CHARTER MEMBERS—The Purchasing Agents Association of New Mexico viewed exhibits in the Sphere of Science last week as special guests of Sandia. Checking a luminous watch for signs of radiation were three original members of the organization, (l to r) Jean Smith of the Public Service Company of New Mexico; Frank Manfredi of the University of New Mexico; and K. S. Spoon, Sandia Purchasing Agent who welcomed the visitors and their guests.

SANDIA CORPORATION

LAB NEWS

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

VOL. 17, NO. 7 / MARCH 26, 1965

ASQC Names 12 To Senior Member

Announcement was made this week by the American Society for Quality Control that 12 Sandia engineers have been advanced to the rank of senior member. The honor is awarded as a recognition of technical competance and outstanding activity in the field of quality assurance and in the Society. The recognition also encompasses factors such as publishing, teaching, consulting, and activities in related societies.

The new ASQC senior members are D. W. Ballard, W. E. Caldes, A. E. Clamp, J. C. Connell, E. M. Hodges, J. R. Holpp, H. P. Kelsey, W. C. Kraft, E. F. Massey, L. J. Paddison, W. A. Sherman, and L. G. Wilson.

AEC to Pave 3.4 Miles of Road in Sandia Lab Area III

C&H Construction & Paving of Albuquerque is the apparent low bidder for a paving project at Sandia Laboratory.

The firm's bid of $126,516 was the lowest of four received. Bids were opened early this month in the Albuquerque Operations Office of the Atomic Energy Commission.

Project engineer R. G. Piper, Plant Engineering Department, said work includes construction of 3.4 miles of paved roadway in Tech Area III and about 6400 sq. yds. of classified storage space in Tech Area I. The storage area west of Bldg. 893 and 894 will be used by Material Services Division.

AEC Gives Sandia Clean Room Film Int'l Distribution

A Sandia-produced 16mm motion picture, "Clean Air Is a Breeze," has been given international distribution by the U. S. Atomic Energy Commission.

Produced by the Sandia Graphic Arts Department, the 16-minute color and sound film illustrates the relative size of minute airborne particles which can contaminate critical industrial processes. Through animated photography, the semi-technical picture explains laminar air flow principles.

Several types of laminar flow clean rooms and clean benches employed at Sandia are illustrated, along with their applications to industrial and medical research and development.

Prints of the film were sent abroad this month to AEC headquarters in London, Tokyo, Buenos Aires, and Brussels, and to U. S. offices at San Francisco, New York, Chicago, Oak Ridge, Tenn., Albuquerque, Idaho Falls, Richland, Wash., Augusta, Ga., and Grand Junction, Colo. Other copies were provided the International Atomic Energy Agency and the U. S. Information Service in Stockholm, Sweden.

In addition, the film was deposited with the National Science Film Library in Ottawa, Canada, and the American Film Library in The Hague, Netherlands.

Three Sandia divisions collaborated in the production. Writing, direction, and photography was done by Industrial Photographics Division; Technical Art Division was responsiible for animation and art work; and technical advice was supplied by Advanced Manufacturing Development Division.

Sandia Lab Taking Part in NASA Int'l Quiet Sun Year Experiment

Sandia Corporation is among a dozen universities, NASA field centers, and federal agencies participating in a Mobile Launch Expedition underway off the west coast of South America.

The project is part of the NASA sounding rocket program being conducted during the International Quiet Sun Year (IQSY) 1964-65, a period of minimum solar flare and sunspot activity.

A World War II aircraft carrier, the USNS Croatan, has been converted to a rocket launching platform and various types of radar antennas are mounted on the flight deck. Other mobile tracking equipment is installed in vans and trailers.

Sandia is interested in some 50 weather rockets which will be fired to obtain meteorological data. Solid-fueled Nike-Apache and Nike-Cajun sounding rockets, capable of lifting 50-lb. payloads to altitudes exceeding 100 miles, will be used for other experiments in the program.

For its part in the project, Sandia has supplied 15 Judi-Dart rockets which will release copper wire chaff easily tracked by radar to determine wind conditions from 100,000-200,000 ft. aloft. These rockets will alternate, on a daily launch schedule, with 30 Arcasondes (capable of giving wind and temperature conditions up to 160,000 ft.), supplied by Langley Research Center. The launch site for Sandia's rockets will range from 10°N. to 30°S. latitude.

"The Judi-Dart rockets have been used by Sandia since about 1960," L. B. Smith of Atomic Particle Physics Division noted. "They are cheap, as rockets go, and are reliable. They have been fired frequently at Tonopah Test Range in support of blast predictions for Nevada Test Site, and have been used in Hawaii and Johnston Island." The range of the rocket complements the Deacon-Arrow rocket which provides data in the 200,000-300,000-ft. range.

Information obtained by the meteorological rockets will be sent to Sandia and used by J. W. Reed of Underground Physics Division in his predictions of effects from blast waves.

Sandia Gives Technical Assistance

JTF-2 Test Flights Starting at Tonopah Test Range About May 1

Beginning about May 1, the first of the combat aircraft participating in Joint Task Force 2 test missions will skim over marked courses at the Tonopah Range. The low level flights, instrumented by Sandia Corporation, mark the beginning of JTF-2's penetration test program. Flights are scheduled over the Tonopah Range from May 1 through the middle of July.

The JTF-2 mission, directed by the Joint Chiefs of Staff, calls for evaluating the low level capabilities of tactical and strategic aircraft weapons systems and also evaluating ground to air defenses against such systems. JFT-2 was created in August 1964 and its headquarters established on Sandia Base last October. Sandia Corporation provides technical and scientific assistance to the JTF-2 mission.

Support by Sandia includes general systems engineering and analysis in the preparation of test plans; designing instrumentation systems for use in aircraft and ground equipment at ranges and other test sites; procurement, installation, and maintenance of the equipment; on-site monitoring and observation of data; data processing, analysis, and interpretation of data; and assistance in preparation and publishing of reports.

In less than three months, since Sandia received the JTF-2 support mission, an organization of 37 Sandia people has gone into action: they have designed and installed a tracking system (including instrumenting two C-130 aircraft and design of instrumentation pods to be carried by the test aircraft); they have created computer programs for rapid data reduction; and they have accomplished detailed technical planning for the first series of test flights.

Don B. Shuster, Director of Special Projects, heads the Sandia JTF-2 mission with activities centered in Systems Evaluation Department under John C. Eckhart. T. A. Sellers, supervisor of Instrumentation Systems Division, led the effort to develop the airborne instrumentation pod and the C-130 aircraft equipment development and installation. J. M. DeMontmollin, supervisor of Test Design and Evaluation Division, is responsible for JTF-2 advance planning and test program planning. J. J. Miller, supervisor of Test Operations and Facilities Division, heads instrumentation pod operations and maintenance, instrumentation aircraft operations and maintenance, test operations and planning, and test facilities and site engineering. C. E. Ingersoll assists with test operations planning and D. G. Beatson, on an interim assignment from Range Engineering, helps with site engineering.

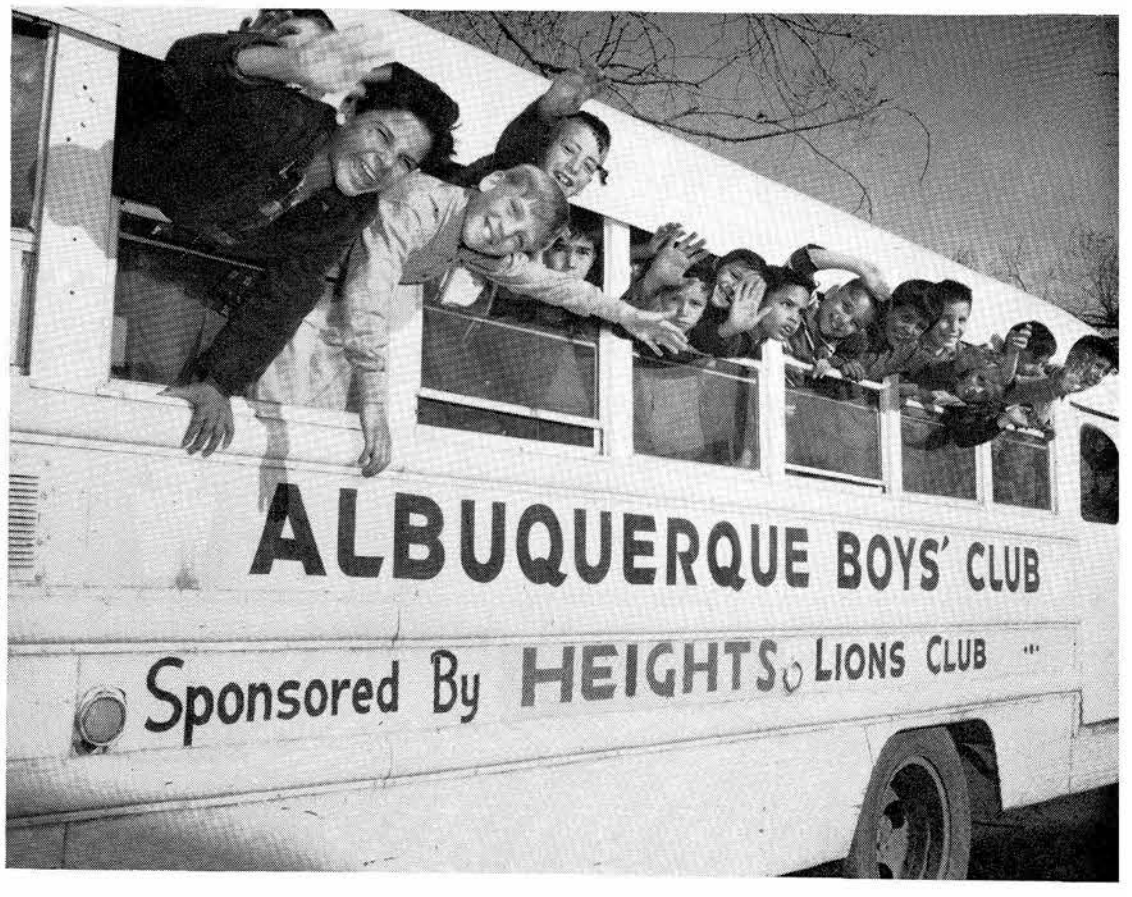
L. Van Blaricum of Data Handling Systems Division is responsible for Field Data Processing while A. R. Iacoletti, supervisor of Mathematical Computing Services Division, is responsible for data reduction at Sandia Laboratory. L. D. Watkins of Data Handling Division is responsible for systems and implementation planning for the data system.

Statistical Research and Systems Analysis Division under G. P. Steck performs the JTF-2 systems analysis, test design, and analysis.

