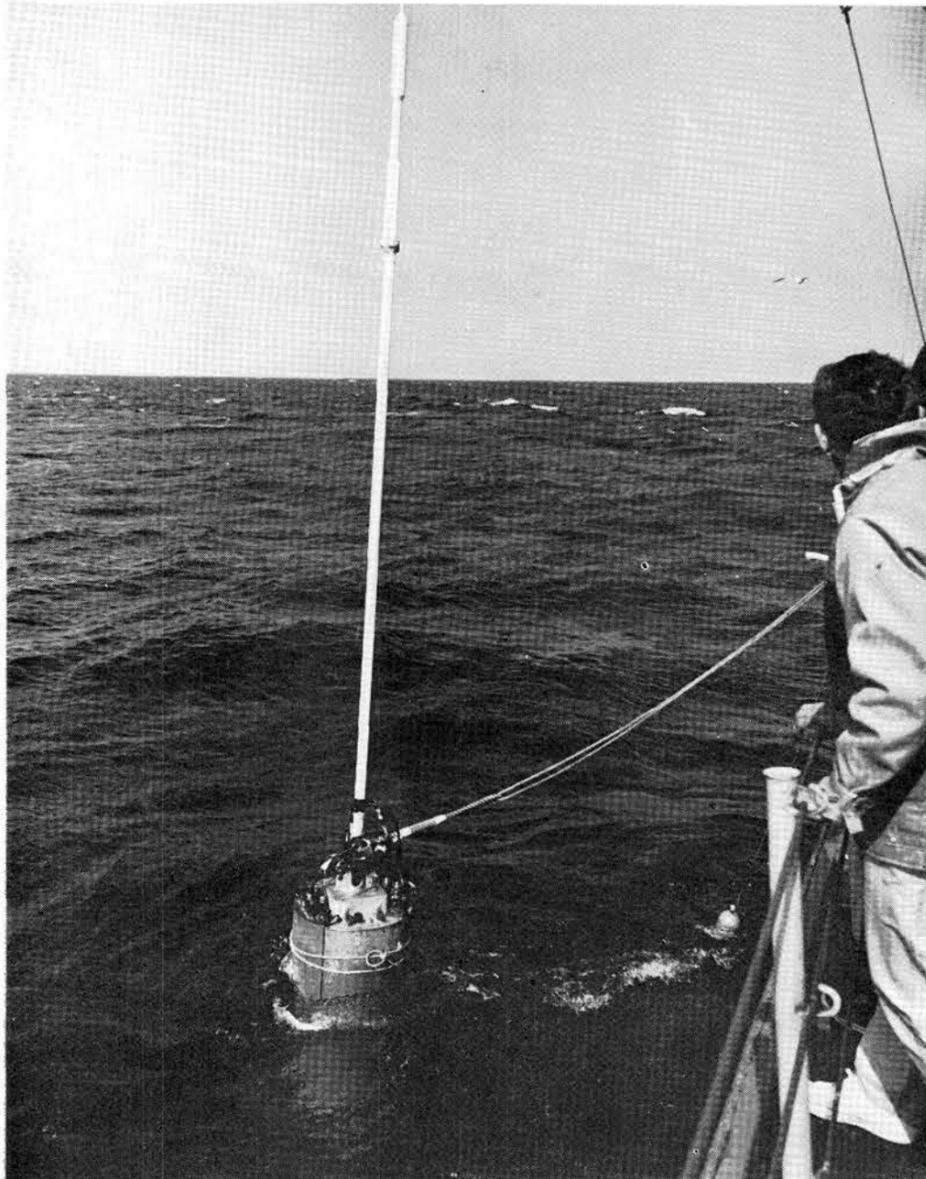


SANDIA LAB NEWS



VOL. 21, NO. 15, JULY 18, 1969



OCEAN-GOING telemetry system is this Sandia developed instrumented buoy which transmits signals from hydrophones suspended below. An array of several such buoys can be commanded from a remote control point. The antenna was designed by Phil Gelt (2624).

Salty Sandians

Signals from the Deep Heard By Labs B-SHA System

The problem of tracking objects dropped into the sea and then obtaining useful data on their subsequent performance has been solved by a group of Sandians who have developed a novel telemetering buoy system.

The third generation of B-SHA (Buoy-Suspended Hydrophone Array) has been built and successfully tested in recent operations at the SCARF range off Santa Cruz Island in the Pacific.

Originally developed by Harry Fisher (7283), Burt Bell (7514) and Jim Wade (7374), the system consists of an array of buoys, each with self-contained telemetering package, antenna, and suspended hydrophones. A central command post is located some distance away either on land or aboard ship. The first system was built in 1964 and tested later that year near the Bahamas. Mod I was built in 1966 and operated at Johnston Island and SCARF, and the third generation, Mod II, was employed this past April and May.

In 1966, Jeff Gorin (7291) joined the group developing B-SHA, and early this year was given responsibility for further development of the system.

Dick Vigil (7264), who began working with the group in 1967, is credited with the development of the successful Mod II configuration and he will be responsible for future applications of the hardware.

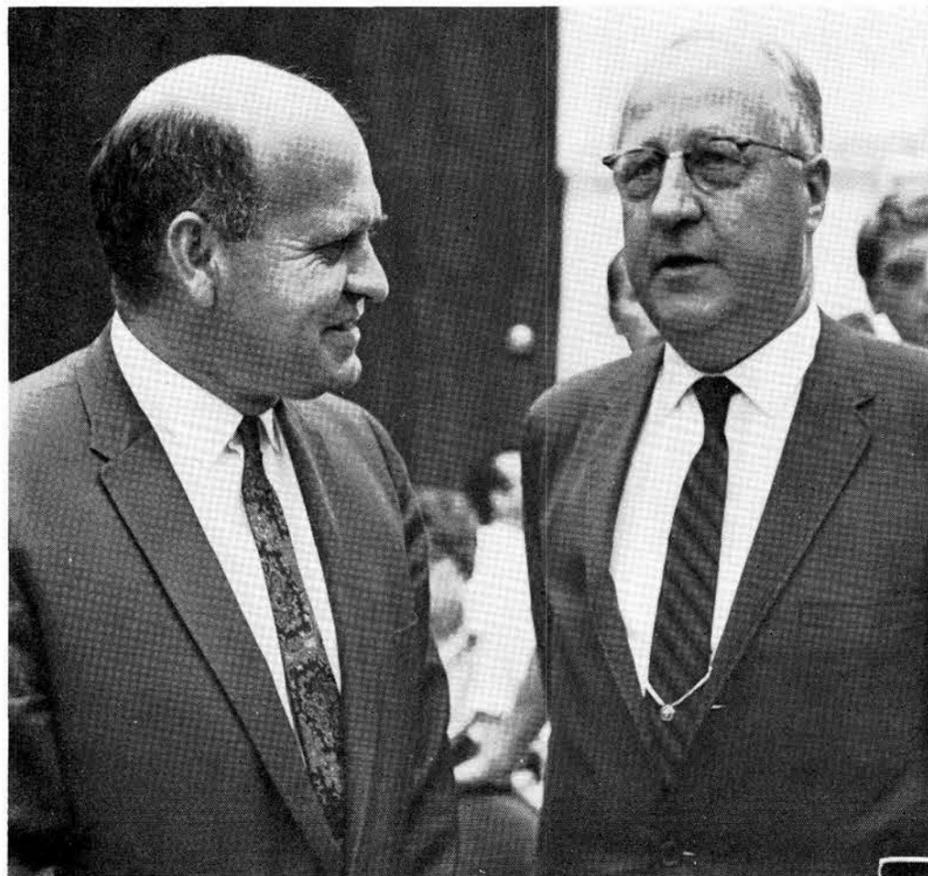
Suspended from each of the buoys, down to depths of 1500 feet, are two hydrophone assemblies. Each assembly has both a listening phone and an acoustical projector. Within the buoy itself is the telemetering equipment: a command receiver, two transmitters, and various signal conditioning instruments. A battery pack is attached beneath the buoy and an antenna, about 15 feet long, is located on the top surface. The special buoy antenna, which presented unusual problems, was developed by Phil Gelt (2624).

