



Mr. Abbott

F. E. Abbott Named AEC-ALO Ass't Manager

Frank E. Abbott (AEC-ALO) has been promoted to the newly-established position of Assistant Area Manager for Administration and Security in the AEC's Sandia Area Office.

Mr. Abbott has been Chief of the Administrative Branch of the Area Office since April 1958, and prior to that was in the Finance Division, ALO, from February 1952.

A native of Denver, Mr. Abbott is a World War II veteran of U.S. Army service. He received his B.S. degree in commerce at the University of Denver.

Prior to joining the Commission he was with the U.S. Department of Agriculture and the U.S. Treasury Department in Denver.

John A. Larned Vice Chairman of Board of Education

John A. Larned, AEC-ALO Program Coordinator at Livermore Laboratory, has been named vice chairman of the Alameda County (California) Board of Education. Mr. Larned has served on the board since 1959.

Professor to Speak At Colloquium

Prof. J. S. Koehler, of the University of Illinois, will speak at a Sandia Research Colloquium on Aug. 17 at 9:30 a.m. in Bldg. 815.

Subject of Mr. Koehler's talk is "Present Knowledge of Point Imperfections in Metals." Tickets are not required for the meeting. For further information, contact Diane Martin (5432), ext. 27155.

Two Rockets Propel Sandia Research Sled at Mach 1.3 in First Test at Holloman

A new Sandia research rocket sled, designed to hit Mach 3 was fired last week for its first test under partial power. The test was made on the six-mile track at Holloman Air Force Base.

With two rocket motors, the sled achieved Mach 1.3 and was still accelerating as it slammed into the water brake. Some 36 telemetering channels reported the sled's acceleration, vibration, in-

ternal stress and strain, and pressures during the 5,250-ft. run.

Designer of the sled is Dave Bickel of Track and Explosives Section 7323-1.

Data collected during the test runs of the sled will be used for comparison against wind tunnel tests of a model of the same sled.

"Previous attempts to correlate field information from a rocket sled against wind tunnel data from

a model have not been totally successful," Dave said. "We hope to perfect a method of accurately predicting the performance of a rocket sled design in advance from wind tunnel models."

The wind tunnel tests are being conducted at the University of Minnesota Rosemont Laboratories. R. J. Loncharich of Engineering Aerodynamics Division 7134 is handling this portion of the re-

search sled project.

Aerodynamic properties of lift, drag, and pitching moment are being explored as well as methods of predicting the shock and vibration loads on the sled.

The sled is scheduled to be fired again today using two motors. The number of rocket motors will gradually be increased to eight. Each of the Javelin motors can produce a maximum of 32,000 lbs. thrust.

"From the data already collected," Dave said, "we are predicting more than Mach 3 when using all eight motors."

R. R. Beasley (7244-2) is the Field Test project engineer for the sled runs.

The sled and nose sections were built in Sandia Laboratory's Sheet Metal Shop, organization 4224-4.

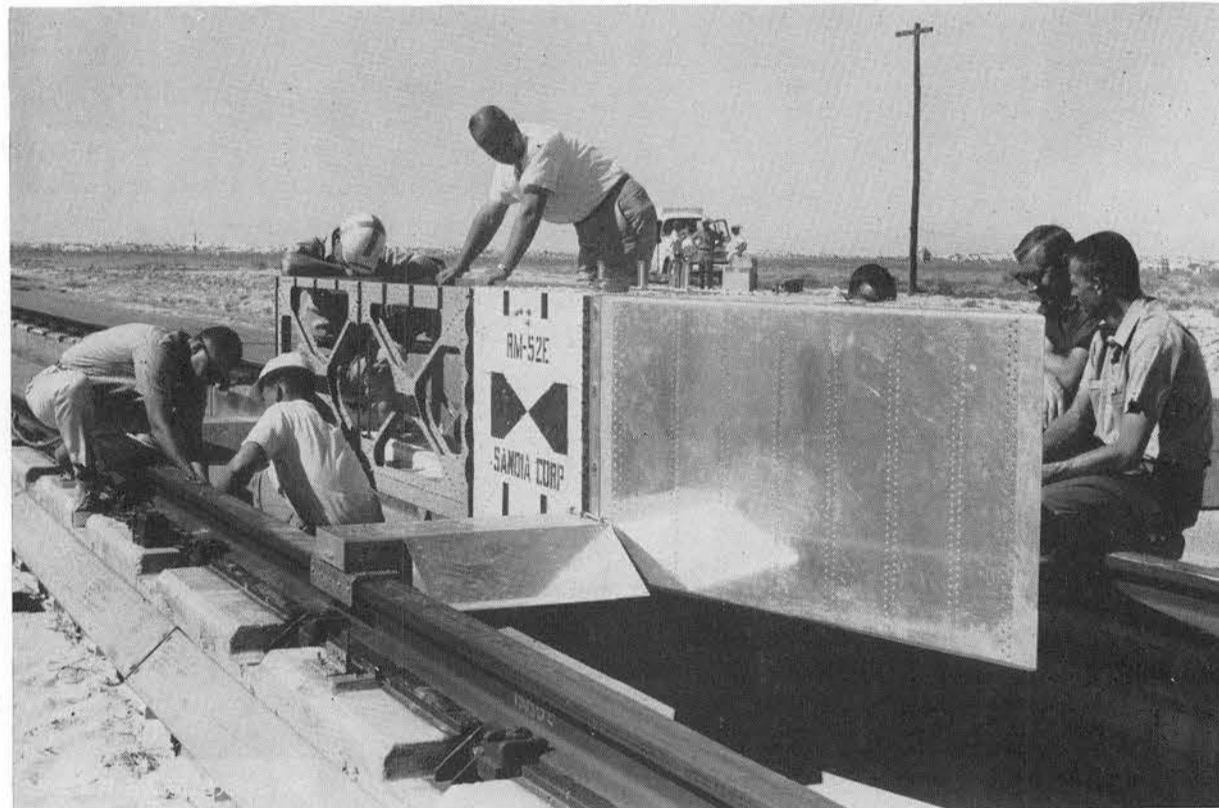
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ROCKET SLED RESEARCH—A new Sandia sled was readied for its initial run at the Holloman Air Force Base track recently. L to R: R. R. Beasley (7244), R. L. Johnson (7244), Capt. Henderson (USAF), W. T. Moffat (7240), D. C. Bickel (7323), and D. W. Bauder (7323).

L. J. Paddison Heads National IRE Organization

L. J. Paddison, Director of Product Test Equipment Development, has been named national chairman of the IRE Professional Group on Reliability and Quality Control.

Membership in this group is worldwide and comprises about 1800 members.

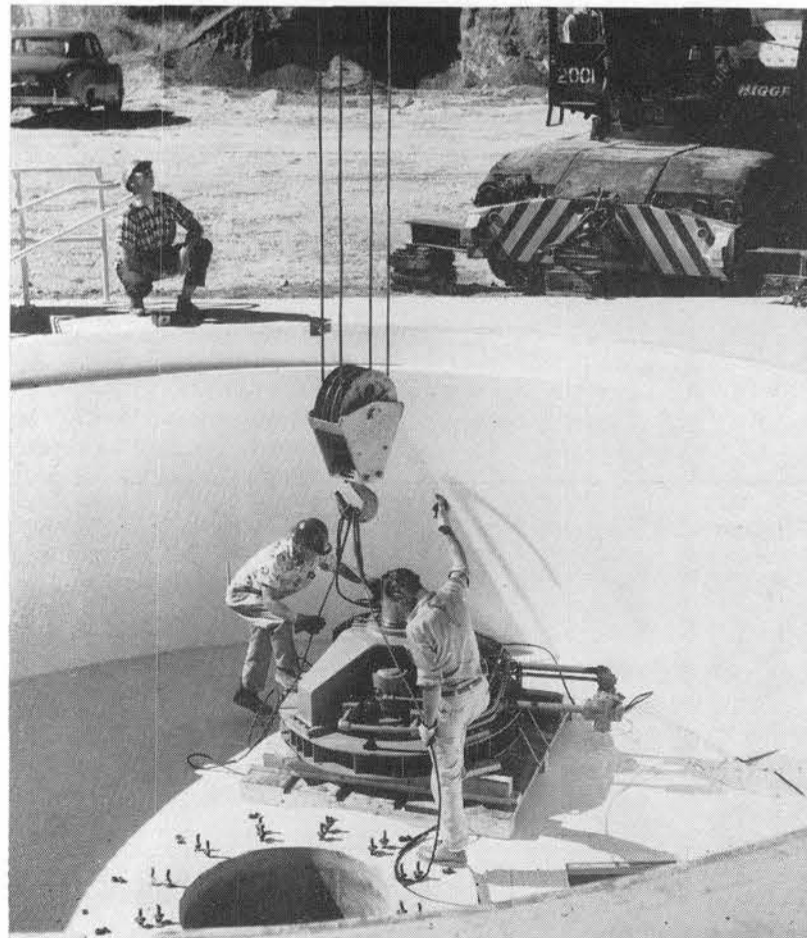
The group's field of interest is in principles and practices used in reliability and quality engineering of electronic products.