The JTF-2 is an all service organization commanded by Maj. Gen. George S. Brown, USAF. Combat aircraft from all services will participate in the flight test program. Pilots will be from operational units of the armed services.

JTF-2 Deputy Commanders are Brig. Gen. Howard E. Michelet, USA, and Rear Adm. Thomas J. Walker, USN. JTF-2 Chief of Staff is Col. Jack C. Scott, USMC. Lt. Col. Philip E. Snyder, USA, heads Administrative Services. Col. Albert S. Kelly, USAF, is in charge of Operations. Plans and Requirements Directorate is under Col. William L. Schreiber, USA, and Analysis and Reports Directorate is headed by Capt. James D. Ramage, USN.

NEW WINDOWS for this Albuquerque Boys' Club bus were purchased with a portion of the 1964 Employees' Contribution Plan reserve fund. The windows cost $220. Anderson Glass Company donated labor and installation cost. Ten other agencies also received various amounts from the 1964 reserve fund.



Editorial Comment

Parking Congestion Solution

The hurry-up and wait traffic game played on Sandia Base each weekday is the result of too many cars with too many solo drivers. Statistics bear it out—each work-bound car carries an average of only 1.5 occupants.

While probably no single solution exists to the traffic congestion problem, the car pool offers many advantages the drive-alone system can't match.

For example, there's the basic gas, oil, and wear-and-tear savings. Not to mention a free car for the wife—without having to buy her one of her own.

For comfort and convenience, there's the possibility of a little added sleep on mornings someone else is driving. And there's no long hunt for a parking place and no mad dash to the parking lot at quitting time as fewer cars leave the Base.

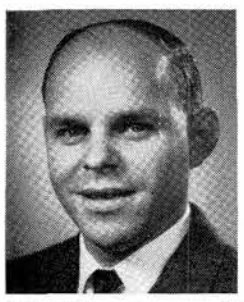
Another plus is the fringe benefits which enliven an otherwise dreary drive to and from work. Pools are more than transportation—they're route determination, bookkeeping, and arguments about married life, economics, and politics.

Despite the advantages of pools, a large number of Sandians continue to drive to work alone. They "live too far out," "like the freedom," or "don't want to be bothered."

Happily, there's a solution—even for the "loners." The two-person pool. It's easiest of all to set up . . . and easiest to dissolve, if things don't work out.

And if one does pan out, it means an extra parking space closer to work for another pool.

Supervisory Appointments



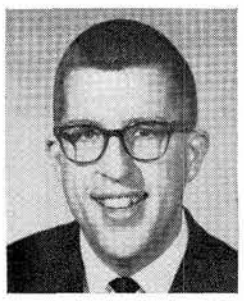
GENE H. HAERTLING to supervisor of Ceramics Division, Materials and Process Department III, effective Mar. 16.

Gene has been working in ferroelectric ceramics since he came to Sandia in June 1961. His assignment has been with Materials Research Division in Physical Sciences Research Department.

Immediately before joining Sandia Gene received his PhD degree in ceramic engineering from the University of Illinois. He has a BS degree in ceramic engineering from the University of Missouri at Rolla and a MS degree from the University of Illinois.

Gene worked for Ipsen Ceramics Inc. in Pecatonica, Ill., both before and after serving two years in the Army.

He is a member of the American Ceramic Society, Tau Beta Pi, engineering honorary, and Keramos, ceramic engineering honorary society.



JAY D. GILSON to supervisor of Numerical Systems Engineering Division at Livermore Laboratory, effective Mar. 16.

Jay joined Sandia at Albuquerque in June 1955 as a project engineer. He transferred to Livermore in April 1959 where he has worked in project engineering, acceptance equipment design, and special projects organizations.

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

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

He is a technical consultant to the APT (Automatically Programmed Tools) Numerical Control System administered by the IIT Research Institute.

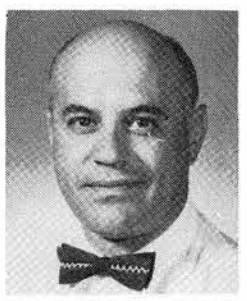
C. HERMAN MAUNEY to supervisor of Special Systems Division, Systems Engineering Department, effective Mar. 16.

Herman has been at Sandia since July 1953, assigned to eral systems development or project groups within the Systems Development organization.

Before coming here he was graduated from North Carolina State College with a BS degree in electrical engineering. Herman has also finished the course work at the University of New Mexico for a Master's degree in business administration.

He is a member of Eta Kappa Phi and Tau Beta Pi, honorary societies.

From 1954-56 he was on leave of absence from Sandia to serve in the Army.



OSCAR M. FLIGNER to supervisor of Project Division, Weapon Systems Development Department II, effective Mar. 16.

He has worked in a systems development group since he came to Sandia in August 1950.

Immediately before, Oscar taught electronics at Lowry AFB, Denver.

He was graduated cum laude from the University of New Mexico with a BS degree in electrical engineering. Oscar is a member of the Institute of Electrical and Electronics Engineers, Sigma Tau and Phi Kappa Phi, honorary societies.

During World War II, he served five years in the Air Force as an instructor in aircraft electrical instruments.

Congratulations

Mr. and Mrs. Audilio Barela (2552), a daughter, Karin Maria Michell, Feb. 19.

Mr. and Mrs. Richard A. Hawley (4234), a daughter, Eleen Carol, Feb. 23.

Mr. and Mrs. Leland Pierce (4224), a son, Leland Justin Stanford, Mar. 9.

Mr. and Mrs. James E. Tichenor (4224), a son, Mark Christopher, Mar. 16.

Mr. and Mrs. John C. Eckhart (9210), a son, Curtis John, Mar. 12.

Mr. and Mrs. John H. Walker (2565), a daughter, Lisa Anne, Mar. 12.

Sympathy

To E. P. Quigley (2565) for the recent death of his father.

To W. C. Elskes (4511) for the death of his father in Texas on Mar. 10.

To George Urish (2212) for the death of his infant son on Mar. 3.

A Look at Your Emotions and Your Physical Health

Part III

Almost half of the people seeking medical attention today are suffering from ailments brought about or made worse by emotional factors such as fear, anxiety, or worry. Here the author discusses how the body seems to try to tell us that something is wrong.

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

Rapid heartbeat is the familiar part of many common emotions. In a person who undergoes constant emotional tension, the resulting palpitation of the heart may occur so readily that he thinks no more of the emotion that originally started it. He may think he has a heart ailment.

Sometimes, a person's emotional conflicts are so difficult for him to accept that he represses his feelings altogether, and is no longer conscious of them. For example, take the little boy who is forced against his will to go to school. He may suddenly get sick and vomit. A woman may develop a severe headache shortly before a party she expects to be tiresome. A student may get a weight in the pit of his stomach shortly before a hard examination. These are examples of the unconscious mind's protest against something the individual really does not want to do.

Almost 50 per cent of the people seeking medical attention are suffering from ailments brought about or made worse by emotional factors. Emotional tensions often play a prominent role in certain kinds of heart and circulatory disorders, especially high blood pressure; digestive ailments such as peptic ulcer and colitis; headache and joint or muscular pains; skin disorders, and some allergies.

Physical distress can frequently be interpreted as an articulate, inner-body language that speaks a warning that certain emotional problems have been too long repressed. Many of our common expressions indicate we all know something about this body language of the emotions.

"That burns me up." "Was my face red." "That makes my blood run cold." "It's breaking my heart." "He drives me crazy." "She gives me a pain." All of these are examples of this awareness; they are often heard in our everyday speech.

Headaches, heart palpitations, difficulty in swallowing are indications that something is wrong. In many cases, the cause may be emotions. A check-up by your physician will determine if there is something organically wrong.

Of course, the big question asked by people with pains and discomforts is, "What can I do about it?" The final article in this series will give some advice along this line.

NEW OFFICERS—Installed recently as 1965 officers of Office Employes International Union, Local 251, AFL-CIO, were, from left, Manny G. Chavez, Accounting Division 4151, secretary-treasurer; Paul J. Cruz, Accounting Division 4151, president; and B. L. Stewart, Procurement Services Division 2552, vice president. The terms of office are for one year.

Sandia Speakers

J. W. Wistor of Physics Measurement Division, "An Extended Range Velocity Gage for Measurements in High Shock Environments," DASA - sponsored fourth meeting of the Working Group on Instrumentation Development and Techniques for Nuclear Weapons Effects Research in Protective Structures, Feb. 16-17, U. S. Naval Civil Engineering Laboratory, Port Hueneme, Calif.

G. J. Hansen of Physics Measurements Division, "Electronic Integrators for Instrumentation Application," Working Group on Instrumentation Development and Techniques (see above), Feb. 16-17, Port Hueneme, Calif.

W. R. Perret of Underground Physics Division, "Ground Motion Measurements," (see above), Feb. 16-17, Port Hueneme, Calif.

D. G. Palmer of Blast and Earth Motion Division, "Instrumenting Nuclear Explosions," (see above), Feb. 16-17, Port Hueneme, Calif.

E. G. Thuman of Administrative Programs Division, "Computors and Data Processing," Data Processing Management Association, Feb. 18, Santa Fe.

J. A. Barber of Area III Laboratory, "Measurements of High Temperature," High Temperature Thermometry Meeting at AEC Headquarters, Feb. 24-26, Washington, D.C.

SANDIA CORPORATION

LAB NEWS

ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

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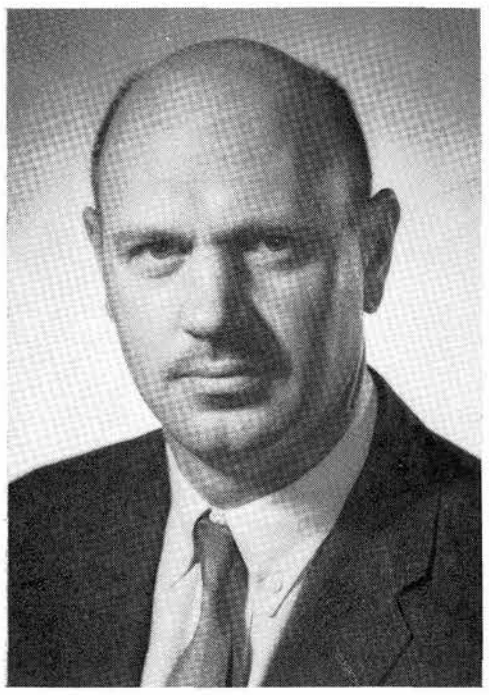
LIVERMORE NEWS

ASTME MEETING—Nearly 90 members of the American Society of Tool and Manufacturing Engineers toured selected areas of Livermore Laboratory during the technical part of the Mar. 17 meeting. Tape-controlled equipment was the focal point of discussion as Sandia engineers and technicians displayed equipment and demonstrated some of the advantages of automatic machine tools. In addition, there were displays of the LASER interferometer and the Orthomat (automatic drafting machine). More than 40 manufacturing interests were represented from the greater Bay Area.