Located at some remote site—either at a land-based station or aboard ship—is a command center equipped with recording instruments, receivers and transmitters, and other telemetering or data processing instruments. In the B-SHA system, the command center is installed in a "transporter"—a metal box-like affair about 7 feet high, 6 feet wide, and 7 feet long—for mobility and rapid transport. The equipment could be installed aboard an aircraft.

"The beauty of this system," says Jeff, "is that it is self-contained and highly mobile. It can be transported quickly to any location where testing is planned. Thus
(Continued on Page Two)

Pulp Plant Problems

Sandians Active in Pollution Studies



CITY COMMISSIONER Harry Kinney (1222) visited briefly with Sandia retiree John Findlay, former Director of Electronic Component Development, who expressed concern about possible water pollution from the proposed pulp plant.

Lou Berry and John McDonald To Head New Directorates

Two new directorates have been created at Sandia Laboratories. Named to head the new organizations are Lou Berry, Director of Materials and Processes 5500, and John McDonald, Director of Material Sciences 5300.

The appointments represent promotions for both men and became effective July 1.

Lou, who has been manager of Materials Research and Development Department 5340 since 1965, previously served as supervisor of the Special Materials Division (1954-65), supervisor of Materials Applications Division in Livermore (1961-64), and supervisor of Coatings and Ceramics Division (1960-61).

A Sandian for 17 years, he also has worked in the areas of chemical and microchemical analysis, high temperature lubricant studies, and contamination control.

Before joining Sandia, Lou was associated with oil companies in Texas and later with the Los Alamos Scientific Laboratory.

A member of the American Society of Metals, he received his BS in chemistry from North Texas State College.

John McDonald has worked at Sandia since 1961. He was a staff member and group leader performing research in gas plating until 1964 when he was promoted to division supervisor. A year later he was appointed manager of Materials and Process Department.

A graduate of Purdue University with a BS and PhD in chemistry, John is a member of the American Association for the Advancement of Science, the American Chemical Society, Sigma Xi scientific society, and the American Institute of Aero-



Lou Berry



John McDonald

nautics and Astronautics. He is a member of an AIAA materials committee.

During four years in the U.S. Air Force, he served at Kirtland AFB and Sandia Base doing weapons research.

Engineers, conservationists, scientists, sportsmen, politicians. A number of Sandians in these categories, as well as others concerned as private citizens, have been showing up at public meetings on pollution problems this month to become informed and to express their views.

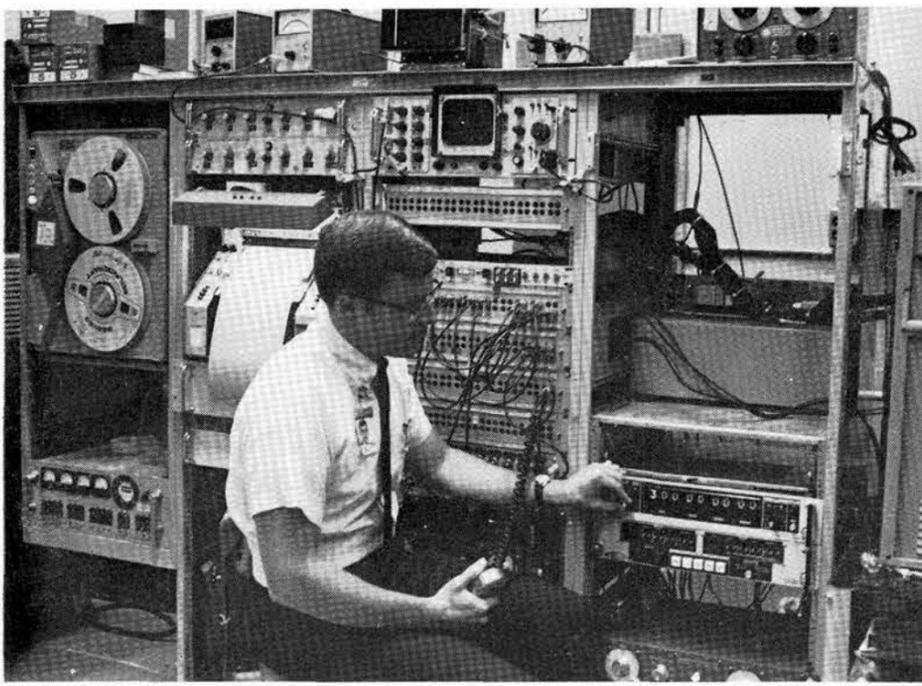
The purpose for the public meetings, of course, has been to examine the possibility of a large pulp plant locating between Santa Fe and Albuquerque. The advantages of employment and plant valuation would be offset by the disadvantages of air and water pollution — of yet unknown quantities say opponents of the proposed plant.

Many Sandians are expressing their opinion on the issue through backing the stands of organizations such as the New Mexico Citizens for Clean Air and Water, Izaak Walton League, Sierra Club, Albuquerque Urban Progress, and New Mexico Wildlife and Conservation Association. Others, such as Don Parker (3311) and Eric Jones (5114) are involved in more official ways.

The Chamber of Commerce's Albuquerque Industrial Development Service (AIDS) and Industrial Funds of Albuquerque (IFA) appointed a special committee to investigate any air pollution, water pollution and odor problems associated with operation of the proposed pulp paper plant. Don was named a member of this committee and was an active participant at a hearing July 8 at which time representatives of Parsons & Whittemore Inc., were on hand to answer questions.