Mr. Paddison has been a member of the professional group since 1952 and has served as national vice chairman for the past six years.

Within the past 14 years Mr. Paddison has headed Sandia's Quality Assurance and Reliability Development organizations in addition to his present position.

During World War II he was active in research and development work on the Navy VT Fuze at the Applied Physics Laboratory, Johns Hopkins University. Mr. Paddison worked on a Navy contract at New Mexico School of Mines for a year prior to joining Sandia's staff.

He is also a member of the American Society for Quality Control, and the American Ordnance Association.



POWER HEAD and base ring for Livermore Laboratory's new 16-foot, 60,000 G-pound centrifuge is lowered into position in Area 8. Watching the proceedings is Project Engineer Harry Jacobs (on rim), of Natural Environmental Section 8121-2. The centrifuge is expected to be in operation early in September.

Where your dollars serve . . .

ECP Agencies Geared to Give Help To Individuals Who Need Assistance

Many Sandia employees have, at one time or another, benefited from services of most of the 34 local agencies they support with the Employees Contribution Plan. Whether by handling adoptions, providing emergency financial aid, or giving nursery care, these agencies can help: Family Consultation Service, Catholic Charities of Albuquerque, Albuquerque Travelers' Assistance, St. Anthony Home for Boys, and Christina Kent Day Nursery.

Family Consultation Service

People come to the Family Consultation Service from all walks of life. They come for help in clarifying the problems they face. The counselors at the Service office provide such help, but they leave the actual solution of the problem to the individuals concerned with it.

Some families come to the office together; sometimes the husband or wife comes alone. But the Service's staff members, Mrs. Katherine Brown and Lawrence Brown, are usually able to persuade each member of the

(Continued on Page Three)



KINDERGARTEN-AGE pupils enjoy playground during recess at Christina Kent Day Nursery. The Nursery provides day care and recreation facilities for about 65 children of working mothers.

Editorial Comment

Let's Do Something About It!

Each year statistics have shown an increase in the number of highway casualties. Figures for 1960 were no exception. Though they are half a year old, the figures are sobering for motorists taking to the roads for their summer vacations.

Last year 38,000 people were killed in automobile accidents. More than 3,078,000 were injured. Deaths were up 400 (one per cent) over the previous year. Injuries increased more than 200,000 (seven per cent).

This is indeed a sorry accomplishment for a civilized people. It advanced no cause, served no purpose, taught no lesson. It came about solely through a lack of concern for others, through negligence, carelessness, and indifference.

Judging the extent of this grim highway toll by number of deaths alone does not take into consideration the ever increasing number of injuries and the consequent suffering and economic losses.

Eighty per cent of accidents resulting in personal injury involved driving violations — they are man-caused. The automobile is far more reliable than the human behind the steering wheel. We cannot place responsibility for this casualty list anywhere other than on ourselves.

The fact that the number of deaths has not risen sharply in recent years is due largely to better and more prompt medical care rather than care on the part of the drivers.

What can be done about this situation? Here are several steps which could be taken:

1. Be sure the states in which we reside have a strong street and highway safety program. Perhaps we need to survey present laws and enforcement procedures and recommend improvements in the regulations and prosecution of violators. Certainly we need to be sure that we have a strong program of public information on the urgency of the problem.
2. Be sure we have a safety education program which begins in the grade schools and continues with driver training before young people can get their licenses.
3. We must be willing to express our support of a strict program of law enforcement. We must be willing to abide by it. Speed is a major cause of fatal accidents (38.5 per cent). It might be necessary to revoke licenses of first-offense speeders. Harsh? Yes! Effective? Yes!
4. Each of us must pledge to develop within ourselves habits of care, caution and courtesy behind the wheel. Bold positive steps will save lives. Maybe even our own.



SIX-KEY BRAILLING MACHINE, which punches raised dots in paper, is used by Evys Warren (1442) to transcribe English into the language of the blind. Different dot combinations form all 26 letters of the alphabet. At right, Elizabeth Frost (1442), also a Brailist, checks copy which Evys has just typed.

Sandians Who Serve

Evys Warren, Elizabeth Frost Typing Braille Books for Blind

Most people take for granted the ability to read. But a blind person must have a special kind of book before he can enjoy the pleasure and knowledge gained from reading.

Helping give the sightless a chance to read are Evys Warren and Elizabeth Frost (both 1442), who recently took a six-month course to learn the Braille language. When the two women signed up for the volunteer class they agreed to spend at least one hour a day practicing, and also to type a minimum of 30 pages in Braille a month when they completed the course.

The Braille system consists of raised dots in different combinations for all 26 letters of the alphabet. As in shorthand, abbreviations and contractions are also used. A blind person "reads" by moving his finger tips over the raised dots.

"It seems like an impossible task to distinguish the dot combinations by touch," said Evys, "but when someone loses one of his five senses, the other four become sharper."

Evys and Elizabeth learned to operate a Braille machine which has six keys on it. The Braille letters are formed by hitting one key or several keys simultaneously. Numbers zero through nine have the same dot combinations as the letters "a" through "i," but a symbol preceding the dots indicates a

number follows.

After finishing the course, Evys submitted a 50-page book in Braille to the Library of Congress for her certification as a Brailist. The Library sent her manuscript to a blind proofreader who checked it for errors and correct format.

Two weeks ago she received notice that her work was satisfactory and she became the eighth certified Brailist in New Mexico. Elizabeth sent her work in after Evys and has not received her certification yet.

They are both members of the Braille Service of New Mexico, which was established last November as a non-profit organization. Elizabeth is treasurer of the group. "We are always looking for new members," she said, "and guarantee that every person who joins will find something of particular interest for him to do."

Several Albuquerque service clubs have purchased Braille machines, which cost \$90, and donated them to the Braille Service of New Mexico.

Instructor of the Braille course was Mrs. Willard Converse (whose husband works in 3425). She was the first certified Brailist in New Mexico, and devotes a great amount of volunteer time to this work. Mrs. James Demas (Jim works in 7523) also volunteers her services as a proofreader for the Brailists.

In the fall, Evys plans to teach her own class. If anyone is interested in taking the course, contact her at ext. 22158. According to Evys, "It's the most worthwhile thing I've ever done."

R. W. Hall Earns General Portrait Photo Certificate

Robert W. Hall (3462-1) has been awarded a special Certificate of Merit by the Winona School of Photography (Ind.) for completing an intensive course in General Portrait Photography.

The course is offered to professional photographers during the summer months and counts toward the requirements for becoming a Master Photographer. New techniques, new equipment and materials, as well as new methods of photography, are among the subjects covered in the Winona curriculum.

Bob has been in Sandia's Still Photography Section since April 1957.

Sandian Plays Part In Mountain Rescue

Oscar Goodwin (3467) participated recently in the rescue of a woman who fell from a high point on the Sandia Mountains. Oscar was taking photographs when an excited child told him, "My mama just fell off the cliff."

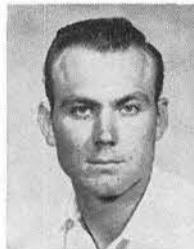
Oscar climbed down the steep slope and helped the woman's husband and two other men carry her back in a makeshift stretcher. The climb, about 60 ft. straight up, took two hours.

Oscar then drove the woman in his station wagon to the Sandia Base Hospital. She is now recovering from broken bones and injuries received from the fall.

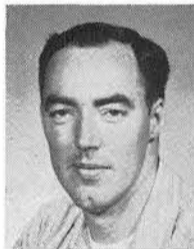
Three Employees Return to Sandia After Completing Military Service



R. E. Baack



S. M. Bragg



L. J. O'Connell

Three men recently returned to their jobs at Sandia Laboratory after tours of duty in the Army.

Rolyn E. Baack (2441) served two years in the Army Corps of Engineers, and was stationed mainly at Fort Belvoir, Va. He originally came to work at Sandia in June 1958.

Returning to his job in Inspection Division 4213 was Samuel M. Bragg. He was stationed 27 months with the Army at Fort Riley, Kan. Sam first came to Sandia in August 1957.

Lawrence J. O'Connell is back in Systems Test Development Division II, 2444, after serving in the Army for two years. He was stationed at White Sands Missile Range, N. M. Larry was hired by the Corporation in February 1957.