WAR-ON-POVERTY CHAIRMAN — (left) Livermore Dep't Mgr. Bill Little has been selected interim chairman of the Valley Communities Economic Opportunity Organization. Bill serves as a member of the Board of Directors to the VCEOO, representing Livermore High School District, of which he is a trustee. He heads a four-man nominating committee that will present a list of candidates to the poverty group on Apr. 7 for election of permanent officers. Last month, the VCEOO seated a 14-man board of directors to pass on all applications for funds to combat poverty in the valley.

Peace and Solitude of Death Valley Has Painful Aftermath for Sandian

Two Sandians from Livermore Laboratory found recently that solitude doesn't always bring solace.

Lurl Ostrander, supervisor of Publications and Graphic Arts Division, and Andy Lieber, manager of Advanced Systems Research Department I, spent several days last month roaming the remote parts of Death Valley, camping wherever evening found them. Their goal was to avoid people and to shoot a few pictures.

They did have luck in those departments. They went for long periods without sighting another human being. They explored and photographed the wind-driven boulders of remote Racetrack Valley and took pictures of a herd of Nelson bighorn sheep—seldom seen even by the Park Rangers.

Five a.m. Monday morning found them atop Dante's View, a spectacular 6000-ft. peak overlooking all of Death Valley. Andy went afoot to take pictures; Lurl remained at the truck. Suddenly Lurl was seized by abdominal pains so severe that they nauseated him and left him barely able to climb into the cab of the truck. He thought the pain would pass quickly, so he didn't attempt to call for help. But when Andy returned, about 20 minutes later, the pains were even more severe.

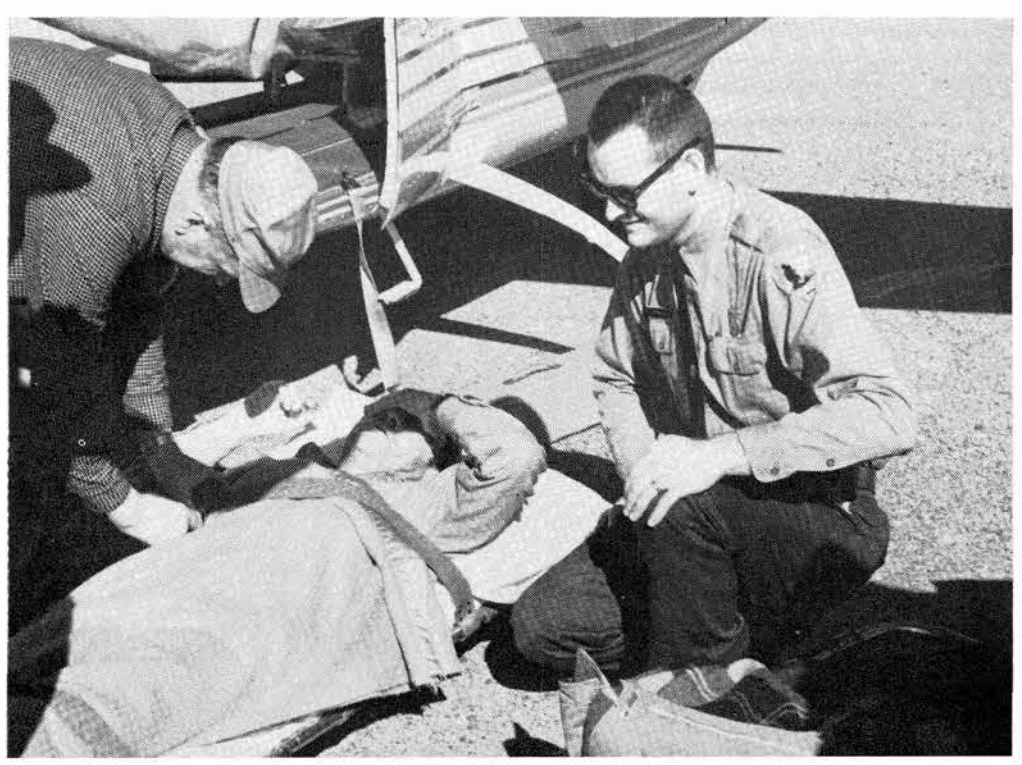
Fearing appendicitis, they made a breakneck descent to reach a roadside telephone. A call to the Park Service Ranger's office revealed that the nearest doctor was over two hours away by road—either Las Vegas, Nev., or Lone Pine, Calif.,—but a nurse was available at Furnace Creek Inn, about 15 miles down into the valley.

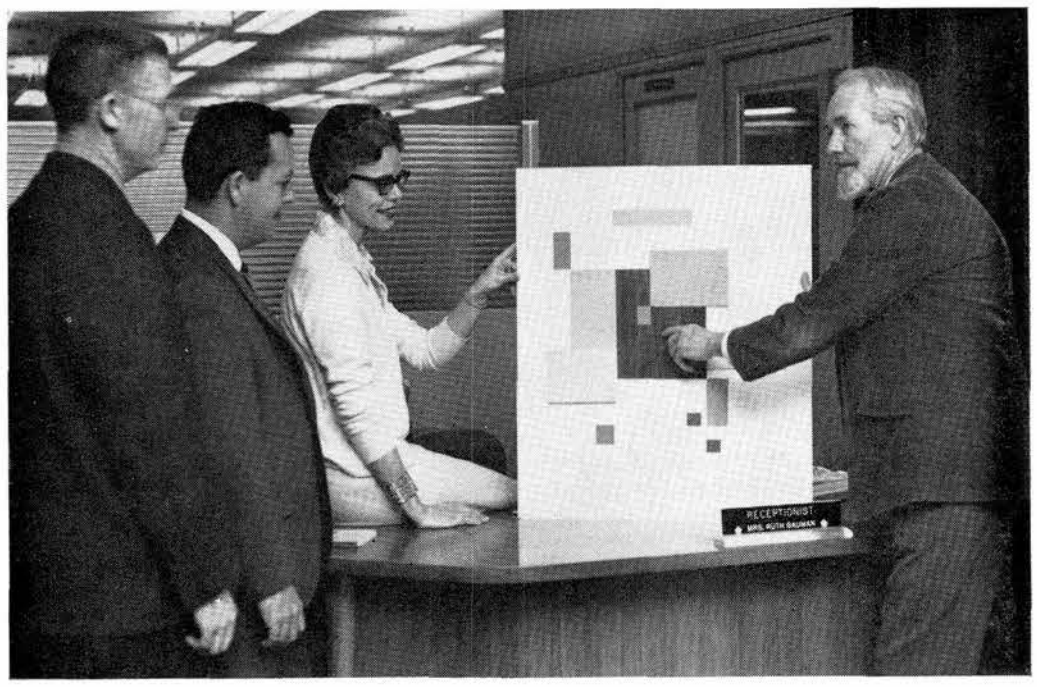
The nurse, a veteran of 26 seasons in Death Valley, contacted a doctor in Lone Pine who arranged for an air ambulance. Park Rangers transported Lurl to the local airstrip in a station wagon ambulance.

After seeing Lurl off, Andy drove to Lone Pine. By the time Andy arrived at the hospital, Lurl's ailment had been diagnosed as a kidney stone and he was sitting up in bed.

"The cooperation and assistance received during the emergency was outstanding," Lurl commented. "Many people volunteered aid without bothering to find out who I was or whether I had any money."

EN ROUTE TO THE HOSPITAL—Lurl Ostrander is strapped onto a stretcher and placed in an air ambulance by the pilot and a Death Valley Park Service Ranger. The picture was taken by Andy Lieber.





COORDINATED COLORS—Ben Aikin (right) explains to receptionist Ruth Bauman one of the techniques he used to select colors for the SCLL Administration Building. Active in the Laboratory-wide painting project are George Mincks (left), who is responsible for the actual painting, and Joe McManus, who worked with Ben in selecting the colors.

Hallways Accented With Color At Livermore Laboratory

One hundred years ago the poet Swinburne wrote "Blossom by blossom the spring begins."

Spring is beginning at Livermore Laboratory as, corridor by corridor, colors are replacing the bland nutmeg hues on walls and doors. Enter one corridor and you are surrounded by tones of blue and green; round the corner and you'll walk among tones of subtle yellow.

The use of color for building interiors at Sandia Corporation follows a trend within industry in which color is used to break otherwise unrelieved corridors. Since corridors at Livermore Laboratory were scheduled for repainting, colors were ordered.

Technical artist Ben Aiken was asked to advise on color schemes. Results so far have transformed architecturally sterile hallways into continuous progressions of soft, pleasing color tones, generally well received by employees.

Ben likens his color schemes to a succession of three-note musical chords, each chord being separate, yet related to the entire theme. The structural features of the corridors are used as the "staff" to carry the color "notes." Columns and other vertical supports are painted light and moderately bright colors. Flat walls are greyed and slightly darker. Doors receive an accent color brighter and deeper than walls or columns.

Colors are selected so that a kind of "tension" is created between the accent and trim colors. For example, in one corridor the trim is green, while the accent color is blue-blue violet. To complement this, the flat wall areas are blue-green. (All colors are greyed and light in value.)

Color has psychological significance. Certain mood-words are regularly associated with particular colors; blue and green are thought of as soothing, yellow as cheerful, red as exciting or stimulating. It has not been proven that colors actually generate the emotions subjectively associated with them. However, qualitative observations have shown that an imaginative, interesting color scheme supplies relief from monotony and can improve employee morale.

Sympathy

To Oliver Rohrback (8252) for the death of his father-in-law in South Dakota on Feb. 13.

To Paul Stewart (8162) for the death of his wife in Livermore on Feb. 24. Mrs. Stewart was the mother of Pat Stewart (8122).

Career, Certificate Programs Set for Chabot Next Fall

Chabot College has announced four new two-year career programs, each leading to the Associate in Arts degree, and four additional certificate programs, all effective with the 1965 fall semester.

It is anticipated that classes under these programs will be offered during day and evening sessions at the college campus in San Leandro, and in the evenings at Livermore High School and Lawrence Radiation Laboratory.

New two-year programs have been approved in Mechanical Technology, Welding Technology, Fire Science, and Commercial Art. Other two-year career programs already offered at Chabot include Automotive Technology, Accounting, Business Administration, Clerical, General Office, Secretarial, Stenographic, Business Data Processing, Dental Assisting, Drafting Technology, Electronic Technology, Machine Technology, Medical Assisting, Merchandising, Police Science, and Surveying.

The new certificate programs include: Auto Mechanics, Electronics, Machine Tool Operation, and Welding.

