



Crawford MacCallum

Physicist to Teach In University Near Cairo, Egypt

Crawford MacCallum of Theory and Analysis Division will leave Sept. 12 for Egypt, where he will be associated with Ein Shams University near Cairo during the coming school term.

He will be on leave of absence from Sandia Corporation and will be working under a Fulbright Lecturing Award.

Ein Shams University is one of four modern universities in Egypt. It was founded in 1950 at Heliopolis, a northeastern suburb of Cairo, and now has more than 18,000 students.

Mr. MacCallum's wife, Anthea, and their baby, Taber, will accompany him. They plan brief stops at Paris, Rome, and Athens en route.

This award and others under the U.S. Department of State's educational exchange program were made possible through the Fulbright-Hays Act. The program's objectives are to promote better understanding of the United States abroad and to increase mutual understanding between people through educational exchange.

Mr. MacCallum received his BS degree in physics from Princeton University in 1951, and did graduate course work at Cornell University. In 1962, he was awarded his PhD degree in physics at the University of New Mexico. He has been with Sandia Corporation since 1957, working first in Physical Sciences Research Department. He has been with Nuclear Burst Physics Department since 1961.

He was one of the original members of the Sandia Laboratory Research Colloquium Committee.

Oregon Adopts Work Ratio System Developed Here by C. J. McGarr

The State of Oregon, Department of Finance and Administration, has started using the Work Ratio System developed by C. J. McGarr, Sandia's Director of Service Operations.

Mr. McGarr worked out the approach four years ago and since that time has presented the system before the Civil Service Administration in Washington, the Veterans Hospital in Albuquerque, a reserve Army unit in El Paso, and numerous other groups. A paper by Mr. McGarr, entitled "Statistical Work Measurement," was released by the American Management Association as their Management Bulletin No. 23.

The system is used to solve the problem of determination of workload versus efficient manning. The standards are not set on individuals or groups but on a com-

Vacation-Time Classwork Earns College Degree

Joe A. Guzman deserves a real summer vacation.

Every year, since coming to Sandia in 1957, Joe has spent four weeks attending the summer session of classes at Colorado State University in Fort Collins. On Aug. 7 he received his Bachelor of Education degree.



Joe already had an Associate of Arts degree from Trinidad (Colo.) State Junior College and had been teaching electronics in Trinidad before moving to Albuquerque. He wished to continue his vocational education, but the courses he needed were not offered at the University of New Mexico. Colorado State accepted all his credits from Trinidad State, had the courses he wanted, but required residency for obtaining a degree.

During the short summer period, Joe usually took an overload of courses—nine quarter-credits. As a rule this required attending classes six hours a day and then studying until midnight or 1 a.m. His wife and children spent the time visiting relatives in North Dakota.

"After a breather, I'll probably start taking courses here," Joe said. He is a technical staff assistant in Component Shock Testing Section.

ECP Distribution Up to \$124,450 At End of July

Members of the Employees' Contribution Plan have given \$124,450 to the United Community Fund and seven other agencies so far this year. As the July checks—totaling \$14,512—were mailed last week, the following distribution has been made:

	July	Year To Date
United Community Fund	\$11,827	\$100,746
American Cancer Society	725	6,259
Bernalillo County Heart Association	595	5,182
National Arthritis and Rheumatism Foundation	188	1,625
New Mexico Society for Crippled Children and Adults	536	4,593
National Multiple Sclerosis Society	188	1,625
Cerebral Palsy Association of Bernalillo County	101	867
Muscular Dystrophy Association of America	203	1,740
Reserve Fund	145	1,234
	\$14,512	\$124,450

parison of the over-all task to the applied man-hours.

At Salem, Ore., the Work Ratio System is being used by the Driver's License Division of the Department of Motor Vehicles. Since Apr. 1, that division has shown a gain of 4.4 per cent over the standards set for average work ratios. The division is comprised of 95 clerical employees and eight supervisors. The other large division of the department, Vehicle Registration with 120 employees, adopted the system July 1.

Other state agencies in Oregon are expected to install work measurement techniques in the near future.

The application of Mr. McGarr's techniques was based on material published by the Interagency Records Administration Conference, held October 1961 in Washington, D.C.



TOMAHAWK second stage rocket and nose cone containing an instrumentation package are weighed prior to placement on the launcher. Performing the operations are, from left, Les Luehring, Clem Sproul, and Jim Stracina, all of Carrier Development Division, Upper Atmosphere Project Department. All photos were taken by Holmes and Narver, Inc., photographers Barney Hatfield and Bill Telaak.

Barking Sands to Launch More Nike-Tomahawk Rockets This Fall

The site is named after a 100-ft.-high mound of fine coral sand. It's called "Barking Sands" because of the peculiar crunching or whining sound it makes when you walk on it. It takes a little imagination to relate this to a dog's bark.

It takes no imagination at all to identify the roar of the Nike-Tomahawk rockets that are launched from the Kauai Test Range in Hawaii by Sandia Laboratory's Projects Division of Upper Atmosphere Projects Department. The purpose: to measure upper atmosphere winds, density, and particulate content.

Sandia reactivated the launch site in March 1963 after it was first used for the Dominic series of full-scale tests in the Pacific during the summer of 1962. Since then, Sandia has launched 57 two-stage rockets from the site. It is located on the island of Kauai, about 100 miles northwest of Honolulu.

Another series of 22 launches is scheduled to begin in October.

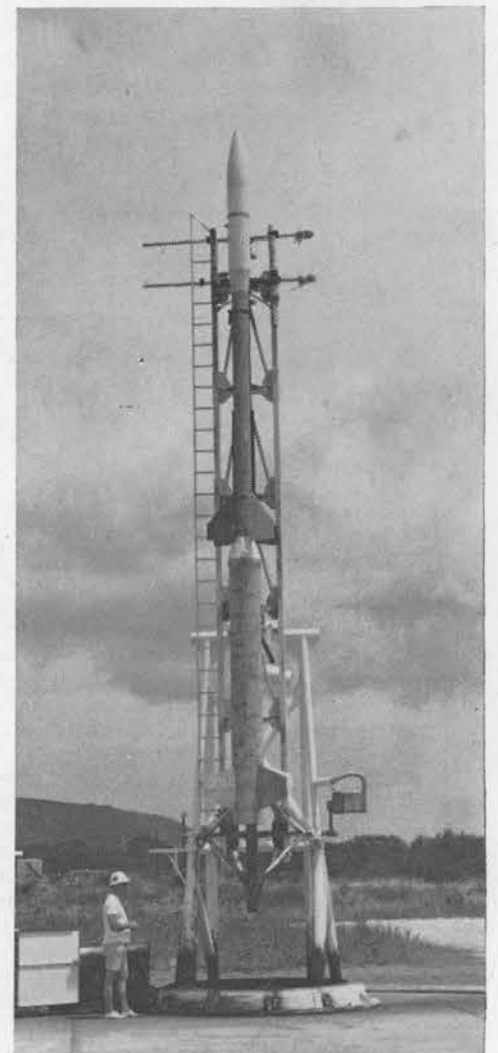
Primarily, the rockets have been of two types—experimental rockets testing new systems under development and rockets carrying instrumentation to make upper atmosphere measurements.

The development rockets test various designs and combinations of motors, nose cones, and fins with the aim of producing reliable, multi-purpose systems capable of reaching altitudes of 250 miles or more.

The design work is performed by Carrier Development Division under K. F. Crowder and Engineering Aerodynamics Division under W. H. Curry.

Upper air measurement rockets are fired at the request of Sandia's Aerospace Physics Division, Los Alamos Scientific Laboratory, or Lawrence Radiation Laboratory.

Sensors Development Division under G. W. Rollososson participates in the design and development of the special instrumentation (Turn to Page Eight Please)



IN FIRING POSITION, a Nike-Tomahawk rocket is given last minute check by Bruce Ercole of Projects Division, Upper Atmosphere Projects Department.



LES LUEHRING places an ignitor into a Tomahawk rocket. The operation is one of the final acts before rocket is assembled and placed on launching pad for firing. Les is in Carrier Development Division, Upper Atmosphere Projects Department.



J. J. MILLER, supervisor of Projects Division, Kauai Test Range, plots rocket trajectory prior to launch. Safety is a primary consideration in rocket operations. All activities are coordinated with the Pacific Missile Range organization.

Editorial Comment

Your 100 'Best' Books

Read any good books lately?