Smokey Maxwell Heads Livermore Lab Drive United Bay Crusade

Roy "Smokey" Maxwell (8225) has been named chairman of the Livermore Laboratory drive for the 1961 United Bay Area Crusade. Assisting him will be E. A. "Gene" Aas (8144).

Smokey will serve also as Livermore Valley account executive for the Industrial Division, a position he held during the 1960 campaign. He was also vice chairman of the Livermore Laboratory drive in 1960.

Overall goal for the Bay Area drive this year will be \$11 million, an increase of six per cent from the 1960 campaign. Participating in the drive will be 263 national and local health, youth, and social welfare agencies in the five-county area. The campaign will get under way Oct. 1 and conclude Oct. 31.

Congratulations

Born to:

Mr. and Mrs. Don Butts (4321) a daughter, Joni Lynn, on July 5.

Mr. and Mrs. Roland C. Hewitt (7234) a son, Randolph Charles, on July 5.

Mr. and Mrs. Steve Drago (2644) a daughter, Karen Elaine, on July 6.

Mr. and Mrs. C. H. Turnbull (8142-1) a son, Andrew Arthur, on July 13.

Mr. and Mrs. R. E. Baldwin (8222-3) a son, Daniel Edwards, on July 14. Kathleen is on leave from 8225-1.

Mr. and Mrs. M. O. Jones (8142) a son, Steven M., on July 16.

Mr. and Mrs. W. R. Wall (8125-1), a daughter, Kelley Leann on July 17.

Mr. and Mrs. Ray G. Mosteller (2441-1) a son, Randall David, on July 26.

Sympathy

To Raymond Clark (3111) for the death of his father-in-law in Jamesport, Mo., July 15.

To Paul Morgan (2622) for the recent death of his father in Indiana.

To Lester Bierly (4574) for the recent death of his mother in Loganton, Pa.

To Marvin Harvey (4223-2) for the death of his mother in Nortonville, Kan., July 21.

To C. R. Eisenhour (7241) for the death of his father in Hummelstown, Pa., July 26.

To Cleo F. Hughes (2442-1) for the death of his mother in Louisville, Ky., July 20.

To John L. Irwin (7185-1) for the death of his father on July 21.

Welcome Newcomers

July 17-28

Albuquerque	
*Barbara E. Eaglin	3126
*Donnie R. Fenstermacher	3444
Dotsie M. Hester	3126
Betty J. Louden	3126
*Sue T. Mathes	3126
Marsha A. Moor	4314
*Jack O. Palmer	4111
M. French Stewart III	3446
Bernie Vallejos	3444
*Laura K. Ward	4623
Colorado	
Gene H. Jeys, Westminster	4411
Connecticut	
Jerome B. Allyn, New Haven	1113
Illinois	
Dorsey E. Bishop, Chicago	7323
Kansas	
James D. McClure, Lawrence	2313
Nebraska	
Marjorie J. Spatz, Omaha	3126
New York	
Donald J. Gould, Norwich	1312
Dennis W. Smith, Binghamton	1122
North Dakota	
David C. Boknecht, Grand Forks	1121
Ohio	
William J. Lenz, Dayton	7115
Pennsylvania	
John C. Borg, Bethlehem	2563
Texas	
William D. Parsons, Austin	4112
* Denotes rehired	
Returned from Leave	
James M. Freese, Ft. Ord, Calif.	5153
Lawrence O'Connell, White Sands, N. M.	2444



Sandra R. McIntosh (8212-3)

Take a Memo, Please

A POWER MOWER can be as dangerous as any industrial machine when improperly operated. Utilize safety practices at home.

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Telephone Sandia Base
 Alpine 6-4411
 Ext. 25253, 26135

Telephone Livermore
 Hilltop 7-5100
 Ext. 2395

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Coyote Test Field HE Experiments To Give Sound Transmission Data

Starting today, a series of high explosive tests is scheduled in Coyote Test Field. The research project will determine the effects of bursts at different heights on the transmission of sound waves. Waves carried by the detonations will penetrate the ozoneosphere, a layer of warm air some 20-30 miles high—then refract to distant western points.

First of three tests was scheduled for this morning. Starting at 8 a.m., four detonations were scheduled for five-minute intervals.

The other detonations are planned for about Aug. 11 and 18. Tests will be postponed if

weather conditions indicate energy waves may be transmitted to populated areas. The blasts probably will be audible in Tech Area I and in the city.

In each series, the non-nuclear explosives are to be discharged at heights of 50, 17 and 3½ ft. and at ground level.

Scientific Director of the study is J. W. Reed of Applied Experiments Division 5112. H. J. Plagge of Coyote Test Field Section 7251-2 is Field Test project engineer.

Monitoring stations will be established in El Morro and Zuni, about 105 and 130 miles away. Instruments in these stations will measure and record pressures.

AT&T-NASA Plan to Launch Two Communication Satellites Next Year

American Telephone and Telegraph Company and the National Aeronautics and Space Administration (NASA) have signed an agreement to launch two experimental communications satellites next year.

The agreement, which is designed to carry forward a cooperative project, calls for launches on April 17 and Oct. 15. AT&T will provide the satellites and the ground station at Rumford, Me., and will have the responsibility for all experimentation after the satellites are in orbit. NASA will provide the rockets, the launching pad at Cape Canaveral,

and related tracking and telemetry services.

AT&T will pay the cost of the satellites, the ground station facilities, etc., and reimburse the government for all identifiable additional costs by the government.

In connection with the signing, Frederick R. Kappel, AT&T President, said, "We are pleased with the agreement, which permits us to proceed with our space communications experiments. This is an important step toward the realization of the worldwide communications system described by President Kennedy.

"Our country leads in the peaceful use of space and the establishment of a satellite communications system would prove to the world our peaceful intentions and the strength of our free enterprise system."

The government receives license to inventions made under the agreement and the right to sublicense them under certain conditions. AT&T will provide NASA with such commercial satellite data as NASA may request and specifically identify. The government will pay the cost of gathering and producing this information.

AT&T or NASA may terminate the agreement at any time except during a period beginning 90 days prior to a scheduled launch date and ending with the day NASA fulfills its tracking responsibilities (about two months after the launching).

Livermore Lab Chess Players Start First Tournament

Livermore Laboratory's first chess tournament began July 26 with the final match scheduled for Aug. 18. Games will be played each Monday and Thursday during the noon hour.

Thirty-two players entered the first match. Winners will go on to compete in the winner's bracket and losers will enter a second bracket in the double-elimination tournament. Winner of the loser's tournament will meet the winner of the winner's bracket for the chess championship title. The final victory will go to the player who is undefeated or who has not lost more than one game.

Honors for Abstract

Robert L. Burgess (7213) has won second place in the Museum of New Mexico's Annual Fiesta Show for his oil abstract "Hint of a Hill."

The public will have its first look at this year's winning paintings during an open house from 3-5 p.m., Sunday, Aug. 6, at the museum in Santa Fe. The art show will continue through September.

In March the collection of outstanding paintings from this region will be hung in San Francisco.

This was also the fourth straight year that Bob has been awarded first prize for one of his mosaics.

William Dehon Wins National Honor in Photo-Essay Contest

William Dehon, who recently joined the Lab News staff, has received notice that he won second place in a national photo-essay contest sponsored by Samuel French, Inc., dramatic publishing house.

Bill's prize, to be given to Powell (Wyo.) High School where he taught English and Journalism, is royalties from 50 plays published by French.

His winning entry concerned a play, "Playboy of the Western World," which was presented by Powell High School students.



ORPHAN TODDLERS pass the time at St. Anthony Home For Boys. The Home is providing care for 93 children. Most of these children have had no other home in their entire lifetime.

Continued from Page One

ECP Agencies Help Those in Need

family to share in the counseling. If the husband and wife are both available, they are interviewed in separate rooms. After completing interviews, the counselors discuss their findings and review the problem with the husband and wife. With the counselors' guidance, the family works toward a solution of the problem.

Psychiatric counseling is also available. Fees, ranging from \$1.00 to \$10.00 per interview, are based on family income and budget.

Catholic Charities of Albuquerque

In the past 11 years, Catholic Charities of Albuquerque has provided 73 children for adoption into the families of Sandia employees. The agency also provides many other services to Catholic and Protestant members of the community. One of its major tasks is the coordination of the work of other social agencies.

For example, a juvenile delinquent may be referred, by the Catholic Charities office, to a social agency where a psychologist is available to handle juvenile problems. A family, in danger of being broken apart by internal problems, can be helped by a social case worker. Necessary arrangements for such case work are then made, with the Charities office acting as coordinator. A family in need of financial aid,

which is not eligible for help from any other public or private agency, receives aid from Catholic Charities.

Some financial support of the agency comes through the United Community Fund, but a good share is derived from voluntary public contributions.

