

AEC Chairman Commends Sandia

Following is the text of a letter sent to Sandia Corporation President S. P. Schwartz by U. S. Atomic Energy Commission Chairman Glenn T. Seaborg.

I wish to express my sincere appreciation to you, the Sandia Corporation and especially to the group under the leadership of Mr. Hubert H. Patterson and Mr. William C. Myre for the significant contribution to the success of the Vela Satellite Detection Program. I have been greatly impressed with the achievements of this program as demonstrated by the continued successful operation of the first two pairs of instrumented spacecraft launched in October 1963 and July 1964, respectively, and the third launch on July 20, 1965 of another pair of satisfactorily performing spacecraft. The excellent performance and high reliability of the space-based data processing electronics, designed and fabricated by Sandia, are remarkable accomplishments and are clear evidence of the great technical competence and professionalism of your laboratory. Congratulations for a difficult job well done.

Note: Hubert H. Patterson is manager of Information Systems Department 9230, and William C. Myre is supervisor of Satellite Systems Division 9231.

Sandia Test Group Will Measure Effects of Idaho Cratering Study

Sandia Laboratory personnel will participate in the detonation of a 100-ton chemical (non-nuclear) high explosive experiment about Sept. 30 in Idaho. Called the Pre-Schooner II Experiment, the project will be conducted by the Nuclear Cratering Group of the Corps of Engineers with the cooperation of the U. S. Atomic Energy Commission.

The experiment is designed to establish cratering and engineering properties of the volcanic rock in the Bruneau River area some 50 miles south of Mountain Home, Idaho. The event is a research and exploratory experiment to develop data for a possible nuclear cratering experiment in the same area. The nuclear experiment has not been authorized.

Sandia will install and operate balloon-mounted blast measurement instruments and six microbarograph stations. Test director for the project is B. C. Benjamin, supervisor of Blast and Earth Motion Division 7242. J. W. Reed and L. J. Vortman of Underground Physics Division 5232 are scientific advisors for the experiment.

Sandia will "fly" a 140-foot long, 30-foot diameter balloon at 4000 feet above the blast site. The balloon will support two strings of pressure measuring instrumentation. Sixteen pressure stations will be mounted on the strings at various altitudes up to 1200 feet. L. E. Larson (7242) is project engineer for this phase of the operation.

K. E. Kimball (7242) is project engineer for the nine blast pressure measuring

ground stations to be installed at various distances up to 4000 feet from ground zero.

A. B. Church (7262) is project engineer for the six mobile truck-mounted microbarograph stations. These instruments measure minute changes in the atmospheric pressure and will be located about 110 to 140 miles from ground zero. Sites chosen are as follows:

To the northwest, 20 miles southwest of Arco, Idaho; to the east, 25 miles west of American Falls, Idaho; to the southeast, near Lucin, Utah; to the southwest, near Paradise Hill, Nev., at the U. S. 95-Nevada 88 intersection; to the west, near Rome, Ore.; and to the northwest, near Payette-Ontario, Idaho.

Three high-explosive detonations of 1.2 tons each will be fired on 15-foot high wooden platforms near the test site to calibrate the microbarographs. The first will be fired just prior to the Pre-Schooner II detonation, and the second and third immediately afterward.

The U. S. Coast and Geodetic Survey will set up seismic stations to measure ground effects of the detonation. Eight stations—six in a straight line approximately northeast to Twin Falls from the Pre-Schooner site, and two on a straight line to Bruneau to the northwest—will be installed.

The seismographs will determine path and speed of the ground motion from the chemical explosive cratering experiment.



VISITING SANDIA LABORATORY last week was Charles L. Marshall (second from left), Director, Division of Classification, AEC, Washington, D.C. He toured Laboratory technical areas with R. W. Henderson (left), Sandia Vice President, and L. A. Hopkins (right), Director of Electro-mechanical Development 1300. They are discussing 7090 computer operations with G. O. Horne, Jr. (second from right), supervisor of Product Record Division 9414. Mr. Henderson is chairman of the Sandia Classification Board and Mr. Hopkins is the Sandia representative to the Senior Reviewer Subcommittee on Nuclear Weapons Classification.

SANDIA CORPORATION

LAB NEWS

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



VOL. 17, NO. 18, AUGUST 27, 1965



PRINTED CIRCUITS produced by new computer technique are displayed by D. D. Isett (7245) and C. J. Fisk (9424), who helped develop the new process. One of Sandia's IBM 7090 computers is in the background.

New Computer Technique Produces Printed Circuit Layouts

A new computer technique which frees draftsmen for the first time from the tedious job of drawing printed circuits has been developed for Test Support Department 7240 by the Thomas Bede Foundation, Los Altos, Calif.

The new technique, which shortens the time normally needed to produce a printed circuit board negative, was conceived by Dr. Iben Browning, a former Sandia employee who is now director of the Thomas Bede Foundation.

Helping with the development were D. D. Isett (7245) and C. J. Fisk (9424). Organization 7200 will soon begin using the technique, which is called Automated Circuit Card Etching Layout (ACCEL).

Printed circuits are the modern way of connecting electronic components. Instead of using dozens of wires soldered to components, printed circuits use thin strips of metal formed by a photo etching process.

A thin, copper-coated board is exposed to a negative made from a circuit layout carefully drawn by a draftsman. In the etching process the unexposed portion of the copper surface is eaten away, leaving the circuit.

This process eliminates human error in wiring and is much faster than the manual wiring process because, once the negative has been produced, hundreds of circuits can be made from it.

However, the preparation of circuit layouts is a long and tedious chore. With ACCEL, these layouts can be prepared in one or two days by a computer.

This is how ACCEL works. The engineer draws a rough circuit schematic, which contains all the parts needed in the finished circuit board. This schematic is given to a clerk, who draws a grid over the circuit with horizontal and vertical coordinates.

Each circuit element—transistor, T-connector, wire, etc.—goes into a separate square of the grid. Each part and its position is identified by predefined code number and fed to the computer.

This information, combined with (1) tolerances and values placed on each component by the engineer, (2) a list of standard components in the computer's memory, and (3) certain instructions or "policies" in the computer program, enables the computer to produce the following five items previously produced only by a draftsman: official schematic drawing, official parts list, component layout, circuitry layout, and table of hole boring specifications.

Using this computer-supplied information, technicians can proceed with the normal photographing and etching of the blank circuit card, and the placing of the components on the card.

The new approach saves paperwork and time—and allows draftsmen to do creative work of which computers are incapable.

Four new concepts or policies, all closely interrelated, are incorporated into the placement program and permit the computer to produce the needed information. These policies instruct the computer to consider that:

1. Components which should be electrically connected are to attract each other;

2. Components are to repel each other to the extent that they do not overlap;

3. Components are repelled by the edge of the circuit board; and

4. Components may pass through each other to avoid being trapped in a less desirable position on the board.

These policies, combined with the grid arrangement which permits an unskilled person to reduce the schematic to a form which the computer can handle, enable the computer to organize the components so the circuit can be readily made.

Conceptually, this is what happens in the computer:

It traces out interconnections, identifies components, learns from its library the sizes and specifications of these components, then locates the components randomly on the circuit board and arranges them according to policy. This arrangement of components is then printed out photographically.

Since the computer now knows the position of each component, it is able to trace out conductor paths between those components which should be connected, being certain to prevent contact between those components which should not be in contact. This is the circuit layout, which is also printed out photographically.

Using the present ACCEL program, the computer can handle up to 1000 components, each having a maximum of four leads or terminals. The process is economical and is expected to have a significant impact on the preparation of printed circuit negatives.

ACCEL is not limited to designing printed circuit layouts since it appears that it can be modified for preparation of layouts for thin film and integrated circuits, and ultimately for three-dimensional systems.

(Editorial Comment)

Defensive Driving

Monday night at 8 p.m. (10 p.m. in Livermore), CBS-TV will again present "The National Drivers' Test."

This hour-long documentary and safe driving test was first presented last May. Although it had no marked effect on the number of traffic accidents during the Memorial Day weekend, the program launched a nationwide campaign on the practice of defensive driving.

This practice seems to make sense. We all claim to be safe and careful drivers, and we usually say that an accident was the fault of "the other guy." Actually, in too many cases we are the victims of the other driver.

It's simply not enough to drive carefully. When we drive, we must be alert and watch for potential accidents at all times. The ones we don't see could be fatal.

But what do we watch for? How do we develop the ability to spot potential accidents and avoid them?

The National Drivers' Test is much more than just a test. It is a brief training course in what to watch for and how to spot that "other guy" who may kill you with his car.

On the last page of this issue, we have printed the test form for Monday night's program. No matter how good a driver you are, it's unlikely that you'll have a perfect score. But you'll probably learn from your mistakes, and you'll certainly increase your awareness of driving hazards.