By the time that three-hour meeting was over, spectators and participants were quite familiar with "BOD" (biological oxygen demand) and "COD" (chemical ox-

(Continued on Page Two)



CONTROL POINT equipment, installed in a transporter for mobility, includes recorders, receivers, and other telemetering devices. Up to five buoys can be remotely controlled from a land or sea based command center. Jeff Gorin (7291) has responsibility for development of B-SHA.

Continued from Page One

Signals from the Deep

we need not rely on the existence of permanent test range facilities, but can take it where a job is to be done when it needs to be done."

An important feature of the telemetering equipment aboard the buoy is that it remains inactive until needed and can be activated or deactivated upon command from the control point. Thus the system can be arrayed well in advance of the actual tests or, in case of bad weather or other delaying circumstance, can remain for long periods at standby readiness without significant battery drain.

The command post, equipped with two 14-channel magnetic recorders and one strip chart recorder, can be used to command, monitor, and record data from as many as five buoys simultaneously. "This has given Sandia not only a versatile underwater tracking capability, but also has provided us with a system of calibrated devices with which to make accurate acoustical measurement—quantitative as well as qualitative," says Harry. Among data yielded from the system are rate of descent of a test object, its entry location, and the exact recovery locale.

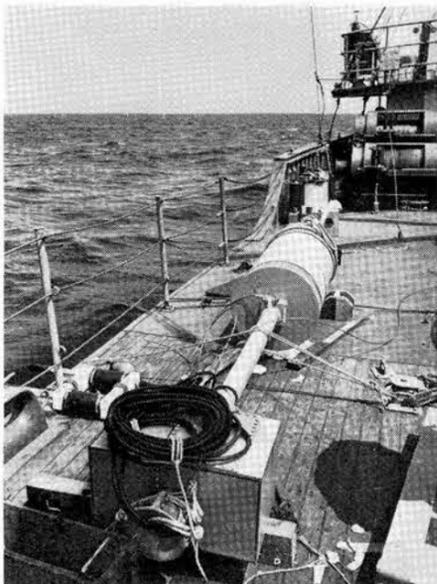
Dick, who has responsibility for the electronic hardware, says that "the system is designed so that we can tailor the electronics to fit the needs of specific tests without altering the basic array." Thus Sandia has an ocean-going telemetering capability which has a great deal of mobility and can be adapted to specific needs with little basic redesign.

In tests performed last Spring off Santa Cruz, the system performed to expectations. The tests were conducted by a team consisting of Jeff, Dick and Arlon Hudgens (7374) who provided mechanical technician support. Harry served as consultant and members of DOD Range Operations Division also provided assistance. The tests were in support of Exploratory Systems Division II.

The operation was conducted from aboard the research ship Swan, owned and operated by AC Electronics Defense Research Laboratory, a division of General Motors. The command center was located on Santa Cruz Island, about 7 miles from the buoys.



SANDIAN Dick Vigil (7264) prepares the instrumentation package of B-SHA for deployment. Dick developed much of the electronic hardware.



RESEARCH SHIP SWAN was used to deploy buoys in recent tests. Buoy measures 25 feet in length and weighs 400 pounds.

Defensive Driving Course Helps Driving Record, Maybe Your Wallet

Did you know that the Department of Motor Vehicles maintains a "point system" file on each driver? In this file are recorded the incidents affecting your driving record such as violations of traffic regulations, citations for involvement in accidents, etc. Heretofore, there has been no way to reduce the number of points on the record but now, under a recent ruling, a driver can, by good performance, reduce the number.

However, in order to be in a position to subtract points from the record, the driver must first complete the National Safety Council's Defensive Driving Course. One point for this completion is subtracted from his record. After that, for the first three months of driving without a citation, another point is subtracted. If he then completes an additional six months without a citation, another point is subtracted. Thus, after completing DDC and going for a full year without a traffic citation, he can erase a total of four points from his driving record.

The maximum number of points that may accrue against one's driving record is 12, at which time the Commissioner of Motor Vehicles may suspend or revoke the license. Points are assessed according to the seriousness of the offense, e.g.:

Offense	Points
Defective muffler or exhaust	2
Driving wrong way on one-way street	3
Passing within an intersection	4
Failure to obey school signs and signals	6
Following too closely	6
Speeding 10 to 19 mph over limit	6
DWI — either alcohol, drugs or narcotics	12

Here is an example of how a driver may

reduce the number of points against his record after taking the Defensive Driving Course:

Date	Points	Balance
February 1	he still has 6 points	6
March 1	he takes DDC (subtract 1 point)	5
June 1	no citation (subtract 1 point)	4
September 1	no citation (subtract 1 point)	3
March 1, '70	no citation (subtract 1 point)	1

One insurance company which insures only persons over 55 will give a 10-percent discount on premiums to policyholders who have completed the DDC.

Out-of-hours classes in DDC will soon be offered to active and retired Sandians and their families.

ASME Western Conference In Albuquerque Aug. 25-27

Sandia will be co-sponsor with the University of New Mexico of the 1969 American Society of Mechanical Engineers Applied Mechanics Western Conference to be held here Aug. 25-27.

Some 400 persons are expected to attend the technical sessions, general lectures and symposia.

Co-chairmen are Orval Jones (5130) and Professor Frederick Ju of the UNM Dept. of Mechanical Engineering. Other Sandians active in conference planning include: Fred Norwood (1721), publicity and ladies' program; William Warren (1721), transportation; Larry Bertholf (5162), social program; and Lee Davison (5133), information. Additional help is being given by Ralph Wilson (4220), president of the local ASME chapter, and John Anderson (1516), chapter publicity chairman.

Continued from Page One

Pollution Studies

Eric, a native of Oregon, was employed by a large lumber company there before coming to Sandia as a physicist.

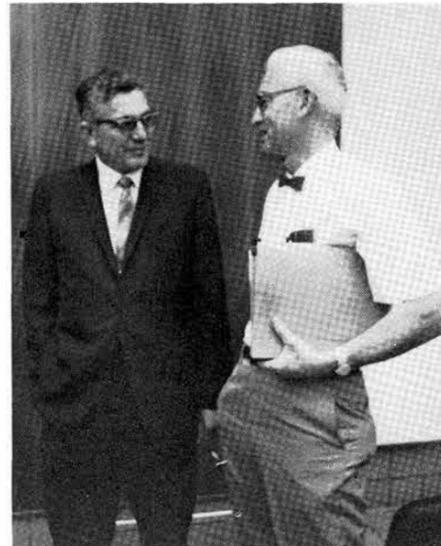
On an issue such as this there is room for the opinion of scientists, with their ability to define pollution in terms of "parts per billion," and there is also room for the opinion of private citizens who obtain their drinking water from shallow wells in the Rio Grande Valley or who might smell the "rotten egg" odor (typical of existing pulp plants) during a period of temperature inversion.

