uses a focussed beam of electrons to penetrate a sample under observation. The transmitted rays pass through a series of magnetic "lenses" which form a greatly magnified image of the specimen on a fluorescent screen or a photographic film.

"Since the wave length of the electrons is extremely small compared with visible light, one can obtain useful magnifications much higher than with the light microscope—up to 200,000 times," W. B. Estill of the section commented. "Such power enables the investigator to examine such phenomena as the fine details of crystal structure, or irregularities in the atomic lattice of certain materials."

Electron microscopy is applied at Sandia using three general techniques. The first involves examination of replicas of the surfaces of materials. Since electrons aren't able to penetrate the surface of samples to any significant depth, replicas of the surfaces to be examined are made using plastics dissolved in volatile media. The plastics are spread over the surface, and, after hardening, are removed from the surface and "shadowed" with carbon and vapor-deposited metals. The subsequent dissolution of the plastic leaves a thin carbon replica which is then examined under the electron microscope.

The second technique involves transmis-

sion microscopy, in which the internal structure of the material is examined. Once again, since electrons are incapable of penetrating materials to any depth, the materials must be reduced to extreme thinness, either by grinding; by electrothinning, in which the sample is reduced to the desired thinness by electrolytic action; by chemical thinning or etching; by mechanically deforming the sample by rolling or beating; or by slicing the sample by means of a microtome.

The third method involves the investigation of the size and shape of fine powdered particles. "In this type of work, the particles are distributed on a transparent substrate, and then examined directly under the electron microscope," A. W. Mullendore of the section explained. "The method is particularly useful when the particles are smaller than one micron."

These techniques are used by the microscopists in performing a variety of tasks. Part of their workload involves "trouble-shooting" in the areas of microcircuitry, the identification of crystal structure, and qualitative analysis.

They're also involved in investigations of shock loading phenomena and the deformation of materials, investigations of deposited layers such as vacuum deposited metals on oxide substrates, and investigations of phenomena associated with particulate materials. In addition, they're involved in studies of radiation damage in materials.

"Electron microscopy has been extensively developed only within the last 10 or 15 years," Mr. Mullendore continued. "It's a field which is still developing." The first transmission electron microscopy of thin metal foils was performed at Bell Telephone Laboratories in 1949. In 1956, others used the technique to reveal im-



ELECTRON MICROSCOPE, operated here by A. W. Mullendore of Sandia's Analytical Methods Section II, is used to explore and inspect the smallest details of the surfaces and inner structures of a variety of materials. The upper part of the instrument is an electron "gun" used to produce and direct a beam of electrons to the specimen under study and through magnetic "lenses" to an observation point.

perfections in the atomic lattices of deformed metal. And since 1956, rapid advances have been made. "Today, there are probably some 600 electron microscopes being used across the country," Mr. Estill concluded.

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OCTOBER 23, 1964

Employ a Domestic? Check Your Social Security Obligations

Does someone work for you while you work for Sandia?

If someone does, it might be well for you to brush up on (and comply with) your responsibilities under the Social Security Law.

Tough luck tales are not infrequent in this matter.

A recent incident deserves reporting. A working woman hired a once-a-week maid several years ago and employed her steadily until recently. The maid quit because she developed heart trouble.

This working woman has new help now, but the previous maid went to the Social Security office and applied for disability benefits. Her ex-employer, feeling sorry for her, agreed that she had paid her wages amounting to such-and-such.

Not too long afterward the tax collector sent her former employer a bill for \$300. She was liable for both her share and the maid's share of the Social Security tax, not a large amount in itself, but it was swelled by a penalty and the interest.

If you have a domestic as infrequently as every other week and pay her as little as \$8 per day, including carfare, then this must be reported to Internal Revenue for social security purposes. The minimum reportable is \$50 per quarter. A quarter is a three-month calendar quarter-year.

In the case of domestic employees, only cash wages are considered. If they receive room and board, it is not reported for social security purposes.

If you think your baby sitter or domestic help will resist being reported for social security, forearm yourself with "Good News for Household Workers," a colorful cartoon style pamphlet written for domestics which explains the advantages of social security.

This booklet is available from your local social security office at 3018 Monte Vista Blvd. NE in Albuquerque. Employees living in Livermore may get their copy from the Social Security Administration, Oakland Office, 891 E. 14th Street, Oakland, Calif.

Also available is a leaflet explaining the law, with a coupon you can mail in to get on the internal revenue mailing list. It is called "Social Security and Your Household Employee."