That commonplace question too often brings the answer "No." In fact, too often the answer is the same if the question is presented without the qualifying word "good." It's true that too many people go year in and year out never reading any kind of a book.

They don't know what they are missing.

Over the years, many persons have compiled lists of the 100 "best" books. Each listing has opened the argument that it is ill-chosen, incomplete, or in some way does not include the 100 best books of the world.

This compilation attempt has gone on for some years. In 1930 Will Durant selected his 100 nominations for the best and entitled the selection "The Road to Freedom." In 1931 the American Library Association issued a list. The University of Chicago "Great Books" program also has such a list.

There has never been complete acceptance of any one list as the final word. There probably never will be. That is not necessary. Each person should have his own list of books to be read. Maybe it would be less than 100, maybe more. The number is not too important.

Though he is conscientious in his reading list, chances are that all of the books will never be read because the enthusiastic reader will add more and more titles. The list will never be completed. The more it grows the more he will read.

There must be many people at Sandia who have either consciously or unconsciously compiled their lists. Any noon hour you can find them turning the pages, pursuing the most fascinating hobby.

How does a person know good books? There are many ways to locate the titles which will give you the most pleasure and the most knowledge. Join a book club. Read reviews in the newspapers. Be discriminating in shopping for paper backs. Join a great books discussion group. Consult a librarian. Or simply get curious about books enough to read and read and read.

State's Ghost Towns Provide Good Peek Into a Past That Won't Die

At some time in his life, everyone should visit a ghost town. Such a visit can be exciting, and it can put a new dimension on life. But it's becoming more and more difficult. Soon, it won't be possible at all, because many ghost towns are being fenced off from the public, some are giving way to the elements, and still others are being vandalized out of existence.

The ghost towns of New Mexico are numerous, but some of them are remarkably inaccessible, awaiting the visitor at the end of long, dry, rut-strewn drives. The accessible ones are more popular than others; honored by the tourists' dubious homage, they are cluttered with beer cans, dried orange husks and table scraps.

Some are little more than dim lines on the face of the land. Look carefully and you'll see the broken foundations of the settlers' flimsy buildings—stores, stables, houses. In some, only the cemeteries survive. The carved letters and figures on the tilting headstones are worn by time but report much history.

Some towns have been mummified by the dry air. The houses stand precariously. There are some remains of earlier days, but these are few.

Some of the ghost towns exist only in fable, atop high mesas or at the end of mountain canyons. In some, the tables in the homes are said to be set for meals that were never served. The altar candles in the churches are still in their sconces, or so the rumors go.

Others are inhabited by two or three families, or by weekend residents who find excitement living in such places.

At any rate, you should try to see one of these relics before they disappear entirely from the landscape. Remember, don't pick up anything. Leave everything intact; remove all traces of your visit. You can bring plenty of pictures—and memories—away with you. Here are several of New Mexico's ghost towns that are worth a visit with the family, with a friend, or all alone.

ON US 10 NORTH OF ALBUQUERQUE—The mining town of Golden lies dead among the cedars a few miles north of Albuquerque. As late as 1900, a substantial amount of gold was taken from the area. A mile from Golden, up a side canyon, lies San Pedro, its smelters standing like Roman mausolea on the hillside. The oldest mineral lode in America lies in this area; it's rockhounds' heaven on week-

ends.

Farther up the road (US 10) lies Madrid, the cadaver of a once busy coal town. Once, every Christmas, the townsfolk decorated their town with lights; Madrid was famous for its decorations. Today, a thousand broken windows are its inheritance. **NEAR MAGDALENA, N. MEX.**—A few miles south of Magdalena lies Kelly, another abandoned mining town, the only place in the New World where smithsonite was found. Kelly had two churches, seven saloons, two dance halls, and two hotels. On Saturday nights, cowboys loved to ride the three miles from Pueblo Springs (now Magdalena) and shoot up the dances at Kelly. Since its abandonment, Kelly has been badly vandalized. A few miles north of Magdalena lies Riley, once called Santa Rita, on the banks of the Rio Salado. At one time, it was an area of small farms and mining. Then, floods dropped the river level, and the irrigation water was bled from the land. Although the town is dead, a few old orchards survive.

SOUTH OF TRUTH OR CONSEQUENCES, N. MEX.—The area southwest of T or C is rich in the relics of the past. The towns of Gold Dust, Hillsboro, and Kingston are located on Ranch Road 180, and Georgetown and Piños Altos are not far away. Gold Dust is an interesting old mining boom town; Hillsboro was a frontier cow town and is occupied today; Kingston, also still occupied, was once the source of \$10 million in silver. Piños Altos was the home of Judge Roy Bean, who brought law (of sorts) west of the Pecos. **CHACO CANYON**—In a shallow canyon 30 miles south of Blanco Trading Post in northwest New Mexico lies the ghostliest ghost town of all, the ruin of Beautiful Village—Pueblo Bonito. Nine hundred years ago, it housed the most highly developed culture north of Mexico; today it is under the jurisdiction of the National Park Service. Other ruins, some hundreds of years older than Pueblo Bonito, dot the canyon. If the presence of the past lives anywhere, it lives there.

The list of ghost towns could go on and on; hundreds of them have been officially recorded in the state. If you're serious about seeking them out, you may be heartened to know that the State Bureau of Mines and Mineral Resources has issued a preliminary edition of a Ghost Town Map of New Mexico listing the locations of hundreds of the state's ghost towns.



HASTA LA VISTA was an appropriate parting expression between (l to r) Mexican Scout Oscar Fernandez; Ricardo Violante, Scoutmaster of the visiting Tampico Troop; Scoutmaster Gene Jeys; and Scout Dave Bundy of Albuquerque Troop 4.

Gene Jeys Heads Scouts Playing Host to Tampico, Mexico Troop

Things are almost back to normal with members of Albuquerque Scout Troop No. 4 after playing host to visiting Scouts from Tampico, Mexico.

Arrangements for the visit were made by Scoutmaster Gene Jeys, who works at Sandia in a design definition group in Area III. Several other Sandians and their families provided accommodations for the Mexican Scouts during their stay. The Sandia employees included David S. Carrick, Alfred M. Hoge, Laura Stone, and Harold Ricker.

"Something special" for the visitors was dreamed up by W. A. Whitfield, who works with Gene. He designed and made neckerchief slides in observance of the visit. The Albuquerque Scouts presented the slides to the Tampico Scouts.

The invitation was issued by Troop 4 during the International Boy Scout Camporee near Monterrey, Mexico, last year. During the ensuing period, Troop 4 raised entertainment funds by digging and planting trees, selling old newspapers, and sponsoring a dinner.

Scoutmaster Jeys and two members of Troop 4 met the 23 Mexican Scouts at El Paso and escorted them to Albuquerque where the coming 12 days were jam-packed with a variety of activities in the city and a four-day camping trip.

Retiring . . .



E. H. Mebs of Metallurgy Division will retire the end of August after six years with the Corporation.

He and his wife have already sold their home and are living in a mobile home at Aloha Village. They intend to make Albuquerque their headquarters and will go "traveling and antiquing" as the mood hits. "It's no fun to be too specific about plans," Mr. Mebs believes.

The Mebs have a daughter in New Jersey, and two sons in Ohio, their former home, plus six grandchildren.



Edward G. Latimer, a Sandia employee for 10 years, will retire Sept. 1. He is with Field Acceptance and Extension Standards Laboratories Division in the Los Angeles area.

He was assigned to the Field Acceptance and Service Section at Sandia Laboratory from January 1961-September 1963, but has been in Los Angeles the rest of the time.

After retirement, Mr. Latimer will continue to reside at 1614 East First St., Apt. 11, Long Beach. His apartment is only a block and a half from the beach and is also near one son. A second son lives in San Francisco.

Mr. Latimer is an avid golfer and deep sea fisherman.



THIS EMBLEM, designed by Sandia's W. A. Whitfield, was placed on scarf slides and presented to members of a Tampico, Mexico, Boy Scout troop to commemorate their recent visit with Albuquerque's Boy Scout Troop 4.

Sympathy

To Flavio Gonzales (4212) for the death of his father in Taos, Aug. 12.

To Lee F. Parman (3420) for the death of his mother in Albuquerque, Aug. 16.

To Edward J. Peterson (4235) for the death of his wife in Albuquerque, Aug. 11.

To Joe P. B. Armijo, Jr. (4413) for the death of his wife and children, Jo Ellen and Joseph, in a bus accident near Camp Pendleton, Calif., Aug. 18.