An August hearing will be held in Santa Fe to determine air pollution standards for the state. By that time, even more Sandians may be working to help solve a problem of local and statewide dimension.

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AIDS-IFA committee member Robert Roundtree, vice president of the Public Service Company of New Mexico, talked with Dick Illing (9524) during the hearing recess. The public could submit written questions to pulp plant officials.



DURING A BREAK at the public hearing July 8, AIDS-IFA committee member Don Parker (3311) was approached by this elderly Valley farmer who wanted assurance that his apple orchard would not be affected by pulp plant effluent.

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Man and His Environment

Governor Appoints Sandian to State Environmental Quality Study Council



Bruce Held of Environmental Health and Medical Services Division 8263 has been appointed by Governor Reagan to serve a four-year term as a member of the State Environmental Quality Study Council.

The Council was established by the California Legislature in 1968 to study and to recommend policies and programs to improve California's physical environment on a long-range basis.

Members in the Council include many state and municipal officials. "The Council is concerned with all aspects of the environment — water resources, air and water pollution, noise, waste management, odor, the whole gamut of pesticides — anything that affects the environment," says Bruce. "The Council gets involved anytime the problem or situation goes over county lines, but it also is a sounding board for local problems and will help authorities, through local hearings, to get legislation enacted."

Bruce will also serve on two subcommittees — the Community Noise Subcommittee and the Air Pollution Subcommittee.

"We'll be looking into noise problems at the Los Angeles International and the Santa Monica airports in September," says Bruce. "There are several million dollars worth of claims against these airports and the question now comes up, 'Should the state take over and set up criteria for all airports?', and, if so, 'How do you control jet noise?'. With the supersonic transports coming in, more problems develop. I'm afraid it's going to get horrendous."

"The Air Pollution Subcommittee is holding hearings on an oil refinery proposed for Palm Springs," continues Bruce. "This is another nebulous case because the refinery is being set up to meet the minimum air pollution standards, which actually aren't very strict. The minimum requirements might be fine up around the Richmond area where pollution can be expect-

ed, but in a resort area such as Palm Springs, the criteria no longer apply. So what kind of criteria should be used?"

Bruce's appointment and the type of problems that the Council is getting into relate directly to his background in industrial hygiene, especially in the field of noise and air pollution. Before joining Sandia in June 1967, he worked as an industrial hygienist in AEC installations and private industry. Bruce is a member of the American Industrial Hygiene Association, the Health Physics Society, and the national honorary Scientific Research Society of America. Several of his articles have been published in the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION JOURNAL. In 1967, he was named Regional Coordinator — Western States of the American Industrial Hygiene Association, and last fall was appointed to the Governor's Advisory Council on Atomic Energy and Radiation Protection in California for a two-year term.

Bruce received a Bachelor of Science degree in biology in 1955 from Cornell University. He was awarded a Master's degree in public and industrial health from the University of Michigan in 1964 while studying under an Atomic Energy Commission Fellowship.

Henry Hanser Awarded MS Degree in Engineering Mechanics



Henry Hanser (8332) received a Master of Science degree in engineering mechanics recently from the University of Santa Clara.

The last two years of his graduate courses were completed while attending classes under Sandia's Educational Aids Program. Previously, he did graduate work at Stanford University for a year.

Henry joined Sandia Laboratories Livermore in March 1967 and has since been involved in component design in an advanced development group. Before coming with Sandia, he was a stress analyst at Ames Research Laboratory, Moffat Field, for two years and at United Technology in Sunnyvale for over three years.

He received his BS degree in mechanical engineering from California State Polytechnic College in 1961.

Fluidics To Be Subject Of July 30 Colloquium

Interesting fluidic innovations, as well as several particular applications of AEC interest, will be discussed by Richard Gottron of Harry Diamond Laboratories, at the Sandia Laboratories Livermore Colloquium on July 30.

Mr. Gottron has been involved in the research and development of fluidic systems since the infancy of fluid control amplifiers. His efforts in the field have spanned the spectrum from biomedical applications to experimental sensing devices using fluidic components.

He received his Bachelor's degree from West Point Academy and his Master's from Purdue University. Last year Mr. Gottron established a fluidics research facility and its associated academic program for the Advisory Group for Aeronautical Research and Development (AGARD) at the von Karman Institute in Belgium.

Tickets will be required for admission. D. L. Hartley (8335) is host.

Congratulations

Mr. and Mrs. Jimmie Bauman (8121), a son, Kurt Evan, June 23.



"NOT NEW" Material in hold area is basis for saving of time, money in Plant Engineering and Maintenance projects. Joe Genoni, supervisor of Material Storage Section 8245-2 (center), and Frank Bacon (right) look over items that have been used many times as Charles Robles unloads other items.

Saves Time, Money, Paperwork

'Hold Area' Vital Link in Plant Engineering, Maintenance Operations

Away from the engineering and development activity at Sandia Laboratories Livermore is Bldg. 963. This building and its environs are known as the "hold area," the collection point for all the materials and equipment used in Plant Engineering and Plant Maintenance projects throughout the Laboratory.

"The facility saves us time and money," says Joe Genoni, supervisor of Material Storage Section 8245-2. "It's difficult to place a dollar value on the savings because some of the items are used over and over, perhaps up to 10 or 12 times, but I'd say it would go from \$50,000 to \$65,000 each year."

Materials and equipment may be gathered in the hold area for immediate use or may arrive over several weeks and be stored until needed. When a work order is initiated, it goes first to Frank Bacon, the custodian in the hold area. He fills as many of the requirements as possible from items on hand. "As an example, take metal partitioning," says Frank. "We have a good supply. Some of it has been used time and again for 10 years and is still in good condition." Remaining requirements are withdrawn from General Stores or are ordered by Purchasing.

"Generally, the orders involve workmen in a number of crafts," says Joe. "When the cold chamber in one of our test buildings was revamped recently, the work order included requirements for piping nitrogen, electrical fixture connections, and machinery and equipment installation. Frank issued the materials to the respective craftsmen — the plumber, electrician, and millwright.

When the job is done whatever is left is brought back to the hold area and Frank sorts it out, returning some items to General Stores, keeping others in the hold area, and sending the rest to Reclamation.

Joe says time is saved especially on small jobs. "For instance, threaded rod comes in six-foot lengths. The workman needs a mere 10 inches, so he withdraws from

the hold area a 24-inch piece left from a previous job and returns the remaining 14 inches. The work gets done quickly without a lot of paperwork and a wait for delivery.

"The same is true of replacement parts," continues Joe. "Time and again the workmen use parts from assemblies that were broken or not operating as a unit."