VISIT SANDIA—Twenty-two youngsters, members of the American Jewish Society for Service, visited Sandia's Sphere of Science last week to learn of scientific mission of the Company and its economic impact in the community. The group had spent the summer working on a volunteer project to build an addition to the Barelak Community Center. Shown with Sandy Borgrink (left) of Community Relations Division 3433 are Amy Lewinger (New Rochelle, N.Y.), Elly Saltzman (Long Beach, N.Y.), Bill Slifkin (South Orange, N.J.)

New Skills Developed at Rehab Center

Sandia Retiree Teaches Retarded Adults

Elmo C. Hubbard, who retired from Sandia Laboratory five years ago, is currently an instructor in an experimental program for mentally retarded adults.

Conducted by the New Mexico Rehabilitation Center, the aim of the program is to provide vocational training for these people. Such training will eventually lead to marketable manual skills, a job, and a self-supporting role in the community.

Elmo, who was an instrument and model maker in Sandia's Development Shops when he retired, finds his present job more demanding in some ways than his Sandia work.

"I am still working with machines," Elmo says, "but now I'm working more with

people. I want to teach them to use their hands, to develop the kind of concentration required to produce a piece of work, and, in some cases, to develop an ability to communicate beyond their present levels. Although the program has had some success in accomplishing these purposes, for me the task is difficult. It requires utmost patience and a constant calmness."

Elmo has a class of six regular students plus several others whose attendance varies. All have a below-average IQ.

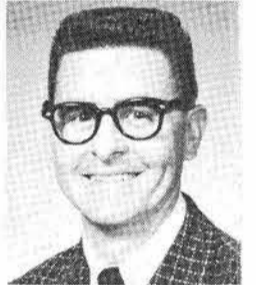
"This is less of a problem than you might think," Elmo says. "Like young children, they have a tremendous desire and drive to learn. Their joy at mastering a job or a skill is a wonderful thing to see."



ELMO HUBBARD (right), retired Sandia employee, helps a student in a class for mentally retarded adults. Elmo is working with the New Mexico Rehabilitation Center as an instructor for the experimental program.

Candido Trujillo Leaves Sandia to Take Government Post

A scant 10 years ago, Candido Trujillo, Jr., came to work at Sandia as a messenger. With a combination of ability and hard work he became an order analyst, a staff assistant, and finally a staff member. Since 1960 he has been assigned to the Computing Organization.



While "Candy" worked he also studied under Sandia's Educational Aids Program. He received his Bachelor's degree in business administration from St. Joseph's College and has completed all the course work for a Master's degree in industrial management from the University of New Mexico.

He left Sandia earlier this month to take a job in Washington, D.C., with the Office of Management Planning of the Agency for International Development, part of the U.S. State Department. He will work on systems evaluation in management problems for AID, and coordinate computer activities. AID gives administrative, leadership, and in some cases financial assistance to underdeveloped countries mainly in Asia, Africa, and South America.

Once settled in Washington, Candy plans to attend Georgetown Law School.

Elmo's classes meet in space provided by the Albuquerque Association for Retarded Children. The staff of this organization cooperates with the Rehab Center in the project.

Since retirement in June 1960, Elmo has not had to work. He has income from his Sandia Retirement Plan, Social Security, and from three rental units that he owns. Nevertheless, since retirement, he has held a couple of jobs in local machine shops.

"You have to feel useful," Elmo says. "I worked all my life and it's hard to break the habit. Nowadays, the money is not important; it's the work that counts. I'm happy to have discovered how to teach. This seems a most meaningful kind of work."

Elmo is so enthusiastic about teaching that he plans to expand his activities next month. He will teach an afternoon class in shop mechanics at Lourdes High School when the new semester starts.

"Retirement is not a unique time of life," Elmo says. "I think it's easier, more comfortable, but the important thing is to find an activity that makes living worthwhile. I've found it. My wife is happier, too, when I'm not an old grouch around the house."

AEC-SAO Names New Chief, QA Branch

The Atomic Energy Commission's Sandia Area Office has announced the appointment of David L. Slusher as Chief, Quality Assurance Branch. He replaces T. B. Miller who recently was appointed Assistant Area Manager for Operations in the Kansas City, Mo., Area Office.



Mr. Slusher received a BS degree from the University of Nebraska, and served in the U.S. Navy from 1951-56, assigned part of the time to Field Headquarters/AFSWP as a nuclear energy specialist.

After leaving the Navy, he joined the AEC as an ordnance and nuclear engineer in AEC/ALO. He has been a program engineer in the Programming and Control Division, Office of Weapons, since 1959.

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AUGUST 27, 1965

SANDIA CORPORATION LAB NEWS



ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

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Glass Doors — A Modern Safety Hazard

Should a black-eyed friend explain he "walked into a door," don't laugh. With the extensive use of glass in modern buildings and homes, this classic punch



GLASS DOORS cause accidents. Hazards are less when the glass is marked by decals or by an attractive design using colored tape. Maxine Hempen (4332) calls attention to the tape.

Evening College Classes Again Offered in Livermore

Free courses will be offered in Livermore again this fall by Chabot College. Late afternoon and evening classes will be held at Granada High School and at Lawrence Radiation Laboratory.

Registration for continuing students will be held on Sept. 7 from 6:30 to 9:30 p.m. in the Granada High multi-purpose room. New students may register in the same location on Sept. 8 from 6:30 to 9:30 p.m. Classes start Sept. 13. A schedule of the courses is posted on Livermore bulletin boards.

High school graduates or non-graduates, who are 18 years of age or over and can profit from instruction, are eligible to enroll. There is no tuition charge for residents of California, but students must purchase their own books and supplies.

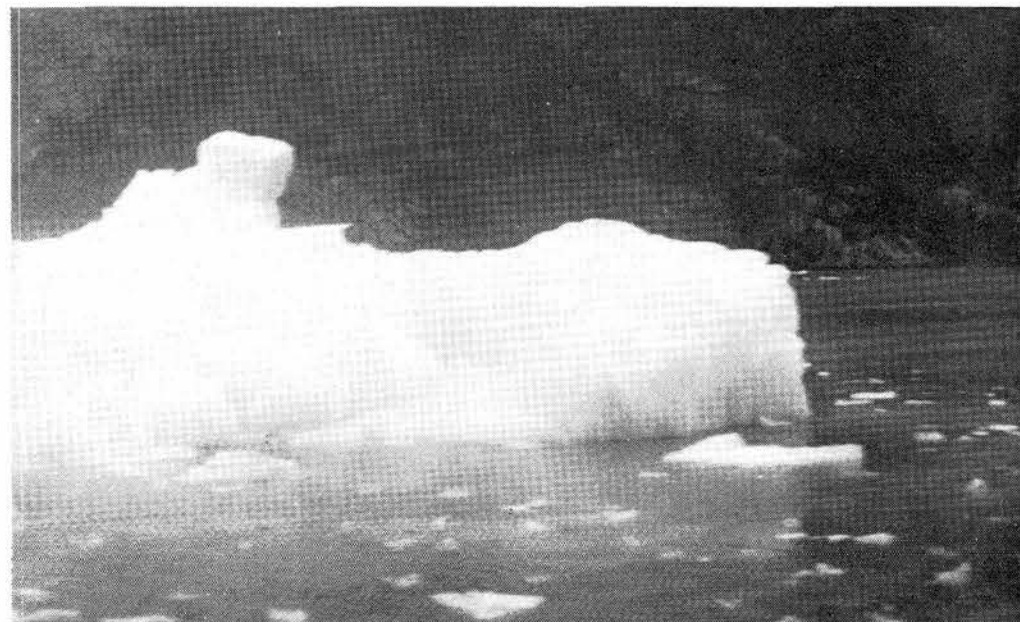
Take Note . . .

A new season of league play starts in September for the Bay Area Industrial Chess League. To establish player ratings, a tournament is being held prior to the first match of the season. For additional information, employees interested in playing should contact Charles Frizzell, LRL, ext. 7291.

Welcome Newcomers

July 30 - Aug. 13

California	
*Mike E. Bergen, Kensington	8162
Thomas W. Cline, Orinda	8252
*Lawrence M. Dorety, Livermore	8144
Elizabeth B. Freynik, Livermore	8232
*Louis M. Gold, San Mateo	8162
Craig E. Johnston, Lafayette	8252
*Dennis M. Myers, Berkeley	8125
Janet K. Vahlensieck, Danville	8211
*Denotes rehire	



ICEBERGS ARE A COMMON SIGHT in the northern waters of the Inside Passage which extends from Haines, Alaska, to Vancouver, British Columbia. Emily Isaacs (8212) traveled down the waterway during a recent tour of Alaska.

line is no longer funny. Many doors are made entirely of glass, and walking into one can cause serious injury.

Accidents involving encounters with glass, both in the home and on the job, have become an important safety problem in California. Because of the temperate climate, glass is often used to enhance the indoor-outdoor concept of living. Glass sliding doors that lead to patios and gardens are very popular as are glass shower and tub enclosures. In industry and business also, glass is becoming a common construction material for beautifying building lobbies and hallways.

Many people are under the impression that glass doors contain shatterproof glass. This is not always true. Only a small percentage of sliding doors in homes are made with safety glass.