Albuquerque Travelers' Assistance

The people who apply for aid at the Albuquerque Travelers' Assistance office have two things in common; they are in transit and they need help.

Last week, for example, the Assistance office helped several individuals and families who were involved in journeys of continental proportions. One man, on his way from New York to Los Angeles, was stranded in Albuquerque by lack of funds. A family enroute from Indiana to California was forced to stop by sickness of one of its members, a boy who had contracted measles before leaving home. An elderly lady traveling to Oakland for the funeral of her sister, stopped at the Assistance office, exhausted by the effects of her trip.

Through the organization's help, these travelers were able to complete their journeys, and many of them made arrangements to repay the office for its aid.

St. Anthony Home for Boys

The St. Anthony Home For Boys provides a happy and healthy way of life for 93 children of Catholic and Protestant backgrounds. Boys to the age of 14 and girls to the age of five are given all of the benefits of parental care, as well as medical aid and education.

Many of the children come from broken homes. Some have been abandoned, orphaned, or neglected. Many remain at St. Anthony's until they are ready for high school. Some eventually return to their parents.

St. Anthony's provides help for children of every race and creed. A complete nursery, kitchen, laundry, classrooms, and dormitories are provided. Recreational and vocational facilities are located at the Home, and residents all share the responsibilities of maintenance.

About one-fifth of the Home's total income comes from the United Community Fund. Funds are used for food, clothing, maintenance, medicine, and rehabilitation.

Christina Kent Day Nursery

The Christina Kent Day Nursery provides care for 64 children of working mothers.

Fees for nursery care are based on family income, and range from \$1 to \$4 per week. A pupil enrolled at the Nursery can count on having his days filled brim-full with activities, all designed to keep him as busy and healthy and happy as possible.

If a pupil arrives at the Nursery in time, he has breakfast with his classmates. After breakfast, there's an informal health inspection. Then, he's free for some time on the playground, where he has a choice: swings, a merry-go-round, a jungle-gym, or teeters. Or he can amuse himself as he wishes.

If an enrollee is in kindergarten, he can count on some formal classroom work. But there are also chalkboards and drawing-boards, finger paints and crayons, books, toys, and games. There isn't time for boredom.

Around 11:30 a.m., everyone cleans up for lunch. The food is excellent; it's prepared by Mrs. Louisa Lopez, a woman who knows nearly all there is to know about her craft. She's a good and trusted friend of everyone at the nursery, especially the children.

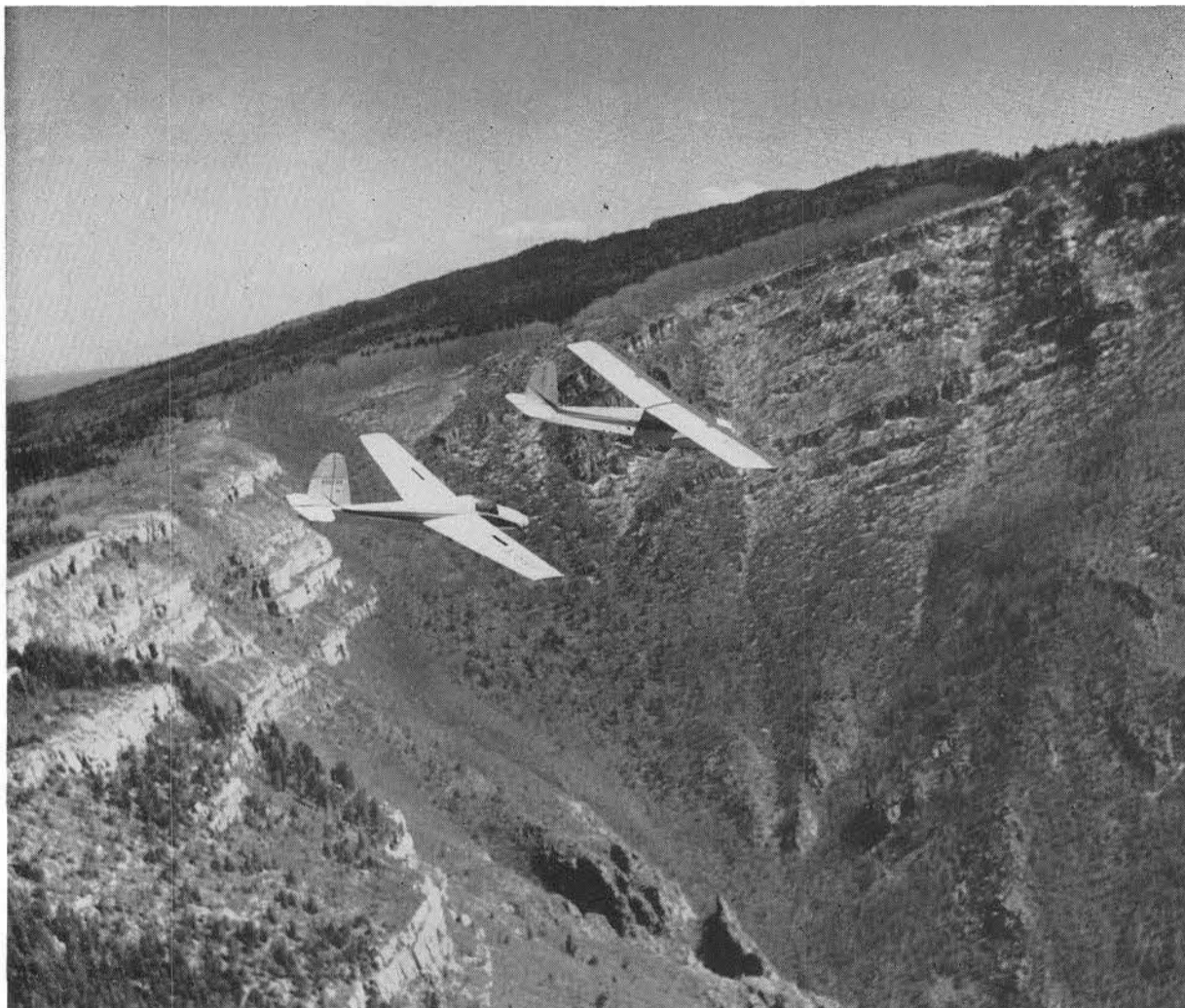
After lunch, there's a half-hour's time for the playground. At 1 p.m., everyone cleans up again before taking a rest. At 3:00, after rest-time, chocolate milk is served to those waiting to go home.



FAMILY Consultation Service counselor, Lawrence D. Brown, discusses application form with Mrs. Katherine M. Brown, agency executive director and counselor. Counseling service is provided families with marital difficulties, child-parent conflicts, and other problems. When advisable counseling is on a family-wide basis.



TWO NATIONAL SAFETY AWARDS were recently presented to the AEC. K. F. Hertford (left), AEC-ALO Manager, holds the President's Safety Award. Vincent C. Vespe, Director, Operational Safety Division, ALO, displays National Safety Council's Award.



RIDGE LIFTS CAUSED by air rising to get over two gliders to fly in formation. Photograph was taken by Dick Illing (7147) from a power plane.

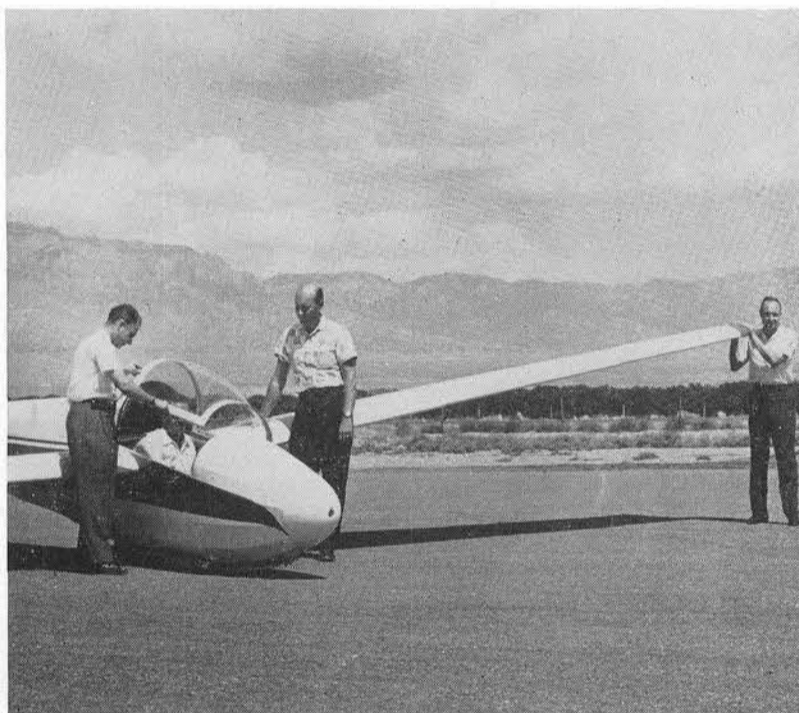


CONTROL PANEL in the cockpit shows instruments used for glider flying. Hank Tendall and Jim Stark make careful last check.