Certificate programs are presently offered in Fire Science, Real Estate, School Lunch Management, Supervision, Nursery School, and School Lunch Program.

For further information, contact SCLL training specialists Wil Miller (ext. 2251), or Walt Dzugan (ext. 2233), or Chabot College, 1177 Aladdin Avenue, San Leandro, Calif., telephone 357-1120.

Congratulations

Mr. and Mrs. Ed English (8145), a daughter, Amy Jo, Feb., 16.

Mr. and Mrs. Ed Bradley (8166), a daughter, Kristen Patricia, Mar. 5.

Mr. and Mrs. Walt Frykholm (8212), a daughter, Amy Joyce, Mar. 5.

Mr. and Mrs. Vernon Swanson (8155), a daughter, Kathryn Belen, Mar. 5.

Mr. and Mrs. Les Peterson (8121), a daughter, Kimberly Jean, Mar. 10.

Livermore Note . . .

The Technical Library has posted a map of southeast Asia outside the library to pinpoint areas frequently mentioned in news reports. Clippings from a major daily newspaper are posted next to the map and are keyed with the map to identify the location of the event described in the news story.

AEC Investing Additional $11.5 Million In Plant Used by Sandia Corporation

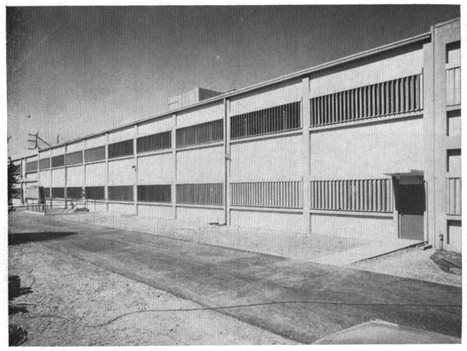
Construction projects now underway at Sandia Laboratory and Livermore Laboratory amount to an increased investment of $11,550,500 by the Atomic Energy Commission in the physical plant operated by Sandia Corporation. These projects include construction of seven major buildings plus smaller projects or modifications and improvements to existing buildings. This miscellaneous construction represents $5,500,000 of the total.

The current $11,550,500 investment follows the $7,322,600 in construction projects completed in the last 12 months. During this period, 13 major buildings, valued at $4,003,900, were completed. In addition, miscellaneous construction totaling $3,318,700 was completed.

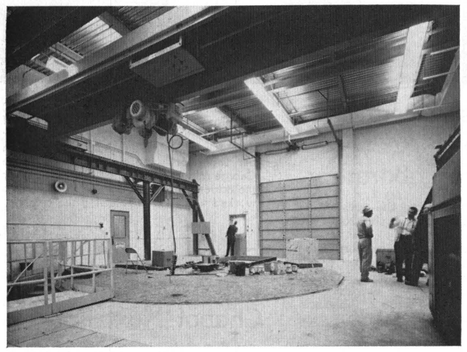
At the end of February 1965, plant assets were valued at $163,482,600. This figure includes $44,600,800 in completed buildings, $2,551,900 in improvements to land, $7,007,700 in utility systems, and $109,322,200 in equipment.

Combining the value of current construction with the above total, the value of AEC property used by Sandia Corporation increases to $175,033,100.

Shown on these pages are pictures of new buildings and buildings under construction. There is not enough space to show pictures of all the construction. However, the resulting spread presents in concrete and steel terms the view Sandia holds of the future.



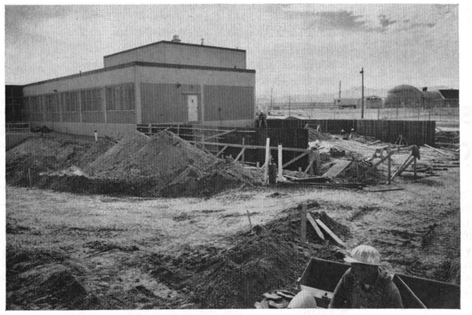
Bldg. 912, Livermore Laboratory $925,000



Bldg. 972, Livermore Laboratory Area 8 $99,900

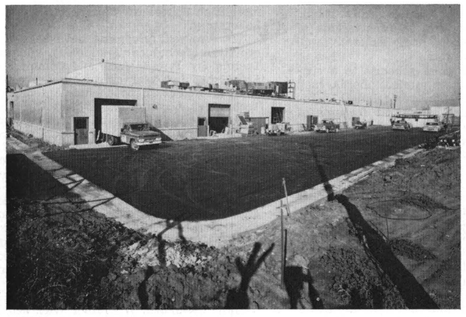
Bldg. 872, Electromagnetic Radiation Facility $200,000

Bldg. 807, Laboratory Building $3,780,000



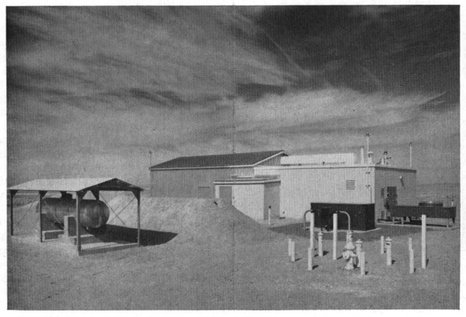
Bldg. 6588, Laboratory Addition to Reactor Building $102,000

Bldg. 9965, Shock Tube Facility, Coyote Test Field $244,000



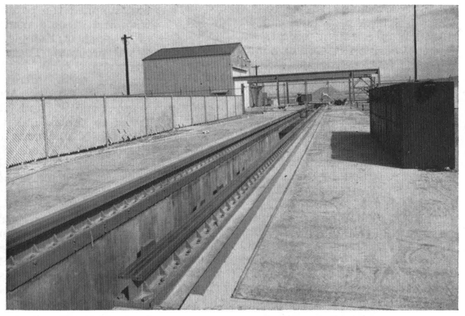
Bldg. 913, Livermore Laboratory, Model Shop Addition $790,000

Bldg. 6020, Explosives Receiving and Packaging $140,000

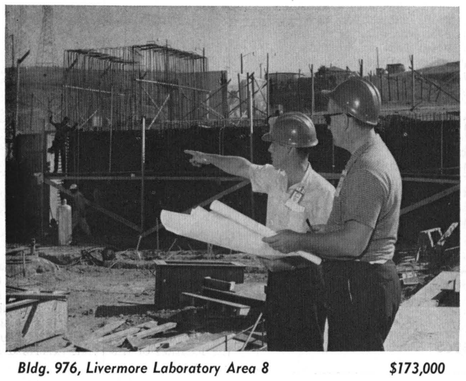


Bldg. 9960, Explosives Prep. Bldg., Coyote Test Field $271,000

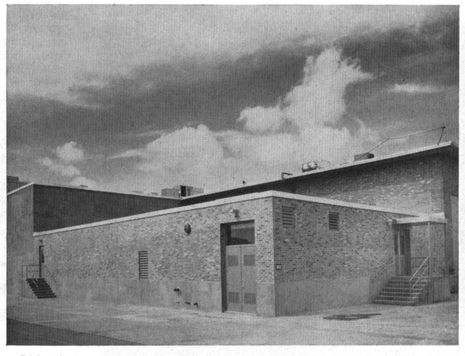
Bldg. 801, Badge Office $60,000



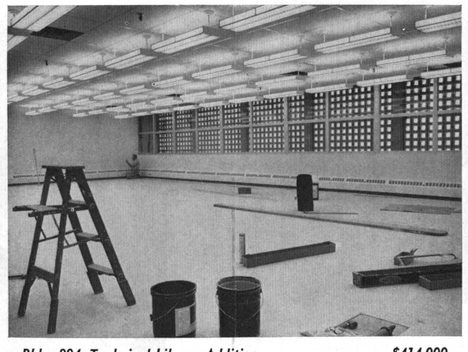
Bldg. 6730, Water Jet Catapult Facility, Area III $720,000



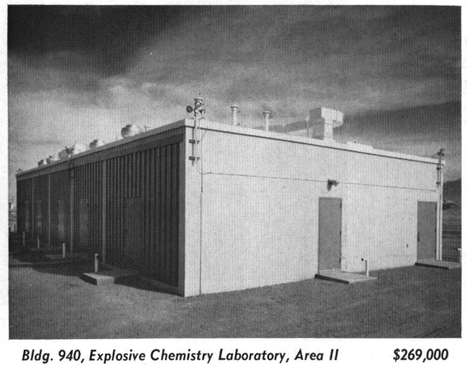
Bldg. 976, Livermore Laboratory Area 8 $173,000



Bldg. 860, Radiography Facility Addition $235,000



Bldg. 804, Technical Library Addition $414,000



Bldg. 940, Explosive Chemistry Laboratory, Area II $269,000

Bldg. 880, CDC 3600 Computer Installation $73,000

PARACHUTE RECOVERED from the October flight of RFD-2 is checked over by (l to r) Eaton H. Draper, Vice President, G. A. Fowler, Vice President, and Alan Y. Pope, Director of Aero Projects.

Rocket, Recovery Systems Division Observes 2000th Parachute Drop

Parachutes constructed of seemingly endless ribbons of nylon. Rotating type chutes. Large parachutes and small parachutes packed into oblong rolls. These and many more were on display in March in Bldg. 884 to mark the 2000th drop of a Sandia-designed parachute.

Sandia has been in the parachute "business" since 1954. The men of Rocket and Recovery Systems Division are charged with designing the parachutes to meet specific requirements and with conducting feasibility studies into new concepts. The material for the chutes (mainly nylon) is purchased commercially; two manufacturing firms sew them to order; and Norton AFB in California packs the parachutes.

There are many things to consider in their design. A parachute can change the direction of a falling object, stabilize its descent, cushion its landing, and provide a means for locating the object, no matter whether the landing is on water or ground.

Although the nylon is purchased commercially, it must withstand up to 4000-lbs./sq. ft. and suspension lines may undergo up to 12,000 lbs. strain. While at Sandia, a former employee designed several weaves used by the textile mills to strengthen selvage edges, where the strain is greatest.

The parachute group is currently experimenting with other man-made fibers to combat the relatively low melting point of nylon. Some of the parachutes must function at speeds up to Mach 5, in which temperatures up to 1500°F. are encountered.

Prototypes Tested

Prototypes are tested in Sandia's wind tunnels and with rocket sleds in Area III, and finally are dropped from airplanes or helicopters or flown on rockets or missiles. The drop ranges have included Tonopah Test Range, Nev., Salton Sea Test Range, Calif., Dabob Bay, Wash., Johnston Island, and at Barking Sands, Kauai, in the Hawaiian Islands. Tracking cinetheodolites at ground locations and motion picture cameras carried on rockets have provided film strips for later study of operation of the parachutes. Last year there were 252 drops of Sandia-designed parachutes compared to 130 the previous year.

