



Calibration Flights Completed

Early Data of JTF-2 Tests Show Sandia Systems Functioning Well

After two weeks of low-level trial and calibration flights over the Tonopah Test Range, instrumentation designed by Sandia Laboratory to support the Joint Task Force Two mission has been proved. All Sandia systems are functioning as designed, John C. Eckhart, manager of Systems Evaluation Department, reports. The data looks good, he said.

Actual test flights will begin about May 3. The JTF-2 mission, directed by the Joint Chiefs of Staff, calls for evaluation of low-level capabilities of tactical and strategic aircraft weapons systems and also evaluation of defense against such systems. Sandia provides technical assistance to the JTF-2 operation.

Systems and instrumentation designed by Sandia for the flight test program include a tracking system (ground instrumentation and equipment aboard two C-130 aircraft), instrumentation pods to be carried by the test aircraft, computer programs for rapid data reduction, and site engineering. In addition, Sandia has performed detailed technical planning for the first series of about 400 test flights.

Tonopah Test Range and part of the adjacent Toiyabe National Forest in Nevada have been marked with three flight paths. One flight path is over relatively flat terrain, another covers moderately rough terrain, and the third flight line covers mountains and very rough terrain.

As the aircraft carrying the Sandia instrumentation pod flies the three flight paths, completed in one run in sort of a giant "S" pattern, the pod will transmit a signal for tracking purposes. This signal will be picked up by the two C-130's flying at high altitude at each end of the range. The C-130 Distance Measuring Equipment (DME) will not only fix on the aircraft but also on six transponder stations located on the ground along the flight paths. In addition, the instrumentation pod will con-

tain a highly accurate radar system to measure the distance of the test aircraft from the earth's surface. The instrumentation system will provide a complete profile of the test aircraft's run over the marked course and along the known terrain profile.

The first series of tests will establish a "norm" for man-machine performance under ideal conditions. The pilots, flying a variety of U. S. operational aircraft designed for low-level operations, will fly as low as safely possible at established speeds during the runs over the range.

Data obtained will receive preliminary processing on two 160A computers. Two sets of taped data will be produced by this preliminary routine. One set will go directly to a 1604 computer and the other set will be flown to Sandia Laboratory for processing on the 3600 computer. The 1604 computers will provide an early readout of key data quantities. This will allow for immediate corrective action should instrumentation or operational difficulties be revealed.

The formation of JTF-2 began early in 1964 as a result of studies produced by the Department of Defense's Weapons Systems Evaluation Group (WSEG). The studies recommended a comprehensive series of tests to collect valid operational data on the low-level penetration capabilities of tactical and strategic aircraft, and ground-to-air defense systems—and to provide an opportunity for the military services to test and evaluate tactics in a joint environment.

In the summer of 1964, the Joint Chiefs of Staff recommended and the Secretary of Defense approved the formation of a joint task force to conduct the test program. JTF-2 was officially established in August 1964, and headquarters were set up on Sandia Base in October.

Sandia Corporation provides scientific and technical assistance to the JTF-2 mission.



BIOLOGICAL CONTAMINATION STUDY conducted in Sandia's laminar flow clean room shows that the room's ability to control airborne contamination approaches a sterile environment. William E. Neitzel, left, and Claude Marsh of Advanced Manufacturing Development Division prepare air sampling devices used in the study.

Tests Show Sandia Clean Room Approaches Sterile Environment

Ability of Sandia Laboratory's laminar down-flow clean room to control airborne microbiological contamination approaches the absolute, according to a Research Report (SC-RR-65-47) just released by Advanced Manufacturing Development Division. In a series of experiments, verified in an independent confirmation study conducted by John W. Beakley, microbiologist, University of New Mexico, personnel of the division could find either no traces or only minute traces of microbiological contamination in the filtered air inside the Sandia clean room.

In the Beakley confirmation study, a distinctive type of bacteria was circulated within the room while the air-moving equipment was off. The blowers were turned on and allowed to operate for one minute, and then a sample of the air was taken with Andersen air samplers. The microbiologist could not find a single trace of the test bacteria. He estimates that 500,000 organisms per cu. ft. of air were sprayed into the room.

The laminar flow clean room concept

was developed and implemented in 1961 by the Advanced Manufacturing Development Division. It has since revolutionized electronic fabrication and other precision assembly operations throughout the country. A laminar flow clean room removes airborne particles three-tenths of a micron or larger from inside the room.

Since most bacteria are larger than three-tenths of a micron, it appears that the laminar flow clean room may have widespread applications in hospitals, nurseries, and other medical facilities. Comparison of the results of the microbiological data collected in Sandia's clean room to data collected in the average hospital operating room shows the laminar flow room to be much more contamination free.

In all the Sandia tests, which involved a series of experiments using a variety of sampling equipment, the clean room was not washed down with antiseptic nor did persons in the room wear masks, sterile gloves, or other special clothing.

The Sandia Laboratory clean room facility, located adjacent to Bldg. 892, is undergoing evaluation by Goddard Space Flight Center, a NASA agency, as a possible biological contamination-free environment for assembly of inter-planetary space vehicles. Goddard is currently planning construction of contamination free facilities and the laminar flow clean room holds high promise, according to Goddard personnel conducting the evaluation.

Laminar flow clean rooms were developed by Sandia to provide a method to control particulate contamination in the fabrication of weapon components. Sandia has vested interest in particulate contamination as it affects electronic and mechanical equipment, and is interested in seeing further development of laminar flow facilities for medical purposes.

Club's Annual Hofbrau Features German Food, Dancing Tomorrow Night

The Coronado Club's annual Hofbrau night will be held tomorrow evening.

A wide variety of German entrees, salads, and desserts, will be served buffet-style from 7-8:30 p.m. The MBC Trio will play for dancing starting at 9 p.m. Reservations may be made at tel. 264-4561. Tickets are \$3 each.

Tonight's social hour will include a chicken buffet and music by Tommy Kelly's Combo; next Friday Max Madrid's Combo will play for dancing and there will be a buffet of Mexican food. Buffet tickets are \$1.25 for adults and \$1 for children.

The Sanado Club will hold its Spring formal on May 1.



Sandia Tech Artists Honored in National Art Competitions

Illustrations of several Sandia Laboratory technical artists received recognition at two recent national judgments.

Gordon Snidow had three illustrations that placed first, second, and third at the Technical Illustrators Management Association annual awards showing in Los Angeles. R. J. Mickey received an honorable mention in the illustrated parts category. Gordon's awards were in the categories of audio-visual aids, posters, and full-tone illustration.

The second competition was the Society of Technical Writers and Publishers Technical Art Show held recently in Huntsville, Ala.

Sandia Laboratory artists whose work was displayed and received honorable mention included R. J. Mickey, Gordon Snidow, Henry Gallegos, Oreste Ganzerla, Leo Ortiz, George Marks, Bill Wagener, Judy Elder, and Nell Norton.

All art submitted to the contests was selected from the regular work of Technical Art Division.

ILLUSTRATIONS of Joe Mickey, left, and Gordon Snidow recently won awards in the Technical Illustrators Management Association contest in Los Angeles. The two also received honorable mention in the STWP Technical Art Show in Huntsville, Ala., along with several other Sandia artists.

Take Note . . .

W. B. Pepper of Rocket and Recovery Systems Division has been appointed chairman of the first National Specialist Meeting on Aerodynamic Deceleration to be held in the fall of 1966. The announcement was made Apr. 7 in Palm Springs, Calif., during the first meeting of the Technical Committee on Aeronautics and Astronautics, which Mr. Pepper attended.

Lee Parman, manager of Technical Libraries Department, will serve as vice president of the New Mexico Library Association for 1965-66. He was elected at a recent meeting in Portales.

Colloquium lecturer at the University of New Mexico Department of Physics and Astronomy recently was William O'Sullivan, Electron Structure of Solids Division. He discussed "Chlorine Nuclear Magnetic Resonance in Paramagnetic and Antiferromagnetic Copper Chloride."

A Woodrow Wilson National Fellowship Foundation grant of \$5000 for tuition and living expenses has been awarded Audrey Mae Joseph, former secretary to Sandia's Director of Materials and Standards Engineering.

Mrs. Joseph is majoring in Far Eastern history and will graduate from the University of New Mexico in June with a BA degree. This summer she will attend the University of California for 12 weeks to study the Chinese language.