Forms for Amateur Radio License Exams Are Made Available

Carl W. Franz (1321-1) has announced that application forms are available for Amateur Radio Operator Licenses. Carl is the local FCC amateur license custodian. He also has a stock of new-type Novice and Conditional-Class license exams for those qualified under FCC rules to administer examinations. Commercial Operator Forms (FCC 756, 753-1) for Third Class Restricted Radiotelephone Operators, as well as the other forms, are also available. Carl may be reached at CH 3-3110 between 6 and 7 p.m.

Examinations for all classes of Commercial, Amateur Extra and General Class Licenses will be conducted by the FCC on Saturday, Oct. 7, 1961, at the Albuquerque High School, 110 Broadway N.E. Commercial License applicants will start at 8 a.m. and the Amateur Class applicants at 11 a.m. Examinations must be completed by 4:30 p.m.



IT TAKES THREE MEN to prepare for glider flight. Jim Stark (7143), left, and Hermann Wentz (7131) secure Hank Tendall (7115) for his take-off. Ken Cordes (7134) holds one wing.

Charles Smith Conducting Experiments On 500 Potted Plants, Improving Growth Rates

Charles Smith (4574) is a happy man when he's puttering around the many plants and flowers he grows at his home.

"I don't care about how pretty or how big the plants are," he said from somewhere amidst his 500 potted plants. "I'm interested in what makes them grow, and I like to do a lot of experimenting."

Smitty is, for example, trying to develop an African Violet that will grow outdoors. He has started one which looks like it's going to be a healthy plant, but he's not predicting results yet.

Another project is growing geraniums which will bloom in the wintertime. But Smitty will have to wait until the cold season to see if he's been successful. He's also working on hybrid ornamental peppers with red, purple, and yellow pods.

Last winter he stored 25 plants outside to see if they would live until spring. He covered them with a heavy layer of leaves, and was delighted to find 18 still alive when warm weather came.

Of course with all this experimentation, Smitty has tried every kind of fertilizer. He finally came up with one he liked best. It's his own mixture. However, he's still combining chemicals to see if he can get better results.

One particular plant with very robust-looking leaves filled a pot



GARDENER CHARLES SMITH (4574) has about 500 potted plants around his home. He is holding a Jade plant, and in the foreground is an asparagus fern which is about 21 ft. long.

abundantly, but Smitty doesn't take much credit for it. "That's German Ivy," he said, "and you can almost make it grow by waving the plant over the pot, it's that easy."

He picked up another pot, turned it over and tapped it on the side of a bench, and took the plant out without losing a grain of dirt. He wanted to explain the root system.

Smitty has a down-to-earth philosophy about his interest. "I don't use the botanical names," he remarked, "because no one but a professional would know what I was talking about."

He pointed out one called the mother-in-law plant. If you eat the stem it causes a swelling in your throat and you lose your voice. "That's wishful thinking," he believes.

Soaring Is One Big Search For Those Elusive Thermals

The cockpit of a glider has the same controls as a small power plane except for one thing — no throttle. When you're soaring you depend upon air currents and your skill. With proper use of both you stay in the air.

Soaring is a new sport to Albuquerque. Four Sandians are almost ready to take flight tests for glider licenses. They are Ken Cordes and Jim Stark (both 7134), Hank Tendall (7115), and Hermann Wentz (7131).

Jim and Ken are both former P-38 pilots, and Jim is now flying F-100's in the Air National Guard. Hermann flew F-86D's until a few years ago with the old (now deactivated) 93rd Squadron based at Kirtland. Hank is a private pilot and owns his own plane.

Soaring conditions in the Albuquerque area are considered among the best in the country because of the warm climate and mountainous terrain. Thermals, ridge lifts, or waves are necessary for soaring.

The warm temperature helps form thermals which are columns of rising air. When air rises to get over the Sandia Mountains, ridge lifts result. Air bouncing off the mountains creates high altitude waves downwind from the range.

Seek Those Thermals

When flying cross country, pilots depend mostly on thermals. How do you find a thermal? "Trees and water usually absorb heat, so stay away from them," says Jim Stark. "Look for light spots on the terrain and fly over them. If you feel a slight bump and your instruments indicate a slight lift, turn the plane back to the spot because you're probably in a thermal. When you gain enough altitude, glide in the direction of your goal until you find another thermal. Then start over again."

All four men belong to the Albuquerque Soaring Club, which owns two gliders and a winch tow. The gliders are a two-place trainer and a single place higher-performance plane which members constructed from a kit. The one-seater has oxygen equipment and instruments for cloud flying.

The men do most of their flying on weekends and holidays. On a good day, each person averages about two flights, each lasting from one-half to one and one half hours. On occasion, flights have lasted more than five hours.

Gliders are launched by either winch- or aero-tows. For aero-tows a 200-ft. nylon rope, attach-

ed to the back of the airplane, hooks onto the glider nose. When the glider reaches necessary altitude and air speed, the sailplane pilot releases the rope and starts soaring.

The winch tow consists of a long steel cable which is wound around a drum powered by an automobile engine. One end of the rope is fastened to the glider which is placed at the other end of the runway. The glider is pulled down the runway as the winch winds the cable in. When the plane gains enough speed to take off, it climbs steeply over the winch and then the cable is dropped. A small parachute floats the end of the cable down.

Need Pilot Experience?

"It's not necessary to have pilot training to fly a sailplane, but it's easier to catch on if you have," says Jim. "Our current president started with no pilot experience last year, and already he's an accomplished glider pilot."

"Contrary to popular opinion," Jim continued, "gliding and soaring is not a dangerous sport. Even though there's no engine. Nearly all sailplanes and gliders have 'lift spoilers' that permit controlled short-roll landing. The aircraft have low landing speeds (30-35 mph normally) and can be stopped in a few feet even with no headwind."

A German pilot on temporary duty at Kirtland Air Force Base for two months showed club members what could be accomplished with soaring. He flew 373 miles to Garden City, Kans. Several of his glides carried him 50 miles or more at an average speed of 50 mph.

"We'd be glad to talk to anyone interested in joining the soaring group," Jim said. The Albuquerque Soaring Club headquarters is presently located at Alameda airport, and several members can usually be found out there on good weekends.



"What's a nice kid like you, doing up in a place like that?"



—Champion Larry Tabor—

Golfers Vary Actions At Cloudfcroft and Play Bridge Too

Narrow, tree-lined fairways, occasionally guarded by water hazards, dominated the course at Cloudfcroft where 49 Sandia Laboratory golfers played in a weekend tournament recently.

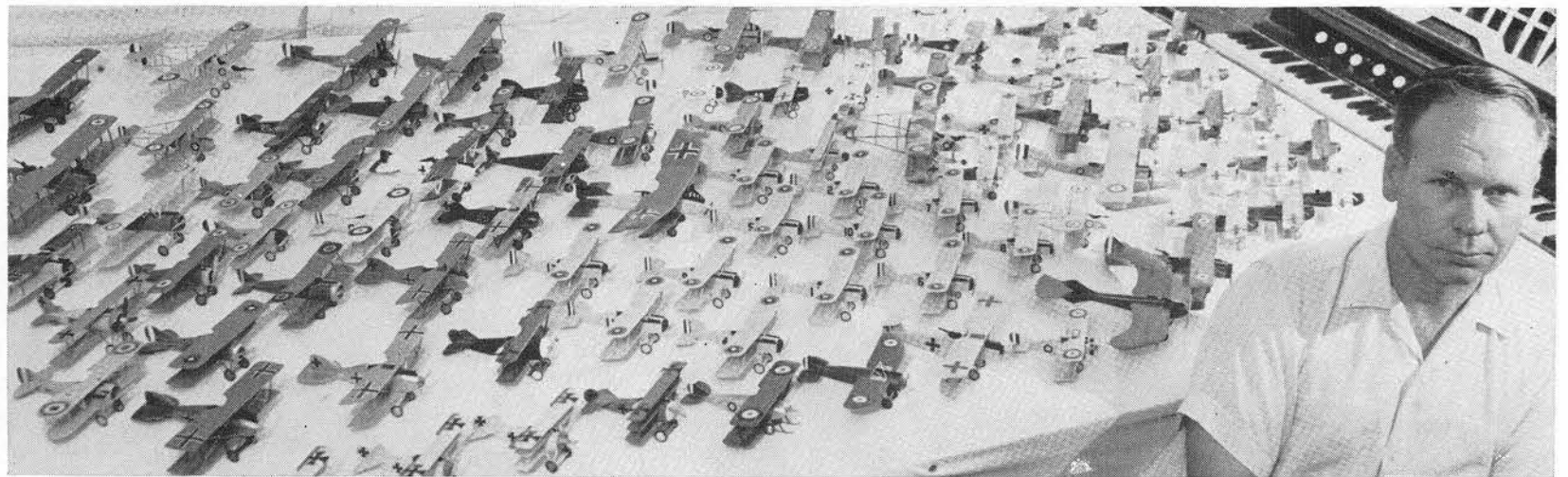
Larry Tabor (4412) led the golfers in the handicap tournament with a net score of 105, and was awarded a trophy. Team winners received gift certificates.