To Naomi Wynant (3427) for the death of her mother on July 15.

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LAB NEWS

AUGUST 28, 1964

SANDIA CORPORATION

LAB NEWS



ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

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Service Operations Makes Use of Statistical Work Measurement

"Service is our mission," C. J. McGarr, Director of Service Operations Organization, states. "The jobs we perform are related to service. No matter how large or small these jobs are, they're important parts of a much larger job."

The Service Operations Organization operates on a statistical work measurement method which relates workload with the personnel who accomplish the work. Standards are not set on individuals or groups, but on a comparison of the overall task to the man-hours applied to it. The system, which measures workload, manning, and effectiveness in terms of man-hours applied to a defined workload or job objective, provides true progress control. It has been used by the organization since 1960.

"Such control is a necessity in the type of work performed by 4600," Mr. McGarr adds. "Our people are committed to work well within the strictly defined time limits of the system. They do so."

General Services Department

General Services Department, managed by O. L. Wright, is one of the organizations within the Service Operations Organization which makes extensive use of the work ratio system. "We've found it helpful in giving the first-line supervisor an accurate picture of his workload," Mr. Wright said. "He can borrow help from, or loan help to, other organizations to meet the varying demands of the workload."

The work ratio system indicates trends as soon as they become evident. If the organization is headed for difficulty because of an increased workload, it can borrow help and work extra time to get the job done. If the trend is downward, the organization can loan time to other supervisors who may need additional manpower.

General Services Department provides material services and support to Sandia's technical organizations. Its general stores are the source of all commercial items used at Sandia: some 16,000 line items with a running inventory worth about \$1 million.

General Services Department uses an electronic data processing system in maintaining Sandia's general stores. This involves use of an Economic Ordering Quantity (EOQ) system for re-ordering—a mathematical method for computing the most economic time to place an order, as well as the most economic amount to be ordered. The system, probably the most highly developed of its kind in the country, utilizes the services of Sandia's 7090 computer, and the teamwork of Sandia's Purchasing and Electronic Data Processing organizations, as well as that of General Stores.

"Teamwork makes the system work," Mr. Wright commented.

Storage of material, probably the most long-standing function performed by the department, involves control and storage primarily of special-design components and equipment.

CASH BUYERS visit Sandia's salvage sales yard each week-day noon. Items to be sold are of no further use to Sandia or any government agency. The general public is welcome.

The department also handles and maintains special stocks. These stocks include Sandia's chemical stores (a part of General Stores) and stores of other special materials. This includes explosive items and materials totaling over 115,000 pieces. Some 1200 explosive line items are processed each month.

The Instrument Service provided by the department is a rapidly developing function involving over 30,000 laboratory-bench-type instruments and an electronic data processing method of handling instrument cataloging, listing, repair, maintenance, and calibration information.

Receiving, Reclamation, And Shipping Department

Receiving, Reclamation, and Shipping Department, managed by J. C. Hart, is responsible not only for handling material coming into or leaving Sandia Laboratory, but also for seeing to it that the material is used to its fullest capacity.

"Our reclamation activities involve everything used at Sandia except waste paper," Mr. Hart commented. "We receive test equipment, machine tools, electronic components, weapon parts, test gear, heavy equipment including trailers and government vehicles, building materials, and a vast miscellany of used material including precious metals, all of which we reclaim, sell, or consign to scrap."

Before un-reclaimable material is put on sale, it is offered to other government agencies, or to the Department of Health, Education, and Welfare for possible use by state schools or other institutions in a five-state area. If these agencies have no use for it, it is placed on sale at Sandia's salvage yard.

Sandia employees who have need for a specific piece or part in their laboratory or other work, are encouraged to visit Reclamation Division to see if the item can be provided. Annually, between \$300,000 and \$600,000 in equipment and material is reclaimed for use at Sandia Laboratory. Such salvage also represents saved time which would otherwise be spent making out purchase orders, shipping and receiving new material and equipment, etc.

Sandia's salvage yard provides items for sale to the public at large. "The salvage yard is especially busy before the annual science fairs are held in high schools across the country," Mr. Hart continued. "We sell a significant amount of material to students for use in their projects."

The department also provides packaging, shipping, receiving, and commercial inspection services for Sandia Laboratory; it uses the work-ratio system in these operations.

During the buildup for operations in the Pacific in 1962, the department made overseas shipments totaling 1,338,877 lbs., or 143,004 cu. ft. Items in such a shipment are packed not only to withstand the stresses and shocks you'd expect to find in such overseas transit, but also to withstand the action of a variety of different environments.

The department also receives and inspects material coming into the laboratory. Such material is unloaded, unpacked, and inspected as quickly as possible to expedite it to the requesting organizations.



INSTRUMENT SERVICES SECTION—Three members of the organization discuss possible future use of a digital readout oscilloscope. L to R: Norman Zirwas, Julius Hollenbeck, Art Jimenez.

"These activities are also carried out under the work-ratio system," Mr. Hart pointed out. "When there are unusual working conditions such as bad weather, very heavy workload, unscheduled absence of personnel, or other circumstances, we depend on our own resources to provide continued service. The work-ratio system makes this sort of self-reliance possible."

The workload handled in the receiving area is reflected in a typical month, during which some 14,140 incoming parcel post, R.E.A., air freight, truck, and railway packages were handled.

Test Evaluation Department

Test and Evaluation Department, managed by Robert J. Dill, tests and evaluates a variety of electronic devices. The results of this work are made available to Sandia's research and development organizations to assist them in determining the reliability to be expected from equipment exposed to various operating conditions.

"We try to determine whether or not such equipment is suitable for Sandia designs," Mr. Dill said. "We perform many life tests and some over-tests, with emphasis on determining life expectancy, reliability, and general performance."

One function of the department involves leak testing and evaluation of components, subsystems, and special items; and calibration of leak detection transfer standards. Another involves testing and evaluation of semiconductor devices and vacuum tubes, including radiation exposure testing and subsequent radiation effects testing of these devices.

MEASUREMENT SYSTEM shown here is used in the Test Evaluation Department to determine the insulation resistance of capacitors, with 1000 volts across the test sample. This provides modern capability in measuring very low currents. For example, certain capacitor samples using polystyrene dielectric material have shown insulation resistances in the range of 10^{13} ohms. Operating the digital electrometer is H. E. Beadersted.

As an additional support service for the R&D groups at Sandia, Test Evaluation Department evaluates a number of microwave and electronic subsystems to "prove-in" various designs and modifications made upon them; the object being to determine what an item will do and how well it will do it.