She is the wife of Walter W. Joseph of Aerospace Nuclear Safety Division IV, and the daughter of Emma Mae Benderman of Classified Information Distribution Division. Mrs. Joseph is the mother of eight-year-old twin boys.

These graduate fellowships are designed to recruit new college teachers.

Leroy E. Cole of Budget Division has been named chairman of the recently formed New Mexico Control No. 33, Accounting Careers Council. The group is starting a program to urge secondary school counselors throughout the state to encourage promising students to take college training in accounting and business administration.

The council is sponsored nationally by the American Accounting Association, the American Institute of Certified Public Accountants, the Financial Executives Institute, the Institute of Internal Auditors, and the National Association of Accountants.

Comedy writer Zeno Klinker, who for 23 years worked with ventriloquist Edgar Bergen, will be the featured speaker at a meeting of the American Institute of Aeronautics and Astronautics next month.

The Albuquerque section meeting will be May 5 at the Kirtland Air Force Base Officers Club. For reservations or further information, call A. C. Bustamante, tel. 264-2043, or D. E. Randall, tel. 264-1075.

Mr. Klinker will present a narrated film, "Higher 'n a Kite," tracing the history of aviation.

E. R. Servis, University Relations Division, will play host Sunday at 2 p.m. to the TDP Wives Club at his ranch home in Peralta.

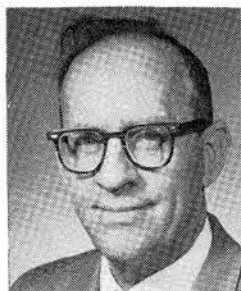
Families of Technical Development Program participants are invited. Children will be entertained with pony rides and games.

Program of the April meeting consists of a talk on "Vacations in the Land of Enchantment" by Mr. Servis. He is a life-long New Mexico resident.

Refreshments will be served.

Membership in the club is limited to wives of men in the Sandia Technical Development Program. The husbands work half-days at the company and spend the remainder of their time in classes at the University of New Mexico, taking advanced courses in mechanical or electrical engineering.

Death . . .



E. D. Bales, an employee at Sandia Laboratory for more than 19 years, died suddenly at his home Apr. 4. He was 52.

He was a technical staff assistant in Special Test Equipment Design Division.

Survivors include his mother, a brother, and two sisters, all residing in California. Interment was at Santa Cruz, Calif.

Response Brisk to 'Bus Pool' Idea; About 200 Questionnaires Returned

Response to a LAB NEWS questionnaire concerning "bus pool" service took the mail room by storm two weeks ago.

The "bus pool" idea was proposed by Thomas Burke, director of public transportation for the Albuquerque Transit System. It would allow Sandia employees living in the same neighborhood to "charter" a city-owned bus for the daily ride to and from work.

More than 190 of the completed questionnaires gushed into the LAB NEWS office through the week, and many of the respondents enthusiastically endorsed the proposal.

"A good idea, if it works out," commented one person. "If I rode a bus I could sell one of my two cars," said another. Several others indicated the plan was "urgently needed," and two men even offered to help tabulate the data.

The forms will be studied by the Albuquerque Transit System to determine if the plan is workable.

The questionnaire is reprinted in this issue in an effort to stimulate further response, particularly from persons on the West Side. About 70 per cent of the replies were from Sandians living in Northeast Heights areas.

- In what area of the city is your home located?
a. NE b. SE c. NW d. SW
- If a "bus pool" were to operate between your neighborhood and Sandia Corporation, would you utilize the service, provided it was sufficiently fast, convenient, and economical?
a. Yes b. No
- What is the maximum number of blocks you would be willing to walk between your home and a bus stop?
a. One b. Two c. Three d. Four or more
- What is the maximum number of minutes you would be willing to spend on the bus between home and work, one-way?
a. 10 b. 15 c. 20 d. 25 e. 30 f. 35 or more
- What is the maximum weekly fare you would be willing to pay for "bus pool" transportation to and from work?
a. \$5 b. \$4 c. \$3.25 d. \$2.50 e. Other (\$.....)
- Other comments:

Name:
Address:
Organization:
Work Telephone:

PLEASE CLIP AND SEND THROUGH COMPANY MAIL TO:
Sandia Lab News
Organization 3142
Bldg. 800, Rm. 112

Sunrise Teaching Job Gives Sandian Early Bird's-Eye View of Education

To the late-riser, R. W. Roberts, supervisor of Apparatus Development Division, must appear an odd duck, for Bob is an early bird whose sideline is teaching.

His latest classroom endeavor is a voluntary one, using his own crack-of-dawn time. He instructs a sunrise, non-credit computer course for 40 hand-picked high school students in the Albuquerque Public School system.

The class meets at Highland High School twice-a-week from 6:30-7:20 a.m. to study theory and application of computers and related equipment. Students, early-risers themselves, come from five public schools scattered across the city—Sandia, Rio Grande, Valley, Del Norte, and Highland.

Bob admittedly is fortunate in having "the cream of the crop" in his classroom, and he talks at length about the young people and their ambitions. "My students run the gamut," he says. "From a young man who is a Scandinavian exchange student to my own son."

While some of the students plan to enter the electronics and electrical fields, each had special reasons for taking the class. Those reasons were stated in a short theme which accompanied the course application required of each student.

Bob said one young man, for instance, designed his own computer and simply wants to learn more about it.

One young lady is taking the course because it fits into her plans of becoming a fashion designer. "She knows computers are being used more and more in department stores for ordering and stock control," Bob explained.

Another student was interested in the use of computers in terms of food and cooking in large baking companies. She wants to become a professional dietician.

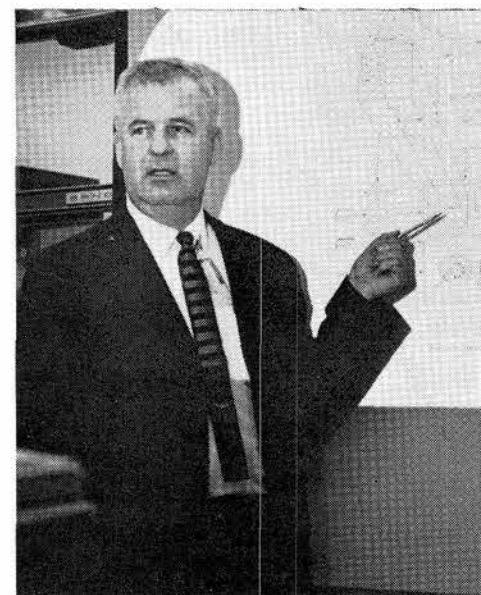
Others are interested in mathematics, business, medical, and accounting careers.

"They all comprehend rapidly," Bob says. "They're attentive and polite and have participated actively, doing homework and even make-up examinations."

In short, they make Bob's early rising worthwhile. "Actually, it's not much of a problem anyway," he remarks. "I get up 40 minutes earlier and then speed up my morning routine."

Bob returns the satisfaction by making the course worthwhile for the students, as evidenced by a drop of only two students from his roll book. Both losses were for personal, rather than scholastic, reasons.

Asked to explain his early-morning involvement, Bob shrugged in reply and asked, "Why does a person do any one thing? I was asked by Community Relations Division to



PART-TIME TEACHER—Bob Roberts, Apparatus Development Division, assumes a pose familiar to the 40 students under his tutelage in a sunrise computer course at Highland High School. Bob's class meets twice weekly at 6:30 a. m.

propose and teach a high school level course of the type I was teaching at noon in the Out-of-Hours Technical Training Program.

"It sounded kind of intriguing, so I gave it a try. It turned out to be a good idea."

An electrical engineer, Bob gained a knowledge of computers while on a team at Bell Labs which designed a computer for automatic billing of long-distance calls.

At Sandia he applies computer technology to the automated test equipment field.

Bob also has considerable teaching experience dating back to his college days at the University of Colorado, where he was a student lab instructor, and at City College of New York, where he taught electrical engineering courses in the night school.

He spent six years with Bell Labs in New York before joining Sandia 12 years ago.