During the past year, the group developed a system to recover a 125-lb. nose cone payload from a Nike-Tomahawk sounding rocket fired 200 miles aloft. The parachute slows the vehicle for water entry, two bags insure flotation on the ocean, and a beacon on the floats provides a means for location. One bag is inflated by carbon dioxode, the other uses a ram-air filling method, which was invented here. The last five of the test rockets, flown from Kauai, Hawaii, this winter, were successfully recovered.

For the recovery system, men of Environmental and Other Electromechanical Components Division (1331) designed a valve for the carbon dioxide bottle on the flotation system, greatly reduced in size from any commercially-available model, and engineers of Projects Division (9221) developed a beacon package which was miniaturized. For an antenna it uses a length of common flexible steel measuring tape, familiar to any do-it-yourself carpenter. (At test sites, Sandians are frequently asked about the printed inch measurements on the antennas. "No reason for the numbers, the tape is a standard shelf item in our stockrooms and is the cheapest—and best—antenna available," is the usual reply.)

RFD-2 Tests

Sandia developed the recovery system and supplied the parachutes last year for tests of RFD-2, a non-radioactive mockup of a nuclear isotopic generator for the SNAP program. These parachutes underwent shake table, high temperature, and spinning tests; were overtested to 380 lbs./sq. ft. on the Area III rocket sled track facility; and finally were drop-tested at Tonopah Test Range.

Presently underway is testing of a 20-ft.-diameter ribbon chute designed for use at near Mach 3, at 10,000 lbs./sq. ft. pressure. It would be carried aloft on two tandem Nikes.

In the division, William Pepper, Ira Holt, Don Johnson, and Milt Kane represent about 35 years of combined parachute engineering experience. The parachute lab personnel, Hal Widdows, Horace Lucero, and Dennis Cronin, represent a similar amount of parachute construction and packing know-how. Through the years 47 reports on parachutes have been published by Sandia and two U. S. patents have been issued on items invented here: the ram air inflated flotation bag, designed by I. T. Holt and H. E. Widdows, and a parachute deployment control assembly, also by Mr. Widdows.

Coronado Club Members To Enjoy Fisherman's Wharf Buffet Tomorrow Night

Fisherman's Wharf Night tomorrow evening will climax the Coronado Club calendar of events for March.

The buffet, served from 7-8:30 p.m., will feature broiled lobster, baked haddock, fried oysters, stewed clams, shrimp creole, assorted vegetables and salads. Dancing to the music of Don Lesman's orchestra will follow from 9-1. Call 264-4561 for reservations.

On Educational Television

Science, Engineering TV Journal Presents Series of 20 Programs

Science and Engineering Television Journal, a 20-week series of scientific television programs, will be aired over KNME-TV at the University of New Mexico Apr. 12.

Robert Creveling, Physics and Advanced Development Division, says many of the programs may be of interest to Sandia scientists and engineers. Mr. Creveling is president of the New Mexico Council of Scientific and Technical Societies, some of whose members have contributed programs to the series.

William M. Shimer, a KNME official, said the half-hour programs would be shown three times each week over channel five: Mondays at 12:15 p. m., Tuesdays at 5:30 p. m., and again Thursdays at 7:30 p. m.

The program schedule, topic, and participating society are as follows:

Week of Apr. 11—Air Polution Control—American Chemical Society

Week of Apr. 18—Supersonic Air Travel—American Institute of Aeronautics and Astronautics

Week of Apr. 25—Lunar Surface Controversy—New York Academy of Sciences

Week of May 2—Environmental Control—American Society of Heating, and Refrigerating and Air-conditioning Engineers

Week of May 9—Observatories in Space—American Astronomical Society

Week of May 16—Seeing Inside Metals—American Society for Metals

Week of May 23—Fiber Optics—Optical Society of America

Week of May 30—Metropolitan Planning and Design—American Society of Civil Engineers.

Week of June 6—The Atomic Jungle—American Institute of Physics

Week of June 13—Operations Research—American Institute of Industrial Engineers

Week of June 20—Topology—Conference Board of the Mathematical Sciences

Week of June 27—Traffic Control Techniques—Institute of Electrical and Electronics Engineers

Week of July 4—Conflict Resolution Research—American Psychological Association

Week of July 11—Pursuit of Perfection—American Society for Quality Control

Week of July 18—Biomedical Engineering—International Federation for Medical Electronics and Biological Engineering

Week of July 25—How to Succeed Without Reinventing the Wheel — Engineers Joint Council

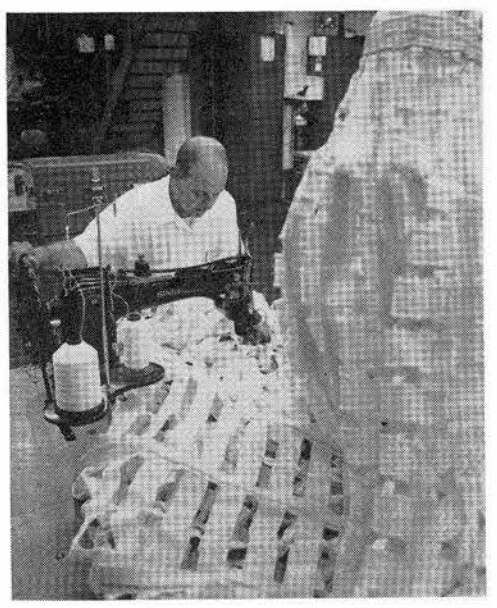
Week of Aug. 1—Communication Among Animals—American Institute of Biological Sciences

Week of Aug. 8—Cryogenics—American Institute of Chemical Engineers

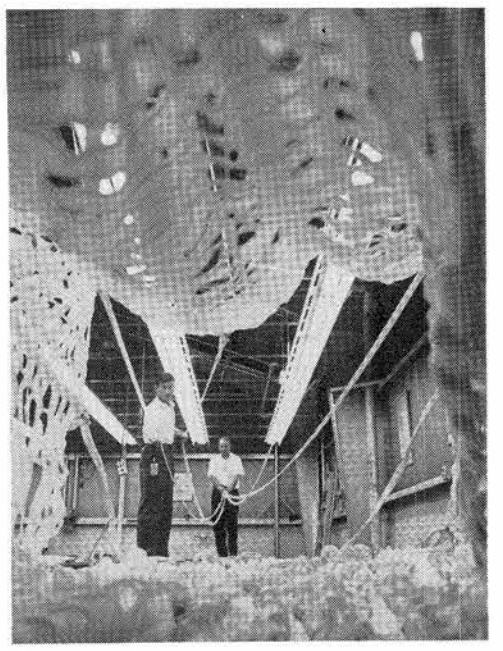
Week of Aug. 15—Man-made Weather Modification — American Meteorological Society

Week of Aug. 22—Pest Control—American Association for the Advancement of Science

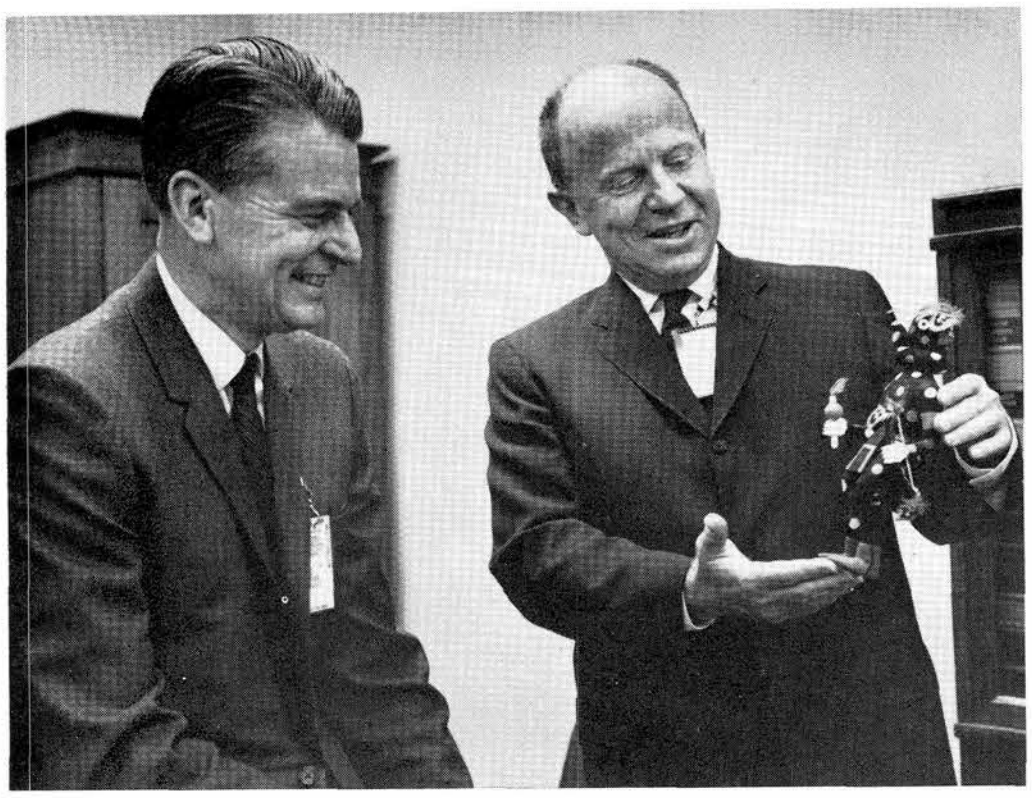
LACING OF A PACKED PARACHUTE is explained by Don Johnson (extreme left) of Rocket and Recovery Systems Division to (l to r) J. D. Shreve of Aerospace Sciences Division; G. A. Fowler, Vice President; V. E. Blake, Jr., of Aerospace Nuclear Safety Department; H. E. Lenander, Director of Manufacturing Development; and Dan Parsons of Range Optics Division. All have some interest in design or use of the chutes.



IN PARACHUTE LAB, Hal Widdows operates a heavy commercial-type sewing machine to alter a research chute. Nylon shroud lines are so firmly-woven the sewing machine needle must be air cooled.



LARGE RIBBON PARACHUTE is stretched to full size in Bldg. 884 parachute lab by Horace Lucero (left) and Hal Widdows.



SANDIA VISITOR — Stephen H. Fletcher, left, Vice President and General Counsel, Western Electric Company, recently visited Sandia Corporation. F. C. Cheston, Sandia Corporation General Attorney, is shown here displaying a Kachina doll, made by Arizona's Hopi Indians, to Mr. Fletcher.

Teletype Communications Network Supervisors Meet at Sandia Lab

Annual briefing for supervisory personnel of Sandia Corporation's Teletype network was held here this week. Twenty-five people from Teletype stations at Sandia Laboratory, Bendix-Kansas City, Clarksville, Pantex-Amarillo, and other locations gathered to learn the latest developments in Teletype communications equipment, procedures, and techniques.