SPOKEN WORDS are translated into written words through the quick hands of Suzanne Burgess of Secretarial Services Division.



SKILLFUL HANDS of Ann Hawk of Tester Fabrication Division seem to have a mind of their own as they deftly solder connections on a tester cable.



EXPERIENCED HANDS of Eugene O. Rudat, Machine Shop Division, have been 18 years in the machinist trade at Sandia, still retain delicate touch for performing precision work.



Tools of the Trade (Everyone's Trade)

HANDS

Skilled hands perform a multitude of tasks daily at Sandia. Sometimes, these hands seem to be an extension of the brain as they deftly carry out complex operations. But hands have to be controlled and protected, no matter how automatically they seem to function.

Hands only know how to do things. They don't know what things to do. Keeping them safe and sound is up to the brain, and this calls for knowledge; good judgment is use of that knowledge.

Hands are more versatile than the fanciest set of wrenches, more valuable than the most expensive automatic tool.

Other tools can be replaced. Not a set of hands.



GLOVED HANDS of Joe Smith of Specialty Crafts Section keep a respectful distance from the spinning teeth of a radial saw in Sandia's Box Shop.



BINDING DOCUMENTS, the careful hands of Frank A. Toya, Printing Section, respect the inherent hazard of a wire stitching machine. He uses extra caution while performing the operation.



A TUG HERE, a push there by the hands of Jack M. Merrill, Sensors Development Division, helps the development of a new shutter capping device.



Bertie Grady

Take A Memo, Please

Proper use of power tools plus an alertness toward unusual conditions combine for better safety.

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ECP Funds to Agencies Total \$153,508 for Year

Funds contributed to ECP by Sandia employees continue their vital work through the ECP agencies. A total of \$151,982 has been contributed by members of the Employees' Contribution Plan to the United Community Fund and seven other agencies so far this year. As the September checks were mailed out recently the following distribution had been made.

	Sept.	Year to Date
United Community Fund	\$11,822	\$124,455
American Cancer Society	725	7,712
Bernalillo County Heart Association	594	6,373
Natl. Arthritis and Rheumatism Foundation	188	2,003
N. M. Society for Crippled Children and Adults	537	5,668
National Multiple Sclerosis Society	188	2,003
Cerebral Palsy Assn. of Bernalillo County	101	1,070
Muscular Dystrophy Assn. of America	203	2,147
Reserve Fund	145	1,380
Totals	\$14,506	\$153,508

Congratulations

- Mr. and Mrs. Frank B. Collins (7223), a daughter, Nancy Lea, Aug. 28.
- Mr. and Mrs. D. L. Greene (4252-1), a son, Scott Marshall, Sept. 21.
- Mr. and Mrs. Carl Childers (7332-1), a daughter, Patricia Elizabeth, Sept. 25.
- Mr. and Mrs. Tom Steely (7253-5), a daughter, Marla Sue, Sept. 26.
- Mr. and Mrs. James P. Martin (7213), a son, Steven Prinice, Sept. 26.
- Mr. and Mrs. Robert K. Cover (2564-1), a daughter, Gayle Kathleen, Sept. 30.
- Mr. and Mrs. G. F. Padilla (4254-2), a daughter, Lucinda Leonora, Oct. 3.
- Mr. and Mrs. J. F. McDowell, Jr. (2564), a daughter, Jennifer Kay, Oct. 4.
- Mr. and Mrs. R. D. Bland (1123), a son, Curt Alan, Oct. 5.
- Mr. and Mrs. Benito Chavez (7612-3), a daughter, Avilia, Oct. 5.
- Mr. and Mrs. John Sisneros (4151-2), a daughter, Margaret Anne, Oct. 5.
- Mr. and Mrs. W. O. Weingarten (1414), a daughter, Oct. 8.



HORSESHOE CHAMPIONS—Winners of the Sandia Laboratory Horseshoe Tournament display their trophies. From left, clockwise, are Tom Towne, Class A singles champ; Parker Burns and Bill Sweatman, Class A doubles champs; Fonzo Cossell, Class B singles winner; Jim Wade and Tony Garcia, Class B doubles winners; Dan Padilla, Class C singles champ; and Tex Ritterbush and Bob Evans, Class C doubles winners.

W. H. Kingsley Heads Rocky Mountain Hygiene Association

W. H. Kingsley, Manager, Environmental Health Department, has been voted president-elect of the American Industrial Hygiene Association, Rocky Mountain Section.