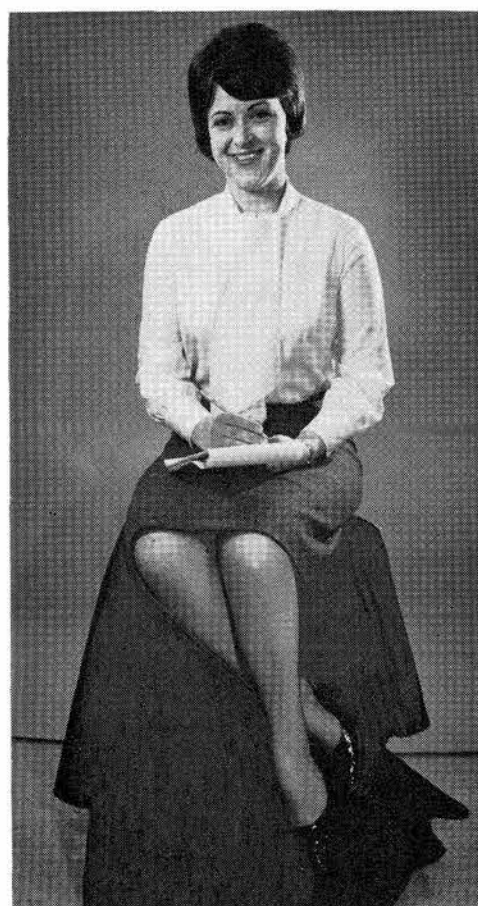
Bob started the 14-week computer course Feb. 15, after working out details with Wendel Scarbrough, mathematics consultant to the Albuquerque Public Schools. He regards the teaching opportunity as "an amplification of the Career Day concept; a chance to contribute in some small way to a successful career, or perhaps 40 of them."

Bids Received for Steam System Improvement Project

Mechanix Company of Albuquerque is the apparent low bidder for general improvements to the steam distribution system in Tech Area I at Sandia Laboratory.

The firm's bid of \$105,790 was the lowest of five received by the Atomic Energy Commission. H. B. Burrell, Building and Facilities Design Division I, is the project engineer.

The work will complete a looping of the steam distribution lines in the area, making it possible to make repairs without cutting off service. The project includes installation of underground piping; and modification, rebuilding, or construction of manholes.



Helen Johnson (5251)

Take A Memo, Please

Power lawn mowers can be as dangerous as power tools. Operate them according to printed instructions and carefully observe all safety precautions suggested by the manufacturer.

SANDIA CORPORATION LAB NEWS



ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

Editor: Robert C. Colgan
Sandia Corporation, Albuquerque, New Mexico

Editorial Offices
Sandia Laboratory
Albuquerque, New Mexico
Employee Publications
Bldg. 800
Room 112
Tel: 264-1053

Livermore Laboratory
Livermore, California
Public Information
Bldg. 912

Tel: Hilltop 7-5100, Ext. 2395

Permission to reprint material contained herein for other than governmental use may be obtained from the Editor, Lab News, Sandia Corporation.



CERTIFIED TECHNICIANS — Loren Converse (holding paper) is one of the first Sandians to have been certified by the Institute for the Certification of Engineering Technicians. With Loren are technicians Jim Hopwood, H. D. Sorenson, and Les Romp.

Four Sandians Certified by National Society

T. F. Jones, L. O. Romp, J. E. Hopwood, and H. D. Sorenson of Livermore Laboratory have been certified as Engineering Technicians by the Institute for Certification of Engineering Technicians sponsored by the National Society of Professional Engineers. Certification was on the basis of technical competency and years of service, according to information supplied by the candidates. Certification is pending for S. W. Mayer, Jr., K. E. Hansen, D. T. Ficht, D. V. Tassano, and J. A. Kersey.

The Institute is an outgrowth of the need felt by engineering and management personnel for a universal, acceptable procedure for giving recognition and identification to the engineering technician. The ICET certification program has become an incentive toward education, economical, social, and ethical development of the technician.

One of the first SCLL technicians to be certified by the Institute is Loren Converse, who was awarded his certificate in June 1964. Loren has actively encouraged other technicians to investigate the certification program for their own professional advancement.

Information on the program can be obtained from Loren or from SCLL training specialist W. L. Miller. Applications are available from the Institute for the Certification of Engineering Technicians, 2029 K Street, Washington 6, D.C.

PAGE THREE

LAB NEWS

APRIL 23, 1965

BOARD OF DIRECTORS—Shown at Livermore Laboratory for a Sandia Corporation board of directors meeting on Apr. 7, are members S. P. Schwartz, Sandia Corporation; A. P. Clow, Western Electric Co.; F. C. Cheston (Secretary), Sandia Corporation; R. W. Henderson, Sandia Corporation; P. A. Gorman, Western Electric Co.; J. B. Fisk, Bell Telephone Laboratories; H. K. Onstott, Bell Telephone Laboratories; L. R. Cook, Western Electric Co.; and H. G. Mehlfouse, Western Electric Co. Not present for the meeting was board member J. P. Molnar, Bell Telephone Laboratories.



Livermore Notes . . .

Sandians Dick Holt and John Hitchcock were among 13 scouter instructors who conducted the annual Acorn Training Course offered Apr. 3-4 by the Twin Valley District, San Francisco Bay Area Council, Boy Scouts of America. The weekend session of outdoor instruction was conducted at Rancho Mochos, a scouting camp about 20 miles south of Livermore. Indoor sessions had been held earlier covering other scout activities.

The training course, organized and patterned after the activities of a regular scout troop, presents the outdoor program of scouting as an aid in strengthening adult leadership of individual troops.

Among 18 scouter volunteers from the immediate area who participated as students in this year's course were Sandians Bob Crow, Carl Lundbom, Ron McClellan, and Chet McIntosh.

A. L. "Bud" Pearson was installed Apr. 5 as Exalted Ruler of the Livermore-Pleasanton Elks, B.P.O.E. Lodge No. 2117. Norm Jacobson moved into the position of Leading Knight vacated by Bud. Both terms of office are for one year.

There are nearly 60 Sandians in the 300-member Elks Lodge, which meets at 8 p.m. the first and third Mondays of each month at 2160 First Street in Livermore.

Bill Ryan won the first-place trophy in the Sandia Employees Golf Club straight handicap tournament at the Tilden Park Golf Course, Berkeley, Mar. 27. He scored a low net of 64. Don Skinrood, Jr., and Earl Beck tied for second place with scores of 65. A special award was won by Earl Beck for coming closest to the pin at the No. 3 hole. John Barnhouse placed second for this award.

Congratulations

Mr. and Mrs. Donald T. Ficht (8141), a son, John Tillman, Mar. 18.
Mr. and Mrs. Robert W. Jackson (8223), a son, David William, Mar. 18.
Mr. and Mrs. R. A. Yung (8245), a son, Troy Allyn, Mar. 23.
Mr. and Mrs. Robert Heilman (8142), a son, Timothy Andrew, Mar. 17.

LIVERMORE NEWS

Auditory Problems Plague Employees During Non-Pressurized Flights

The Health and Safety Division at Livermore Laboratory is alerting employees about potential ear problems that may occur when flying in non-pressurized aircraft. During the past few months, several Sandians have required treatment for "aerotitis media," more commonly called "blocked ear," which is caused by pressure differential between the inner ear and the atmosphere.

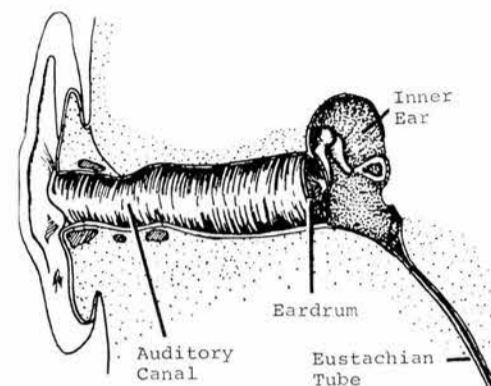
During descent in non-pressurized aircraft, the more dense atmosphere exerts pressure against the outer surface of the ear drum, forcing it inward. If the air pressure in the middle ear is not equalized quickly, the person may experience severe pain and a temporary loss of hearing acuity. Tissue fluid, and even blood, may be drawn into the middle ear cavity. This condition usually takes about one week to correct, but may take longer if complicated by infection.

The only way to equalize the pressure across the ear drum and prevent this from occurring is for air to enter the middle ear via the eustachian tube, which normally lies collapsed. Relief can usually be obtained by swallowing, which contracts certain muscles of the throat that are attached to the mouth of the eustachian tube, thereby pulling it open. Another method is to attempt to blow through the nose while holding it and the mouth closed. The increased pressure in the throat forces the tube open.

It is important that the pressure be equalized intermittently during descent, because the differential can become great enough to create a vacuum in the middle ear that can keep the eustachian tube closed.