A national study was conducted recently to determine the extent of glass accident injuries. Participating in the study were California Health Departments in Contra Costa County, Orange County, and the city of San Jose. Findings revealed that in a three-month period, 750 glass breakages and 225 glass injuries were reported. Sliding glass doors and panels were responsible for 50 per cent of these injuries, windows in hinged doors for another 38 per cent, and shower stalls or storm doors for the remaining 12 per cent.

The Division of Industrial Safety of the California Department of Industrial Relations has been collecting information about disabling job injuries resulting from glass wreckage. Over a two-year period, 114 such injuries were reported involving glass doors. In 53 of these cases the employee either walked or ran into a glass door or adjacent panel.

To prevent serious injuries from glass breakage, proper precautions can be taken. The East Bay Chapter of the National Safety Council makes these recommendations:

Watch where you walk—do not run.
Use decals to attract attention to glass doors and panels.

Install a bathroom safety bar that will call attention to a glass door and prevent contact with it.

When installing or replacing glass in the home, order safety glass.

Side Trip to Arctic Circle Area Highlights Sandian's Tour of Alaska

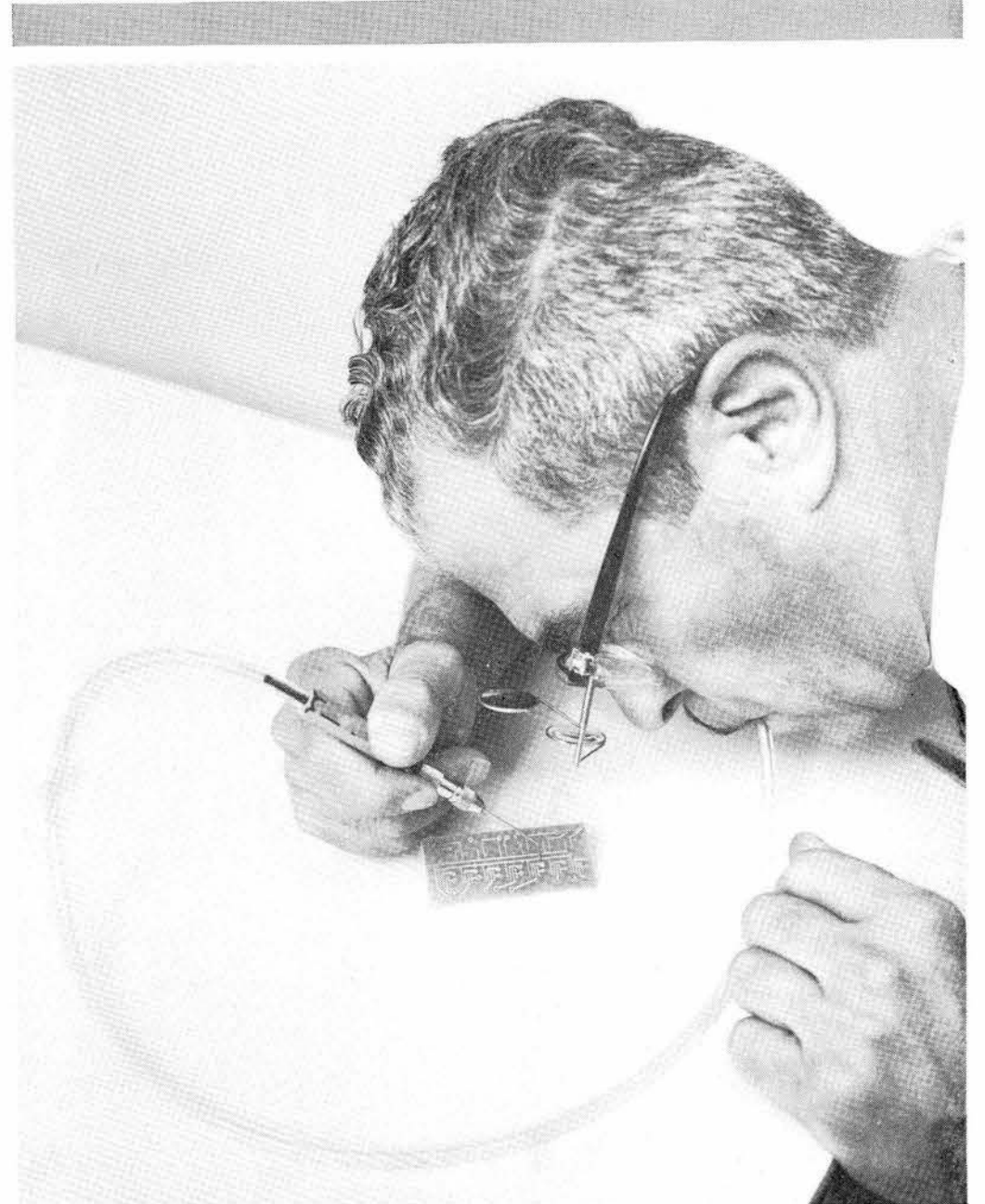
Alaska is not the frozen wasteland many people imagine according to Emily Isaacs (8212), who recently completed a 13-day tour of the 49th State.

"Besides the rugged snow-covered mountains, Eskimos, and dog sleds so often characterized in adventure stories about the Alaskan frontier, the state has lush green meadows and forests, beautiful lakes and rivers, and fertile valleys."

Emily's tour began in Fairbanks, the largest interior city of Alaska. "I was surprised when I stepped off the plane in Fairbanks and discovered that the temperature was a mild 64° at 11 p.m. However, local residents explained that temperatures in most parts of Alaska are comfortable and only occasionally drop to extremes like -65°.

"The area in and around Fairbanks is

LIVERMORE NEWS



A "STICKY" MICRO-CIRCUIT assembly problem was solved by M. G. Gregory (8153) by using this pipette to place tiny parts on the printed circuit board.

Pipette Used To Handle Small Parts

It's rather difficult to pick up an item that has a diameter of 1/32 inch and a thickness of .001 inch. It's even harder to then place this tiny part where it belongs on a micro-circuit board assembly that's coated with a sticky substance. And it's really a feat to perform these tasks without damaging the item or disturbing the sticky coating.

Michael G. Gregory of Advanced Development Division 8153, solved the handling problem using the principle of the pipette, an instrument you may recall from days spent in high school biology or chemistry labs.

Mr. Gregory's pipette is a holding device with an adjustable chuck, a thin stainless steel tube with an inside diameter of .0020 inch, and a plastic tube.

Using the pipette like a soda fountain straw, the operator draws air through the plastic tube creating a vacuum at the tip of the steel tube. The vacuum will lift and hold the tiny part until it is in the proper position. Once in position the operator stops drawing and gently blows the part into place without disturbing the coated surface of the assembly.

"I tried tweezers and other holding devices," said Mike, "but they either damaged the tiny part or disturbed the sticky coating. The pipette solved our problem."

Congratulations

Mr. and Mrs. Otto Schreiber (8116), a daughter, Karen Deanne, July 31.

Mr. and Mrs. Glen Boyd (8252), a daughter, Natalie Suzanne, July 29.

particularly exciting because of the frontier atmosphere," Emily said. "Most of the people seemed to be involved in trapping, mining, and operating trading posts or lodges. Quite a few of the houses are log cabins, and many streets are not paved."

From Fairbanks, Emily was flown to Fort Yukon by an ex-bush pilot who now works for the F.A.A. Fort Yukon is a frontier outpost located eight miles north of the Arctic Circle. "This unexpected side trip was an exciting addition to my tour," she exclaimed. "During our stay in Fort Yukon, we watched a sunset and three hours later watched the sun rise again. You can't experience that in too many places in the world."

Emily returned to Fairbanks to join her tour group which went by train to Anchorage, a port city located on Cook's Inlet. "Anchorage is more of a metropolitan city than Fairbanks and the women are fashionably dressed," said Emily. She also noted that Anchorage seems to have recovered from the recent devastating earthquake.