Bill has been at Sandia since 1946. Prior to that time he was associated with the University of California at Los Alamos, and with Tennessee Eastman Company at Oak Ridge.

He will assume office at a meeting of the Rocky Mountain Section of the American Industrial Hygiene Association in Colorado Springs, Colo. on Oct. 29-30.

Sandia Takes Honors In First Intra-Base Small Game Tourney

Sandia Laboratory walked off with the championship of the First Intra-Base Small Games Tourney, sweeping three of four events with a total of 42 points.

Linus Phillips, Joe Abbott, Nick Pavletich, and Lionel Graver took the handball competition. Tom Towne, Bill Sweatman, and Parker Burns earned the horseshoe honors. Benny Garcia, Gene Chavez, and Ernest Gurule won the table tennis event.

Kirtland AFB, Sandia Base, and Manzano pooled 30 points against Sandia Lab's 42.

SHOPPING CENTER

CLASSIFIED ADVERTISING
Deadline: Friday noon prior to week of publication unless changed by holiday.
A maximum of 125 ads will be accepted for each issue.

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

- '50 CHEVROLET pickup, rebuilt engine, cooling system, front end, R&H, \$235. Netz, 282-3607.
- LADY'S RH Power Bilt golf clubs, 1,3, 4 woods, 2 through 9 irons and putter, \$50. Breehl, 256-1350.
- 3-BDR, 1 1/2 bath, fireplace, double garage, 1450 sq. ft., \$14,000, low down. Svensson, 344-7700.
- FOX 40 model engine, new, \$10. Fedzuga, 344-7700.
- SMALL SORREL mare, bred to Arabian stallion. Also, shetland pony w/small saddle. Ortega, 877-2799.
- ONE-WHEEL luggage trailer w/frame and canvas cover, new tire, \$60. Nelson, 264-7356.
- BUTANE bottle, 10 gal., \$10. Oliver, 299-8853.
- 3-BDR., 1 1/2 baths, fireplace, double garage, south valley, \$14,000; 500 gal. butane tank, make offer. Justice, 898-3329.
- RIFLE, 30-06 Springfield 03A3, finished Monte Carlo stock, recoil pad, Williams "foolproof" peepsight, hooded ramp sight, detachable sling, \$50. Kinoshita, 299-6491.
- TRAILER hitch, custom, for 1963-64 Dodge, new, \$8.50 installed. Clenny, 864-8394.
- CAMPING equipment: 3-burner stove, \$19; camp potty, \$2; 2-mantle lantern, \$10; 2 folding aluminum beds, mattresses, \$6.50 each. Thayer, 299-3127.
- METAL FRAMES, almost twin beds, box springs, bolsters, couch and bolster covers, white chenille spreads, all for \$20. Harroun, 299-9048.
- TAP AND TOE SHOES; infanseat, car bed, play pen, other misc. baby items; girl's baby clothes, table lamps. Richardson, 299-3673.
- '62 INTERNATIONAL C120 pickup, 6-cyl., 4-speed, heavy duty rear end, long bed. Braudaway, 298-2486.
- ARMY COTS, 2 w/mattresses, \$14; 18" fan, \$7; Craftsman 12" band saw w/stand, \$30; misc. football equipment. Martin, 255-8030 after 5.
- TAPE RECORDER, Pentron Hi-Fi Customline Mercury, 3 3/4 and 7 1/2 speeds, fast forward, radio mike input, volume and tone control, amp-speaker out, \$50. Halpin, AX 9-8309.
- 3-BDR., 1 bath, Mankin home on General Arnold NE, carpeted, draps, newly painted. Bickelman, AX 9-4941.
- 3 CHAIRS, overstuffed, \$5 each, 2 matching. Elingson, 299-4056.