Here are five preventive steps that are recommended to prevent "blocked ear":

1. Don't fly in non-pressurized aircraft if you have a cold, hay fever, or any other nasal obstruction, since this causes congestion around the opening of the eustachian tube;
2. Be alert to keep the ears cleared during climb and descent;
3. If you have chronic or recurrent ear problems associated with a tendency to block, consult an ear specialist;
4. If difficulty develops en route, the use of an inhaler or nose drops may shrink the eustachian tube and clear the ears; and
5. If you can't relieve a blocked ear, see a physician immediately after landing.



PRESSURE IN THE INNER EAR can become painful if not quickly relieved.

Herb Turnbull Wins Trophy in His First Roller Skate Contest

In his first roller skating contest, C. H. Turnbull won a first-place trophy in the men's "esquire" figure-skating competition at the Rollarena Skating Rink in San Leandro. Skate dancers who had not previously skated above the state or divisional level were invited from the Bay Area skating rinks that are members of the Roller Skating Rink Operator's Association of America. In judging an "esquire" figures performance, emphasis is on the smoothness of execution rather than the complexity of the step or pattern.

Both Herb and his wife, Betty, participated in the skating event, and as a dance team placed well among a group of 19 couples. Although Betty skated during high school and college days, the two first began dance-skating lessons together in early 1963. The seven levels of proficiency by which skaters are rated range from First Dance Bar to Gold Dance Medal. Having received the Bronze Medal award for the third level, Herb and Betty now plan to try for the fourth level Silver Bar award.

"Roller skating is a wonderful family recreation activity," Herb said. "Both of our children are enthusiastic about skating. James, our eight-year-old, is practicing for the first award proficiency test, and three-year-old Andrew is enjoying the learn-to-skate stage."

Events Calendar

- Apr. 23—Sandia Spring Dance-Cruise, Jack London Square, Oakland
May 12—Annual Livermore Laboratory Blood Bank Drive
May 7—Motion picture "The Sound of Music," at United Artists Theatre, San Francisco. Reserved seat tickets available from Employee Services.
Thru Dec. 31—Josephine Tussaud Wax Figures from London, England, at the Wax Museum, Fisherman's Wharf, San Francisco. Discount tickets available from Employee Services.

Weather Limits Turnout For El Toro Sailors

Sandia's "El Toro Bunch" from Livermore Laboratory, which normally numbers about 20, diminished to six stalwart sailors for the first race of the unofficial sailing group. The Apr. 10 "Spring Tune-Up" at Woodward Reservoir was thwarted by high wind, rain, hail, thunder, and lightning, which discouraged a larger turnout.

Even the hardy ones who appeared Saturday morning lasted only a few hours before being driven off by the harsh weather. As Glen Brandvold put it, "The wet masts became dangerous when lightning began to crackle around us."

Of the regular members of the group, those who appeared were Bob Schaefer, Miles Nelson, "Spike" Leonard, John Herbolsheimer, Charlie Stoll and Glen.

A plaque, intended as a trophy for the canceled race, will be presented instead to the winner of a special race scheduled for May 1 at Turlock Lake.

Welcome Newcomers

Feb. 5 — April 9

California	
Durward P. Green, Livermore	8245
Ted L. Hebebrand, Livermore	8232
*Florence P. Lenz, Livermore	8232
John W. Liebenberg, Berkeley	8156
Patricia A. Maurer, Livermore	8211
Glenda A. Plake, Livermore	8211
Garry A. Tidrick, Berkeley	8146
Ruth E. Sanen, Fremont	8215
Lawrence E. Wells, Walnut Creek	8232
Arizona	
Burton L. Wood, Sierra Vista	8144
Washington	
Eugene R. Benner, Seattle	8154
Returned from Leave	
William S. Dawson	8252
Ray W. Gillette	8252
*Denotes Retired	



TOM FOX at Teletype keyboard demonstrates a "Compatible Time-Sharing System" for rapid man-machine interaction. The keyboard was connected directly with a computer at Massachusetts Institute of Technology via the AT&T TWX network. Howard Hayden, foreground, operates video recorder while Wayne Hancock and Elliot Harris operate TV cameras.

Rapid Man-Machine Interaction

Time-Sharing System Demonstrated From Sandia to MIT Computer

A unique program in Sandia's Theater Bldg. 815 recently demonstrated remote access to a computer and a "Compatible Time-Sharing System." Tom Fox of Applications Oriented Systems Division, using a Model 35 Teletype operating on the AT&T TWX network, communicated directly with an IBM 7094-Mod 2 computer at Massachusetts Institute of Technology.

Using the Time-Sharing System, he demonstrated that it is possible to write, edit, compile, execute, debug, and receive processed data on a program originated from a remote console.

The Time-Sharing System was developed at MIT as part of Project MAC, Multiple Access Computer. Last year, Tom spent a year at MIT as part of a team of computer specialists developing a new computer language called AED-1 (Automated Engineering Design). Part of his work was with Project MAC on the Time-Sharing System.

The MIT computer can handle as many as 30 users simultaneously. The remote stations can be as far away as Albuquerque, Tom demonstrated. The advanced system provides for extremely rapid man-machine interaction. Any number of stations could be connected to the MIT computer.

The demonstration was attended by members of Sandia's Computing organization and other interested staff from technical organizations throughout the laboratory.

The demonstration was repeated that evening in Bldg. 815 for members of the Association for Computing Machinery.

Members of the audience watched both demonstrations on six TV monitor sets positioned throughout the theater. The TV sets were part of a closed-circuit TV system which was set up and operated by Industrial Photographics Division. The two television cameras and six TV screens permitted close-up views of the Teletype keyboard and the information being sent and received.

The demonstration was also recorded on video tape for future use.

Operating the closed-circuit TV system were Howard Hayden, Wayne Hancock, Elliot Harris, and George Skinner of Industrial Photographics Division. The demonstration marked the first time a closed-circuit TV system was used in the theater.

The TV system was assembled from various pieces of equipment borrowed from other Sandia organizations. The Teletype machine was leased from Mountain States Telephone Company.



AUDIENCE receives close-up views from six TV monitor sets during recent demonstration of rapid communication with a computer at MIT from a keyboard at Sandia. Members of Industrial Photographics Division assembled and operated the closed-circuit television system.

Promotions

Robert O. Morrow (7523) to Staff Associate Administrative
 John M. Foster (7523) to Staff Associate Administrative
 Roque Feliciano, Jr. (7221) to Staff Assistant Technical
 Fredrick D. Snyder (7221) to Staff Assistant Technical
 Samia Doro (3126) to Secretarial Typist
 Harold R. Wallace (3428) to Camera Operator
 Mary Ray Houston (3421) to Librarian
 Marilyn J. Hughes (8253) to Communications Operator
 Vernon W. Westbrook (8144) to Computer Operator
 Betty M. Lacher (2511) to Administrative Clerk
 Nathan W. Purington (8222) to Boiler Plant Operator
 Maria E. Garcia (3126) to Steno Clerk
 Margaret E. Marquez (3126) to Steno Clerk
 Margaret L. Best (3126) to Typist Clerk
 Benita J. Gonzales (3126) to Typist Clerk
 Emma Dale Daniel (3126) to Secretarial Steno
 Nancy C. McCorkle (3126) to Secretarial Steno
 Margaret Ringer (3126) to Secretarial Steno
 Marcia L. Simon (3126) to Secretarial Steno
 Lois H. Wade (2512) to Data Reduction Clerk
 Lavonne I. Mueller (2231) to Service Clerk
 Edna S. Baca (3428) to Service Clerk
 Betty L. Bards (3428) to Service Clerk
 Joseph M. Marques (8232) to Mail Clerk
 Robert Rodriguez (8232) to Mail Clerk
 Donald J. Knaple (8253) to Service Clerk
 Harold J. Hicks (8144) to Computer Operator
 Robert R. Horton (7324) to Laboratory Assistant

PAGE FOUR

LAB NEWS

APRIL 23, 1965

Supervisory Appointments



ROBERT C. DOUGHERTY to supervisor of Division I, Advanced Systems Development Department III, effective Apr. 16.

Bob joined Sandia at Livermore Laboratory in June 1958 and has been in preliminary design, project engineering, and advanced systems research there.

Before his employment with Sandia, he was an instructor of mechanical and electrical engineering for two years at the University of Idaho. While serving as an instructor, Bob earned his MS degree in mechanical engineering. He also received his BS degree in mechanical engineering from the same school in 1953.