Tied for four-ball team honors at 104 were Jack Canute (7231), Glenn Guist (4412), Charlie Runyan (4220), and Rex Roselle (4413); and Jim Kelly (2632), Oscar Schroll (2542), Dan Power (7241), and Bill Rappleyea (4253).

Two teams also tied at 107 for three-ball winners. They were Maury Chavez (4132), Lou Aragon (4171), and Bill Rappleyea; and Glenn Morter (7147), Larry Tabor, and Vic Sirwinski (2444).

Two-ball team winners were Jack Canute and Oron Worden (2313).

A duplicate bridge tournament was also held in conjunction with the golf tournament. Fred Silva (7521) and June Leonard (3432) tied for first place individual honors and received duplicate trophies.



NINETY scale models of World War I combat planes are displayed by Jim Breitenbach. Jim draws his own plans for each plane, builds each part "from scratch," and mixes special paint to simulate the

original color schemes used. He spends as much as 100 spare-time hours in the construction of a single plane. Collection was started in 1945 when Jim was a B-29 gunner stationed in Florida.

Building Precision Scale Models of WW I Combat Planes Occupies Jim Breitenbach

"They were fabulous airplanes," Jim Breitenbach (7323) was saying. "Made of wood, wire, fabric and dope, those old crates were flown by reckless fools, but they wrote a special chapter in the history of warfare."

Jim was looking at his collection of 90 colorful models of World War I combat planes. Each model was a masterpiece of precision and detail, an exact replica of the original. The scale used for all the planes was quarter-inch to the foot.

Jim picked up a small Fokker tri-plane. It was painted bright yellow with a sky blue control surface and a red cowl. The tiny machine guns looked wicked.

"Richthofen flew one like this," Jim said. "These others (he indicated four more Fokker tri-planes painted in bizarre colors) resemble the markings of Richthofen's Flying Circus. They took a terrible toll of Allied fliers. Richthofen alone shot down more than 80 confirmed planes in combat."

"Wagtail" Jim's models range from the German "Taube" (Dove), used during the earliest part of the war to the British Westland "Wagtail," which saw action late in 1918. Each one is thoroughly researched and the plans are painstakingly drawn in minute detail. Materials used in the construction

include balsa wood for the fuselage and wings, and basswood or white poplar for the rudder, elevators, and struts. Silver thread is used to simulate the intricate wire rigging of the original plane. Exposed portions of the motors are made from carved wood. For instance, Jim constructs a radial engine around a hardwood crankcase, and adds cylinders made from dowels wrapped with thread. This is then enclosed in a carved cowling with tiny exhaust pipes protruding at the rear.

Wheels are another bit of ingenious construction. Jim shapes a piece of solder into a ring, paints it black, and mounts it on a carved hardwood hub. He duplicates spoke wheels by using thread, made stiff with glue, as the spokes.

Jim builds all his models "from scratch." Plastic is a dirty word around his house.

Full Squadrons "Handle it easy," Jim said. "A job like that Nieuport 28 takes about 60 hours to complete. The large Bristol two-seater took about 100 hours to build."

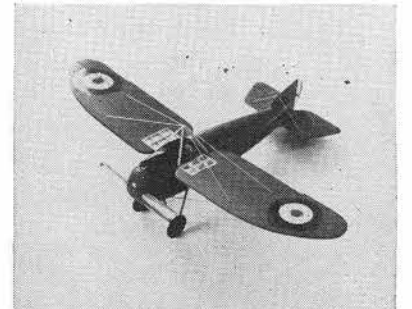
Jim sees no end to his hobby. "Enough pictures and drawings are available to draw plans for about 200-odd different types of WW I planes. And then, too, I can always build whole squadrons of individual types, like the 12 SE-

5's and the 15 Fokker D-VII's that I have here."

The building of the collection of 90 models started in 1945 when Jim was a B-29 gunner stationed in Florida. "A friend, H. A. Burdwood, and I started one rainy weekend and we've kept it up since," Jim said. "He now lives in Yarmouth, Me., but we keep the mails busy exchanging plans and information."

In addition to the solid scale models, Jim has built rubber- and gasoline engine-powered flying models and models of old sailing ships. Current project is a Zeppelin airship, built to the same scale as the WW I combat planes. The frame of the Zeppelin is already built and measures over ten ft. in length.

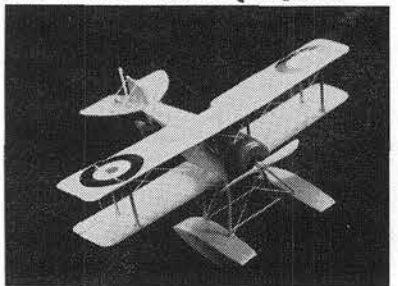
"I figure it will take about six months to finish it," Jim says, "but first there's a Vickers 'Gunbus' that I want to complete."



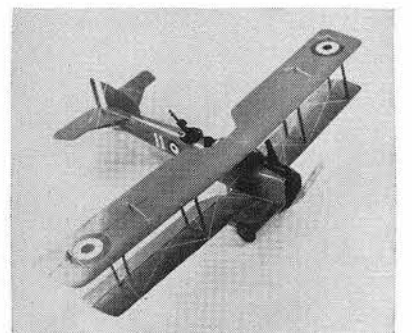
Bristol Monoplane



Albatros D-III



Sopwith "Baby" Seaplane



Bristol F2-B

It's an Easy Short Drive from Livermore To California's Serene, Scenic Muir Woods

Sandia Corporation employees at Livermore Laboratory will find Muir Woods within easy reach, with a round trip possible in one day. However, for more extensive visits, overnight accommodations may be arranged in nearby cities. This is the third article of a summer series describing vacation spots in Northern California and New Mexico.

Just a short drive north of San Francisco, across the Golden Gate Bridge, stands the Muir Woods National Monument with marvelous scenic views, an uncrowded picnic area, and the peace and quiet so welcome to the weekend vacationer.

Principal attraction for the visitor is the magnificent redwood, or coastal sequoia preserved by the National Park System in this 485-acre national monument. Trees of the species found in the park exceed 2000 years in age and rise hundreds of feet in the air.

The towering trees, cathedral-like in appearance, help establish a mood of serenity in the park. Brooks and winding trails provide new vistas around every turn.

Hundreds of raccoons, deer and birds of all varieties populate the area and bobcats and skunks can be seen occasionally. Steelhead trout and salmon are plentiful in the pools and streams but they are there to be seen, not to be caught.

Forest rangers conduct regular tours of the park from sunrise to sunset, the hours the park is open. Souvenirs and refreshments are available at a small shop adjacent to the administration building.

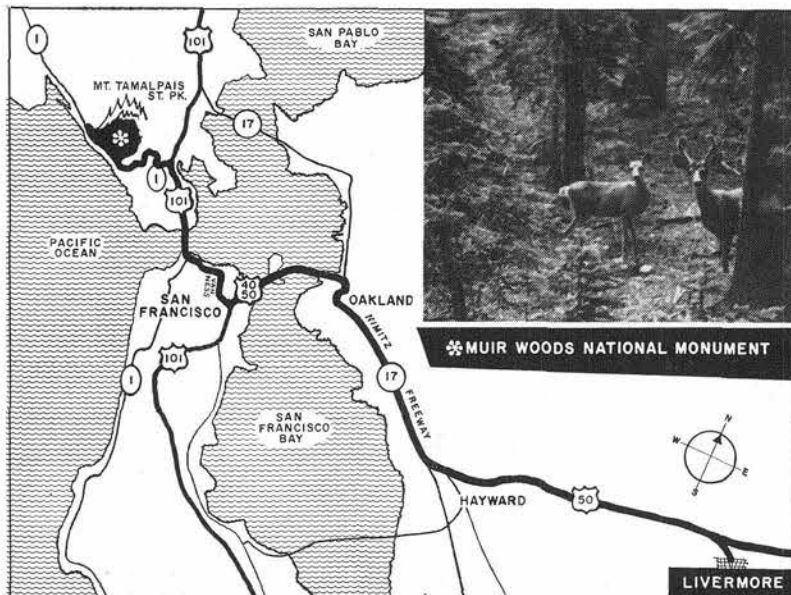
Adequate parking space and a picnic area are provided, but no fires are permitted and there are no campsites.