J. W. Porter, supervisor of Communications Center Section, arranged the conference. Program included demonstrations of new Teletype machines and remote computer inquiry through Teletype communication. The group discussed Facsimilie system transmissions and Comsec equipment.

W. W. Troy, Security Standards Division, discussed communication security; E. C. Domme, supervisor, Configuration Management Data Division, discussed Sandia's product record system; H. P. Kelsey, supervisor, Program Development and Data Division, discussed Quality Assurance communications; and C. R. McKelvey of Information Processing Division, discussed the electronic communication controller.

Coronado Club Style Shows

Easter fashions and career girl clothes will be featured at noon hour style shows during the next two Wednesdays at the Coronado Club. Club Manager John Ulling reports that the first such event on Mar. 17 was very well received.

The four models appear first on the ballroom stage, then walk through the dining rooms showing the fashions and describing the material or other special details.

Sandia Base Nursery Invites Youngsters of Sandia Employees

The Sandia Base Kindergarten-Day Nursery is attempting to arrange a summer recreation program for children aged 6-11.

"If at least 30 children are enrolled, we can make arrangements for swimming and tennis lessons, and instruction in art and music appreciation," explained Mollie C. Miller of Sandia's Personnel Development Division, who is a member of the nursery's board of directors. She requests interested parents to contact her during the coming week for additional information.

Company employees, as well as military and civilian employees on Sandia Base, are eligible to use the facility for their dependent children at minimum cost.

A nursery program for children from 18 months through 7 years is offered on a year 'round basis. In addition, during the school year, there is a pre-kindergarten program for four-year-olds, a regular kindergarten program, a speech therapy program, a ballet program, and last September a special Montessori program for children, two-and-a-half through five years, was started.

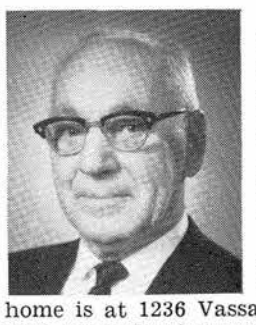
Under the summer work schedule, the nursery will be open from 6:30 a.m. to 5:15 p.m.

Bridge Players to Compete for Benefit

Bridge players are invited to participate in the Coronado Duplicate Bridge Club's semi-annual charity event, to be held Apr. 5 at 7 p.m. at the Coronado Club.

The American Contract Bridge League yearly sponsors nationwide events to benefit two selected charities. Last year more than $200,000 was collected for the American Cancer Society and United Cerebral Palsy Association. All playing fees collected during the Coronado Club event ($1 per person) will be forwarded to the ACBL Charity Foundation. ACBL Master Points will be awarded, according to R. W. Mottern, bridge club president.

Retiring . . .

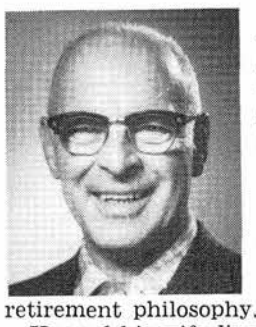


John Paul, who has worked in mechanical inspection at Sandia for more than 13 years, will retire Mar. 31. He is assigned to Measurements and Standards Division.

Albuquerque will remain "headquarters" (the family home is at 1236 Vassar NE), but Mr. and Mrs. Paul plan to spend the winter months in Tucson and the summer months at Grand Canyon or some other seasonal resort.

"We've already traveled extensively in the U.S., Canada, and Mexico, so most of our future trips will be to visit relatives," Mr. Paul said.

Their married son is William Kenneth Paul, who also works at Sandia in Engineering and Research Support Division III.



Fred S. Williams, who has worked in Sandia's Tool and Gauge Design organization for 13 years, will retire the end of March.

"I have no elaborate plans, I'll take life as it comes," is the way Mr. Williams explains his retirement philosophy.

He and his wife live at 1108 Monroe SE. They expect to visit their married daughter in Detroit and other relatives in Canada in April. Later there will be a trip to California to see their son and his family.

Mr. Williams will continue his interest in the Shrine Chanters and his lessons on playing the organ. "Since we plan to stay in this part of the country, I also have a yen to learn how to speak Spanish," he added.

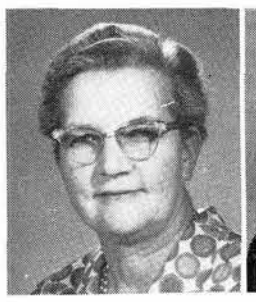
Summer Hours Start For Sandia Employees Next Monday Morning

Set the alarm clock a half-hour earlier Monday. The annual switchover to summer hours begins Monday, Mar. 29, and Sandia employees at Albuquerque will change working hours and report at 7:30 a.m. Quitting time is 4:30 p.m. Lunch hour will remain the same—from 12 noon until 1 p.m. Morning break period will be from 9:30 until 9:45 and the afternoon break will be from 3 p.m. to 3:10.

Livermore Laboratory, Lawrence Radiation Laboratory, and Los Alamos Scientific Laboratory change to Daylight Saving Time Apr. 25. Whether on Standard or Daylight Saving Time, these laboratories keep the same working hours the year 'round.

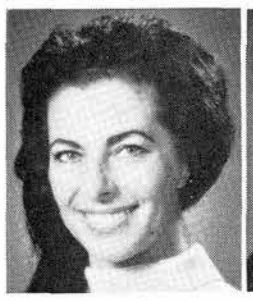
Service Awards

15 Years



Dora W. Dyer
3427
Mar. 27, 1950

F. Juanita Fidler
3428
Mar. 27, 1950



Roseanne Bascom
4516
Apr. 4, 1950

Nora C. O'Neill
4000
Apr. 6, 1950

10 Years

Mar. 27 - Apr. 9

Helen E. Hutton 3463, Robert B. Allison 7442, James B. Gibbons 2413, Mary Beth Eastman 6021, Gladys M. Leierer 1420, William H. Carman 1432.

Charles I. Westmark 1433, Edward J. Krapf 4352, Mahlon G. Baker 9321, Fae M. Parker 9413, Robert J. Leslie 7522, and James L. Pennington 3465.

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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

CARPETING, brown tweed, 2 pcs., 13'x17½' and 8'x9½', $1/yd. Dodd, 9706 Morrow Rd. NE., 299-6330.

HI FI speakers and cabinets. 17 speaker system and 3 speaker bass reflex unit. Tassia, 511 Utah SE.

SMITH & WESSON K-38 masterpiece. Long, 527 Utah SE.

WESTINGHOUSE clothes dryer, $50; '56 Eldorado Seville, factory air. Mitchell, 299-8647 after 5:30.

REEL TYPE POWER MOWER w/Briggs & Straton 4-cycle engine, $22; standard hand mower, $7. Johnson, 298-1011.

BOAT, 14' fiberglass Arkansas Traveler, 35HP Evinrude, Holtzclaw trailer, front controls, lights, skis, other extras, best offer over $750. Poe, 264-5576.

DINETTE SET, red, gray, chrome, six chairs, $25. MacGibbon, 298-1210.

¾ SIZE VIOLIN, orininal owner, w/bow and case, handmade Roth, $90. Bell, 3032 Mackland NE, 256-7975.

MANZANO MOUNTAIN HOMESITE, 5 acres, one-room cabin, 10 miles South on State 10, $3800, terms. Krogh, 299-8879.

MAPLE TWIN BEDS, $32.50; adjustable load-leveling trailer hitch, $11.50; registered ¾ Arabian colt; purebred Arabian champion gelding. Galbreath, 898-0644.

RECORD PLAYER, "Voice of Music" 4-speed, automatic record changer, $10. Bailey, 3818 La Hacienda Dr., NE., 256-2360.

'59 FORD V8 station wagon, factory air, PS, OD, radio, $595. Rufsvold, 268-5970 evenings.

REFRIGERATOR, w/spacious freezer, $110; single bed mattress, box springs and metal frame, $30. Hook, 255-1897.

SEALELECTRIC ROADRACE TRACK, Atlas HO Road race set, complete. Campbell, 299-4330.

14' ALUMINUM RUNABOUT w/canopy, deck, windscreen, wheel and controls, 7.5 motor, Sea King trailer and winch, $595. Stuart, 268-2943.

HOME near base and school, fireplace, hw/floors, fa heat, AC, 3-bdr., family room, 1¾ bath, landscaped, FHA, open. Bemis, 268-6376.

'60 CUSHMAN MOTORSCOOTER, recently overhauled. Trudo, 268-3772 after 6.

'63 CHEVROLET convertible, 6, R&H, PS, priced well below blue book. Dahlgren, 298-4390.

CAMERA, Crown Graphic, 120 size, w/all accessories, sold together or separately; slide rule, K&E, log log duplex decitrig. Alvino, 255-6339.

ANTIQUE CHERRY CHEST; storkline crib, white w/Kantwet mattress; 2 pr. auto safety belts, heavy duty. Scheiber, 299-4743.

REEL-TYPE POWER MOWER, 18", 2 HP engine, $30. Thompson, 298-2603.

120 BASS ACCORDION, Italian made, $125. Bradshaw, 268-8708.

GIRL'S BIKE, 26", $12. Glass, 7112 Seminole NE, 298-0842.

PORTABLE DISHWASHER, GE power shower, 2 yrs. old, $100. Klein, 256-7373.

1 SET MEN'S GOLF CLUBS, 4 woods, irons, putter, bag and cart, $70; or trade for camera equipment. Hedman, 299-2077 after 6.

3-BDR., den w/fireplace, garage, covered carport, covered patio, sprinklers, fenced front/back, near base, $14,500. Snyder, 336 Gen. Somervell NE, 299-7845.

PART APPALOOSA FILLY. Baca, Los Lunas, 865-9528 after 6.

MUZZLE LOADING SHOTGUN for fireplace; automatic .45 w/three clips ammo; or trade for 2" barrel, .38 revolver. Wilson, 282-3225.

'62 HARLEY SPORTSTER XLCH, 9000 miles, $975. Sutton, 298-7036.

'61 V8 CHEVROLET WAGON, full power and extras. Capaldi, 318 Mesilla NE, evenings and weekends.

3-BDR., carpeted, 1¾ bath, corner lot, near Valley High; up to 20 acres available in Manzanos, 12 miles South on 10. Romero, 344-0302.

'56 CADY 4-dr., full power, factory air, $625 or best offer; GE undercounter dishwasher, w/mo. guarantee, $95. Brunacini, 344-9675.

INTERNATIONAL TRAVELALL, '53, spare tank, six wheels, four-speed box, new paint, 60,000 miles, $395. Gubbels, 299-8089.