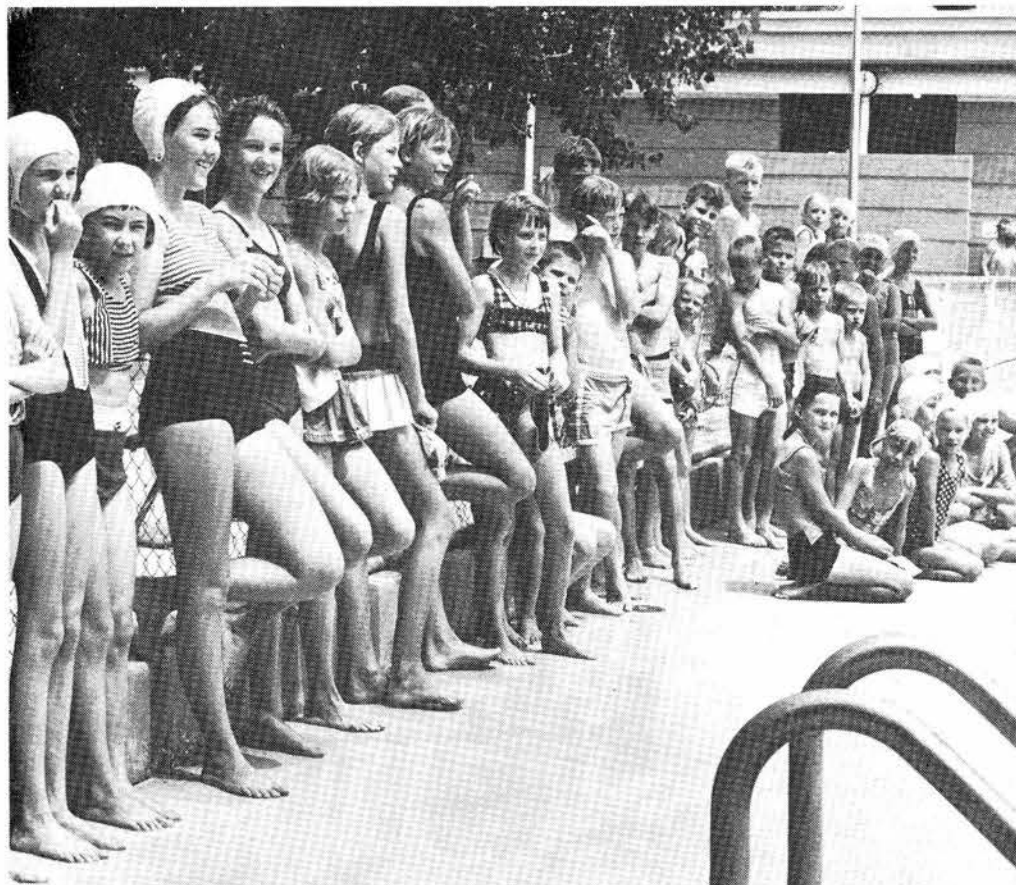
Valdez (pronounced Valdees), a small community located about 200 miles south of Anchorage and on the ocean front, was almost completely destroyed by the quake and tidal wave that followed. The buildings that survived are slowly sinking and leaning because the earth beneath them is still settling. "We slept in a hotel in Valdez that was leaning so badly I thought I was going to roll out of bed at night," she said. "One of the Valdez city fathers has donated a large parcel of land about four miles west of the original site of the town. The plan is to move the entire town to the new site in the very near future."

The last part of the tour was spent aboard the SS YUKON STAR, cruising south through the famous Inside Passage to Vancouver, British Columbia—"... past giant glaciers and through iceberg-filled waters for a fitting climax to an exciting trip," Emily related.

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BIG SPLASH AHEAD when this gang of Coronado Club swimmers hits the water next week-end for the final hours of pool enjoyment. A Water Carnival on Sept. 4 will highlight the successful swim season.

Coronado Club Swim Season Ends With Big Water Carnival

The Coronado Club's big water carnival—marking the end of the swimming season—will be held Saturday, Sept. 4, with races and fun for all.

Admission will be free for all Coronado Club members, and the pools will be available for recreational swimming from 10 a.m. to 12:30 and again from 4:30 to 6 p.m. Water carnival events will start at 1 p.m.

Carnival Director Charlie O'Keefe (3126) has arranged a schedule of races that will appeal to all age groups. There will be competitive events for children six and under, as well as other age groups through the 15-17 year olds. The watermelon push and penny dive events are expected to demand real skill.

For adults there will be comedy relays and other special races. Medals and ribbons will be awarded the winners of races.

Diving and swimming exhibitions by Club members, and performance by a diving troupe of clowns will round out the swimming part of the program.

The keenest competition will probably be for the title of "Miss Coronado Club of 1965." It will be strictly a bathing suit contest—for girls six years old or younger.

Free soft drinks will be available throughout the day.

"The pool will officially close Labor Day,



WATER CARNIVAL diving demonstration by 11-year-old Janet Ely and others will show proficiency acquired by instruction and long hours of practice at the Coronado Club pool during the current season.

Sept. 6," Mr. O'Keefe said. "It has been a very successful season, with a high participation in the swimming program by Club members and their families."

Other Club Activities

Social Hours

Devotees of Mexican food and music will be particularly interested in tonight's Social Hour—both will be offered. Sol Chavez' Combo will provide the music and the Club's Mexican buffet will be available for \$1.25 for adults, \$1 for children.

On Friday, Sept. 3, the Moya Quartet will play for dancing and the chuckwagon roast beef and shrimp buffet will be served for \$1.75 adults, \$1.50 children.

Backyard Barbecue

A barbecue in someone else's backyard always seems more fun. This time it will be at the Coronado Club's patio area. The barbecue buffet (chicken, spare ribs, and beef tenderloin) will be served tomorrow evening from 7-9, then there will be dancing to the music of The Muscats. Tickets are \$3 for members, \$3.50 for guests and reservations at the Club office are requested.

Adult Dance Lessons

Adult instruction in both American and Latin dance steps will start Sept. 13. Beginners classes will start at 7 p.m. each Monday and advanced classes will follow at 8:30 p.m. Instruction will be by Gale and Jennifer Ward, and Charley and Holly Balistrere. The price for the 10-week course for Club members is \$15 per couple.

Bridge Club

Thirteen pairs competed in the Coronado Bridge Club's Open Pairs Championship on Aug. 9. When all the hands were played, John Nakayama (1513) and R. E. West (1422) were in first place, followed by Doug Kerr (5256) and Frank Gerstle (7311).

French Cuisine, Paris Fashions All on Sept. 11

An Evening in Paris — without even leaving Albuquerque — will be offered to Coronado Club members Saturday, Sept. 11.

Paris is known for its wonderful food, so a special menu for the dinner, served from 6-8 p.m., will feature pate de foie gras, filet mignon, French fried potatoes, French cut string beans, French bread, and, of course, fancy pastry for dessert.

Paris is also famous for its fashions, so a leading Albuquerque fashion shop will preview the new French-inspired fall styles from 8-9 p.m.

To complete the evening, Jess Sawaya's Orchestra will play for dancing from 9-1. Tickets for this gala event are \$3 for Club members, \$3.50 for guests. Reservations and tickets must be picked up by Wednesday, Sept. 8.

Excess Gov't Material Procurement Program Saves Sandia \$3.5 Million

Saving money—big money—for Sandia Corporation is one of the jobs of Procurement and Local Services Section 2524-1 under J. T. Gammon. In 12 months of operation, the surplus procurement program conducted by the Section has obtained equipment and material worth about \$3.5 million.

The program works this way:

As a prime contractor to the Atomic Energy Commission, Sandia qualifies for excess government material—more than 12 billion dollars worth of every conceivable kind of item.

This surplus government material is administered primarily by General Services Administration, but other government agencies — military, Department of Defense, AEC, etc.—also make surplus equipment available. Listings of these available items are circulated to all government agencies.

If an agency such as Sandia needs a particular item, it contacts the holder of the equipment, arranges for transfer of the item, and pays shipment costs.

Transportation and handling costs are the only real money paid by the requesting agency for the equipment.

"When Sandia organizations project their needs for equipment several months in advance and let us know, we can often locate the equipment in the excess material listings and effect delivery to meet their time scales. Lead time for our search is of the utmost importance," Mr. Gammon says.

A successful case to illustrate the point involves 300,000 pounds of TNT needed by Nuclear Test Department 7250 for various operations in Coyote Test Field, Tonopah Test Range, and the Nevada Test Site. A memo informed Section 2524-1 of these needs well in advance of the desired delivery date.

With this information, A. C. Finlayson assisted by Patte MacPherson (both of 2524-1), searched for and found a supply of TNT offered as surplus by Pueblo (Colo.) Army Depot. The material was in the form of eight-pound blocks. Mr. Finlayson double checked the specifications with the requester. The TNT blocks were acceptable and shipment was arranged. The transaction saved Sandia \$60,000.

In other similar cases, Mr. Finlayson has arranged for transfer of scientific instruments, communications gear, rocket motors, storage tanks, gas cylinders, shipping drums, radiation measuring equipment, trailers, heavy equipment (including a \$30,000 crane and \$60,000 worth of mo-

bile aerial platforms), general stores items, and many, many other pieces of equipment. During the past year, some 241 orders were filled with a total original value of \$3.5 million.

In addition to filling specific orders, Mr. Finlayson and Mrs. MacPherson screen all incoming lists (about 200 per month) for material which might interest Sandia organizations.

Excess material lists are also searched as a matter of procurement procedure for all orders for new material originated by the Programming Organization's order analysts, who provide administrative support to Sandia technical organizations.

The procedure is detailed in SCI 6501—Acquisition of Excess and Surplus Material for Sandia Corporation Use. The SCI directs Sandia organizations to notify Section 2524-1 of the type and amount of items needed. Since Section 2524-1 will be continuously contacting and inspecting other area installations for appropriate material which has not yet appeared on an excess or surplus report, the needed material might be available for Sandia use prior to official declaration as excess. In addition, Section 2524-1 can request the AEC, GSA, or DOD to make a special survey for the needed material which may be available but not reported.