Representatives from Plant Engineering and Plant Maintenance go through the hold area twice a year to determine what is no longer useful or of value in fulfilling their requirements.

"We're now compiling an inventory so that a tab run can be issued and people will thus know what is available. You can start right with the men on the Plant Engineering drafting boards — if they know a specific item is in the hold area, they can incorporate it into their drawing at the outset."



NEW SECURITY REMINDERS—As part of the continuing security program at Sandia Laboratories Livermore, a new booklet, "In Your Hands," and a series of posters and coasters have been developed by illustrator Evelyn Bachman of Technical Art Section 8233-2 (right). Evelyn and Jim Spirup of Security Administration and Operations Division 8261 display the first of the posters to be used and one of the coasters being distributed throughout the Laboratories.

Sympathy

To Pat Leigh (8161) for the death of her father-in-law in Deerfield, Fla., June 10.

To Dottie Thompson (8262) for the death of her mother in Livermore, June 9.

To Bill Kent (8163) for the death of his mother-in-law in Springfield, Ore., June 16.

To John Bryson (8223) for the death of his mother-in-law in Livermore, June 26.

To Sue Matthews (8245) for the death of her father in Hudson, S. Dak., June 13.

To Don Skinrod (8151) for the death of his son in Livermore, July 6.

Labs Man Cited by Police

James Kennedy (5133) has been cited by the Police Department for his driving—with a \$25 savings bond.

"I was driving in town with my family and had noticed this police car some distance behind me," Jim relates. "After a couple of miles I pulled into a shopping center and he followed. Then the policeman came over and commended me on my driving. He had taken quite a few notes and said that it was a rare driver who didn't commit some driving error in two miles of city driving."

The award is sponsored by the Albuquerque City Police and is given to encourage better driving practices by city drivers. Jim says he has had a few prior citations, but they weren't quite so enriching.

Deaths



George Henfling



Hazel Whitlock



Frank Pena



Bill Metzger



Ralph Kennedy



Estelle Richardson

George Henfling, an order analyst in Administrative Support Division I, died June 30 after a long illness. He was 56.

He joined Sandia in October 1954.

Survivors include his widow and a daughter.

* * *

Hazel Whitlock, a senior clerk in Communication Systems Division 9415, died July 5 after a long illness. She was 42.

She had worked at Sandia Laboratories since April 1957. She is survived by her mother and daughter.

* * *

Frank Pena, a property clerk in Instrument Service Division 4615, died as a result of a freak accident July 4. He was struck by a stray bullet in his backyard, origin still unknown. He was 33.

He had worked at Sandia since April 1962.

Survivors include his widow and four small children.

* * *

Norbett (Bill) Metzger, AEC Auditor in Charge for Sandia Laboratories, died following a heart attack on July 10. He was 45 and had been at the Laboratories since 1965. He is survived by his widow and young son.

* * *

A. Ralph Kennedy, a graphics programmer in Division 7653, died suddenly July 9. He was 23 and had worked for Sandia three years.

Survivors include his widow and a two-year-old son.

* * *

Estelle Richardson, secretary for Measurement Standards Department 7450, died June 29 after a lengthy illness. She had been with Sandia 17 years.

She is survived by her mother, a brother and three sisters.



CREW with an express purpose! This high-flying organization provides speedy aid to needy persons in isolated communities. The plane flew about 80 missions this past year. Members include, from left: Bob Welk of the Albuquerque Welfare Department, Floyde

Adams (9225), Lt. Cdr. Tom Anderson of Sandia Base, Bill Jacoby (9232), Bud Martin (9235), and Ed Young (5165). At rear, standing on wing, are Art Eiffert (4250) and Joe Flanagan (3455).

Compassion On the Wing

St. Jude Express Speeds Aid to Villages

The St. Jude Express, organized two years ago by Sandians Ed Young (5165) and Joe Flanagan (3455), continues to provide airborne assistance to impoverished communities in remote areas of New Mexico, Arizona, and Mexico.

The non-profit organization, which now has 11 members including six Sandians, has acquired an aircraft, a warehouse and office at the Sunport, and has established a city-wide collection network for food, medicine and clothing. The Express, a six-place Piper Cherokee, flew about 80 missions and nearly 60,000 miles during the past year.

Other Sandians active in the group are Floyde Adams (9225), Art Eiffert (4250), Bill Jacoby (9232) and Bud Martin (9235). Among members of an advisory committee are Ray Powell (3000), Marv Sektan (3113) and Mike Michnovicz (7632).

In addition to flying food, clothing and medicine to remote villages, the Express provides transportation for the Amigos de Las Americas (a sort of privately-run Peace Corps), and others involved in assistance work in poor communities. The plane serves 15 mission stations throughout the Southwest and Mexico and supplies thrift stores in outlying New Mexico towns. Three such stores are now in operation and the group hopes to have 10 opened by the end of the year. Collection of articles for the stores is handled by a St. Vincent de Paul group headed by Larry Kiefer (7344).

"This is a unique system for aiding persons less fortunate than ourselves," says Ed. "The plane provides speed, mobility and an instant response capability not often found in groups of this sort." The group originally rented a plane — at members' expense — but were fortunate enough to acquire their own craft last year. The main source of income is individual donations and church collections.

The group plans to make its services available on a state-wide basis to anyone in need by this fall. The person or family needing food or clothing assistance need only contact their local clergyman and tell him of their problem. He can then call the Express and the plane will be dispatched to the area carrying up to 1000 pounds of cargo.

The St. Jude Express is international

and non-denominational, and is incorporated as a non-profit, tax-deductible organization under state and federal laws. Anyone having goods, talent, time or money

they would like to contribute should write to St. Jude Express, P.O. Box 5333, ZIP 87115, or call one of the members listed above.

Student Movement in Venezuela Five-Month Interest for Secretary

When a Sandia secretary quits work to accompany her husband to another city, it's not usually Caracas, Venezuela, nor would she usually spend 44 hours a week taking notes in Spanish. But that's how Judy McMillan (5111) spent the past five months.

Upon return to Sandia, Judy explained, "I really didn't visit the usual tourist spots, so what can you write about?" Well, as a start, Judy and her husband Doug lived in a "pension" run by a family from Spain. The other guests were from Paraguay, Argentina, Canary Islands, Germany, England (an architect who only stayed one week), and Venezuela. No other Americans.

Doug speaks Spanish and is working on his doctorate in Latin American History at the University of New Mexico. His dissertation on the history of student political activity (1928-1965) in Venezuela was the purpose of their visit.

Every day, including a half-day Saturday, the couple spent hours at either the National Library or the local newspaper office. Doug would scan the material and when he came across information he needed, Judy (who speaks and reads very little Spanish) copied the material and later they both retyped it on note cards.