- HOTPOINT dishwasher in working order w/leaky gasket, six years old, \$25 or best offer. DeLollis, AX 9-5384.
- HORSE, half-Arabian gelding, six years old, \$175. Chaves, 877-0769.
- CORNET w/case; 9 x 12 hemp rug. French, 255-7676.
- '61 ALFA ROMEO Spider convertible, \$300 and take over payments. McCown, 345-0034.
- '52 RANCHWAGON, new radiator, 2 new tires, battery, generator and regulator, \$150. Mitchell, 256-9651.
- RED TRICYCLE, original cost, \$17, will sell for \$8.50; child's navy blue jacket w/hood, size 5, \$6. Miller, AL 6-6020.
- MERCEDES BENZ 190 SL 1959 sport coupe, Michelin tires, trade for American Ford or Chevrolet sedan. Smitha, 299-1096.
- SCOUT equipment; Explorer and adult uniforms, cot, wool sleeping bag liner, sheep-lined leather pants, jerry can, mess kits, cook kits, etc. Costella, 256-9702.
- 12" TRAILER wheel-axle assembly w/fenders, \$30. Stuart, AM 8-2943.
- 6 DANISH solid walnut dining room chairs; mahogany veneer dropleaf table and chairs. Jennings, 255-5950.
- 3-BDR and den Roberson near Eubank and Indian School, half block to grammar school, walled yard, sprinklers, AC, 4 1/2% loan. Hunter, 268-7014.
- GAS RANGE, full size Roper, \$35; Serval gas refrigerator, \$50; bantam chickens, 75c each; gentle grey mare, \$150. Shock, 877-3728.
- BABY BUGGY, six months old, \$20; stroller, \$5; Chinese print, framed, \$2.50; electric rotisserie-broiler, \$10. Sloyter, 299-6861.
- '36 FORD V-8 flathead motor, complete, \$50 or make offer. Sisneros, 2419 Oro Vista NW, 344-4326.
- BLOND china cabinet, sliding glass doors, \$50. Olson, 298-3795.
- SLATE ROOFING, 9 rolls, 90 lb., \$2.50 a roll; cartop carrier, \$12. Stuckert, AM 8-1879.
- '59 KARMANN GHIA, new seat covers and seat belts, radio, \$1050. Morrow, 298-1762.
- '64 CHEVELLE Malibu convertible, R&H, auto. trans., under 8000 miles. Jacobson, 3305 Morris NE, apt. 3, 299-8174.
- '54 MORRIS ford, \$89 or best offer; Dodge power wagon w/winch and tempte body and aerial ladder. Villella, 299-6261.
- PUPPIES, Collie and German shepherd, you pick 'em \$5, we pick 'em free. West, 282-3460.
- GOLF CLUBS, three woods (Wilson Stratobloc), eight irons (Wilson Middlecoff), putter, and golf bag, \$100. Golf shoes, 7 1/2 C. McKelvey, 256-9787.
- METAL SKIS, Hart, 7 1/2", new ski warranty, \$80; boots and bindings also available. Willie, 299-7166 after 5.
- DEER RIFLE, Marlin 30-30, \$50; wood lathe, 30" with table, motor and six tools, \$45. Morrison, 855-9173.
- LEWYT vacuum cleaner, all attachments, \$20. Luna, 299-2488.
- '64 GRAND PRIX, factory air, loaded, \$3700, \$400 under NADA list. Ream, 299-2076 after 5.
- '51 WILLYS, 4-wd. jeep pickup, new engine, battery, 2 new tires, \$550. Jiron, 877-3642 after 5 or weekends.