Mr. Finlayson's duties also include periodic visits to other agencies to determine the condition of available material. By negotiating with the agency, he can arrange for transfer of material not previously reported. He finds that, on the whole, the condition of government excess material is accurately described in the listings. He reports that much new and excellent equipment is available.

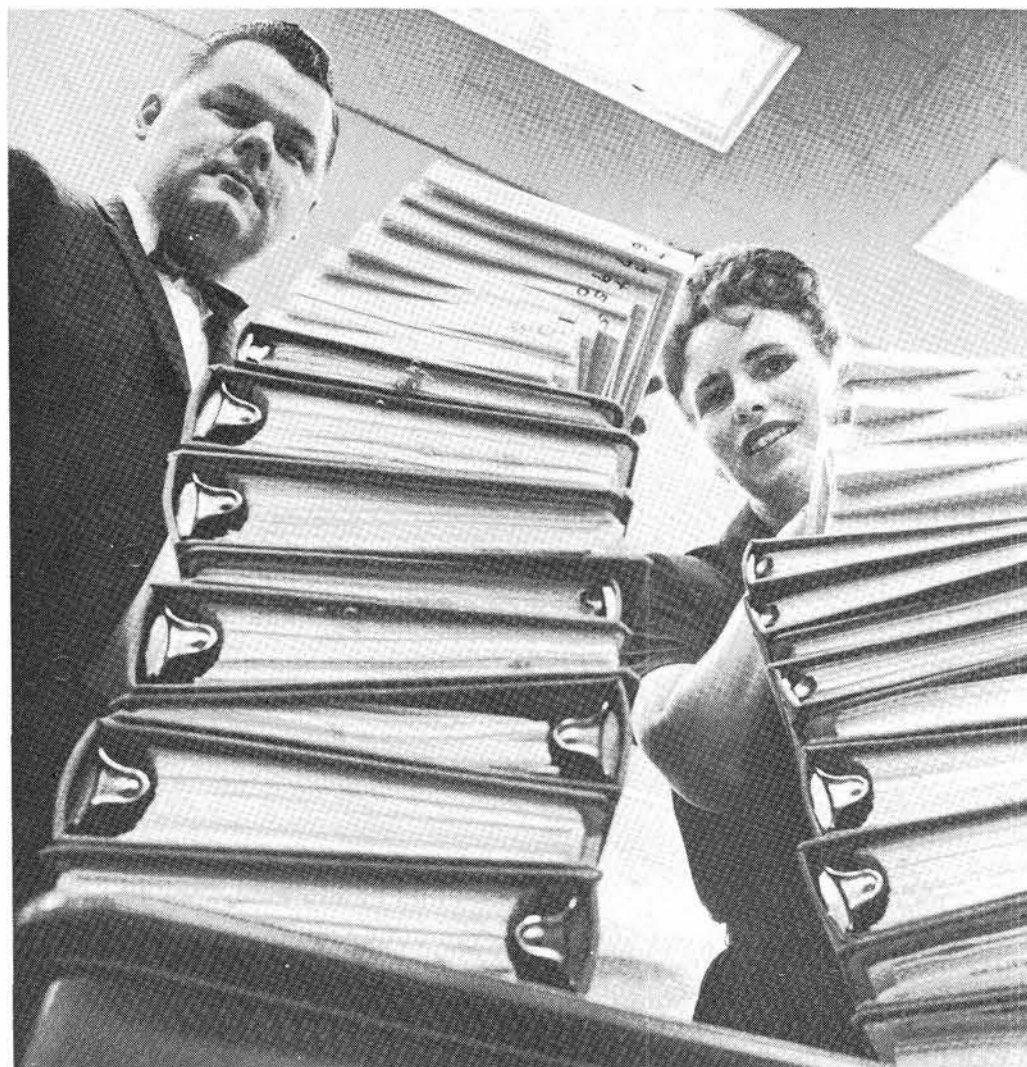
The SCI further points out that, once located, the needed material may be inspected before transfer is arranged.

"This is a tremendously beneficial system," Mr. Gammon says. "Not only does Sandia benefit by using its funds more efficiently, but a double savings is passed on to the taxpayers."

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LISTINGS of excess government material seem endless, but Art Finlayson, left, and Patte MacPherson (both 2524-1) believe that in these files are many, many items Sandia Corporation organizations can use. By procuring excess material instead of buying new items, Sandia has saved \$3.5 million during the past 12 months.

Observations on Soviet Science

By Bell Laboratories President

Bell Laboratories President James B. Fisk spent two weeks as a member of a six-man delegation touring scientific and industrial institutes in the Soviet Union. The delegation went to study Russian methods of planning and coordinating scientific research. Specifically, the Americans were to observe, discuss, and appraise the developmental activities of the Russians as a prelude to possible future technological exchanges. Donald F. Hornig, President Johnson's special assistant for science and technology, headed the delegation.

In the following interview (condensed from Bell Laboratories REPORTER magazine), Dr. Fisk tells of some of his reactions to the management of science and technology in the Soviet Union.

Q Dr. Fisk, we have exchanged visits with the Russians on scientific matters before. Was this visit a part of a continuing series, or was it something special?

A. The visit was part of what is officially known as the "exchange program" which is negotiated between the Soviet Union and our State Department every couple of years. Although these official exchanges are called cultural exchanges, they cover everything from blast furnaces to ballet.

Q. Who initiated this visit?

A. It came of a direct invitation from the Deputy Prime Minister K. N. Rudnev who is chairman of the Soviet Union's State Committee for the Coordination of Scientific Research.

Q. What were their motives in issuing this invitation? Do you think they were looking for our opinions and our advice as well as to show you what they were doing and what their methods were?

A. Some of both, I expect. In addition, I felt that they would like to make a return visit and cover some of the same ground in this country. They are very much interested in trade, in American technology, and how our research and development process is carried out. And they are curious about what kinds of relationships we have among the various components that go into the introduction of new technology in society.

Q. Deputy Premier Rudnev seems to be involved with all of the organizations of research and development that have to do with the Russian technology. Just what are his responsibilities?

A. Well, first I should say that in a short visit, especially the first of its kind, it is very difficult to learn all of the things that you might like to know. So I can't say in detail the scope or exact character of all of Mr. Rudnev's responsibilities. But it is clear that he does exercise a substantial control both in program and in financing of the larger segments of Soviet industry. This would be pretty much all the way from the applied research activities up to the time in which the decision is made to manufacture some new product or go in for some new process. This seems to spread pretty much across the principal fields of technology that have to do with non-military aspects of the Soviet industry.

Q. Would you say an objective of the Rudnev committee would be to separate the research and development from manufacture, or rather to separate each discipline in its own line of development?

A. It's not entirely clear what the real objectives were when this organization was first set up. There are something over 3000 so-called research institutes in the Soviet Union covering a great variety of science and technology. The formal organization under which these institutes work with one another or with the factory organizations that may be ultimately manufacturing a product or collection of products, is pretty loose. I suspect that Rudnev's committee was set up to bring as much order out of this as a coordinating committee can do.

Q. Could you specify the types of institutes Rudnev coordinates?

A. There are, so far as I am aware, a large number of institutes which come directly under the Academy of Sciences. These are primarily focused on the more fundamental aspects of the sciences in Russia. There are also institutes which are under the jurisdiction of the so-called state committees, where Rudnev has some coordinating function. Then there seem to be some institutes which come under Rudnev's coordinating committee directly. There are institutes under the various "ministries"—for example, defense or communications. And there are those called "design institutes" which come under the jurisdiction of the individual factories in various parts of the countries.

Q. Are any of these organizations that you saw similar in their operation to the way industrial research operates in this country? For example, could you compare your role as president of Bell Labs to the role of anyone in those institutions?

A. No, not my own role. The closest parallel I can think of is one of the institutes under the Ministry of Communications which I visited in the outskirts of Moscow. This particular institute has an exploratory-development character—a kind of systems engineering role—with responsibility for long distance wire and cable communications. They carry out the same activities we would find in some of our transmissions organizations within Bell Laboratories, both in development and systems engineering. But this is a fairly large group corresponding to, perhaps, one of our divisions—activities that fall under an executive director.

Q. Is this concept of "systems engineering" widespread?

A. The only place we saw anything that looked like systems engineering was in this one communications organization. Otherwise, I saw nothing that would even remind me of the systems engineering concept that Bell Laboratories has evolved.

Q. How do you suppose the research people get their ideas into the hands of the manufacturing people?

A. About the closest we could come to an understanding here was that they apparently have factory people resident in their laboratories. Also, members of a particular research institute may visit a factory during the time when a new product is being put into manufacture.

Q. Of course in Russia there is no "market," as we know it, to control production and thus affect the direction that invention takes. From your visit, could you tell who decides what the economy wants or needs? What do they use in place of the feedback of a free market that we have here?

A. It was very difficult to find what the equivalent is. Generally speaking, the overall economic plans are established at a very high level within the government in Moscow.