The National Library occupies most of a square block, and parts of the structure date back to the 1600's. Upon entering, every person is given a "ficha," a date slip which must be surrendered upon leaving. The stacks are closed and the "ficha" is taken by an attendant as security when each book is checked out. (The limit is one-at-a-time and no material can be taken out of the building.)

"It was a busy place, used by grade school through high school youngsters as well as adults," Judy recalled. "Often we had to wait 15 minutes to obtain our next book."

During the siesta and on Sundays, the McMillans walked to different parts of the city. Tall, modern buildings and high rise apartments in the downtown area contrast sharply with the "barrios" — areas of slums and sub-standard housing, which surround the city. Caracas is roughly five miles wide and 15 miles long and is ringed by mountains. "Venezuelans are very respectful about their hero Simon Bolivar. A large plaza in the middle of the city is named in his honor and no man without a jacket can cross this plaza without being stopped by a policeman and fined," Judy said.

They were in Venezuela during the national election Dec. 1 — the country's third democratic election since the overthrow of former dictator Perez Jimenez. This was also the first election with relatively little violence although the streets were well-patrolled by soldiers with machine guns in hand. "We were advised to carry our passports at all times," Judy said, "and we usually crossed to the other side of the street to avoid meeting the armed soldiers. We were afraid that some of them might be a little trigger happy."

Judy and her husband were also in Caracas during the pre-Lenten carnival. "There were several parades with bands and elaborately costumed participants," Judy said. "Confetti was the big thing. Some mornings the confetti was almost a foot deep on the main plazas, and children from the barrios gathered there to resack the confetti and sell it again."

Doug interviewed a number of student leaders and found that the student movement there was quite sophisticated and influential. Through personal contacts and background material he has been able to trace definite trends of student influence in Venezuela through three generations.

National, Regional Honors to Labs Team

Seventeen Sandians were winners of national and regional awards in the postal series of the 1969 rifle and pistol matches sponsored jointly by the National Industrial Recreation Association and the National Rifle Association.

The air pistol team of Bob Davis (7342), Bill Stephenson (2611), Dick Vivian (1611), and Dave Bennett (2342) took first place in the national competition. Among winners of national individual awards were Dave Overmier (9122) — 3rd place, air rifles; Bob Davis — 5th place, air pistol; and Ray Mosteller (9132) — 19th place, .22 cal. pistol.

In the regional division there were three first place team awards:

.22 cal. rifle — Curt Moses (1548), Wes Kimbrell (4512), Dave Overmier, and Buz Milton (5443).

.22 cal. pistol—Ray Mosteller, Dave Bennett, Will Farrar (7351), and Bob Davis.

Air rifle — Dave Overmier, Karl Svensson (7651), Bob Klett (9513), and Doug Loescher (5153).

Sandians dominated four divisions of regional individual competitions:

.22 cal. rifle — Ernest Graves (7333), 1st; Sanford Erickson (5421), 2nd.

.22 cal. pistol — Dave Bennett, 1st; Will Farrar, 2nd; Bob Davis, 3rd.

Air rifle — Ken Nowotny (2442), 1st; Bob Klett, 2nd.

Air pistol — Bill Stephenson, 1st; Dick Vivian, 2nd; Luciano Archuleta (3520), 3rd.

Speakers

O. M. Schroll (2355), "Vacuum Deposited Thin Film Bridges in Electroexplosive Devices"; H. S. North (3351), "Initiation of Electroexplosive Devices by Lightning," Sixth Symposium on Electroexplosive Devices, July 8-9, San Francisco.

R. E. Thompson (7653-1), "Computer-Aided Precision Graphics," Third National Conference of the Association for Precision Graphics, June 5, Dallas.

Lorella Salazar (3433), "Employment Opportunities," American G.I. Forum Auxiliary, June 1, Kansas City, Kan.

R. N. Jefferson (9141), "Nuclear Reactors at Sandia," Lions Breakfast Club, June 5.

M. I. Weinreich (3421), "Foreign Educational Systems and European History," Highland Kiwanis, June 17.

H. B. Young (7414), "Make Every Day an Adventure," La Luz Chapter, American Business Women's Association, June 26.

J. P. Brannen (1741), "Digital Simulation of Systems of Non-Linear Functional Equations," SIAM 1969 National Meeting, June 10-12, Philadelphia.

M. M. Sluyter (9343) and K. J. Touryan (9340), "The Effect of a Magnetic Field on a Rotating Cone in Compressible Flow," AIAA Fluid and Plasma Dynamics Conference, June 16-18, San Francisco.

F. M. Roddy (2633) and J. Hewitt (University of Denver), "Use of Microstrip Transmission Line to Improve Broadband Electromagnetic Measurements," IEEE Electromagnetic/Compatibility Symposium, June 17-19, Asbury Park, N.J.

Authors

M. A. Gusinow and J. B. Gerardo (both 5243), "Formation of Molecular Helium During the Early Afterglow," Vol. 180, No. 1, PHYSICAL REVIEW.

R. E. Nettleton (5151), "Effective Hamiltonian for Polarization in Displacive Ferroelectrics," May 15 issue, JOURNAL OF APPLIED PHYSICS.

J. R. NiCastro (9114), "Similitude for Shock-Wave Initiated Flux Compression," Vol. 12, No. 4, PHYSICS OF FLUIDS.

G. J. Simmons (100), "The Game of SIM," April issue, JOURNAL OF RECREATIONAL MATHEMATICS; "Correlation Properties of Binary Code Sequences," PROCEEDINGS OF THE COLLOQUIUM ON INFORMATION THEORY, published in April by the Bolyai Mathematical Society and the Hungarian Academy of Sciences.

N. S. Gillis (5151), "Soft Phonon Mode in SnTe," June 9 issue, PHYSICAL REVIEW LETTERS.

E. D. Jones (5114), "Nuclear Magnetic Resonance Measurements in the Rare-Earth Group-VA Intermetallic Compounds," Vol. 180, No. 2, PHYSICAL REVIEW.

J. F. Reed and W. H. Curry (both 9322), "A Comparison Between Transonic Wind-Tunnel and Full-Scale Store Separation Characteristics," May-June issue, JOURNAL OF AIRCRAFT.

Leading the Pack

Shawkeet Hindi Builds, Races Car No. 11



SHAWKEET HINDI (3462) built this \$5000 Super Sprint machine in five months of off-hours effort last winter, has driven it to top spot at Albuquerque Raceway.

Since 1960, Shawkeet Hindi (3462) has built a racing car each year. Now, with a mighty little yellow and orange bomb marked No. 11, Shawkeet is leading the pack at the Albuquerque Raceway track.

In the races each Sunday, Shawkeet picks up enough points to keep in the lead. Since the top cars are positioned in the back of the lineup for the starts, this means that Shawkeet invariably has to thread his way through a field of a dozen or more screaming racers to win — a feat that takes a very fast car and a very cool driver.