During the Korean conflict, Bob spent three years in the Navy.

He is a registered professional engineer in Idaho and a member of the National Society of Professional Engineers.

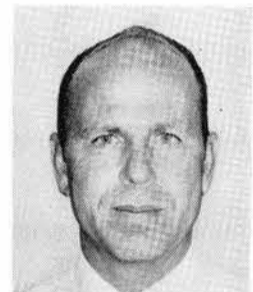


ELMER WHITE to supervisor of Environmental Division, Planning and Functional Test Department, effective Apr. 16.

Elmer has been in Sandia's Environmental Testing organization since 1952. During this period he has been associated with the static testing, radiant heat, climatic, and centrifuge facilities and also facility design.

He came to Sandia directly from the University of New Mexico, where he received a BS degree in civil engineering, and has completed all of the required course work for a Master's degree. Elmer is a registered professional engineer in New Mexico.

He served three and a half years in the Army.



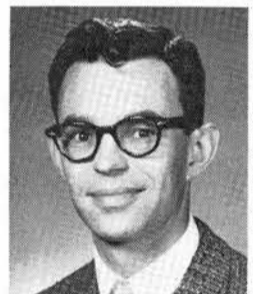
W. C. MCKINLEY to supervisor of First Shift Operations Section 7090, Operations Division, effective Apr. 1.

Chuck has been with Sandia since October 1950. His first work was in quality assurance; for the past five years, he has been in Data Center and Operations Department.

Before joining Sandia, Chuck had been a policeman for the City of Albuquerque for three years. He had also worked for a painting contractor in Los Alamos.

Chuck served in both the Army Air Corps and the Field Artillery during World War II.

He is a graduate of Albuquerque High School and attended Kansas State Teachers College and Centenary College of Louisiana.



ALBERT J. CHABAI to supervisor of Division III, 5623, Advanced Systems Development Department II, effective Apr. 16.

Al has worked in Underground Physics Division since he came to Sandia in December 1958.

Immediately before, he was at Lehigh University where he received his MS and PhD degrees in physics. Al's BS degree in engineering physics is from Montana State College.

He is a member of the American Association for the Advancement of Science and the American Physical Society.

Sandians Help Judge State Science Fair Student Exhibits

Thirteen Sandians were among the judges faced with the difficult task of selecting the best student entries in the State Science Fair. The event was held on Apr. 10 at the New Mexico Institute of Mining and Technology at Socorro. Regional winners from throughout the state displayed their science projects for the final judging.

Sandians who participated included D. R. Anderson, P. E. Cassidy, R. P. Clark, J. R. Bannister, C. R. Blaine, J. N. Day, R. I. Ewing, C. B. Pierce, J. D. Shreve, C. B. Rogers, R. L. Kruse, J. A. Schatz, and R. J. Ventli.

A. A. Key of Community Relations Division coordinated Sandia participation in the event.

In addition, four other Sandians—G. C. Newlin, C. E. Land, T. F. Marker, and D. K. Holck—served on a special committee of the Albuquerque-Los Alamos Chapter of the Institute of Electrical and Electronics Engineers to select a student exhibit to be shown at the West Coast Convention of the IEEE. The Chapter awards the student and his instructor an expense-paid trip to the convention which will be held in San Francisco in August.

HELPING JUDGE student entries at the recent State Science Fair held at NMIMT at Socorro were J. A. Schatz, center, and R. L. Kruse, right. Thirteen Sandians were Fair judges.



Guessing Game and Funny Dummy Provoke Inspiring Safety Program

Monthly safety meetings in Classified Information Control Division are never dull, especially when Evelyn Buchanan is running the show.

Take her March meeting, for example. Evelyn, a dynamic grandmother of 10, and Percy Wyly, supervisor of Safety Education Division, put their heads together and came up with a program illustrating proper ways of lifting things. "This is especially important in my division," Evelyn explained, "because we have 15 women and only four men. That means we women have to do some of the lifting."

After giving a slide presentation showing how and how not to lift objects, Evelyn asked people in the division to pick up six boxes of varying size, shape, and weight. Then they were told to estimate weights of the boxes, which ranged from five to 25 lbs.

The weight-guess demonstration was prepared by Safety Education Division because women are prohibited by a Sandia Corporation Instruction from lifting anything heavier than 30 lbs.

Of the 19 people taking part in the exercise, only one—a young man—was able to post a perfect score. Most of the others over-estimated the weights.

"From a safety standpoint, that's what we want," Mr. Wyly commented. "With women facing the 30-lb. weight restriction, it's far better that they over-estimate. Then, instead of lifting something by themselves, they say, 'I'd better get someone to help me'."

Evelyn said the second demonstration utilized a "ridiculous-looking, wooden dummy" which depicted damage that could be done to the lower spine by im-

proper lifting.

Division members dubbed the manikin "Broken Back Charlie."

"He showed each of us what happens in that careless split second when we forget," Evelyn noted. In what she described as a "hilarious 20 minutes," each person in the division took turns manipulating the two-ft. flexible dummy.

Responsibility for safety meeting programs in Classified Information Control Division rotates among division members on a month-to-month basis. Division supervisor is Frank A. Baczek.

Sandia Speakers

E. S. Roth of Advanced Manufacturing Process Development Division, "Basic Principles of Functional Gaging," ASTME annual convention, Mar. 30, Cleveland, Ohio; "Survey of Modern Inspection Methods," ASQC inspection workshop, Apr. 3, Joplin, Mo.

H. H. Baxter of Building and Facilities Design Division I, "Updating a Computer Air Conditioning System," regional meeting, American Society of Heating, Refrigerating, and Air Conditioning Engineers, Apr. 30-May 1, Albuquerque.

R. D. Seeley of Elastomers, Molded Plastics and Foams Division, "Characterization of Silicone Rubber Network Structures by Solvent Dilation Techniques," American Chemical Society's Third Meeting in Miniature, May 8, New Mexico State University.

A. R. Sattler of Crystal Lattice Defects Division and Geoffrey Dearnaley of Atomic Energy Research Establishment, Harwell, England, "The Angular and Energy Dependence of Emergent Protons Channelled in Single Crystal Silicon," and "Channeling of Protons as a Function of Incident Angle in the (110) Plane in Silicon and Germanium," American Physical Society, Apr. 26-29, Washington, D. C.

A. C. Wilken of Techniques Development Division, "A Precision Analog Memory with Nondestructive Readout Using Multiaperture Ferrite Cores," International Conference on Nonlinear Magnetics, Apr. 21-23, Washington, D. C.

T. A. Howard and E. J. Bernard, both of Techniques Development Division, "Advance and Prime Pulse Generator for Driving Digital Magnetic Logic Devices," International Conference on Nonlinear Magnetics, Apr. 21-23, Washington, D. C.

R. H. Braasch of Techniques Development Division, "An Approach to Analog Storage Using Multiaperture Cores," International Conference on Nonlinear Magnetics, Apr. 21-23, Washington, D. C.

Felton W. Bingham of Atomic Interactions Research Division, "Energy Dependence of Alpha-Particle Scattering from Si²⁸," American Physical Society meeting, Apr. 26-29, Washington, D. C.

C. E. Nuckolls of Vibration Division, "An Approximate Method of Simulating Mechanical Impedance in Vibration Testing," Institute of Environmental Sciences Symposium, Apr. 21-23, Chicago.

J. E. Schirber of Electron Structure of Solids Division, "The Effect of Pressure on the Connectivity of the Fermi Surface," First International Conference on Solids at High Pressure, Apr. 20-22, Tucson, Ariz.

R. C. Marsh of Manufacturing Research Division, "Design and Performance Characteristics of Laminar Flow Clean Room Systems," Parenteral Drug Association meeting, Apr. 9, Chicago.

James F. Reed of Experimental Aerodynamics Division, "Dynamic Stability Testing of Special Weapon Shapes," Second Technical Workshop on Dynamic Stability Testing, Apr. 20-23, Tullahoma, Tenn.

Edward C. Rightley of Mechanics and Mathematics Division, "Dynamic Stability Derivatives for a 10° Blunt Cone at Mach Numbers from 0.5 to 21," Second Technical Workshop on Dynamic Stability Testing, Apr. 20-23, Tullahoma, Tenn.

P. E. Cassidy and D. K. McCarthy, both of Polymer Chemistry Division, "Polymerizations and Applications of Epoxytetrahydrophthalic Anhydride," American Chemical Society's Third Meeting in Miniature, May 8, New Mexico State University.