Ideas may come from any source. But

before a decision is made—for example, before a particular type of computer will be developed—the whole matter will be reviewed by an ad hoc committee, probably headed by the Academy of Sciences in Moscow. Then, having decided there what course to take, the decision must be made as to who will take care of the development and where the ultimate design will be manufactured. So these decisions are very highly centralized. There is nothing there that we could discover that is the equivalent of say IBM or General Electric or RCA or Sperry-Rand competing in a free market, each with his own product, to see what is best and what will stand the test of actual usage.

Q. Some years ago, E. C. Liberman, a professor at Kharkov University, proposed use of the profit motive to improve economic techniques. This seems to be getting a great deal of attention recently in Russia. Did you have any discussion on this?

A. We didn't talk so much about the profit motive itself as we did about finding ways to provide the equivalent of competition, to provide the incentives that come from our free enterprise systems from profits. I think they have a very real concern about the lack of incentives and the lack of competition in their present set up.

Q. How about their communications industry? Did you get a chance to use their telephone system?

A. They appear to be quite competent in what they are doing in communications. We had relatively little occasion to use their telephone system but those with us who did were reasonably impressed, particularly by their long distance network.

Q. Are there many telephones in the Soviet Union?

A. A city like Moscow, with nearly seven million people, has perhaps 300,000 stations. There doesn't seem to be any great incentive to provide telephones in the sense that they are provided in this country.

Q. This is not an R&D problem either?

A. No. It's more a question of how to allocate resources in a country where there are so many needs. In areas where they have a very strong desire to do so they're able to focus very competent research and development.

Q. Are they shifting towards an automated society?

A. They would like to, but they would like to jump into it. For example, they are very much interested in the use of computers. But we noticed their interest seems to be very little in the area where we use computers extensively—in business to reduce paper work. What they would really like to do, to know how to do, is to leap-frog to the concept of an automated factory.

Q. Did you visit any computer institutes?

A. We visited a computer factory. The computers we saw are of small capacity, compared to our present generation of computers, and of relatively lower speed. They are a couple of computer generations behind the United States—something which concerns them. They would like very much to lay hands on a modern American computer, for example, the IBM 360 or even a 7094. This is where the interest in trade really becomes understandable.

Q. The Russians seem to want to buy or to copy a great deal—our techniques and some of our instruments like the computers that you mentioned. Why is this?

A. They do indeed want to buy or copy a great many things. They have what I would call an almost pathological interest in anything scientific or technical that comes from the United States. They feel they almost have to be doing something in any field that is active here. I suspect one of the reasons they're so interested in what we do is, as we mentioned before, they lack the test of a market place that tells them one choice is preferable to another.

Q. Dr. Fisk, you visited four cities—Moscow, Leningrad, Minsk, and Novosibirsk. Could you tell us a little bit about your impressions? Did you have any free time to look around?

A. We were pretty busy the whole time we were there but of course you make certain observations as you go around. Leningrad, for example, is basically a very beautiful city. I must qualify what I say here by observing that visiting the Soviet Union in the middle of November is probably not the best time of the year to come away with the most favorable impressions. But I'm afraid I found things in each one of these places rather drab and dreary, not much color of any kind. Modern Soviet architecture is the same from one end of Russia to the other as far as I can tell. The new apartment buildings, of which there are very many, and the new office buildings are stark and gave me a rather depressed feeling about the place.

Q. What about your accommodations and traveling?

A. Traveling is quite good. Trains run on time, they are comfortable, and air travel seems to be equivalent to our own. Our accommodations were adequate and so were the general services. But service, as you might suspect, isn't a word that is held in very high regard in Russia.

Q. But when you eat in a restaurant, someone has to serve?

A. Yes, but in a restaurant you have to allow for quite a long time to be served any kind of meal. As a matter of fact, the food in Russia on a whole is very good—if you are prepared to wait long enough to get it.

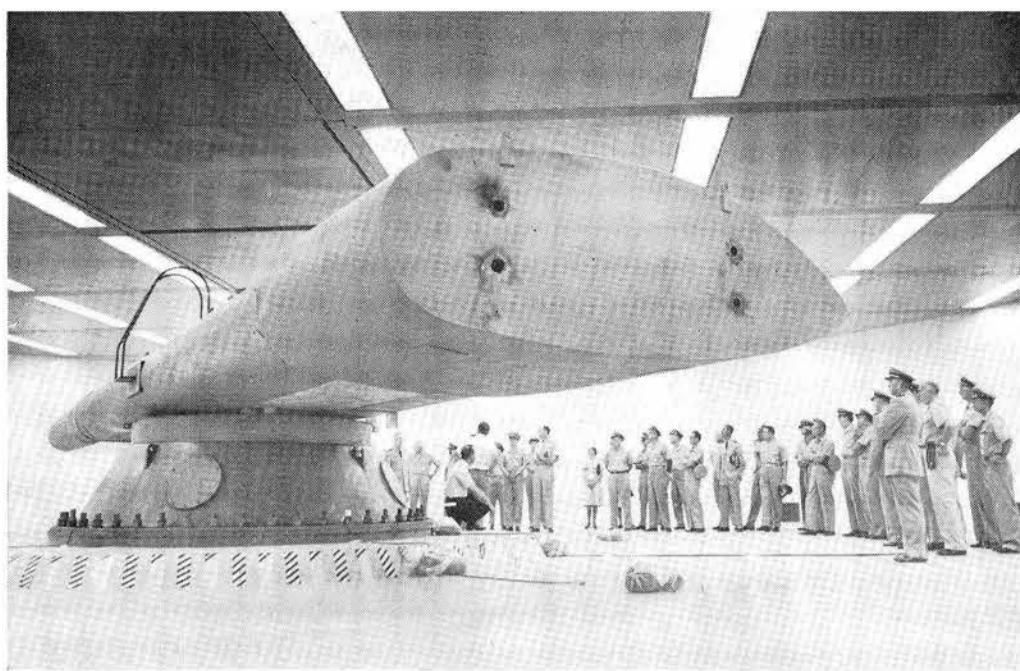
Q. As far as the technology is concerned is there any particular thing that impressed you about your trip? Do you think there is anything Western science and technology could learn from the Soviets in the way they operate?

A. The Russians have the same kinds of training, they have many good facilities, good apparatus, and there is a lot of good work going on. However, having said that, I must observe that in one way or another they have managed to create an organizational framework that defies description. It's hard for me to say how this works, even though we were exposed to some segments of it and were able to observe it and discuss it in great detail. So I would say that they have real managerial and organizational problems. The mere fact that this committee of Rudnev's exists is almost an acknowledgment of difficulties of this character.

You can always learn something from any exposure to an entirely different way of doing things. But I did not learn anything that would lead me to want to change the way in which we function in the Bell System.



DR. JAMES B. FISK is the president of Bell Telephone Laboratories, and a member of Sandia Corporation's Board of Directors.



NINETY officers attending a Naval Research Reserve Seminar on Sandia Base recently toured Laboratory facilities. Part of the group is shown here viewing Sandia's new underground centrifuge facility in Area III.



BOAT AND BUILDER—John Watkins (2532) stands by the Paula Jay, 24-foot cabin cruiser which he built in 18 months of spare-time work. The boat sleeps four, can hit 30 mph.

John Watkins Works Hard to Build Beautiful Boat So He Can Loaf

The Paula Jay is a 24-foot white and brown cabin cruiser with an inboard motor. Launched May 24 by John Watkins (2554), the boat was built in about 18 months of spare-time work.

The Paula Jay has four bunks, a dinette area, large storage areas, a flying bridge, and such luxury features as an electric gear shift and an outdrive which enables the propeller and drive shaft to be raised in shallow water.

The inboard engine, taken from a '53

Chevy, delivers a top speed of 30 mph.

John built the boat in his backyard—the garage was too small—from commercial plans which he modified. Hull framework is two-inch oak, covered with $\frac{3}{8}$ -in. marine plywood, and several layers of fiberglass. The cabin is mahogany with a natural finish. It represents hundreds of hours of work.

"But it was worth it," John says. "I like to fish, and I like to loaf. Now I can do both if my daughters don't talk me into learning to water ski."

Sandia Authors

J. V. Walker (5222), "The Effects of Flux Anisotropy on Thermal Neutron Flux Perturbations," Vol. 22, 1965, NUCLEAR SCIENCE AND ENGINEERING.

J. V. Walker (5222), D. E. Feltz and J. D. Randall, both of Texas A. & M. University, "Absolute Thermal Neutron Flux Measurements Using Non-perturbing Foils," Vol. 16, June 1965, INTERNATIONAL JOURNAL OF APPLIED RADIATION AND ISOTOPES.

L. E. Lamkin (7300), "The Long View: Slight Requirements Became More Stringent, but the Reason's the Same," June issue, ENVIRONMENTAL QUARTERLY.