Although Muir Woods is but one of many parks throughout the

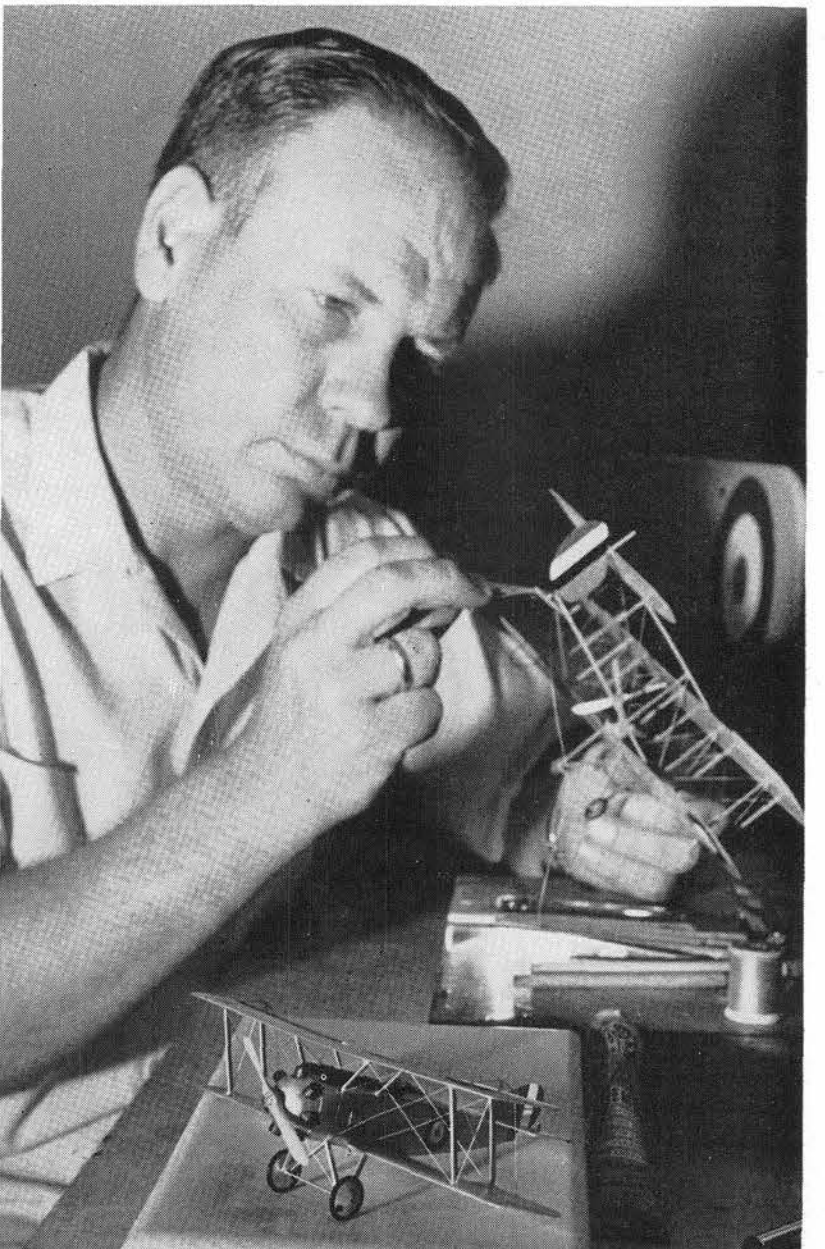
state where the giant redwoods are found in abundance, this area is the closest to Livermore, a distance of about 60 miles. The same trees found at Muir Woods grow in regions along the Pacific Coast extending from 125 miles south of San Francisco to the southwest corner of Oregon. The Founders Tree, 250 miles north of San Fran-

cisco in Humboldt Redwoods State Park, is 364 feet high, the tallest living thing on earth.

The coastal variety of redwoods is often confused with the giant sequoia of the Sierra. Trees of this species are found in the Sierra Nevada at altitudes of 4000 to 8000 feet. These trees attain diameters of 35 feet or so but are considerably shorter than their coastal relatives. Giant sequoias are found in Sequoia, Kings Canyon, and Yosemite National Parks, the destination for many other weekend vacations.



MUIR WOODS NATIONAL MONUMENT, north of San Francisco, is the destination for this issue's Weekend Vacationer. About 60 miles northwest of Livermore, the park can be visited easily in one day. A more extensive tour, taking in Mt. Tamalpais State Park and nearby beaches, makes a fine weekend outing.



STRIVING FOR REALISTIC DETAIL, Jim Breitenbach uses silver thread to simulate intricate wire rigging on his models. He is completing a Vickers "Gunbus." In the foreground is a recently finished model of a British Westland "Wagtail."

Egyptian Cubit Was Man's First Attempt To Standardize Linear Measurements

When Noah undertook to build the Ark, God instructed him to make it 300 cubits long, 50 cubits wide and 30 cubits high. Later the Egyptians established the royal cubit, which became the first standard of linear measurement. Now, this royal cubit in replica has found its way to Sandia Laboratory.

Several weeks ago, J. C. Moody (2411-1) wrote to Continental Machines, Inc., of Savage, Minn., requesting a chart to be used for a speech concerning systems of measurement. Soon he received a long, rectangular, heavily-insured package. The package contained a wooden box, carefully finished and varnished, and covered with the scribed lines of Egyptian hieroglyphs. The cover lifted easily. Inside was a black granite master of the royal cubit.

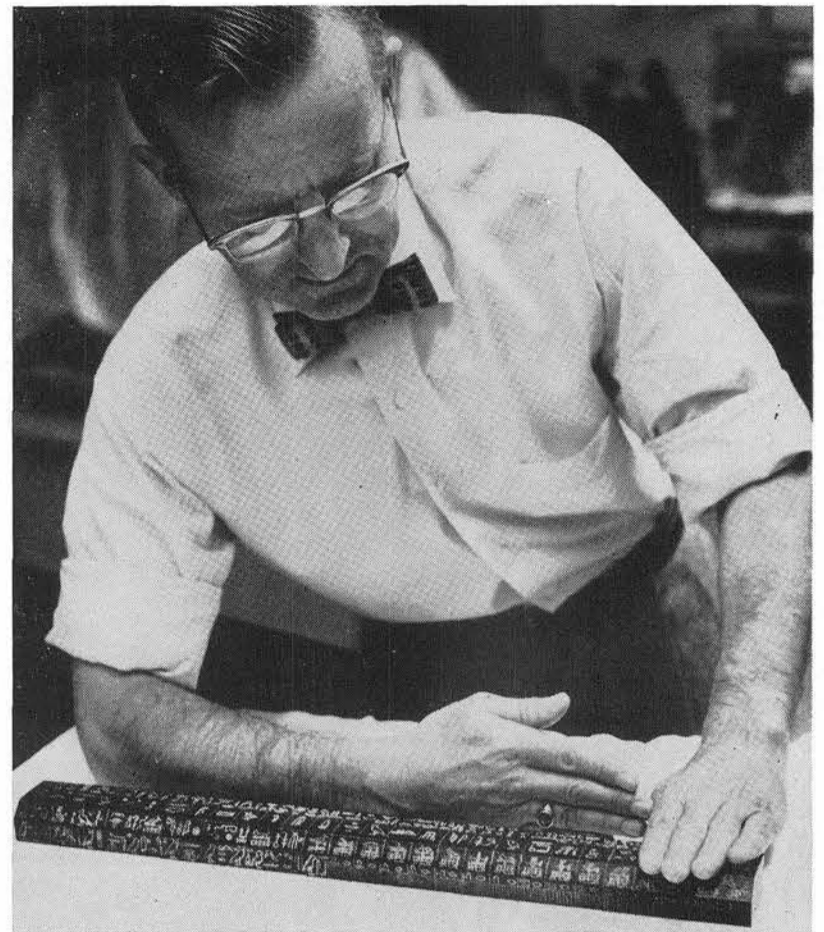
"It was a museum replica of the real thing," Mr. Moody explained, "and was used by Continental Machines as a display. They were generous in sending it to Sandia, and you can imagine its effectiveness as a visual aid for a speech."

Prehistoric man instinctively used his body dimensions as standards for measurement. The cubit, one of the first standard linear measures based on body dimension, consisted of the distance from the point of the elbow to the tip of the middle finger. By 5000 B.C., dynastic power had reached such a magnitude that the body of the monarch only was referred to as a standard. The Egyptian pharaoh, Amenhotop I (c. 1411 B.C.) devised a royal measurement consisting of the standard cubit (equal to six palm spans) plus one palm-span of the royal hand; a measurement designated the "royal" cubit.