- DEER RIFLE, .35 cal. Marlin lever action carbine, side ejection, box of shells included. Farmer, 299-6007.
- 26" BOY'S Schwinn bike, \$12; soap box derby and cart with soap box wheels and axle, \$8. Causey, 299-0089.
- R-1 LOTS, one or two, north of Comanche, just west of Moon, low down payment. Sutton, 299-0384.
- WAGON WHEEL light fixtures, two, w/four lamps each fixture, frosted glass, brass trim. Klein, 256-7375.
- TIRE CHAINS, lug reinforced, will fit tire sizes 6:00x17, 6:50x16, 7:60x15 or 8:50x14, \$5. Smith, 10109 Maya Court, NE, 299-6873.
- CHINA CLOSET, 34 1/2" wide by 69" high, 4-doors, 1 drawer, mahogany. Thompson, 255-3634.
- GOLF CLUBS, 1 through 4 woods, 2 through 9 irons and putter. Valdez, AM 8-5375.
- CLARINET, Bundy B-flat, student line, case, \$89; encyclopedia, 15 vol., \$23; Leica, Model I, 3.5 lens, \$47.50. Taylor, 256-3221.
- SPANISH guitar, 3/4 size, ideal for beginner. Glover, 298-7302.
- '51 CHEVROLET station wagon, plywood floor behind seat, used as camper, make offer. Henry, 1933 Truman NE, 255-2536.
- BONA ALLEN saddle, 15" tree, hand tooled, leather covered stirrups, \$80. Taylor, 256-3774.
- POODLE, miniature, six months old, AKC registered, \$49; gas tank, 20 gal., \$5; fish aquarium w/fish, \$14. Winblad, 344-3109.
- MAHOGANY vanity, mirror and bench, \$40 complete; cedar chest, \$30. Metzger, 298-5054.
- MAN'S 26" English style 3-speed bicycle, puncture proof white walls, \$25. Scott, AX 9-3412.
- '56 METROPOLITAN, 4-cyl., \$275. Frenkel, AX 9-3258.
- SILVER, Gorham Fairfax, six 6-piece settings, large place knife and fork, \$25/set; 23 extra pieces, less than half price. Collis, 255-0470.
- EUREKA vacuum sweeper, tank type w/attachments, \$7. Wladika, 255-9166.
- HOUSE TRAILER frame, first \$15 takes. Chavez, AX 8-5091.
- '52 DODGE, 1 1/2-ton pickup. Blaylock, 709 California SE, 256-0734.
- '60 CHRYSLER Saratoga, 4-dr. HT, all power, original owner, \$1150; '55 Pontiac wagon, \$125 or trade. Corli, 255-5683.
- CRIB w/mattress and pads; play pen; Porta-Bed. North, 256-6844.
- FREE long-haired kittens, housebroken. Osterby, 299-4606.
- BABY CRIB, full size, mattress; high chair. Perea, AM 5-0861.
- PING-PONG table, folding, w/paddles, net, \$20; Pan American trombone, \$35; .22 Winchester, model 67A, regulation NRA target rifle, \$25. Warden, 255-0557.
- '49 CHRYSLER coupe, 2 owner, low mileage, 6 cyl., R&H, \$125. Anderson, 299-7782.
- MINK stole, Autumn Haze, original price \$600, will sell for \$300. Young, 268-9210.
- GOLDEN RETRIEVER pups, 14 weeks old, all shots, excellent blood lines, AKC registered, reasonably priced. Stouder, 255-5041.
- BUTANE tank, 100 lb., with regulator, \$25. Salazar, AL 5-1301.

- '54 DESOTO sedan, reasonable, radio. Neas, 299-1764.
- CONTINENTAL Mark IV hardtop, auto. trans., PB, PS, PW, six-way seat, AC, \$1650. Hart, 299-1123.
- PICKET fencing, approximately 400 lineal feet, 20c per ft. Bertrand, 268-4191.
- REFRIGERATOR, used, large freezing compartment across top, \$30. Henderson, 256-1355.
- MATTRESS and box spring, single size, steel frame, blond bookcase headboard, \$45. Duvall, 299-8744.
- BOY'S 20" bicycle with balloon tires, \$10. Summers, 299-4674.
- ELECTRIC range, GE, 24" full oven, \$25; bunk beds, Sears, \$10; bookcase single bed, \$20. Woleben, 299-8481 after 5.
- ARGUS 300 35mm projector w/40 metal Airquipt slide containers, will hold 1440 slides, all for \$60. Donaldson, 255-9429.
- '63 TRIUMPH TR-4, black w/red interior, wire wheels, tonneau cover, low mileage, \$2150. Durgin, 298-3581.
- 21" MAGNAVOX console TV, 1957, \$50. Brown, 299-3189.
- AFRICAN BERMUDA SOD, free, you dig. Graham, 725 San Pedro, SE, 268-8967.
- '59 SINCA, 4-dr. Aronde, needs work on engine, \$120. Champion, 299-5821.
- STORKLINE crib, Kantwey mattress, \$20; baby outline, \$5; 2 pr. heavy seatbelts, \$4. Scheiber, 299-4743.
- '58 RENAULT, 4CV, blue, 4-dr., 22,000 miles, \$325. Dalphin, P.O. Box 8564.
- '56 FORD V8 4-dr., AT, PS, new tires. Seknan, 298-0373.
- LIONEL TRAIN, 6-unit 24 sections of track, smoking unit and whistle, 60-watt transformer, \$15. Mahoney, 298-5711 after 4.
- '63 HONDA, 305cc Dream, less than 3100 miles, equipped w/windshield, saddle bags and electric starter. Truitt, 256-6100.
- REFRIGERATOR-FREEZER, Coldspot deluxe, 12 cu. ft. frostless refrigerator, 2 cu. ft. freezer on bottom, \$40. Rainhart, 299-2887.
- NORGE automatic washing machine, \$40; Scott 20-watt per ch-mel stereo amplifier, model 222C, \$135. McIntire, 298-6145.
- MAYTAG washing machine, wringer type. Pitti, 256-1629.
- '64 VOLKSAGEN, white metal sun roof, radio, undercoat, seat belts, recliner seat, 8 mo. old, \$1775. Hawk, 256-6264.
- GE WASHER AND DRYER, color yellow, \$100 for pair. Shoemaker, 255-8820.
- GIBSON ELECTRIC Spanish guitar, ES-125TC, semi-solid w/cutaway, plush-lined case and 3-pickup amplifier, \$275. Gustafson, 299-3270.
- AKC registered poodles, miniature, male. Aragon, 298-7341.
- '63 CORVAIR, over \$100 below NADA. Seelbach, 299-5489.
- REGISTERED Half-Arabian weanling fillies, one grey, one chestnut. Gentzler, 282-3425.
- '59 FORD, tinted glass, PB, PS, AT, blue/white, will trade for 6 cyl. car, \$650. Morgan, 256-7994.
- BEDROOM SET: dresser, bookcase headboard, 2 end tables, mirror and glass tops, rattan design, Philippine mahogany, \$150. Hawk, 256-6264.