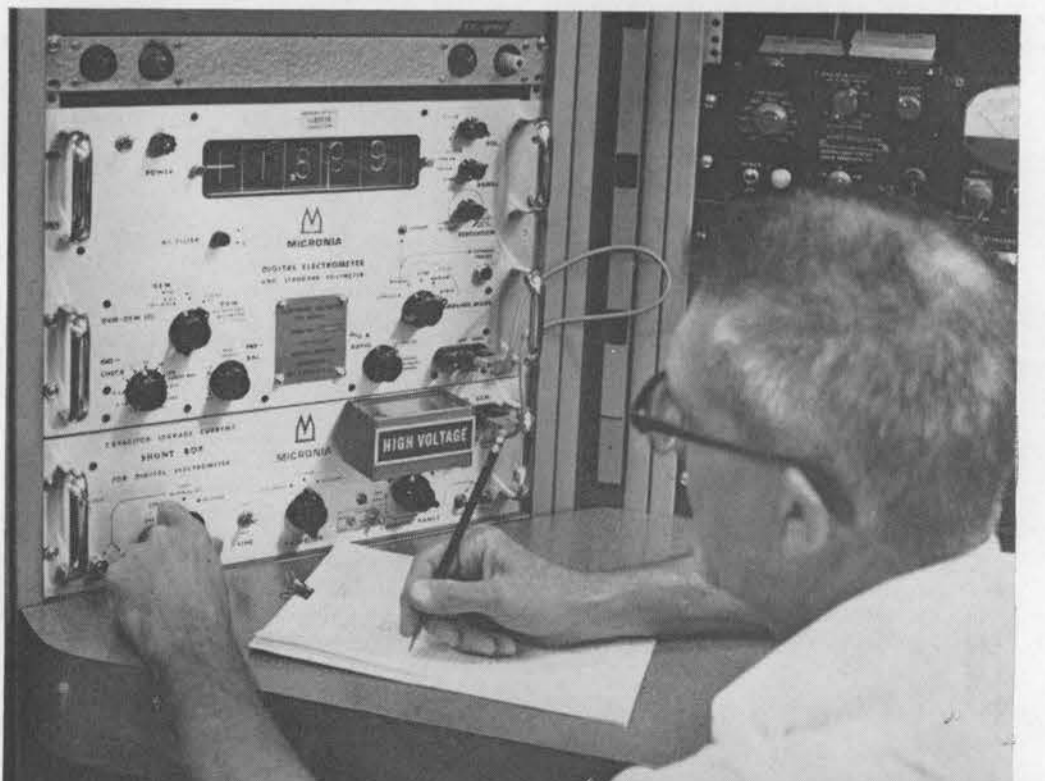
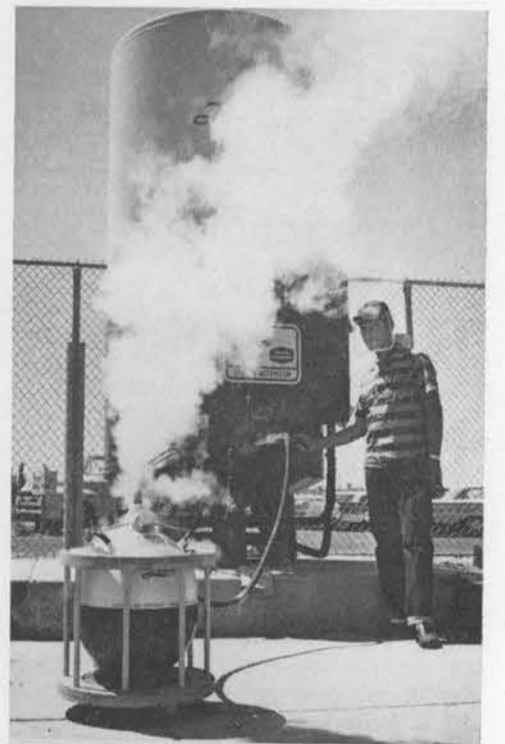
Types of items tested include, as well as the active components mentioned, passive (Turn to Page Four Please)

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LAB NEWS

AUGUST 28, 1964

FELIX CASTILLO fills a liquid nitrogen dewar for one of many technical groups supplied by the General Stores Organization.





(Continued from Page Three)

Service Operations

elements such as capacitors, inductive components, wire and cable samples, connectors of many designs, resistors, and ferroelectric (ceramic) bodies.

Calibration of measurement equipment and the practices of precision typify the "philosophy" of this department. Automation, as far as economically feasible, is used. The work performed provides Sandia's component and system development organizations with data improving understanding of operational reliability in devices at a time when design changes can still be effectively applied. Use of technicians to perform this test and evaluation work, as required by Sandia and related military specifications, relieves staff personnel in research and development for the broader phases of Sandia's missions.

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LAB NEWS

AUGUST 28, 1964

Sandia Speakers

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

C. J. McGarr, Director of Service Operations, "Management Science in an Inventory Control System," Aerospace Applications Workshop (sponsored by IBM), Aug. 18, New York City, and Company Management Conference (Kierulf Electronics Corporation), Aug. 21, Los Angeles, Calif.

J. E. Schirber of Solid-State Physics Division, "New Open Orbits in the Fermi Surface of Zinc," IXth International Conference on Low Temperature Physics, Aug. 21-Sept. 4, Columbus, Ohio.

L. S. Nelson and N. L. Richardson, both of Aerospace Physics Division, "Differences Between the Combustion of Zirconium Droplets in Air and in Oxygen Aragon Mixtures," American Chemical Society, Aug. 30-Sept. 4, Chicago, Ill. Mr. Nelson will make the presentation.

J. O. Wear of Plasma Physics and Chemical Kinetics Division, "Kinetics of the Reaction Between U(IV) and Np(IV) at Low Acidity Aqueous Solutions," National Meeting of the American Chemical Society, Aug. 30-Sept. 4, Chicago, Ill.

C. W. Campbell, Vice President, Administration, "The Sandia Approach to Research Facilities," American Chemical Society, Aug. 30-Sept. 4, Chicago, Ill.

A. B. Blackwell of Applied Mechanics Division at Livermore Laboratory and R. E. Duff of Lawrence Radiation Laboratory, "High Explosive-Driven Wind Tunnels for High Altitude Blast Simulation," Ninth Ballistic Missile Symposium, Aug. 14, San Diego, Calif.

Irving Auerbach of Plasma Physics and Chemical Kinetics Division, "Free Radical Decay in Polyethylene," American Chemical Society, Aug. 30-Sept. 4, Chicago, Ill.

TYPICAL allotment of materials to be distributed throughout Sandia Laboratory is checked out by Buford Coleman, left, and J. B. Sanchez, both members of the General Stores Division.



SHIPPING CARTONS are manufactured by Gabriel Baca in Packaging Section shop. Boxes of varied shapes and purposes are made in this organization.

Look at One ECP Agency Indicates Good Work Done by 35 Others

By J. M. Wiesen
Chairman, ECP Promotion Committee

Each dollar contributed through the Employees' Contribution Plan gets a lot of mileage. Some part of it goes to help finance the work being done by each of 36 ECP member agencies.

If there were time, each one of us could take a first-hand look at the good our contribution accomplishes. The agencies are justifiably proud of their work, and they would proudly show it to us. But, since there isn't time, we might take a second-hand look at one agency, one which, in its busy activity, dedication, and perseverance, typifies the work being done by all of the agencies.

The New Mexico Chapter of the National Multiple Sclerosis Society is such an agency. The battle for victory over MS is far from won, but it's also far from hopeless. It's being quietly and persistently fought by researchers, physicians, therapists, and most enthusiastically, by patients.

They're courageous people, those having this illness. From their cheerfulness and enthusiasm, you sense their optimism about the future.

The disease that they are battling has no known cause. There is, at present, no known cure for MS. It attacks its victims during the time of their greatest vitality; from 20-40 years of age. The first symptoms are deceptive, for they could indicate any one of several diseases; numbness of certain body areas, blurred vision, dizziness, fatigue.

The pathology of the disease apparently consists of deterioration of the sheathing (myelin) which covers the nerves of the

This Party Trick Is No Joke; Provides Basis for New Resistor

The Mobius loop makes a great party trick.

Take a strip of paper about two in. wide and 12 in. long, twist it once, then tape the two ends together. Now take a pair of scissors and prepare to cut the loop lengthwise down its center.

At this point you can take bets. Ordinarily, you would expect to get two separate loops after the cutting.

With the Mobius, you get only one longer, thinner loop.

Now cut this new loop down its center one more time. Take bets again, because everyone will readily agree that you will get just one loop as you did the first time.

No so. You get two loops this time, intertwined as in a chain link.

How about that?

The Mobius has one other unique property. If you start a pencil line down the center lengthwise, it will transcribe a complete circle, meeting itself at the starting point.

The loop was first studied scientifically by a German mathematician, August F. Mobius, about 100 years ago. He defined it as a single surface. Eventually it carried his name.

Now the Mobius loop is the basis for a new transistor invented by Richard L. Davis of Electronic Components Division. This resistor has applications in radar and other pulsed energy circuits. It provides a resistor function with negligible residual reactance. A patent application has been filed for the resistor employing the Mobius principle.

Another striking feature of the Mobius resistor is that it does not couple to other metallic objects or to itself. When the measuring bridge is nulled, the resistor can be handled or changed in form without disturbing the balance. Physically, the Mobius resistor can be made to fit almost any space by folding or winding.

Dick had been working on the problem of making nonreactive resistors with the Chaperon or Ayrton-Perry winding for about two years. However, low resistance values still presented inductive reactances, which are undesirable. How to further improve the resistors remained a problem. He was thinking about this one day as he was looking out of the window of the office.

"Suddenly, there it was," Dick says. "The idea of using a Mobius loop. I hadn't thought about the Mobius for years. It had always been a mathematical novelty."

Dick and Charles M. Barnes, technician



RICHARD L. DAVIS converted the Mobius loop from a mathematical novelty into a new low-reactance resistor.

in the Division, made the first Mobius resistor using masking tape. This was twisted and connected to make the basic loop. It functioned as the resistor dielectric. They used aluminum tape as a conductor and attached this to the surface of the masking tape. Then the current leads were placed opposite each other.