L. F. Shampine (5256), "Quadrature Formulas Using Derivatives," July issue, MATHEMATICS OF COMPUTATION JOURNAL.

R. E. Cuthrell and C. F. Schroeder (both 1133), "Spectrophotometer Signal Enhancement by Digital Computer," August issue, REVIEW OF SCIENTIFIC INSTRUMENTS.

R. O. Dell (2223), "True Position Teaching Simplified," August issue, GRAPHIC SCIENCE.

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LAB NEWS

AUGUST 27, 1965

Early Immunization

by S. P. Bliss, M.D.

Sandia Corporation Medical Director

Too many parents wait until their children are school age (and the law demands it) to have them immunized against diphtheria, whooping cough, tetanus, polio, and smallpox. According to doctors, this is taking a useless and sometimes fatal risk because the younger the child who contracts the disease the more danger there is of complications, after-effects and death.

Family physicians, pediatricians and public health doctors of this country urge that infants be protected against these infectious diseases by their first birthdays, and that if parents have neglected to have their children under five given the initial immunization series, they act at once to have them protected.

Doctors also urge that parents keep a careful record of immunizations for themselves as well as their children and do not forget about booster shots when they are due to maintain immunity.

Some of the most frequently asked questions are given below with answers, because it has been found by surveys that many people are confused about immunization though it has been practiced on a mass scale for many years.

Q. Why should we worry about diphtheria, whooping cough, tetanus, polio, and smallpox when there have been so few cases in our country during the past years as compared to years ago?

A. There are fewer cases of these diseases because mass immunization was started years ago for some of them and within the past ten years for polio. However, many people feel safe, let their immunity run out by not getting boosters—and endanger their infants and young children by not having them initially immunized—and would be fair prey for the germs of diphtheria, whooping cough, tetanus, polio and smallpox, because the germs are always present looking for victims.

Q. What is the meaning exactly of immunization?

A. Immunization is the process of stimulating the body to produce special antibodies through staging a false alarm of attack by a disease. This is done by giving vaccines made of killed, live but greatly weakened germs, or weakened toxins (poisons) of the viruses or bacteria.

Q. Why does my child have to have three shots for his first vaccination of diphtheria, whooping cough, and tetanus vaccines?

A. Because it has been found that for the initial immunization to protect against these diseases, three doses of DPT were necessary to stimulate the body to produce enough antibodies to insure protection.

Q. Why should babies be vaccinated?

A. Babies should be vaccinated against diphtheria, whooping cough, tetanus, polio, and smallpox by their first birthdays according to your doctor's schedule, because the threat of death is highest for children under one.

Q. What is a "booster" dose of vaccine?

A. A booster dose is a renewed stimulation of the body with vaccine to force it to "boost" production of anti-bodies in the blood against a given disease germ when they begin to diminish which means that protection is running out.

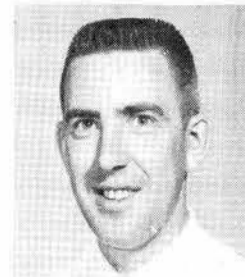
Supervisory Appointments

JOSEPH E. STIEGLER to supervisor of Systems Engineering and Coordination Division 7251, Nuclear Test Department, effective Aug. 16.

Joe was hired by Sandia at Livermore Laboratory in January 1959. He worked on telemetry systems in the Field Testing organization there until November 1963 when he transferred to Albuquerque. He participated in Operation Dominic and in the readiness program.

A graduate of the University of Washington, Joe received his BS degree in electrical engineering there and was a member of Tau Beta Pi and Zeta Mu Tau, honorary societies. He also belongs to the Institute of Electrical and Electronics Engineers.

He served three years in the Coast Guard prior to attending college.



JOE W. WISTOR to supervisor of Development Division II, 7244, Test Support Department, effective Aug. 16.

Joe has been assigned to Field Testing Organization since he joined Sandia in June 1952. During this time he participated in Operation Ivy and Castle in the Pacific; Teapot, Plumbbob, Hardhat, and Hardtack II at Nevada Test Site; and Project Shoal at Fallon, Nev.

Previously he worked two years at the Naval Ordnance Test Station, Inyokern, Calif., after serving two and a half years in the Navy.

He was graduated from the University of New Mexico with a BS degree in physics. Joe is a member of Kappa Mu Epsilon.



Take Note . . .

Fall horsemanship classes will start on Sandia Base Aug. 28 with instruction available for beginners, intermediate, and advanced riders. Each course is comprised of five two-hour sessions and costs \$10. Reservations can be made at the Sandia Base Riding Stables located on Pennsylvania Avenue, tel. 264-5482. Information is also available regarding all-day trail rides in the Manzano Mountains, hayrides, and chuck wagon dinners for groups. Both Sandia Corporation employees and their dependents are eligible to take advantage of these classes and outings.

Articles by C. J. McGarr, Director of Service Operations 4600, have been accepted for publication by two different publications. "A Simplified Labor Cost Index" will appear in ADMINISTRATIVE MANAGEMENT and IBM's Data Processing Application Organization will publish "Computer Management Science in an Inventory Control System at Sandia Corporation."

Sandia Speakers

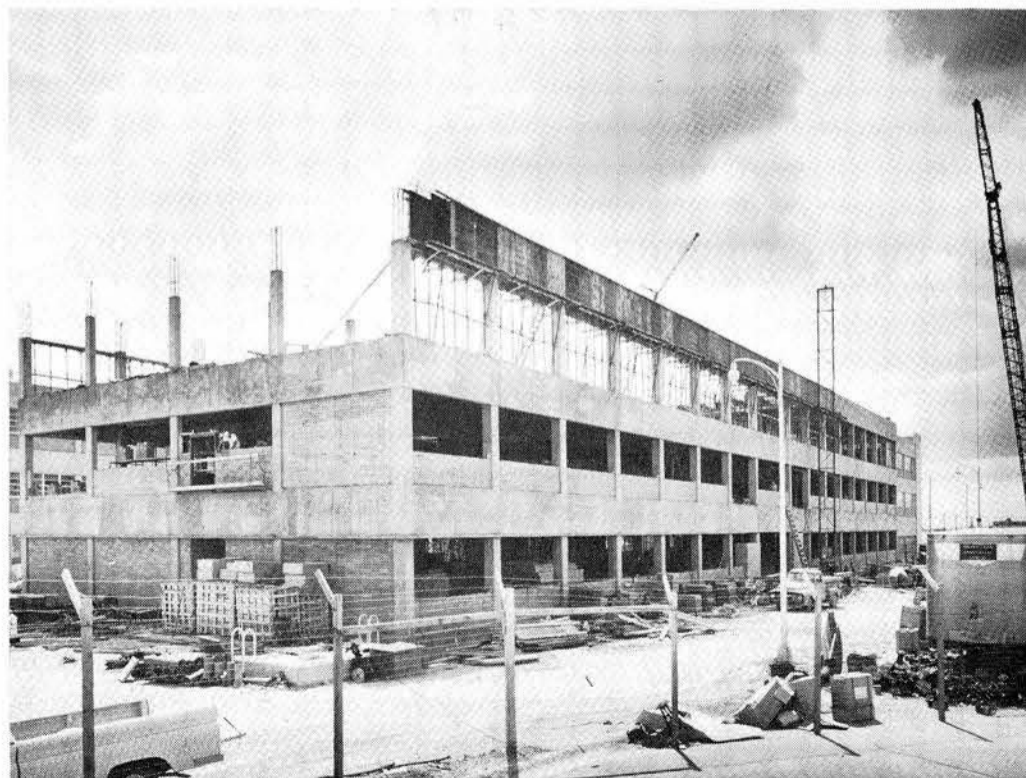
C. J. McGarr (4600), "Scientific Inventory Management," Aerospace Material Control Workshop, Aug. 10, Los Angeles.

A. C. Switendick (5213), "Results of Augmented Plane Wave Calculations of the Band Structure of Cerium Metal," Fifth Rare Earth Research Conference, Aug. 30-Sept. 1, Ames, Iowa. The co-author, James Waber (LASL) will make the presentation.