- TEMPORARY ELECTRIC service pole, meter base, weather head, weatherproof plug, 50 ft. wire; twin bed, mattress, box spring. Howard, 344-6091.
- REYNOLDS "Grenadier" trumpet w/case, \$98. 1830 Indiana NE. Finch, 268-8115.
- '32 DODGE 8-cyl., motor, running gear, and breaks restored, no dents in body, 4-dr. sedan, \$750. 2713 Carol NE, Swanson, 298-5632.
- 6V 55A ALTERNATOR and regulator, \$20; mod. 91 Mauser cal. 7.65 mm, \$25; tubecaddy w/200 tubes, tools, \$150. Ernst, 268-9414.
- '63 HONDA 50, 1500 miles, \$235 including helmet; radio controlled airplanes and accessories, including transmitters and receivers. Reed, 299-1684.
- WANTED**
- RIDE to and from work, vicinity of 1607 Ridgcrest Cir. SE. Rael, 268-3111.
- KILN 14" or bigger and in good condition. Archuleta, 295-6781.
- HOME for Siamese sealpoint, 3 1/2 years old, spayed. Halpin, 299-8309.
- PASSENGER to and from St. Louis area for two weeks in November, possibly to share driving. Kerns, 255-1450.
- GOOD USED metal lathe, 6" capacity. Bear, 298-2744.
- RIDE from vicinity Valencia to Bldg. 894, will alternate driving. George, Los Lunas, 865-7969.
- BABY SITTING in my home, NE Bellhaven area. Farmer, 299-6007.
- CHILD CARE, 1-3 children in my home, reasonable and close to Base, inquire at 313 Erbbe St. NE. Mon.-Thu. anytime. Orth
- HOMES for housebroken kittens. Tatum, 877-0997.
- CAR POOL MEMBERS to join existing car pool. From Princess Jeanne Park to Personnel parking lot. Lindsay, 298-0818.
- RIDE from 443 Yucca NW. round trip or mornings only. Willing to pay well. Heilwig, 242-8393.
- VENTED GAS HEATER, w/blowers, not less than 40,000 BTU. Passmore, 299-5172.
- NOONHOUR CASHIER at Coronado Club, 12-12:30, \$1.50 plus meal. Holliday, 264-4561.
- FOR RENT**
- 2-BDR. unfurnished apt., electric kitchen, washing machine, private backyard, carport, storeroom, Winrock area. Stewart, 298-0439 after 6.
- 3-BDR. HOUSE, partly furnished, 5500 Arvilla, 1 blk. North Menaul, 2 blks. east San Mateo, \$95. Carabajal, 865-7470.
- RENT OR SELL: 3-bdr., den, a/c, draperies, carpeting, near school. Morrow, 298-1762.
- 2-BDR. unfurnished apt., stove, water and garbage paid, near Sandia, yard work for part of rent. Villella, 268-7045 or 299-6261.
- FIRST MONTH FREE, large 2-bdr. apt., drapes, stove and refrigerator, no children or pets, \$105. 945B Louisiana SE. Weinberg, 268-4728.
- LOST AND FOUND**
- LOST—Men's Bulova watch, Citizens State Bank check book, brown billfold. LOST AND FOUND, tel. 264-2757.
- FOUND—Men's ring, GM car key, leather wrist band, gold earring, key, pr. ladies white gloves, Ford ignition key, red and black striped cap. LOST AND FOUND, tel. 264-2757.