"The first unit had a 0.022-ohm resistance and 0.003-microhenry residual inductance," Dick says. "It had a time constant of 1.3×10^{-7} second, a very low value for such a small resistance. I assumed immediately that higher resistance values could be made with very low residual reactances. We made new Mobius resistors with both ribbon and round wire and had good results with both."

The work is described in a Sandia Technical Memorandum, "Design Formulas for High-Voltage Pulse Resistors," SC-TM 362-63 (14).

The document reports the extensive performance studies of the Mobius resistor made by Dick and Charlie. Still, they have a question about it.

"Since the Mobius resistor operates on the same principle as the other resistor geometries, it must utilize the whole length of the conductors to dissipate the pulse energy," Dick says. "However, compared to the hairpin geometry, the dielectric of the Mobius resistor is used more efficiently, since two equal pulses travel throughout its volume between the conductors."

Then he asks, "How can the two equal potential pulses of opposite phase travel through each other without cancelling?"

We'll leave that one for the topological engineers.

Deaths

Winston W. (Ted) French, a Sandia employee for 13 years, died Aug. 9. He was 63.

Mr. French was a model and instrument maker in the Machine Shop Division.

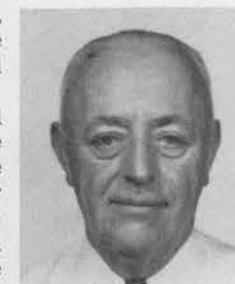
Survivors include his widow; a son, Winston, Jr.; a daughter, Mrs. Marjorie L. McGarrath; and a grandson. All reside in Los Lunas, N.M.



Tillett S. Daniel, a Sandia employee for 14 years, died Aug. 23.

Mr. Daniel had been assigned the majority of the time to the Military Liaison Organization, although in recent months he had been on loan to Medical Services Department to work on a special safety assignment.

He was a retired Navy Commander. Survivors include his widow, two children in California, three grandchildren, and his mother in Greensboro, N. C.



AEC Schedules Nuclear Test in Mississippi Salt Dome Formation

A group of Sandians is now at the Project Dribble site near Hattiesburg, Miss., helping to make final preparations for a five-kiloton underground detonation. The joint Department of Defense-Atomic Energy Commission project is part of the Advanced Research Projects Agency Vela Uniform Program designed to develop techniques for improving the capability to detect, identify, and locate underground nuclear detonations. The event is tentatively scheduled for Sept. 22.

Sandia Laboratory participation in Project Dribble includes arming the nuclear device, recording free-field particle motion both underground and on the surface, and providing a specially-designed television camera to inspect the drilled holes prior to detonation and after.

For the particle motion studies, 71 instruments, including surface-motion gages and subsurface instrument stations, have been placed in four drilled holes surrounding ground zero. Project scientist for this effort is W. R. Perret of Underground Physics Division.

Sandia project leader for Dribble activities is A. D. Thornbrough, supervisor of Effects Instrumentation Section. Field Test personnel participating in the project will include R. L. Rutter, L. C. Sandgren, L. A. Kracko, D. B. List, Walter R. Drake, and F. K. Millsap. R. L. Baca is the Engineering and Research Support Division representative on the project.

R. J. Brousseau of Nevada Test Site Test Support Division is responsible for arming the device. He will be assisted by J. H. Fuqua.

R. G. Scharrer, G. G. Curry, and L. W. Wright of Instrumentation Development Section and G. W. Hughes of Range Optics Division have developed the heavily-insulated television system that will be used for study of the cavity after the detonation. The camera, about five in. in diameter, will be lowered into the shaft and will be able to operate up to 15 minutes in a high-temperature environment.

Technical direction of Project Dribble is the responsibility of Lawrence Radiation Laboratory.

The device will be detonated in a tamped emplacement at the bottom of a 2700-ft. hole. The hole was drilled into the Tatum Salt Dome, a halite (rock salt) formation of from 95 to 97 per cent purity. The Tatum Dome is one of several similar halite deposits found in the Gulf area and formed during the Cretaceous geologic period, when shallow seas covered much of the central portion of the continent.

The Vela Uniform program, of which Project Dribble is a part, evolved from recommendations made in 1959 by the Panel on Seismic Improvement, an officially-appointed group of noted U. S. scientists. The Panel, taking note of difficulties in detecting the difference between some underground nuclear detonations and some earthquakes, called for a program of increased basic research in seismology; procurement of instruments for a worldwide seismic research program; development of improved seismic instruments; construction and operation of prototype seismic detection stations; and an experimental program of underground detonations encompassing both high explosives and, where necessary, nuclear explosions.

The Panel recommended firing a number of underground detonations in different locations and under varying conditions as a source of ground motion that could be recorded by improved detection instruments. Suggested placements were in granite, in an earthquake-prone area, in a cavity, and in varying geological formations at the Nevada Test Site.

The Sand Springs mountain range near Fallon, Nev., was selected as a location meeting the requirements for a granite medium and an active earthquake area. A Vela Uniform event called Project Shoal was conducted there with a con-

tained nuclear detonation on Oct. 26, 1963.

The detonation of a nuclear device suspended within a large cavity was recommended as a means of testing a theory that decoupling or muffling would reduce greatly the volume of seismic or ground motion signals from an underground explosion. Scientists agreed that a salt dome was the most advantageous site for such an experiment.

The decoupling theory is: If a large enough cavity were created underground, and a nuclear device of the right yield were detonated at the center of it, the air would cushion the shock and relatively little of the energy of the detonation would be transmitted to the cavity wall. Therefore, the earth shock or seismic signal transmitted to distant seismographs would be extremely small when compared to the energy transmitted from a tamped explosion of the same yield and at the same position.

Preliminary experiments, using chemical high explosive detonations in small cavities in salt, were conducted by the AEC during late 1959 and early 1960 in a salt mine near Winnfield, La. The experiments suggested the decoupling theory, and supported the prediction that the seismic signals from a fully-tamped nuclear explosion would be about 200 to 300 times larger than the signal from a decoupled explosion of the same energy yield.

Firing 100-ton nuclear devices in both tamped and decoupled emplacements at the same depth (2000 ft.) in the same medium (salt) and in the same area (Tatum Salt Dome) will permit correlating and evaluating results of seismic instrument readings so that more complete knowledge of decoupling possibilities and the seismic recording of decoupled explosions can be obtained. These 100-ton detonations are planned, but not authorized as yet.

The purpose of the U. S. seismic research program is to design instruments that may pick up such signals, to learn how far such a signal may be transmitted, and how well the origin can be identified.

More than 100 nuclear devices have been detonated in shallow or deep underground positions at the Nevada Test Site in experiments dating back to 1957. All of these detonations and the seismic signals resulting from them have been studied as part of the continuing Vela Uniform research program. The information obtained has provided United States negotiators with technical data for talks bearing on test ban matters when discussed in Geneva, Switzerland; Washington, D. C.; New York City; and other locations since 1958.

Promotions

Elaine A. Coons (4333) to Record Clerk
 James L. Duran (3413) to Messenger
 Randall D. Kilmartin (3413) to Messenger
 Juavana Thomas (3126) to Secretarial Stenographer
 Mary A. Kruger (3126) to Stenographer Clerk
 B. Joann Mathews (3126) to Secretarial Typist
 Jewell C. McDaniel (3126) to Secretarial Typist
 Donna C. Brown (3421) to Library Assistant
 Jane L. Hallisey (4432) to Document Clerk
 Kaye L. Hunemuller (4432) to Document Clerk
 Naomi M. Kelly (2642) to Document Clerk
 Marjorie L. Eyerly (7612) to Keypunch Operator
 Patricio Sanchez (3413) to Mail Clerk
 Alice M. Vancil (4131) to Payroll Clerk
 Orinda M. Griffin (3411) to Typist
 Edna F. Morris (4432) to Tabulating Equipment Operator
 Arthur L. Gregory (4613) to Service Clerk
 David E. Salas, Jr. (7611) to Computer Facility Operator
 Martin L. Dieter (7331) to Senior Clerk
 Ben Jojola, Jr. (2641) to Order Analyst
 Jacqueline G. Thornton (8144) to Data Processing Clerk
 Timothy J. Cody (8232) to Document Clerk
 Donald R. Rich (8144) to Tabulating Equipment Operator
 David L. Durgin (7418) to Staff Associate, Technical
 James E. Breitenbach (7323) to Staff Assistant, Technical
 Nell B. Norton (3463) to Staff Assistant, Administrative
 Howard D. Hayden (3465) to Staff Assistant, Administrative
 Frank Lucero (7614) to Staff Assistant, Administrative
 Joseph M. Garcia (4574) to Janitor
 R. W. Fitzgerald (4574) to Cleaner
 Virginia J. Miller (4233) to Assembler
 Pauline H. Selph (4233) to Assembler
 Delores N. Smith (4233) to Assembler
 Charles F. Collier (4233) to Coil Maker
 Mildred D. Smith (4233) to Assembler
 Carl O. Kemp (4233) to Plate Maker
 Sesario C. Cordova (4575) to Laborer
 Nancy C. Chavez (3126) to Typist Clerk
 Richard Chavez (4233) to Technician
 Donna Jo Finley (3126) to Typist Clerk
 Beatrice C. Martinez (4431) to Typist Clerk
 Frances J. Krommenhock (1314) to Staff Assistant, Technical
 Endalecio Gurule (4623) to Material Handler
 Luciano Chavez (4613) to Stockkeeper
 Tom O. Cordova (3428) to File Clerk
 Judy G. Mershon (3126) to Secretarial Stenographer
 John Erni, Jr. (7611) to Data Processing Clerk
 Robert C. Jaramillo (7611) to Data Processing Clerk
 Lyle T. Davis (7241) to Mathematics Analyst
 Helen M. Headrick (1323) to Laboratory Assistant
 E. Marie Hayden (8242) to Record Clerk
 Gloria S. Putman (6000) to Secretarial Assistant