D. R. Anderson of Polymer Chemistry Division, "A Preliminary Investigation of the Submacroscopic Structure of Several Thermosetting Resins," American Chemical Society's Third Meeting in Miniature, May 8, New Mexico State University.



ART LITES displays some of the award-winning publications he has designed and produced through the years. In the background are some certificates and achievement awards.

Art Lites Brings Many Talents, Many Awards to Manuals Production Work

Art Lites is a key man in the production of the many weapon manuals prepared by Sandia Corporation for the U.S. armed services. He is the catalyst between the manuscript and the printed book.

As supervisor of Composition Section of Technical Manuals Department, Art has held the responsibility for the production of manuals since 1951. He brings to the job more than 20 years of award-winning experience in publications design and production. He continues to win awards for his professional activities.

Before coming to Sandia, Art was production manager with a local advertising agency and gained a reputation for solving technical problems in the production of quality printing. Most full-color printing depends as much upon the artist for its quality as it does upon the skill of the engraver who prepares the printing plates and the pressman who operates the reproduction equipment. It is a complex job from the artist's conception to the finished printing.

Art is still called upon by his former clients to solve problems in design and printing and he engages in an active freelance business. Through the years, Art has produced an impressive array of publications ranging from promotional brochures to "Indian Life" magazine, many

of which have won awards for excellence in design, illustration, and typography.

Art is active in the Albuquerque Club of Printing House Craftsmen and has served as editor of the organization's "Bulletin," a publication honored by the International Craftsmen's organization. Art has served on the Bulletin's committee for the International Club of Printing House Craftsmen and as a publications judge.

Art's publications career began at Stanford University where, as an undergraduate majoring in social sciences, he worked for the Stanford University Press. After graduation, he stayed with the Press for more than 16 years as a typographic designer, a position which had supervisory responsibilities throughout the printing plant.

During this time, Art designed and illustrated a great many books, brochures, and pamphlets that received distinction. Every year, at least one of his books was selected as one of the best designed books published on the West Coast. The award was made by the Rounce and Coffin Club, an association of West Coast publishers and printers. Two of his books, "Plains Indian Paintings" and "45 Contemporary Mexican Artists," were selected by the American Institute of Graphic Arts to be part of an exhibit of the 50 best designed books of the year in 1940 and 1951.

The book that Art is proudest of, though, is one that was published by the Arthur Lites Press. This book, "A Dangerous Journey" by J. Ross Browne, was printed on Art's own 10x15-in. platen press, two pages at a time. The sheets were hand fed and required as many as five runs through the press using different colored inks. The illustrations, adapted from woodcuts, were printed by a special technique of using sandpaper behind the impression packing to impart a textured tone to the colors. The book was a reprint of articles that appeared in HARPER'S magazine in 1862 describing the early gold rush days of California.

The book received good reviews from literary critics and its design was honored by the publishing associations. It was a commercial success, too, if the year of spare-time production time is discounted. All but a few of the original 1000 copies produced by hand were sold.

In all of Art's work, top quality is the goal.

"Publication design," he says, "is comparable to the background music of motion pictures or television programs. It contributes greatly to the overall effect of the communication. It is carefully keyed to the mood and the plot. It becomes overdone when it calls attention to itself."

Art's skill now produces books for a specialized audience — the users of Sandia products. Content of the manuals is all-important.

"Readability, clearness, and accuracy are the things we strive for," Art says, "and we have to meet schedules." Art's years of experience keep the manuals' production on time and well designed.



BROKEN BACK CHARLIE—Evelyn Buchanan, Classified Information Control Division, manipulates Charlie, a wooden dummy rigged up by Safety Education Division to show damage that can be done to the lower spine by improper lifting. Charlie is going about it all wrong, as evidenced by the glaring break in his back.

Sandia Authors

J. D. Mote of Dynamic Stress Research Division and Joy George, professor of Government College Chittur Cochin, Kerala, India, "Dislocation Etch Pits in the Hexagonal Ag-A1 Intermetallic Phase," May issue, JOURNAL OF APPLIED PHYSICS.

F. L. Vook of Crystal Lattice Defects Division, "Thermal Conductivity of Electron Irradiated Germanium," May 17 issue, PHYSICAL REVIEW.

J. E. Schirber of Electron Structure of Solids Division, "Effects of Pressure on the Connectivity of the Fermi Surface of Zinc," Jan. 18 issue, THE PHYSICAL REVIEW LETTERS.

R. D. Driver of Applied Mathematics Division, "Note on a Paper of Halanay on Stability for Finite Difference Equations," Vol. 18, No. 3, ARCHIVE FOR RATIONAL MECHANICS AND ANALYSIS.

Bruno Morosin of Electron Structure of Solids Division and Kathryn Lawson of Crystal Physics Division, "The Configuration and Electronic Absorption Spectra of Tetrachloro- and Tetrabromocuprate Ions II. Additional Comments and Erratum," December 1964 issue, JOURNAL OF MOLECULAR SPECTROSCOPY.

A. R. Sattler of Crystal Lattice Defects Division, J. H. Hamilton, J. F. W. Jansen, and P. F. A. Goudsmit, all of the Instituut voor Kernfysisch Onderzoek, Amsterdam, Holland, "The Isomeric Decays of Ag^{108m} and Ag^{110m}," Vol. 61, No. 2, 1965, NUCLEAR PHYSICS.

T. A. Green of Atomic Interactions Research Division, "Electron Capture by Protons Passing Through Helium Gas," Vol. 38, Page 109, 1965, HELVETICA PHYSICA ACTA (a Swiss publication).

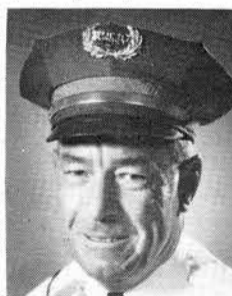
Service Awards 15 Years



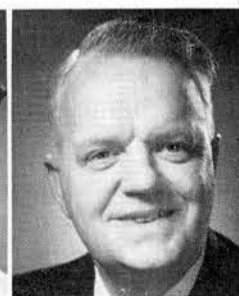
Evelyn L. Garman
9412
Apr. 23, 1950



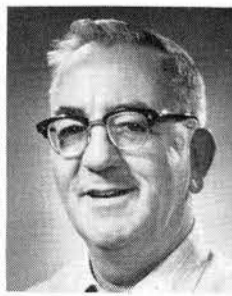
Donald E. Fossum
2412
Apr. 28, 1950



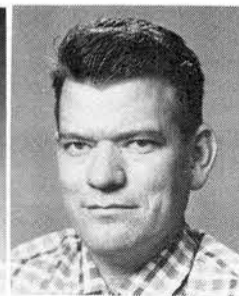
Woodrow W. Littrell
3242
May 2, 1950



Frank E. Anderson
2411
May 4, 1950



Kenneth W. Campbell
4232
May 4, 1950



Raymond H. Opperman
1413
May 5, 1950

10 Years

Apr. 23-May 7

Clara M. Gearhart 3421, Frederick R. Steele 7221, W. Douglas LaCross 1414, Jackie A. St. Clair 1331, Grant M. Johnson 4153, Ralph H. Richards 8141, John L. Colp 9312, Harvey E. Long 2551, Joann H. Finchum 5255.



ON THE SPOT—When a phone call is not returned, it's the secretary—not the boss—who's in Dutch with the caller. It is simple common courtesy to return calls promptly. Besides, it will save the secretary from being blamed for not passing the message along. Models for photo are Rosemary Padilla and Bob Austin.

Now Let's All Brush up on Our Telephone Technique—Manners

It really puts a secretary on the spot when she gives someone a message, and the call isn't returned.

The girl is embarrassed and made to look inefficient when the same caller calls back and says, "This is . . . Didn't you ask him to return my call?"

Even though most everyone wishes to be thought of as considerate and courteous, such instances occur everywhere every day. Even at Sandia.

Every time a Sandia employee picks up the phone on his desk, he creates an impression not only of himself, but also of the company. It may be a good, a bad, or an indifferent one.

Fortunately, anyone can develop a pleasing, effective telephone manner. The first step is a cheerful and considerate attitude toward each incoming call:

—When practical, one should answer his own phone promptly, identify himself, and greet the caller. If a person is not available, get the caller's name, number, and message.

—Always offer to be of service. Respond graciously to inquiries.