OPEN HOUSE was held recently at the Massachusetts Institute of Technology's Electronic Systems Laboratory to report on progress made in the development of AED-1 computer language, which will eventually be used in Computer-Aided Design System. Attending the meeting were (l to r) G. A. Fowler, Vice President, Development; W. C. Scrivner, Director of Computing; Tom Fox of Applications Oriented Systems Section; and J. L. Tischhauser, Manager of Programming Department. Charles Lang of MIT, at right, is illustrating computer-aided sketching technique. Tom Fox is working with AED-1 development team at MIT.

Team Tackles Problem of How to Communicate With Computers

For the past seven months, Tom Fox of Sandia's Applications Oriented Systems Section has been working with a small group of computer specialists at the Massachusetts Institute of Technology's Electronic Systems Laboratory. They are developing a new computer language, AED-1 (Automated Engineering Design), an early phase of a much larger and more complex computer program system which, when completed, may bring revolutionary changes to the field of engineering.

When the ultimate system (called the Computer-Aided Design System) which MIT is developing is complete, computers will perform much of the routine work associated with the generation of the new engineering designs. Computers are already basic tools for the engineer; without their speed, engineering problems which concern large numbers of variables and other calculations could not be solved. But up to this time, engineers have found it necessary to adapt their methods to the computers.

Now, several studies are underway to transform computers into more useful engineering tools. For example, an engineer is now able to sketch shapes on the face of a cathode ray tube in such a way that the shapes are then stored numerically in a computer's memory.

The computer performs engineering analysis of the shapes and "corrects" the shapes to conform to pre-programmed engineering equations and other formulas. The engineer can subsequently change these shapes, erase them, impose geometrical constraints such as parallelism on them, and ask the computer to present specific engineering information about them.

Further developments in the program will enable the computer to take over many more sophisticated but routine engineering tasks. While the engineer will continue to be responsible for the initial concept of a new design, and for such creative tasks as the definition of the conditions under which the new design must perform, the computer will eventually be called on to perform a large part of the design routine.

It may be used for the detail work of analysis of initial design, for subsequent revision of design, for refinement of design details, for production of drawings, for tolerance and system interface analyses, and finally, for preparation of tapes for controlling the machine tools that will produce the prototype of the new design and even for preparation of tapes to control automatic test equipment.

To make such use of a computer possible, an engineer must have a fast and natural way of communicating with the computer. To provide this, as well as a programming tool for the enormous amount of supporting programming required, one of the basic initial tasks undertaken was the development of an appropriate computer language.

Under the direction of Douglas Ross of MIT—a leader in developing computer languages and the originator of the APT language used to program machine tools—a team, including members supplied by

interested companies, was formed to undertake this task. Tom is working on the team with other specialists from MIT, United Aircraft, Lockheed-Georgia, North American Aviation, and the Boeing Company.

The team's prime concern is the development of the AED-1 language. To perform this task, they have undertaken a rigorous period of highly specialized self-training before beginning their research into the problems associated with the development of the computer language.

There are three major requirements for AED-1. It must be powerful enough to handle the complex tasks it will be called upon to perform; it must be flexible enough to handle a variety of such tasks; and it must be "machine independent," that is, designed in such a way that it is not dependent upon a specific type of computer for its usefulness, but can be used to program a variety of computers.

The team is moving steadily in the development of a language which will fulfill these requirements. To help them in their task, they have divided into three sub-teams, each concerned with a separate phase of the work. And they are being aided by another computer project known as "MAC" (Machine Aided Cognition), which provides multiple access computer techniques for the teams.

On Aug. 28, MIT held an open house in which the project team demonstrated the results of their work to representatives of the team-sponsoring companies. G. A. Fowler, Vice President, Development, W. C. Scrivner, Director of Computing; and J. L. Tischhauser, manager of Programming Department, attended the meeting.

"While the completion of the full Computer-Aided Design project is still several years away, many important goals have already been reached," Mr. Tischhauser comments. "Through the efforts of the project teams, the project is well underway. Their accomplishments at this stage are impressive."