Cubit Subdivided

The royal cubit was subdivided into one, two, and three finger breadths (digits); one palm (four digits); one hand (five digits); one small span (12 digits or three palms); one large span (1/2 cubit length); one t'ser or two thirds (16 digits or four palms); one remen (20 digits), used for land measurement; and one small cubit, used for common measurements. The royal cubit had an overall length of 20.63 inches, and was used for measurement of temples and pyramids only. It was used to calibrate a number of measuring sticks or "working cubits." Egyptian craftsmen and artisans were required, on penalty of extreme punishment, to check their field instruments periodically against the royal cubit. The master instrument was made of black granite, the most dense and stable material known to the Egyptians.

"The cubit was the basis for the



ROYAL cubit length is demonstrated by J. C. Moody (2411-1), who used replica for recent lectures on measurement. Scribed lines on right end of front face were used for fractional measures.

Egyptians' dimensional control system," Mr. Moody said. "It enabled them to draw plans, and to determine relative dimensions of structural components." By combining these skills with imagination and direction, they became consummate builders. The cubit eventually became the measurement basis for the execution of sculptures and paintings, the construction of chariots and sailing vessels, the building of canals and systems of irrigation, and the collection of taxes involving land measurements. Circles and arcs of desired diameter and radius were drawn with lengths of string accurately measured against the cubit. Later, the Greeks utilized the string-circle principle in developing calipers and proportional dividers.

Egyptians Use Rope

The Egyptians found that a rope, marked by equally-spaced knots, could be extended between pegs in units of three, four or five-knot lengths, in order to produce a right angle. The cubit was used to make an accurate right-angle form

which served as the reference master to construct and check a set-square, as well as to devise a horizontal level, composed of two right-angle forms.

Alexander the Great conquered Egypt in 332 B.C., but the conquest had no lasting effect upon the Egyptian standards of measurement. "As a matter of fact," Mr. Moody explained, "the Greeks utilized the Egyptians' cubit in developing the Greek olympic foot (12.16 inches). Then the Romans came along and based their Roman foot (11.65 inches) on the Greek standard. The Anglo-Saxon foot, from which the modern linear foot is derived, utilized the Roman foot as its basis.

"We can thank the Egyptians, indirectly at least, not only for establishing the foundations for modern measurement standards, but for paving the way to modern dimensional quality control, to progressive gauging, and to duplicate part production," Mr. Moody said. "Their influence upon our modern way of life is enormous."

Club Pool to Be Busy in August With Number of Splash Events

August swimming pool activities at the Coronado Club include seven different events.

Supervised water recreation for the youngsters will be held Monday through Friday from 3 to 4 p.m. all during August.

Both pools will be closed to the public until noon on Aug. 28 as swimmers will be taking Red Cross certification tests.

On Aug. 20, the Club will hold a free Swim Carnival for members and their families only. Participants can buy their lunches at the Club from 12 to 1. The pools will be closed at 1 except for those entering the water carnival events.

Four different swimming classes will be offered to members. Sixteen one-hour classes will be taught in Junior and Senior Life

Saving from 9 to 10 a.m. Monday through Thursday. Cost for this course is \$5.

Competitive Stroke Correction classes will be held from 8:30 to 9 a.m. Monday through Saturday. The class will be divided into two groups, each meeting three times a week. Fee for the 12 one-half hour classes is \$2.

Four one-hour classes in Adult Drown-proofing (for persons 16 and over) will be offered on Sundays from 9 to 10 a.m. This course costs \$2.

Skin Diving Classes will be held from 8 to 9 a.m. on Saturdays and Sundays. The Club will furnish air lungs for this \$5 course which consists of eight one-hour lessons.

For further information call the Pool office, ext. 41287.



POST HASTE—Members of Sandia's Emergency Force assembled during a "dry run" exercise of the group last week. L to R: A. O. Butts (4514-1), E. J. Whitmore (4575), and J. M. Winter (4512-1).

Emergency Force Assembles In Minutes for Trial Exercise

A "dry run" last week called out the 50-man Sandia Laboratory Emergency Force.

The force was created to deal with emergency situations such as floods, snow storms, and explosions. The group assembled for the practice exercise within 10 minutes of the call.

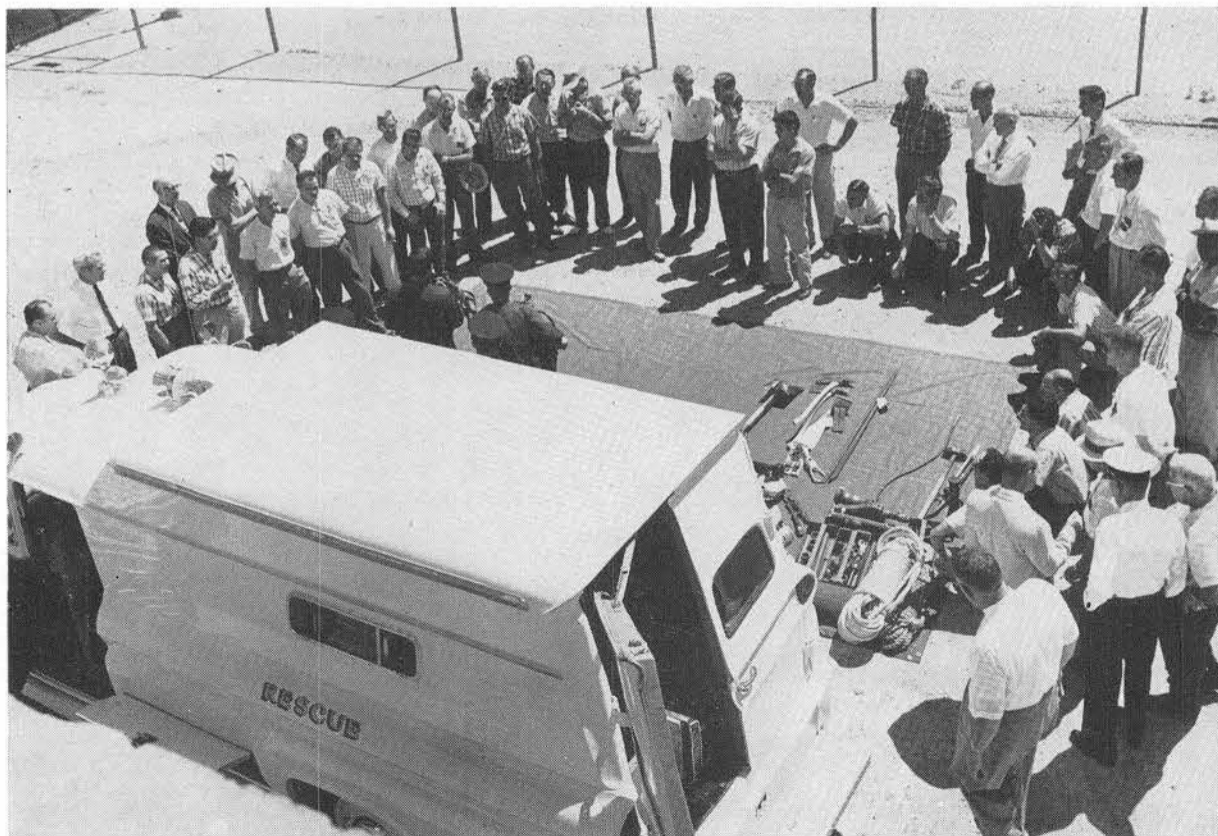
"We do not intend to use the force in emergencies which other agencies are already geared to handle," according to John Timmons of Emergency Planning Section 3232-1 which directs the force. "However, the Emergency Force could be used to help such

organizations as the Fire Department and Plant Security."

The force is composed of volunteers, some of whom possess special skills or knowledge which would be of value in emergency situations.

"Our plans are to train the force in handling different types of emergency problems," John said. "We will get necessary equipment and have it ready for use."

Last week, after assembly in Building 815, the force attended a demonstration of emergency and rescue equipment by the Albuquerque Fire Department.



EMERGENCY TRAINING—Special equipment was demonstrated to Sandia Laboratory's Emergency Force by members of the Albuquerque Fire Department.

The Sandia force will help the Fire Department or Security organization in case of any emergencies that may arise from time to time.

Sandia's Safety Record

Sandia Laboratory's current safety record of 122 days or 4,295,000 employee-hours without a disabling injury ended Tuesday as a maintenance employee working in the motor pool strained himself while installing a heavy cylinder in a vehicle.

At the time, the injury was painful but did not seem serious, however, pain built up over night and the employee reported to Clinical Medical Department 3330 the next morning. The employee is now recovering at home.

Livermore Laboratory

HAS WORKED

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