—Listen attentively without interrupting. Take appropriate notes.

—If it becomes necessary to leave the

line, explain and ask the caller's permission. Apologize for errors or delays.

—Avoid "buck-passing," but if it becomes necessary to transfer a call, explain and wait for a response. Be polite if someone dials the wrong number.

—Close by reviewing important details and hang up gently. Keep any promises and, above all, take the required action.

Good telephone communication is a two-way street. As in baseball, both "pitcher" and "catcher" must be skilled and alert. Thus, another half-dozen simple rules apply when someone makes a call:

—Return calls promptly. It's courteous to the caller and saves the secretary from being blamed for not giving the message.

—Plan the call, being sure of the number. Don't guess.

—Give the person at least a minute to reach his phone. Stay on the line until the party answers.

—Dial carefully, but if a wrong number is reached, apologize to the person answering.

—Without fail, one should identify himself and state the purpose of the call.

—Close the conversation pleasantly.

More than anything else, good telephone manners are governed by common sense: —A person transferred to another office should leave a forwarding number. If exco-workers don't know where he is, others find themselves lost up a blind alley.

—If a person isn't available, give a report. Say, "I'm sorry, he's talking on another line." Not, "He's busy."

Avoid screening calls, especially the ego-deflator, "Who's calling?"

—Display alertness, talk distinctly and naturally, be expressive, and reflect pleasantness.

—Remember the "please's," "thank you's," and "I'm sorry's."

—Let the secretary know where you're going and the approximate time of your return. Return any calls received while you were out.

Commission Opens Bids For Lab Substation Job

Gardner-Zemke Company of Albuquerque is the apparent low bidder on an electrical modification project at Substation 4A in Tech Area I.

The bid of \$34,835 was the lowest of five submitted to the AEC Albuquerque Operations Office. Work completion is expected in about 100 days.

Plant engineer R. B. French of Planning, Budgeting, and Control Division said the project called for installation of a new master transformer unit, associated switch gear, and a metering cubicle. Some modification work and relocation of an existing substation also were included.

Sandia Instruments Help Study Of Project Dribble Cavity

Two Sandia-designed instruments are contributing to studies of the cavity created last October by the detonation of a five kiloton nuclear device in an underground salt formation near Hattiesburg, Miss.

George Curry and John Talbot of Field Testing's Project Coordination Group are alternating an assignment at the Project Dribble site to direct the use of a remotely-operated television system for down-hole inspection of the cavity. The second instrument is a film camera optical measuring system which projects collimated beams of light and a 180-degree wide-angle lens to measure distances inside the cavity.

Use of the instruments so far has been limited due to the concentration of a gaseous cloud inside the cavity. However, the TV system has been able to "see" the floor and ceiling of the cavity.

Preliminary reports by Lawrence Radiation Laboratory indicate that the cavity is approximately 110 ft. in diameter, very close to the size predicted before the detonation.

When the device was fired Oct. 22, 1964, personnel from Sandia participated in the project. Sandia armed the nuclear device, recorded free-field particle motion underground and on the surface, and provided special instrumentation.

The detonation did not create a perfect sphere because molten salt from the sides and top flowed to the bottom, forming what appears to be a rather flat, smooth floor. It is believed the salt forming the floor is about 22 ft. thick at the center, tapering in thickness to the sides.

280 Degrees Hotter

Temperature inside the cavity is approximately 400° F. or about 280° hotter than before the explosion. When the cavity was penetrated, about four months after the explosion, radioactivity in the gases filling the cavity had declined to a level of about one-tenth of a roentgen per hour.

Later, air was pumped into the cavity and the radioactive gases were forced up

and through the "bleed-down" plant, a surface facility of piping and filters, where most of the radioactivity was trapped. A large volume of air then was mixed with the gases and the mixture released through a stack to the atmosphere. During this operation, no radioactivity was detected by sensitive instruments placed outside the site area. Inside the area, radiation levels were far below permissible limits.

Pressure in the cavity was somewhat less than atmospheric pressure when the first measurements were made. Later, during operations designed to flush gases from the cavity, air was pumped in to several times atmospheric pressure and allowed to flow out.

Computing the pressurizing effect of a known quantity of air in the cavity showed that the cavity as it stands has a total volume of 660,000 cu. ft.

The cavity ceiling is 2660 ft. below ground surface and its floor is 2747 ft., making the cavity 87 ft. from top to bottom, or nearly the height of a nine-story building. The original top-to-bottom height was decreased by the melted salt that flowed to the floor, but this probably has slightly increased the diameter on a horizontal plane. The explosive device was positioned at 2715 ft. below ground surface.

Floor Cored

Coring into the floor of the cavity was done to provide samples for radio-chemical analyses by Lawrence Radiation Laboratory and to provide knowledge of how far from the detonation the salt mass was affected by the energy of the explosion.

Personnel of three Sandia Field Testing Divisions participated in the design and development of the down-hole TV system and optical measuring system. The devices were built to operate for up to 20 minutes in a radiation environment and in temperatures up to 1100° F.

Grover Hughes of Range Optics Division performed mechanical and optical design for both systems, assisted by Clarence Meyer, project draftsman. Leland Wright participated in the electronics design effort with Bob Scharrer, George Curry, Dale Breeding, Bill Wilson, and John Talbot.

Project Dribble was sponsored by the Advanced Research Projects Agency of the Department of Defense as part of a research program to improve means for detecting, locating, and identifying underground nuclear explosions. The technical program is directed by Lawrence Radiation Laboratory.

Bidders Sought by AEC For Tonopah Construction

Bids will be invited later this month for construction of support facilities at the Tonopah, Nev., Test Range operated by Sandia Corporation.

Project engineer Kenneth D. Harper, Building and Facilities Design Division I, said the project includes two prefabricated metal buildings, one earth-covered structure, a reinforced concrete building, and related equipment. It will be used by Tonopah Range Operations Division.

Bids are scheduled to be opened in the Albuquerque Operations Office of the AEC on May 27. Work is to be completed within 180 days after the contractor is given notice to proceed.

PAGE SIX

LAB NEWS

APRIL 23, 1965



CHILDREN at the Albuquerque Hearing Society are benefiting from a recently-installed audio amplifier system made possible by a portion of the 1964 Employees' Contribution Plan reserve fund. The master console and one desk unit were purchased for \$340. Up to six desk units may be added to the system. Ten other agencies also received various amounts from the 1964 ECP reserve fund.

Space Travel Will Be No Lark Jack Sivinski Tells Audiences

In discussing hazards encountered by space travelers who sever the umbilical cord with Mother Earth, H. D. Sivinski of Advanced Systems Research Department III pulls no punches.

He talks about things that'll curl anyone's hair. Things like 500 days in cramped quarters, bathless months, dried algae dinners, boredom that'll drive you mad, and the possible nauseating effects of prolonged weightlessness. He covers just about every aspect, not normally thought about, that is needed for the safety and well-being of those venturing into the heavens.

Regardless of how unsavory they may be, the problems do exist, and "Jack" spends many of his noon hours and evenings telling people about them in a straightforward, down-to-earth sort of way.

Jack is well-qualified to speak on the subject. In addition to his present work at Sandia, he served as chairman of the New Mexico Academy of Science "Man in Space Colloquium" a few years back, and was supervisor of the Planning Section for the Environmental Testing organization before moving into systems research work.

The son of a Nebraska farmer, Jack earned his BS degree in mechanical engineering at Iowa State University in 1957. He joined Sandia that same year.

Today Jack is in great demand as a speaker. He has delivered scores of talks to civic, professional, technical, church, business, and student groups across the country.

Results are invariably the same. Rave notices pour in.

"It is probably one of the all-time programs heard by Roswell Rotary," says one letter. Another, from Springer, says, "Never before have I had my fellow Kiwanians reply how much they enjoyed a program." Writes an Oklahoma State University professor, "You would have been proud to see the reaction of these boys."

Other samples: "Everybody is still raving," "It went over big," "A huge success," "Marvelous speech" . . .

Jack, himself, attributes the overwhelming success of his appearances to the law of supply and demand. "I offer a much-needed and much-appreciated service," he comments. "People want to know about our space efforts, so I explain the program in a way they can understand.

"To stimulate them is stimulating in itself."