Summer Employee Tackles Difficult Programming Job

For the first time, George Hudson, a mathematics teacher in the Albuquerque Public School System, is working for the summer at Sandia Laboratory. For him as for other Sandia summer employees, the experience is a new and enriching one.

George has taught mathematics at Sandia High School since it opened six years ago. Before that time, he taught for three years at Valley High School. He's chairman of the mathematics department at Sandia High, an active member of the school's mathematics curriculum committee, and the inheritor of the high school teacher's share of club sponsorships and other duties.

"I've found the experience at Sandia very worthwhile, both to my interest in mathematics and to my work as a teacher," he said. "The people with whom I work at Sandia are deeply involved in mathematics; they work with it in applications that we don't always see in the classroom. And they're personable; their friendliness

and help have made my job considerably more meaningful." George is working on a computer project in the Statistical Programming Project of the Applications Oriented Systems Division. The purpose of this project will be to develop, implement, and maintain programs for applying large scale digital computer to the solution of problems of a statistical or probabilistic nature. "Although computer-oriented mathematics isn't yet taught extensively in high schools, it will be soon," he continued, "and the experience of working on computer programming is valuable in that respect."

The relationship between George and Sandia is mutually beneficial; in this sense, he typifies Sandia's summer employees.

The summer hire program, which provides employment for a limited number of high school and college teachers and graduate students, generates numerous other specific benefits, both for Sandia and for the summer employee. The program provides manpower to do important work; it provides available manpower during summer vacations of Sandia's regular staff; it generates interest in possible future permanent employment among graduate students. There are some 50 Sandia staff members and supervisors who had their first experience with the Company as summer employees. The program also provides graduate students and faculty members with gainful employment in an effort to encourage their further study or teaching; and it provides faculty personnel with information on industrial needs to aid them in their teaching.

Summer employment at Sandia is handled by W. A. Doyle of the Employment Division. "The main object of the graduate student summer employment program is to enable the student to become better acquainted with Sandia, and to enable Sandia to become more familiar with him," he said. "And the university faculty program engenders better relations between Sandia and colleges and universities across the country."

"Graduate students for summer employment are contacted by Sandia's college recruiters on the campus," he continued, "and university faculty members are frequently introduced to Sandia by their former students who are now on the laboratory's staff. The high school faculty member seeking summer employment at Sandia makes application through the school administration."

George Hudson is one of 11 high school teachers hired at Sandia this summer.

Supervisory Appointments



RICHARD L. ENO to supervisor of Systems Development Division 7433, Upper Atmosphere Projects Department.

Dick has been with Sandia since July 1956 and for the first three years did project work in Systems Development organization. He participated in Operation Hardtack, Phase I, and Operation Dominic, and two years ago was promoted to supervisor in Space Projects Division II (now re-named Systems Development Division).

He was graduated from the University of Nebraska with a BS degree in mechanical engineering.

During three years service in the Air Force, Dick worked the majority of the time in a preliminary design group at Cape Kennedy then known as Cape Canaveral.



ROY M. TIDWELL to supervisor of Range Electronics Division 7222, Test Range Department.

Roy has been with Sandia Corporation nine years and has been a section supervisor for four years. His work has been mainly in Field Testing. He headed various sections in Livermore Laboratory's Test Department for four years, and returned to Sandia Laboratory last January as supervisor of Special Underground Projects Section.

Roy is a scientific advisor to Defense Atomic Support Agency, and participated in the following full-scale tests: Redwing, Plumbbob, Hardtack, and Dominic.

He has a BS degree in electrical engineering from Texas Technological College, and is a member of Eta Kappa Nu and Tau Beta Pi, honorary societies.

Congratulations

Mr. and Mrs. V. E. Schulze, Jr. (1534), a son, Joseph Edward, July 21.

Mr. and Mrs. Harold Howell (2441), a son, William David, July 28.

Mr. and Mrs. Joe Valdez (4213), a daughter, Maria Montserrat, Aug. 1.

Mr. and Mrs. R. H. Barnett (7331), a son, Douglas Royal, Aug. 2.

Mr. and Mrs. Bill Palmer (4221), a daughter, Linda Anne, Aug. 6.

Mr. and Mrs. W. R. Dameron, Jr. (2563), a son, Guy Corbett, Aug. 9.

Mr. and Mrs. W. J. Meikle (1311), a daughter, Margaret Mary, July 30.

Mr. and Mrs. D. D. Little (4233), a daughter, Molli Dee, Aug. 8.

Mr. and Mrs. G. A. Villane (1531), a daughter, Susan Anne, July 31.

Mr. and Mrs. Norman Corlis (7212), a daughter, Deborah Anne, Aug. 13.

A. D. Swain Helping Make Study at Army Electronic Proving Ground

Alan D. Swain, a human factors specialist in the Development and Systems Division, is one of a group who have been asked by the U. S. Army Electronic Proving Ground to make a study of ways to improve its test and evaluation of new equipment. The proving ground is located at Fort Huachuca, Ariz.

Members of the group are examining previous testing methods in the light of human factors engineering and better test design as a whole.

Human factors engineering—an offshoot of both psychology and engineering—seeks the tool or the machine which best fits the capabilities of its operator.

The services of the group were obtained through the Army Research Office, Durham, N. C., which lists specialists in many fields who are available for consultation and assistance.

Mr. Swain is doing his part of the project while on vacation this month.

AEC Selects Sandia Films for Distribution Throughout Nation

Two Sandia-made films have been selected by the Atomic Energy Commission for inclusion in the AEC motion picture library and for distribution (free of charge) from nine AEC field libraries.

The movies are "Environmental Testing at Sandia Laboratory" and "Fundamentals of Mechanical Vibration." Both were filmed by Industrial Photographics Division.

The first film is of semi-technical nature and discusses the environments, both natural and induced, which weapon components and systems may experience between manufacture and use. A series of test sequences shows some of the facilities at Sandia Laboratory (giant centrifuge, electrodynamic shaker, rocket sled, air gun, climatic chamber, etc.), which are used to produce varying environments to help insure reliability.

The second movie is primarily for engineers and engineering students and discusses the simple systems of mechanical vibration. Animated mathematical examples are included.

Each film runs approximately 30 minutes.

Service Awards 15 Years



Tess K. Reis
3152
Aug. 29, 1949



Carter E. Howard
7611
Aug. 31, 1949



Rodney N. Lord
4611
Aug. 31, 1949



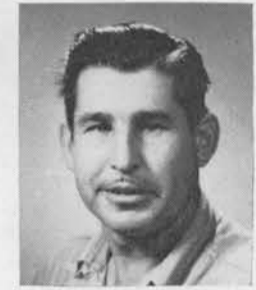
Carl Gregory, Jr.
2524
Sept. 2, 1949



Sarah M. Copeland
2321
Sept. 7, 1949



Jesse C. Rehberg
7432
Sept. 7, 1949



Antonio C. Selazar
4574
Sept. 7, 1949



Robert J. Dill
4630
Sept. 6, 1949

10 Years Aug. 29-Sept. 11

Robert L. Corey 2525, Donald P. Argyle 7212, Merlin A. Manteufel 7245, John M. Stott 4412, David L. Schafer, Jr. 7221, Dale E. Haskins 1533.
M. J. Madlener, Jr. 2541, Frank W. Neilson 1620, C. F. Trimble 2512, M. Muriel Denison 2330, Manuel J. Apodaca 3462, Thaddeus J. Stetz 7246.