Welcome Newcomers

Sept. 21 - Oct. 16

Albuquerque	
*Bertha N. Armijo	4135
Shirley I. Baldwin	3126
Margaret L. Best	3126
Theresa L. Blair	3126
Frances L. Brown	4333
John A. Cantwell	4113
*Evelyn P. Carrillo	3126
Barbara A. Conner	4361
Harry B. Conrad	4632
William R. Dickson	4542
Rudy R. Garcia	3413
*Florence M. McCabe	3153
Holly E. Paul	4413
*Jean H. Ramshaw	4212
Robert E. Treharn	4574
Myrna L. Walla	3126
District of Columbia	
Jess C. Tidmore, Jr., Washington	5152
Georgia	
Bobby D. James, Marietta	2412
Illinois	
Henry C. Shefelbine, Evanston	1333
Patrick H. Monahan, Arcola	2531
David A. Northrop, Chicago	5154
Kansas	
Lowell H. Molby, Kansas City	2413
New Mexico	
Gerald M. Hayhurst, Belen	3413
Virginia	
John K. Shane, Falls Church	2451
*Denotes rehired	

Pedalers Abound in Tech Area; They Keep 125 Bicycles Busy

Best way to save time and shoe leather in Sandia Laboratory's Tech Area I is to ride a bicycle. There are 110 acres and 88 major buildings in the Area and many employees must visit several locations in the course of their work.

About three years ago, the company made a number of bicycles available. The sys-

tend to "bunch up" at places such as the Theater Bldg. 815 and "thin out" around buildings with large populations such as 836 and 880.

This problem is partially solved each morning by Bonnie Montano of the Motor Pool Division who is responsible for maintaining the company bicycles.

With a specially-designed trailer which holds eight bicycles, he picks up and re-distributes the bicycles in racks throughout the area. He also picks up bicycles tagged for repairs and fixes them in the bicycle shop.

Between five and eight bicycles per day require repair. Most work is in replacing pedals, hand grips, or fixing flat tires.

Company bicycles are supposed to be parked only in the provided racks. Bonnie finds them inside buildings, behind buildings, and hidden in the landscaping.

This practice, he feels, is responsible for the occasional scarcity of bicycles in the racks. In addition, if these "hidden" bicycles need repair, it will be a long time in coming.

He urges all bicycle users to respect the company policy of parking them only in the racks and to continue to use the plastic tags to call attention to needed repairs. This will assure full use of the bicycles and maximum benefit to all bicycle users.



BICYCLES provide a fast, shoe-leather saving way to travel the 110 acres of Tech Area I. Robert E. Healy of Weapon Systems Development Department uses one of the 125 company-furnished bikes that circulate through the Area.

tem proved an instant success. There are now bicycle racks near every major building and more than 125 bicycles are in use.

A casual survey of the area streets will show that bicycle traffic just about equals vehicle traffic during all periods except the start and close of work.

The company has always provided bicycles, but until three years ago, they were assigned to specific organizations. At that time, more bicycles were purchased and they were made available for general use.

The system works, and works well, except for a distribution problem. The bicycles

LAB NEWS

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OCTOBER 23, 1964

Supervisory Appointment

R. JERRY EVERETT to supervisor of Environmental Health Division 3311.

Jerry has been at Sandia nine years and has headed Industrial Hygiene Section 3311-1 for three years.

Prior to coming here, he was attending the University of New Mexico, where he received a BA degree in chemistry and has also taken graduate study.

He served three years in the Air Force in the field of aviation medicine.

Jerry is a member of the American Industrial Hygiene Association and the Health Physics Society.



Sandia's Safety Scoreboard

Sandia Laboratory:

68 DAYS
2,300,000 MAN HOURS
WITHOUT A
DISABLING INJURY

Livermore Laboratory:

63 DAYS
324,000 MAN HOURS
WITHOUT A
DISABLING INJURY

Sandia Authors

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

A. T. Steele of Administrative Programs Division and E. K. Snyder, AEC/ALO, "Computerizing Freight Cost Calculations," September issue, *Transportation and Distribution Management*.

George W. Elliott of General Employment Section, "Technicians at Sandia," July-August issue, *Journal of Engineering Education*.

G. L. Morrisroe of Tester and Facilities Programming Division, "New Formula for Management Control: NAMDA Plus Computer Equals On-Time Deliveries," October issue, *Tool and Manufacturing Engineer*.

K. H. Jones, W. Van Dusen, and L. P. Theard, all of Radiation Effects, Dielectrics Division, "Inter-Molecular and Intra-Molecular Energy Transfer in Gamma Ray-Irradiated Alkylbenzenes and Related Mixtures," September issue, *Radiation Research Journal*.

Sympathy

To Edward J. Hodyke (4212-1) for the death of his mother in Long Island, N. Y., Oct. 11.

To Henry Williams (4212-1) for the death of his brother Oct. 8 and his brother-in-law Oct. 15.