An advocate of the off-the-cuff approach for natural delivery and the question-and-answer session for clarity, Jack tailors the same talk to fit different audience levels. He goes "the 3x5 route," speaking from fragmentary notes, and reviews the many

UNIVERSAL APPEAL — Jack Sivinski, Advanced Systems Research Department III, is in such demand as a speaker these days, that he is forced to turn down several requests each month. Jack gives his audiences some down-to-earth insight into the hazards, risks, and problems of space travel.

technical problems encountered between lift-off and reentry.

After setting the audience at ease with a couple of space jokes, Jack usually begins by saying, "When man ventures into space, any problem—regardless how small—that has been overlooked or neglected, may lead to disaster. In the unfamiliar and hostile environment of space, man should never be called upon to improvise. So far as is possible, he must be forewarned, forearmed, and prepared to cope with any contingency."

Jack speaks seriously on the tremendous undertaking of putting man into space and places major emphasis on the manufactured environment of the space capsule.

"Psychologically," he remarks, "the hostile environment of the space traveler must be controlled for effective performance."

He points out that this is why even interior colors of a space vehicle are important when passengers are cooped up for long durations. Equally as vital as sight are the senses of touch, taste, smell, and sound—which would be lost in space under normal circumstances.

That's why Jack thinks, for instance, it might be beneficial to play periodically a recording of traffic jams or lowing cattle, depending whether the traveler is from the city or the country.

Of space debris, he says, "There are dust-balls in space like we have under our beds. They collide with the spaceship, giving off a distracting 'ping.' Pretty soon the spaceman finds himself bracing for the next one. It may come in a second, in a minute, or in 10 minutes. Or not for two weeks. It's like waiting for the fella upstairs to drop the second shoe."

As for the bathing question, Jack explains that baths are out of the question in the blackness of space. "It's problem enough supplying drinking water," he says, "because a cu. ft. of water weighs 62.4 lbs. More water would require more fuel, because of the added weight."

His illustrations go on almost endlessly, and frequently he adds humor to the proceedings by asking, "Any volunteers?"

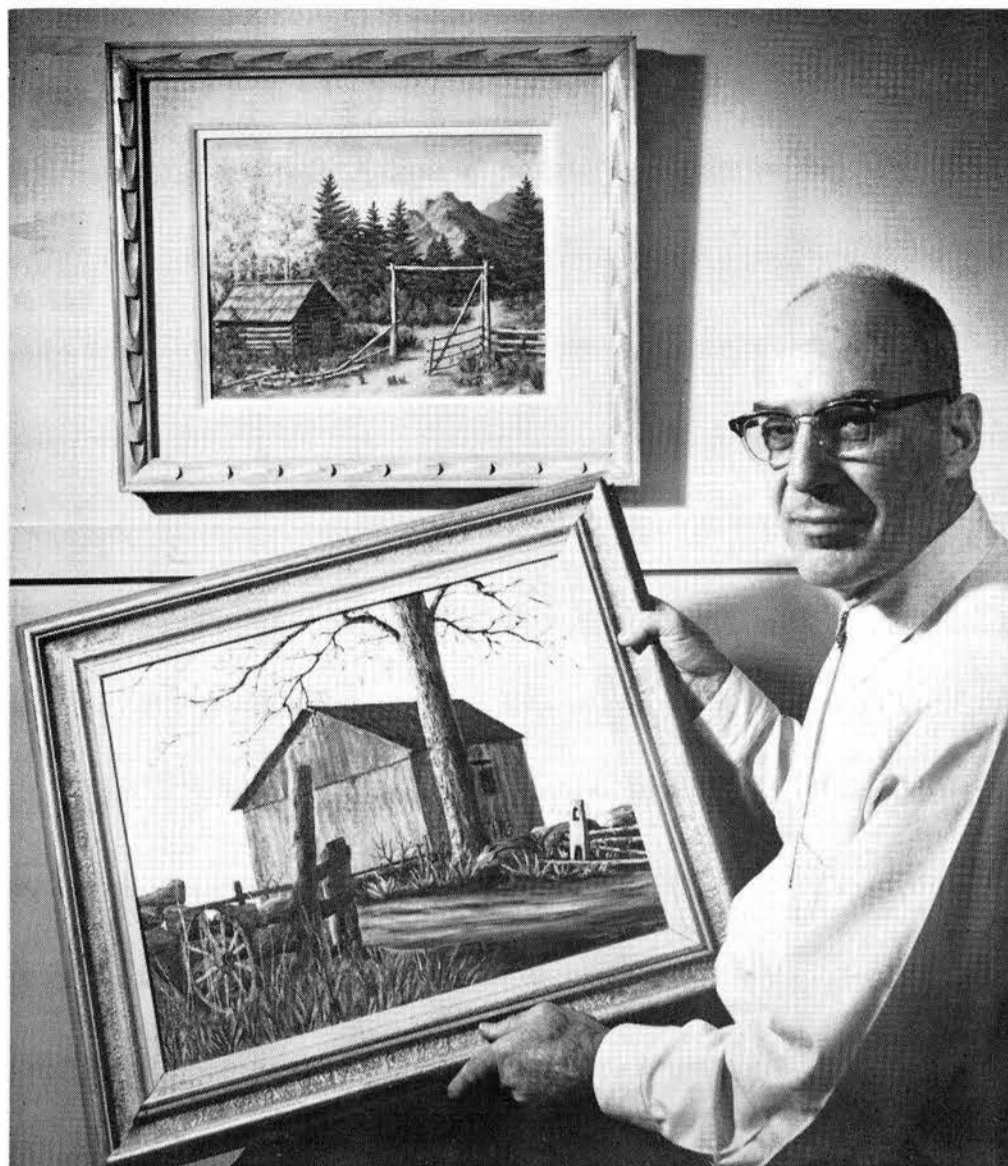
With the benefit of Jack's insight into the many complex problems and risks involved, there are few, if any, takers. There are, however, a number of citizens more aware and more responsive to the space program.

Winners Named for Bridge Charity Event

Winners of the Coronado Club Duplicate Bridge charity game, held Apr. 5, were Jerry Shinkle and William Fulcher, East and West. North and South winners were Mrs. Randy Parsons and John Nakayama.

This month's Master Point game will be Monday. Plans for May include a buffet supper, with bridge following, on May 17, and the monthly Master Point game on May 24.

The Coronado Club Duplicate Bridge group meets every Monday at 7 p.m., at the Coronado Club and is open to all club members.



ELMO HIRNI displays two of his latest oil paintings. He recently completed the Famous Artists Course in fine arts, a project which took four years of spare-time work.

Oil Landscapes Attest Skill of Elmo Hirni in New Avocation

After four years of evening and weekend work, Elmo Hirni of Crystal Lattice Defects Division has completed the Famous Artists Course in fine arts. Two handsome oil paintings attest to his skill. These paintings, completed toward the end of the course, represent the best of his work so far.

"This is only the beginning," Elmo says. "The course has given me the basic skills to paint, now I want to produce. Perhaps later I'll take an advanced course."

Elmo is most interested in painting landscapes. He likes the outdoors and, during the summer, he takes camping trips into the wilderness areas of New Mexico. He plans to make his paints and canvas a standard part of his camping gear.

Elmo also attributes his mastery of the oil media to George Marks of Technical

Art Division. George is his next door neighbor.

"I couldn't resist asking him for help on some of the school assignments," Elmo says. "Correspondence schools are certainly worthwhile, but so is firsthand help."

PAGE EIGHT

LAB NEWS

APRIL 23, 1965

Sandia's Safety Scoreboard

Sandia Laboratory:

67 DAYS
2,463,000 MAN HOURS
WITHOUT A
DISABLING INJURY

Livermore Laboratory:

244 DAYS
1,250,000 MAN HOURS
WITHOUT A
DISABLING INJURY

Sandia Cabinetmaker Rosendo Lesperance Retires After 15 Years



Rosendo Lesperance, a cabinetmaker at Sandia for more than 15 years, will retire Aug. 30. He is in Maintenance Service Division.

Part of his leisure time will be spent in Albuquerque, where he lives with his wife and his nine-year-old granddaughter at 3317 Gabaldon Pl. NW. Mr. Lesperance has a cabinet shop in his home, and now plans to work on several pieces of furniture that he's never had the time to make.

Other weeks, the Lesperances will be at Mineral Hill, near Las Vegas, on a small ranch that has been in the family for more than 100 years.

The Lesperances have raised four sons, two daughters, and two nieces. All live in Albuquerque and two of the sons (Frank and Larry) work in Sandia's Plant Modification Division.