Those Miserable Allergies - - Nothing to Sneeze at!

by S. P. Bliss, M. D.
Sandia Corporation Medical Director

Allergy is a sensitivity which some people develop to substances which ordinarily are harmless to most other people.

This deceptively simple definition only states the problem; it does not in any way indicate the severity of allergy. A conservative estimate is that there are more than 17 million persons in the country who suffer from some sort of allergic illness.

The important word here is "illness." To many people, allergy is only a temporary condition which may draw comments from friends about the redness of one's nose. But allergy—including the red nose variety—can be a serious illness unless controlled.

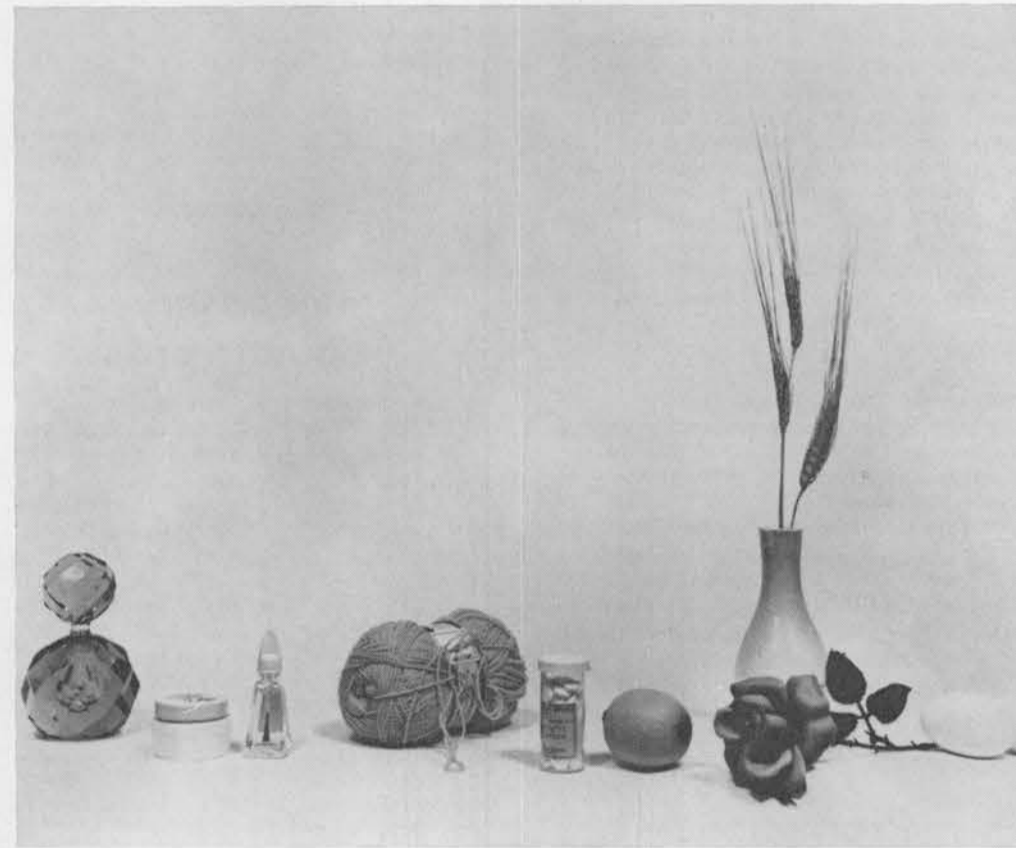
Those who suffer from hay fever, food allergies, and skin allergies—nearly one of every ten persons in the United States—often are prevented from leading normal lives. The loss of efficiency and the cost of doctor's care and medicines, owing to hay fever alone, are immeasurable. Allergies can rightly be considered a major health problem.

Let's take a closer look at these illnesses.

The most common allergic diseases may involve any part of the body. Hay fever and asthma attack the respiratory system. Skin reactions may include hives, eczema, and such irritations as those caused by contact with poison ivy. Digestive disturbances resulting from allergic reaction also are common, and diseases of the eye and ear sometimes are caused by allergies. A more serious aspect of allergies is evident in a case of chronic asthma, for example, where the heart and blood vessels may eventually be damaged.

The illness of the allergy may be mild (a light attack of hay fever or a brief outbreak of hives) or it may be severe and extremely serious (an acute asthmatic attack). In either case, it is wise to seek medical advice and care.

The substances to which individuals may become sensitive are called allergens. They reach the body by being inhaled, swallowed, touched, or injected into it. In more susceptible individuals, the second or third exposure to an allergen—or many exposures over a period of time in less susceptible individuals—produces the reaction. This is usually manifested as an



HARMLESS to many but not to all: cosmetics, wool, drugs, a lemon, wheat, roses, and eggs. The number of common allergens is legion, the accompanying article points out.

irritation of the sensitive tissues of the nose, skin, bronchial tubes, or digestive tract.

The number of common allergens is legion: pollens, molds, house dust, feathers, animal hair, certain cosmetic ingredients, wool, dyes, perfumes, metals, eggs, milk, chocolate, nuts, fish, drugs, hormones, antibiotics, the sting of bees and wasps—and even heat, cold, and sunlight.

Anyone can develop an allergy. It is not inherited, but there is a tendency for some people to develop allergies if either of their parents is allergic or if there is a history of allergy on either side of the family. However, children do not necessarily develop the same type of allergy as their parents.

Hay Fever

Hay fever, the most common allergic disease in the country, can make a person's life miserable and interfere with normal activities. The hay fever victim is troubled with attacks of sneezing, congestion, and itching of the eyes, ears, nose, throat, and mouth. Caused by an allergy to the pollen of trees, grasses, or weeds, hay fever may attack in the spring, summer, or fall—or through all three seasons.

The most common cause of hay fever is

pollen from the ragweed plant, and the peak of the season in the eastern part of the nation occurs between mid-August and mid-September when the plant is in flower. "National Allergy Month" is held from Aug. 15 to Sept. 15 to acquaint the public with the prevalence of the disease.

Some people suffer from year-round hay fever, called "allergic rhinitis." The symptoms are the same as seasonal hay fever and the illness is caused by dust, feathers, animal hair, and certain foods. Both types of hay fever can produce serious complications, and one out of every three hay fever sufferers develops asthma.

Asthma

Asthma is the most serious of the common allergic diseases and the individual suffering from this illness is always handicapped. In acute cases, hospitalization is required. Asthma is a condition characterized by coughing, wheezing, and difficult breathing. It may be caused by any of the allergens which are inhaled (pollen, dust, etc.) or by sensitivity to food. Asthma also may lead to permanent bronchial trouble, and especially may damage the lungs and heart. The disease usually is more common among individuals with a family history of allergy and, like hay

fever, asthma may occur seasonally or all-year-around.

Skin Allergies

Eczema is a skin eruption inflicting itching, swelling, blisters, and scaling. Its causes are many and there often is a family history of allergy. Eczema may be localized anywhere on the body and then spread to other parts. It usually is one of the prevalent allergies of early childhood, and the itching can become so annoying as to produce serious infection from scratching.

Hives are an outbreak of inflamed lumps or welts of varying sizes on the skin, accompanied by a sensation of itching. When the swelling is large and invades the deep tissues, the person's lips, tongue, eyelids, ears, and internal organs may be affected. Hives are most often caused by an allergy to food, drugs, antibiotics, or inhalants.

Contact dermatitis is a skin eruption similar to eczema and is caused in susceptible individuals by contact with such substances as metals, cosmetics, dyes, certain textiles, poison ivy, poison oak, and sumac.

But whatever type of allergy occurs, and it may occur at any age, early diagnosis is important. There is no simple cure for any allergy, nor is there a single treatment for every case. The best source of advice and help is your physician who, if necessary, can refer you to an allergy specialist. To be certain your illness is an allergy, and to identify the substances to which you may be allergic, the doctor will construct a thorough family history before examining you. It is likely he will perform skin tests to determine your sensitivity to various substances by using extracts of allergens.