"I like to drive," Shawkeet says. "This is competition, this is excitement, this is what it's all about — but I also like to build cars. This is a challenge."

No. 11 is a "Super Sprint," a category which allows for unlimited engine power. The size (but not the weight) of the car is limited to a 105-inch wheelbase and safety requirements are strict — otherwise, the design of the car is up to the builder.

Shawkeet uses a 332 cu. in. Chevy engine with fuel injection in No. 11. The motor has been bored and the heads polished. It burns methanol fuel. The car has no starter and no clutch. The drive is straight through to the rear end, an Indianapolis-type configuration. When a gear change is required for track conditions, the proper gear is inserted before the race.

The driver controls the car with only an accelerator and brakes — big disc brakes.

"You drive by the seat of your pants — really," Shawkeet says. "You sense the feel of the car with your whole body. In a turn, this is important. As you come into it — you're always turning left — you feel the critical point when you throw your front wheels to the right and go into a controlled spin, controlled through engine power."

The constant turning to the left is a factor to consider in building the car. Shawkeet compensates for the turning in the suspension of the car. It is slightly offset in the front springs and rear torsion bars.

He spent five months last winter building No. 11. He has about \$5000 invested in it. Costs add up quickly — tires, for instance, are about \$80 each.

Shawkeet has about decided that this will be his last season for driving. "I've been lucky," he says, "and I've had great fun. I just may quit while I'm ahead."

He still plans to build race cars, however.

"There's a few more ideas I'd like to try," he says.

With a Sandia ID card, admission to the Raceway track is \$1.50 for adults, \$1 for juniors. Kids under 12 are admitted free. The races start at 8:30 on Sunday evenings. The track is located on South Broadway.

'Stress Analysis' -- People Break Too

By Bette Graham
Clinical Psychologist, 3342

People are often curious as to the work of a clinical psychologist, especially at Sandia. "What do you do there?" "What do people mean by mental health and mental illness?" "Is there a difference between a psychologist and psychiatrist?" "Is there a formula I can use to solve my problems?" These are the questions that have been asked of me from time to time.

Mental health professions are drawn from many disciplines. The clinical psychologist's basic training is in the behavioral sciences — psychology, sociology, anthropology; the studies of people, and how they live and work together. In addition to this academic background, he must have advanced training in human relations and psychotherapy. A psychiatrist is a medical doctor who has graduated from Medical School, served an internship, and has had special training in the treatment of nervous and emotional disorders. Although they may come from different backgrounds, the mental health professions have one thing in common, to help the people that they see lead fuller, happier, and more productive lives.

We all feel life's stresses and strains, and we show our reactions to them in different ways. Some people have physical

symptoms, are tired or have vague aches and pains, while others feel depressed or "nervous." The task of the psychologist is to help people find alternative, healthier solutions to their problems.

A person who has a mental problem may be reluctant to ask for help, thinking this is a sign of weakness; actually, it takes a great deal of strength to be able to admit to one's self that a problem does exist. People hesitate to seek help for an emotional problem, but will hurry to the doctor at the first sign of a fever. Early attention to emotional difficulties is as important as early treatment of physical ills.

The role of the clinical psychologist in private practice is generally focused on offering help over a long period of time with personality and marital problems. For the clinical psychologist in an industrial setting, the concentrated effort is on prevention, through education, "crises intervention" — offering aid during times of stress, and short term counseling with personal and family problems.

In addition, the psychologist in a setting such as Sandia can offer insights into human relations such as the employer-employee relationship. He can also often offer practical suggestions for greater job satisfaction so that discontents are not carried home in a briefcase.

Out of Hours Program

Sandia Women Earn Tech Institute Certificates

Two Sandia women, draftsmen in Design Definition Division 7651, recently earned the equivalent of a Technical Institute certificate in Sandia's out-of-hours education program. They completed the Drafting and Design Electromechanical curriculum and became the first women to earn a TI certificate in Sandia's program.

Mary Ward started the Sandia course in 1960. She transferred four courses from UNM but completed the rest of the 21 courses during noon hours and after work. The mother of three children, she completed the homework assignments between household chores. Her husband is an Albuquerque policeman and works evenings. Mary earned her certificate the hard way — "I had to pay for babysitters," she says. She plans to continue taking courses at UNM next fall.

Alice Smith also started the Sandia program in 1960 after transferring two courses from San Diego State College. The Sandia program included several courses on combinational logic design and sequential logic design. The program stressed math (algebra, geometry, calculus) and included two physics courses and a course on FORTRAN.

Alice's husband is also a Sandia draftsman. She says the hardest part of the program was "staying with it" through the years.



COMPLETE COURSE — Alice Smith and Mary Ward (both 7651) earned the equivalent of a Technical Institute certificate in Sandia's out-of-hours education program, the first women to do so.

Retiring

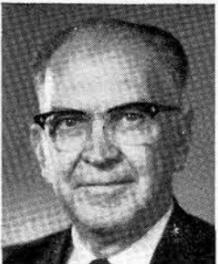


James Caller, a staff member in Connectors and Cables Division 2634, will retire July 31. He has been assigned to the Electronics Components Department since joining Sandia in October 1952 and his work has been in the development of coaxial, RF, and high-voltage connectors.

Mr. and Mrs. Caller have a married daughter living in Roswell and two grandchildren. The Callers will continue to live in Albuquerque following Jim's retirement. He plans to work part time as a consultant for one or more connector companies. "The balance of time will be spent enjoying ourselves," Jim says. "We'll travel as the spirit moves us." Jim has several hobbies—playing an electric guitar, collecting coins, fishing, and dabbling in stocks, especially mutual funds.

Immediately following his retirement, Jim and his wife are leaving for a month-long auto trip throughout the Pacific Northwest. At one stage, they'll leave their car at Prince Rupert and take the ferry north through the Alaskan waterway. Jim says they plan to go at least as far north as Juneau, Alaska, and return by way of Vancouver, British Columbia.

* * *



Calvin Thompson, a staff assistant in QEST Section II 7424-2 of Stockpile Sampling Operational Division, Amarillo, Texas, is retiring the end of this month. He joined Sandia in October 1961 at Medina Base in San Antonio and transferred to Pantex in 1966. Before his employment with Sandia, Cal had worked for 24 years for Petty Geophysical Engineering Company in San Antonio.

Mr. and Mrs. Thompson will return to their home in San Antonio at 1607 Alhambra. They recently purchased a small travel trailer and their immediate plans include a two-month tour of the North Central U.S. and the West Coast.

"After our trip our plans are indefinite," Cal says. "We'll get re-established in our home and then visit our son and family (one granddaughter) in Corpus Christi. I like the Gulf Coast fishing and hunting."