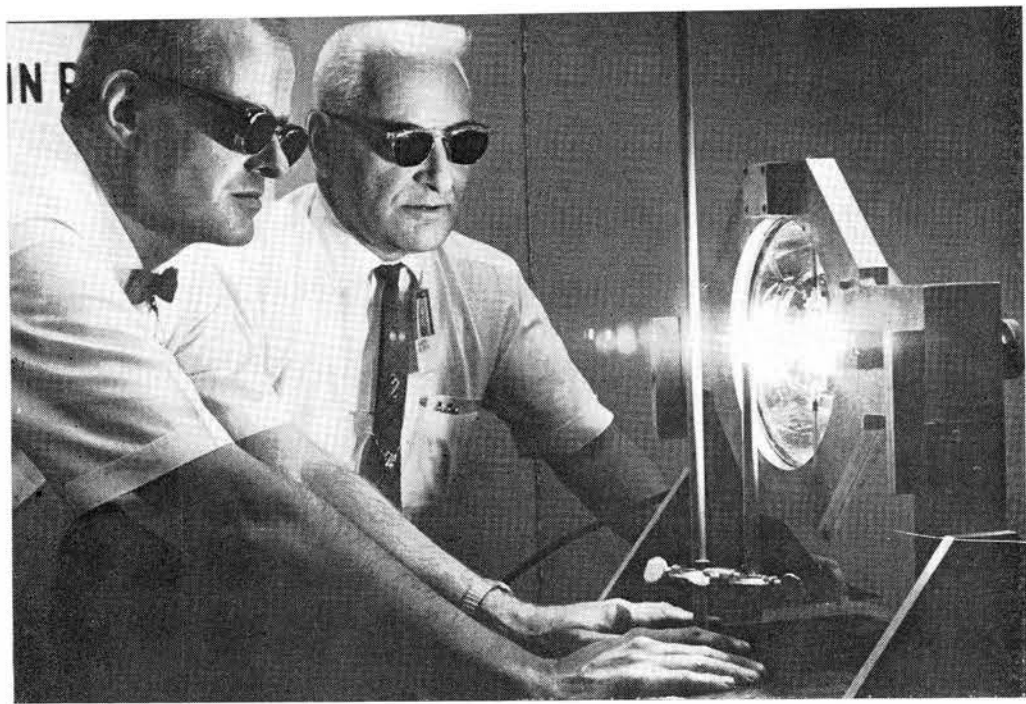
Dan Parsons (7224), "Optical Instrumentation for Reentry Studies," 10th Annual Technical Symposium of the Society of Photo-Optical Instrumentation Engineers, Aug. 18, San Francisco.

Irwin Mordka (3133), "A Comparison of a Research and Development Laboratory's Organization Structures," Annual Convention of the American Psychological Association, Sept. 5, Chicago.

D. R. Morrison (5256), "A Library Automaton," 1965 Symposium on Mathematical Logic, Recursive Function Theory, and Automata Theory, Aug. 25-27, Rome, N.Y.



CONSTRUCTION was ahead of schedule last week as workmen moved up to the third floor of Bldg. 807. Construction of the \$3,780,000 laboratory building is 61 per cent complete. Construction should be complete Dec. 9, 1965, but equipment installation and occupancy will not be completed until May 1966. C. M. Morrisett (4543) is the Plant Engineering Department project engineer.



SMALL INFRARED heating apparatus creates temperatures capable of melting steel, and concentrates the heat at a point about .8 inch in front of the center of the reflector. Joe Hegge (left) and Walt Barbier are currently compiling performance data on this equipment which is operating here at low power.

Focused Infrared Heat Shows Promise for Wide Sandia Use

Temperatures up to 4300°F. have been produced with a special laboratory bench set-up by two Sandians of Manufacturing Research Division 2564. Using a gold plated reflector and a lamp (which, in some cases, is the same kind as those used in home movie lighting units), J. I. Hegge and W. H. Barbier are able to focus this heat onto small test items or areas.

Other than the reflector, the quartz-iodine lamp, a power control, and a test jig, no other special equipment is needed. The reflectors are available in many sizes up to 12 inches in diameter. The lamp is inset into the reflector. Power is supplied from a standard 110-volt AC outlet.

The unique reflector could be considered to be the heart of the system. Its elliptical spheroidal shape gives it the cross-section of an ellipse, or a portion of one. This allows energy from the lamp to be put in at one point, and the reflector shape concentrates that energy at another point a short distance outside the reflector, where the test item is positioned. More than 90 per cent of the energy from the lamp which strikes a clean reflector is reflected. By using two reflectors face-to-face in a kind of egg-shaped configuration (with the workpiece inside) more efficient heating can be obtained.

The original development work on this infrared heating apparatus was conducted earlier by the Western Electric Engineering Research Center, Princeton, N.J. The system is now being used for soldering and glass-to-metal sealing at Western Electric plants.

Mr. Hegge and Mr. Barbier believe that this heating system could have a variety of applications in the production of Sandia-designed items. Their job is conducting re-

search in, and evaluating, advanced manufacturing techniques to determine their value to Sandia Corporation programs.

In addition to possible applications in production of components, the Sandians feel that the infrared heater is a versatile tool for testing small items at Sandia.

For instance, the infrared heater was used recently for preliminary temperature testing of a bonding material used between layers of nose-cone-type ablative and insulating materials. Small samples were successfully tested with the infrared apparatus. The study was for Surface Chemistry and Adhesives Division 1133.

In another example, the infrared heater was used to test a material to determine its suitability to function as a part of an antenna during reentry.

Regarding cost, the apparatus is relatively inexpensive, despite the gold plating (which is only a few tenths of a thousandth of an inch thick). The cost of the reflectors range from less than \$20 to \$75 each depending on size. A representative cost of a lamp is about \$8.

A Tech Memo is currently being prepared which will describe the heating capabilities of selected infrared heating systems. The memo, "Focused Radiant Heating (Preliminary Report)" should be published soon.



QUARTZ IODINE LAMP which powers the infrared heater is the same type unit used in home movie lighting. Photo shows some of the weird optical effects produced by the gold-plated elliptical spheroidal reflector.

THE NATIONAL DRIVERS TEST

OFFICIAL TEST FORM

A. JUDGMENT

Defensive Driving Techniques

circle correct letter

1. a. b. c. d. SCORE
2. a. b. c. d.
3. a. b. c. d.

B. KNOWLEDGE

Rules of the Road: circle T [true] or F [false]

- | | | |
|---|--|--|
| 1. T. F. . . . <input type="checkbox"/> | 6. T. F. . . . <input type="checkbox"/> | 11. T. F. . . . <input type="checkbox"/> |
| 2. T. F. . . . <input type="checkbox"/> | 7. T. F. . . . <input type="checkbox"/> | 12. T. F. . . . <input type="checkbox"/> |
| 3. T. F. . . . <input type="checkbox"/> | 8. T. F. . . . <input type="checkbox"/> | 13. T. F. . . . <input type="checkbox"/> |
| 4. T. F. . . . <input type="checkbox"/> | 9. T. F. . . . <input type="checkbox"/> | 14. T. F. . . . <input type="checkbox"/> |
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C. PERCEPTION

Hazards Alertness

List one key word for each driving hazard you see and total number between brackets below.

NUMBER () SCORE

D. SPECIAL

circle correct letter

1. a. b. c. d. SCORE
2. a. b. c. d.

TOTAL SCORE

More Than One Tree Grows in Tonopah—It Says Right Here

Last issue of the LAB NEWS carried an item about the one tree growing in the Sandia Corporation housing area in Tonopah. The headline said, "A Tree Grows in Tonopah—Just One Tree Grows in Tonopah."

Mrs. M. C. Maddy (her husband, Malcolm, works in Electronics Measurements Division, Tonopah Test Range Department 7230) rose to the defense of the greenery in her town.

She writes:

"Someone is badly misinformed concerning Tonopah trees. There are many in town, almost one per home. As one comes into town, one sees many small elm trees sheltering a trailer park area.

"Joshua trees are not native to Tonopah, but grow in surrounding areas.

"Tamarisk trees are found in a large

section of Nevada including Tonopah. Their pink flowers brighten up our spring.

"We have many lovely wild flowers in the spring and early summer. My husband has color slides of many of them.

"The brown earth of Tonopah is still dotted with greenery. Some of the sage brush is coming into bloom. We have had a great deal of rain these last two months, and there is much more green on the hills than there ever was in Livermore, Calif., (where we were living last year) in the summer.

"We now have two rose bushes (blooming), four day lilies (blooming), some prickly pear cactus, an agave, and a very healthy apple tree. These have all been planted since last March."

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LAB NEWS

AUGUST 27, 1965

Sandia's Safety Scoreboard

Sandia Laboratory:

60 DAYS
2,100,000 MAN HOURS
WITHOUT A
DISABLING INJURY

Livermore Laboratory:

71 DAYS
365,200 MAN HOURS
WITHOUT A
DISABLING INJURY

Death



Joe N. Skelton, a Sandia employee for 12 years, died Aug. 16 after a brief illness. He was 46.

Mr. Skelton was a welder in Plant Maintenance Division 4512.

Survivors include his widow; his mother, Mrs. Birdie Sanderson of Albuquerque; a brother in Tyler, Tex.; and a sister in Los Angeles, Calif.

Sympathy

To Dorothy James (4135) for the death of her husband Aug. 6.

To Joe E. M. Cuellar (4574) for the death of his mother-in-law Aug. 13.

Welcome Newcomers

Aug. 9-20

Albuquerque	
Mary Ann Bishop	4371
Domitilia Casares	4613
*Bonnie D. Conley	3126
Merton S. Goldstein	3413
*Anne F. Hamilton	3126
Franklin E. Halase	3413
Mary K. McElfresh	3153
Nina Rae Proctor	4333
Yvonne L. Sharp	4372
Mervyn D. Willard	1311
District of Columbia	
Robert S. Printis, Jr., Washington	2422
Indiana	
John J. Deely, Lafayette	5255
Oklahoma	
Burt Edwards, Jr., Stillwater	1514

*Denotes rehire