KENMORE electric range, deluxe model, top-mounted controls, automatic oven, clock rotisserie, timed appliance outlet, double oven. Pitti, 256-1629 after 5:30.

36" GAS RANGE, "burner with brain," timer, clock, window in oven door, storage space. Bell, 299-8068.

140'x150' HILLSITE LOT in Sandia Manor, unobstructed view of city, $6000 or trade for lot in Heights. Goodwin, 256-2216.

'59 STUDEBAKER LARK VI, HT, 2-dr., R&H, automatic, motor rebuilt, $325. Slesinger, 299-4626.

WELCOR STEREO, console model, 4-track tape recorder. Hamilton, 1312 Chama NE, 265-4123.

REGISTERED FRENCH POODLE, miniature, 6 mos. old, all permanent shots; 5" oscilloscope, VTVM, and VOM. Rea, 299-9315.

DOUBLE BED w/Sealy box spring and mattress. Cook, 299-7509.

'57 FORD Country Squire, 9-passenger wagon, air, PS, 265HP engine, $300. McIlroy, 8907 Los Arboles Ave. NE, 299-4977.

'39 PLYMOUTH, engine recently overhauled, original upholstery, $350. Paul, 201 Cornell SE.

'57 (292) FORD PARTS, heads (new valve job), 4 bbl. manifold and carb., 2 bbl. manifold and carb. Ramkin, 344-6712.

THREE 29" bar stools, molded fiberglass contour seats, 1 white, 1 tangerine, 1 turquoise, brass swivel bases. Fifer, 344-9814.

SWIVEL ROCKER; red tub chairs; 2 lamps; kitchen table and chairs. Paul, 256-6228.

'56 MGA 1500 series, engine rebuilt one yr. ago, $450. Williams, 255-2244 after 5.

BEDROOM SET, 5 pcs., $115; TV; lamps; chair; children's dressers; patio furniture; antique tables; baby buggy; stroller; misc. $3-$50. Meyer, 298-4825.

BELLEHAVEN 4-bdr., den, 2000 sq. ft., plus double garage. Van Dusen, 298-1091.

'60 PONTIAC Catalina, 2-dr., HT, will sell below NADA; turntable base, walnut, $5. Cutchen, 298-0449.

'63 FORD V8 wagon, 4-dr., 6-passenger, AT, R&H, chrome rack, will take trade. Calvery, 255-9545.

SEAR'S 21" TV, limed oak cabinet w/doors, $30; model 70 Winchester 257 cal., Leupold variable scope, $150. Adams, 268-5943.

PART-OWNERSHIP of fully equipped 1960 Cessna 172. Incorporated club, full insurance, total operating costs: $11 monthly plus $5.50 per hour incl. gas. May, 299-5548.

GENERATOR, electric 5KVA 115-230 volts (not operating), $110; floor furnace, natural gas and vent pipe 44100-63000 BTU, $35. Aaron, 282-3124.

HORSES, all kinds, any breed, registered or grade. Tolbert, 282-3438.

GE PORTABLE DISHWASHER, formica top, power shower, $85; baby bassinet and bathinette, each $5; child's round playpen, $7. Doyle, 299-7567.

GO KART, MC engine, padded seat, alloy wheels. Kuhn, 299-1898.

ALFALFA HAY, $1.25 per bale, want to buy a manure fork. Patterson, 277-3158.

IRONRITE IRONER, $50. Taylor, 256-3774.

'49 FORD PICKUP ¾ ton, long bed, recent overhaul. Liguori, 256-3613.

'58 CHEV, 2-dr. sedan, 6-cyl., standard. Konnick, 268-6409.

3-BDR., 1¾ bath, den w/fp, attached garage, 1475 sq. ft. living area, walled back, fenced front, landscaped, $16,000. Post, 298-0481.

ACCORDION, light blue pearl color, Italian made. Sebrell, 299-8791.

CRIB AND MATTRESS, $15; Peterson stroller, $10; cherry arrow-back chair, $12; youth chair, $3. Lambert, 344-9012.

'51 CHEV., R&H, $100. Allen, 268-3654.

3-BDR. HOUSE, 1¾ baths, AC, fireplace, bedrooms newly carpeted and draped, half block from schools, asume VA loan. Becherer, 344-1413.

2 WHITE COUCHES, $50; 3-bdr. Mankin 1½ yrs. old, walled yard, AC, Foothill Estates NE, $16,500. Ruppert, 298-2431.

AIR PISTOL, Benjamin, single shot, pump, .177 cal., w/box pellets, $7; two 26" boy's bicycles, need some work, 1-$12, 1-$6.50. Hansen, 256-0641.

'58 PONTIAC Chieftain, AC, recently overhauled, AT, R&H. Randall, 256-1853.

REFRIGERATOR, 9 cu. ft., $30. Bertrand, 268-4191.

'62 MERCURY Meteor sedan, PB, PS, custom interior, will trade for small or older car. Ramshaw, 256-3176.

PORTABLE Smith-Corona typewriter w/universal case, $40; slide projector, $25; four used 5.20x13 tires, $10. Stang, 299-5139.

21" TV, blond thinline cabinet, new picture tube, $65. Sayers, 344-8597.

'57 PONTIAC Star Chief, 4-dr. HT, red on white, Hydramatic, PS, PB, R&H, factory air, $300. Magerkurth, 299-0379.

GE AUTOMATIC WASHER. Greer, 255-7687.

KENMORE AUTOMATIC WASHING machine, $20; motorized Singer sewing machine w/button-holer, $12; Meissner radio-disc recorder, $20. Driver, 299-2063.

4 TIRES: 1st line, 6.95x14, brand new, getting premium tires for new car, available about Apr. 1, $60. Caskey, 256-9701.

SILVER MALE miniature poodle, 9 American and European champions in pedigree, 11 mos., proven. Workhoven, 282-3246.

4-BDR., 2805 Second SW, $8500, take trade. Chavez, 298-5091.

SMALL MOUNTAIN CABIN, two floors. Hawk, 256-6264.

24" CRAFTSMAN ROTARY MOWER, self-propelled, two speeds, used one season, cost $120, sell $30. Fite, 255-6943.

FOR RENT

UNFURNISHED 2-bdr., AC apt., $70 mo., redecorated, near Sandia, 8322 Trumbul SE, no pets. Villella, 256-9729 or 255-7604.

4-ROOM authentic adobe, furnished, big front/back yard shade trees, children, pets welcomed, $75/mo. Cummings, 247-8437.

FOR LEASE: brick home, 1129 Dakota SE, 3-bdr., 1¾ bath, den w/fp, AC, $135. Gaither, 298-1043.

WANTED

RIDE from 4500 block Douglas MacArthur NE, mornings and evenings. Neiswander, 344-8482.

PORCH SWING, good condition. Wright, 256-9210.

RIDE from Coal and Reynolds SW. Miller, 243-7494.

TRADE a 10-gal. 200 psi air tank for a 5-gal. approx., air tank. Wilson, 282-3225.

RIDE from 1601 Silver SE. Cantwell, 255-6049.

HOME for free puppy; also want to rent flat trailer capable of hauling an automobile. Arasim, 298-8431.

OLD HUNTING KNIVES, military knives, any condition, will pay cash or trade antique swords. Smitha, 8607 Menaul, 299-1096.

USED PICCOLO in good condition. King, 299-3778.

LOST AND FOUND

LOST—3 keys on silver ring, "Cross" ballpoint pen, man's sunglasses, Frank Medico pipe, Ronson lighter. LOST AND FOUND, tel. 264-2757.

FOUND—Silver earring, nail clipper and knife on chain, gold cuff link. LOST AND FOUND, tel. 264-2757.

With Rockets, Flying Observatory

Sandia Expeditions Will Study Solar Eclipse Over Pacific Area

Approximately 40 Sandians will participate in two scientific efforts to study the solar eclipse in the South Pacific area on May 30, 1965. Sandia Laboratory has organized one scientific expedition to obtain a variety of measurements from a KC-135 aircraft observatory flying above the clouds along the path of the eclipse. Along with the Sandia group, there will be experimenters from the University of Chicago, Naval Ordnance Test Station, and Edgerton, Germeshausen & Grier, Inc., aboard the aircraft.

The second group of Sandians will launch several Nike-Tomahawk rockets from Rarotonga in the the Cook Islands with x-ray measuring devices developed by Los Alamos Scientific Laboratory. The rockets will carry the LASL x-ray detectors some 200 miles above the earth's surface where they will measure segments of the x-ray spectrum from the sun's corona.

As part of the rocket project, Sandia will install a launch complex consisting of four launchers and related facilities on Rarotonga. The x-ray experiments will be performed by physicists from LASL, and Sandia will provide the telemetry, data acquisition, and supporting ground facilities.

Heading the rocket test activities will be W. E. Walker of Carrier Development Division. A. A. Young of Projects Division will be technical team leader and D. P. Fifield of Field Test E&C Group will perform site engineering.

Study of Sun's Corona

The primary purpose of many experiments aboard the Sandia aircraft is to take advantage of the total solar eclipse to study the sun's corona. Other experiments are designed to study the upper atmosphere.

N. C. Anderholm of Electro Optics Division is scientific project leader for the flying observatory. M. M. Robertson of Analytical Methods Division II is the Sandia experimentor for optical experiments. Personnel of Range Electronics Division, Range Optics Division, Photometrics Division, and Diagnostic Aircraft Operations Division are participating in the design, fabrication, installation, and operation of the K-135 aircraft. W. B. Pafford of Diagnostic Aircraft Operations Division is coordinator.

The solar eclipse will be observed over the Pacific Ocean near the island of Tau-myshausen. In this location, ground totality will exist for about four minutes.

Experiments scheduled for the Sandia aircraft observatory include photographing visible region of spectrum for streamers, monitoring pre-chosen spectral line and background intensities, television spectograph study of line intensities in infra-red, measurement of cosmic ray induced fast neutron flux, investigation of twinkling layer in atmosphere, air glow, and polarization and surface brightness measurements.

E G & G Participates

The photographic photometry of the outer corona will be conducted by Edgerton, Germeshausen & Grier. The purpose of this experiment is to obtain absolute photometric and radiometric data of surface brightness of the solar corona at distances out to at least 10 solar radii from the sun. Outer corona brightness information will supplement data that was collected from aircraft during the 1963 eclipse.

Indications are that a television spectrograph under development by Aerospace Nuclear Safety Division III may be able to detect fainter lines, because of higher sensitivity, than other methods. This TV system should permit easier interpretation of line intensities, since elements in low abundance could be detected as well as weak lines of known elements.