Once the cause of your allergy has been determined, the doctor will tell you to avoid—insofar as possible—the substances to which you are sensitive. If food is suspected, for example, you will be placed on a special diet. If the allergy is mild, it may be controlled with antihistamines; if more severe, a series of injections may be suggested which will help desensitize the reaction to the allergen. This particular method has proven to be of great help in instances where the allergy is caused by pollen, mold, or dust. Even when relief is incomplete, the severity of the symptoms may be reduced.

In some instances, removal of the cause producing the allergy may be enough to cure the patient permanently. In other cases, treatment over a longer period of time may alleviate the condition. But cures can be effected, so it is important that you consult your doctor if you suspect that you have an allergy.

After all, your health is nothing to sneeze at!



FIRING console is operated by A. J. Canute, who was Sandian in residence at the Barking Sands Launch Site until last month when he was returned to Albuquerque. R. V. Tullar now holds the assignment. Both are in Projects Division, Upper Atmosphere Projects Department.

(Continued from Page One)

Barking Sands Launches

needed for these upper air research studies.

Sandia has flown various kinds of X-ray detectors for Los Alamos scientists. The rockets are aimed at the sun. Detectors measure "soft" X-rays produced by the sun which normally do not penetrate the earth's atmosphere.

Projects Division under J. J. Miller has responsibility for operation of the Kauai Test Range and works with Carrier Development Division and Sensors Development Division in the development of the overall rocket systems. Telemetry systems, launch operations, and range safety are performed by Projects Division personnel. Operations are coordinated with the U. S. Navy's Pacific Missile Range organization. PMR provides surveillance and recovery aircraft, radar tracking facilities, and communications systems.

When a launch series is scheduled, the concerned Sandians leave Albuquerque for the Kauai Test Range and stay until the project is completed. A permanent caretaking crew remains at the site the year around. Caretaking is contracted to Holmes and Narver, Inc., of Los Angeles and Honolulu. At Kauai, H&N provides four versatile maintenance men and two photographers who maintain facilities and equipment, and help with the operations. The photographers man the ME-16 tracking telescope and other optical instrumentation during rocket launches.

Supervision of the range is alternated between J. J. Miller and Keith Smith for various operations. A Sandian is in charge of the facilities at all times between operations. A. J. Canute has held this post for the past several months. Just recently, R. V. Tullar took over the assignment.

At Sandia, work is well underway for the series of launches scheduled in October. All rocket systems and instrumentation are assembled here and thoroughly bench-tested prior to shipment to Kauai.

The forthcoming series will involve several rocket systems under development, upper atmosphere sampling devices, rockets designed to spread a trail of sodium and glowing TMA chemical clouds above 100,000 ft. to measure upper air winds, rocket tests of a Sandia-developed gyro-stabilizing platform, and rocket tests of Sandia telemetry systems.

R. E. Hollingsworth Named New AEC General Manager

Dr. Glenn T. Seaborg, Chairman of the Atomic Energy Commission, has announced the appointment of Robert E. Hollingsworth as General Manager of the Commission's staff.

Mr. Hollingsworth has served as Deputy General Manager for almost five years. He will succeed Major General A. R. Lueddecke, USAF (Retired), whose resignation became effective July 31, 1964. General Lueddecke has accepted the position of Deputy Director of the Jet Propulsion Laboratory at Pasadena, Calif.

The General Manager is responsible for executing, on behalf of the Commission, an operation approaching \$3 billion a year, involving the supervision of approximately 7300 AEC employees and the administration of contracts involving over 125,000 employees. The AEC's operations extend to virtually every state of the union. The AEC has cooperative programs with nations and organizations on every continent.

In announcing this appointment, Chairman Seaborg said, "We are extremely fortunate in having available to us in Mr. Hollingsworth a man with a long and distinguished record of responsible AEC service, one who has fully demonstrated the potential to assume the responsibilities of General Manager. I think it reflects credit on the Commission that it has been able to attract and develop men of Mr. Hollingsworth's caliber. He is taking on one of the toughest and most demanding managerial assignments that we know of. We are confident that he will do a fine job. He will certainly have the full support of the Commission."

Mr. Hollingsworth was graduated from Columbia University, where he received an A.B. in government. He subsequently studied for three years there in the graduate school of public administration. He has served the Federal government for 23 years and has been employed by the AEC for 17 years. Mr. Hollingsworth served in the Army from 1942-46, attaining the rank of Lieutenant Colonel. He was awarded the Arthur S. Fleming award for outstanding young men in government in 1958.

Take Note . . .

Two tenors are needed by the Bel Canto Singers, according to Brian Finley, supervisor of Salary Job Evaluation Section. Anyone interested in auditioning for the group may contact Brian, tel. 299-0739.

The Professional Photographers of America, Inc., has photographed a Merit Award to William P. Mahaffey of Sandia's Industrial Photographics Division for "outstanding accomplishment in photography."

He was one of 16 photographers receiving the award in a new industrial motion picture and slide film program. Qualities considered are production techniques, editing, continuity, and overall excellence.

Ruth Chapman will be the featured speaker at the next meeting of the Free Lance Orators, Thursday, Sept. 3. The informal group meets during the noon hour in Rm. 280 of Bldg. 836, to improve public speaking skills. Emcee for the program will be Jim Johnson.

WE-Bell Laboratories Build Guidance System for Syncom 3

The Western Electric-Bell Laboratories guidance system successfully guided the NASA Syncom 3 communications satellite into its initial orbit Aug. 19. The launch was from Cape Kennedy, Fla. In a later stationary orbit planned over the Pacific Ocean, it will be able to relay TV pictures of the October Olympic Games from Japan to America and Europe.

A thrust-augmented-Delta rocket rose from its launch pad at 7:15 a.m. (EST) and was directed into a planned initial orbit 700 to 22,300 miles high. Western Electric's participation ended with initial orbit and NASA facilities will command Syncom 3 to execute a number of intricate maneuvers over a 12-day period to change orbit and, if successful, position itself at a point 22,300 miles high above the intersection of the equator and the International Date Line.

This will make Syncom 3 the world's first



LESLIE EVANS of Secretarial Services Division enjoys the last days of summer at the Coronado Club twin pools. The swimming facilities will continue a full schedule through Labor Day, Sept. 7.

PAGE EIGHT
LAB NEWS
AUGUST 28, 1964

New AEC Research Program to Study Effects of Ground Motion

An unusual pair, Las Vegas hotels and the United States Coast and Geodetic Survey, have teamed up in a research program sponsored by the U.S. Atomic Energy Commission.

The program is designed to develop a reliable means of predicting the response of various types of structures to ground motion caused by underground explosions. The program is being carried out by John A. Blume and Associates Research Division for the Nevada Operations Office of the AEC.

Motion resulting from an underground detonation at the Nevada Test Site was felt in Las Vegas for the first time following detonation of a device of approximately 200 kilotons yield on Sept. 13, 1963. Although the building motion was slightly above the threshold of human perceptibility, it was well below the threshold of structural damage. Earthquake response, a subject in which the Blume firm has an extensive background, indicates that generally there is a wide range of motion between the threshold of human perception and of damage.

Ground shock experts agreed that even large detonations would not be likely to cause damage to property off the Test Site. However, no reliable means existed for determining structural response at various distances to detonations of varying yields.

The program includes the placing of accelerometers, seismoscopes, seismometers, displacement meters, strain gauges, and micro-tremor instruments in tall buildings and on the ground to record reaction to natural or man-made earth tremors, ground motion, high winds and other phenomena. The permanently installed instruments are being furnished by USC&GS, and USC&GS crews will supervise record-

ing and maintenance.

Installations have been made at the Desert Inn, Fremont, and Sahara Hotels, with additional installations planned at the Dunes Hotel and the Landmark Tower when those structures are completed. Temporary installations will be made at the Stardust Hotel and in other buildings for specific experiments.

Considerable useful information and theory about ground motion and structural response have been developed in connection with earthquakes and structural dynamics. However, this information and theory are not considered sufficiently accurate or complete for development of the required structural response predictions involving underground nuclear detonations.

Information gained in the Las Vegas research and the development of a reliable structural response forecasting capability also may contribute to the AEC's Plowshare Program of developing peaceful uses for nuclear explosives. Accurate prediction of ground motion and structural response would be important in projects involving nuclear excavation.

Sandia's

Safety

Scoreboard

Sandia Laboratory:
12 DAYS
420,000 MAN HOURS
WITHOUT A
DISABLING INJURY

Livermore Laboratory:
7 DAYS
37,900 MAN HOURS
WITHOUT A
DISABLING INJURY