The Earth Planetary Sciences Division of the Naval Ordnance Test Station (NOTS) at Inyokern, Calif., will conduct the air glow study and the polarization and surface brightness experiment. In the air glow experiment, an all-sky scanning, multicolor photometer will be used to study the brightness of the sky in terms of absolute units. The observations will be used to verify the existence, spectral compostion, intensities, and heights of daytime air glow. This information is needed to explain and describe the interactions between the incident solar energy and the earth's atmosphere.

Polarization and surface brightness, the other NOTS experiment, is designed to obtain polarization and photometric data at the outer corona at large solar radii. From this data, electron densities and temperature in the corona can be derived.

A Sandia-designed photometer, with a filter wheel containing 24 filters rotating in front of a photomultiplier, will be used to monitor pre-chosen spectral line and background intensities at various wavelengths.

White Light Pictures

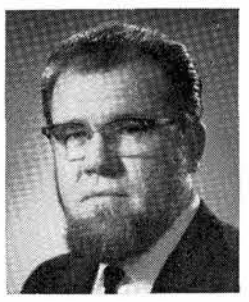
In another Sandia experiment, a camera with an ultra violet lens system will be used to obtain white-light pictures. The pictures are expected to record streamer characteristics under quiet sun conditions. The visible region of the spectrum will also be investigated for streamers by using a visible camera system in another experiment.

The event camera data will be used to record where the other instruments are "looking." Recorded data would lose its significance without knowledge of just where in the corona it originated.

A "twinkle" experiment, conceived by Craig C. Hudson of Theory and Analysis Division to investigate a layer of atmosphere which apparently causes the scintillation of stars, will be conducted while the aircraft is en route from the U. S. to the South Pacific eclipse area. The "twinkle" layer in the atmosphere is believed to be a layer of turbulence which is associated with the tropopause, perhaps lying just below it. The variation of the altitude of the twinkling layer with latitude has not been well defined. A flight across one of the distinct breaks where the tropopause rises will help to make the association more positive.

The joint Sandia and University of Chicago cosmic ray experiment will involve measuring the cosmic ray induced fast neutron flux at 30,000 ft. en route to and from the southern hemisphere. The experimental apparatus for the measurement will be furnished by Prof. J. A. Simpson of the University. J. E. Keith of Aerospace Sciences Division is participating in this joint study.

Charles Goben Earns PhD at Iowa State; Awarded on Feb. 27



Charles Goben of Materials and Device Physics Division last month became the first Sandian to earn his doctorate under the Educational Aids Program while simultaneously working full-time on the job.

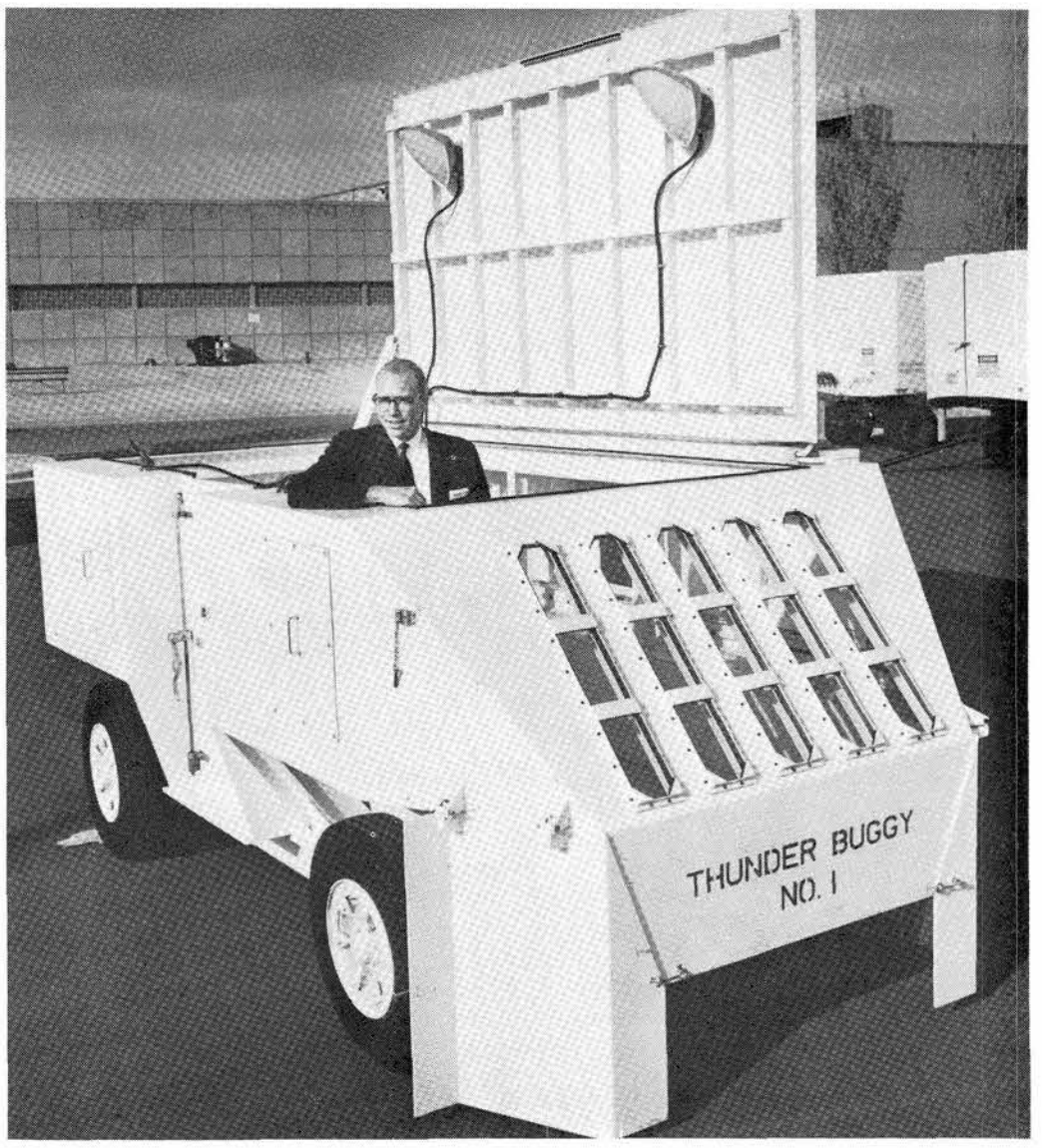
Mr. Goben received his PhD degree in electrical engineering at Iowa State University, Ames, Ia., on Feb. 27, after completing his oral examinations Jan. 12. His thesis was entitled, "Neutron Bombardment of Transistor Current Gain."

The sheepskin culminated five years' work—two-and-one-half of them under the Sandia EAP, by which the company paid half the tuition costs for job-related courses—and caused its recipient to sigh, "I'm mostly just relieved to get it over."

While Mr. Goben was not the first to earn a doctoral degree under the EAP, he was the first to do it without leaving the job. He met campus residency requirements before joining Sandia in early summer, 1962, and utilized vacation time to complete the orals.

Three other Sandia employees—Richard D. Jones in 1961, Crawford McCallum in 1962, and Arthur Breipohl in 1964—used the EAP route to their PhD's, but each of them had to leave work in order to fulfill semester-long on-campus residency requirements at the University of New Mexico.

Mr. Goben, a native of Lucas, Ia., did his undergraduate work at Iowa State, where he also earned his master's degree in electrical engineering.



THUNDERBUGGY—Resembling an armored car or a tank, this vehicle designed by Dean Gladow of Test Range Department will be used as an instrumentation shelter during explosive tests in Area Y and Coyote Test Field.

Mobile Shelter Built to Withstand Shocks of Nearby HE Detonations

"Thunderbuggy" is not an armored car or a tank. It does, however, slightly resemble both. Dean Gladow of Range Optics Division, Test Range Department, designed the heavy steel vehicle to serve as a mobile bunker to house cameras and instrumentation during explosive tests. It will be fitted with instruments, towed to a test site, leveled with hydraulic jacks, and used many times.

"The design problem," Dean says, "was to provide Photometrics Division a weathertight shelter capable of withstanding severe shocks and pressures and yet be highly mobile and provide for a flexible array of instrumentation. Previously, for each explosive test performed in Area Y or Coyote Test Field, a new reinforced concrete bunker or sand bag shelter had to be built or renovated, and instruments had to be installed and zeroed in. The instruments occasionally suffered weather or dust damage."

Thunderbuggy should help the situation and save time and money.

Thunderbuggy is 14 ft. long, 8½ ft. wide, and weighs 7500 lbs. It provides 325 cu. ft. of protected space for instruments. Fifteen photographic-quality glass ports (¾-in.-thick) are provided in the front for camera viewing, and removable side panels will allow for more cameras, if needed, or easy accessibility to internal instrumentation.

The entire floor and shelf area inside are pre-drilled and tapped for mounting of instrumentation. Instrument terminal strips and 110-volt outlets are distributed throughout. The trailer also contains light fixtures.

"Thunderbuggy provides no power on its own," Dean says. "It will be connected by cable to a portable power generating unit or connected with power lines at the test site."

The vehicle design made use of a surplus heavy-duty "wishbone" trailer as the chassis. Its four 14-ply 8.25x15 tires are protected by "missile skirts" during test exposure.

A unique design feature is the trailer's top "lid." This 470-lb. door is hinged with torsion bars which enable one man to lift it easily. The torsion bars are balanced to absorb all but about 30 lbs. of the weight of the door.

Thunderbuggy can be used as close as 47 ft. to a test using 100 lbs. of conventional explosives, Dean calculates. For a test using 1000 lbs. of HE, Thunderbuggy can be stationed as close as 100 ft. For a test using 10,000 lbs. of HE, the station can be as close as 215 ft.

Thunderbuggy was fabricated primarily of ½-in. steel by a Sandia supplier. It was mounted on the chassis by men of Sandia's Welding Section.

Promotions

Joseph E. Magruder (3341) to Staff Member Administrative
L. Jim Connally (4622) to Stockkeeper
Jose E. Vigil (4516) to Office Machine Repairman
Marvetta R. Davis (4135) to Invoice Clerk
Alma G. Leclair (3126) to Secretarial Steno
Sandra J. Harris (4615) to Service Clerk (Central Records)
Nina J. Dziadulewicz (2523) to Service Clerk (General)
Paul F. Martinez (7611) to Computer Facility Operator
Jack P. Pons, Jr. (8245) to Stockkeeper
W. Darleen Byfield (8235) to Communications Operator
Dolores E. McKelvey (5240) to Secretary

Sandia's Safety Scoreboard

Sandia Laboratory:
39 DAYS
1,365,000 MAN HOURS
WITHOUT A
DISABLING INJURY

Livermore Laboratory:
216 DAYS
1,103,232 MAN HOURS
WITHOUT A
DISABLING INJURY