* * *



James Wade, a staff assistant in Shop Services Section II 4211-2, is retiring July 31. He came to Sandia in November 1951 from Minneapolis where he had been employed in an arms plant.

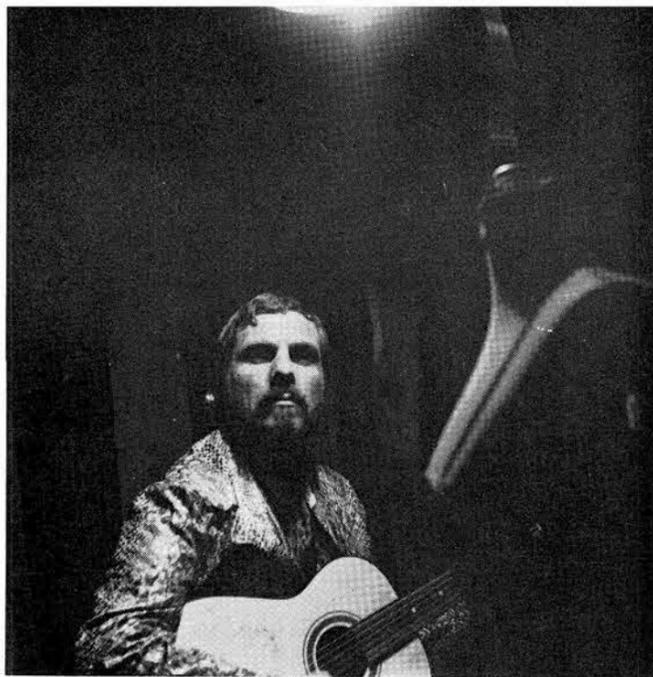
Mr. and Mrs. Wade will continue to make their home at 3131 Countryview SW, where Mrs. Wade has flower gardens and Jim has corrals and a training arena for his horses. Jim trains cutting horses and says it is the most satisfying and enjoyable hobby he knows. Jim has a mare that he has been working with for four years, and he'll be entering her in a number of shows between now and State Fair time in September. "After that time, I'll decide if I want to return to work. Right now, I'm tired of the rigid routine of working and am looking forward to some leisure time," Jim says.

* * *



Gustav Kleindienst of Electronic Inspection 4213-3 will retire July 24. He was employed by Sandia in December 1951 in the packaging organization. Gus says when he transferred to Inspection he became interested in electronics and has enjoyed his work and the many friends he made there very much. Before joining the Laboratories he worked as a carpenter for 20 years.

Gus is taking early retirement because of ill health. He and his wife Ruth, who also works at the Laboratories (7431-2), will continue to live in Albuquerque. Because of his health, Gus says he will stay home and take life easy. He likes reading and says there are so many good things to read he knows he'll enjoy his retirement



BRUCE HAWKINSON
plays Valentine
Xavier

'Orpheus Descending'

Bruce Hawkinson Looks Good in Snakeskin on Adobe Theatre Stage

Bruce Hawkinson (4135) is the man in the snakeskin jacket.

It is a symbol of something on the Corrales Adobe Theatre stage, but like most of Tennessee Williams' symbols, who knows what for sure?

The play is called "Orpheus Descending." The movie version was titled "Sweet Bird of Youth." It was never a runaway Broadway hit or a blockbuster movie but the Adobe Theatre production is packing them in. One of the reasons might be Bruce's interpretation of the lead male role — an idealist named Valentine Xavier with a shady past.

"It is a powerful play," Bruce says. "Disturbing. A very modern allegory. Youth, innocence, evil, conformity, honesty, lies and the question of how does a man live his life are some of the things the play is about. Val wears a snakeskin jacket as a kind of armor."

Bruce keeps his beard in the play also. "Maybe it's kind of a mask," he says. "Nowadays a beard is a form of protest, a badge of independence. This play is concerned with independence, individuality and the retribution that results from insisting on being different."

No stranger to the Albuquerque theatre

scene, Bruce directed the experimental "Homecoming" for Old Town Studio last winter. He was producer of the recent Adobe Theatre production of "The Importance of Being Earnest." He has performed in several other Albuquerque productions and acted in college drama programs.

"The director is a catalyst," Bruce says. "The actor is a reaction. I enjoy directing as an intellectual experience. Acting is emotion. The audience provides the third necessary ingredient. Things happen to actors in front of audiences. The illusion might just become a kind of reality for a little while."

The Corrales Adobe Theatre is a remarkable structure, created from the shell of an old church, and it provides a unique shielding for the drama on the stage. The set is spare, symbolic rather than realistic, and dramatic lighting is effective. The theatre is located a couple of blocks north and about five blocks west of the Territorial House in Corrales. Watch for the sign on the left side of Corrales Road.

The play will run tonight, tomorrow and Sunday plus three nights next weekend. Curtain time is 8:30 and tickets are \$2. Call 898-3323 for reservations.

No Cars, No Roads

Remote Alaskan Village Is Prospect for Gwen Warnick

You don't find many women giving up a desk job at Sandia after 17 years to teach school in an Alaskan village which can be reached only by plane or boat.

Gwen Warnick, an editorial assistant in Technical Information Division II, 3412, will be giving it a try. In mid-August she will receive a three-day orientation in Anchorage, will make arrangements for her nine-months supply of food to be air freighted to the school, and will fly about 450 miles westward to Fortuna Ledge, population 130.

"I'm told," Gwen says, "that there is a post office, school, store, and some homes. There are no roads, only a backpack trail and the landing strip, but the Yukon River is nearby and navigable."

Gwen will teach grades 1-4 and another teacher will instruct the upper grades. Before coming to Sandia, Gwen taught 10 years in a rural elementary school in Maryland where she was the only teacher, and then five years in a small school where she had fourth and fifth grades. Now that her own children are grown and she lives alone, Gwen felt this was the time for a change. "I don't expect to help the children in this village nearly as much as they will help me," she says.

When Gwen leaves Albuquerque by plane next month, she will be loaded down with paints, typewriter, fishing rod, books, shotgun and rifle, tape recorder, etc., but at least the trip will be a little simpler than in June when she drove a truck-camper and trailer to Anchorage accompanied by another woman, four children and two dogs.

"I finally realized an ambition of 20 years — to drive the Alcan Highway to Alaska — but I wouldn't give a nickel to drive it again," she says.

On this four-week vacation, Gwen drove

north 3900 miles, 1200 of it dirt road. They experienced no car trouble although they were well-equipped for any emergency (four cans of gasoline, four mounted spare tires, three loose tires, extra set of spark plugs, oil filter, fan belt, radiator hose, headlight, case of oil, and "screwdrivers, pliers and wrenches until they were coming out of our ears"). Near the end of the trip both the outside butane line and

water line on the trailer had been flattened by rocks kicked up by the pickup, but that was only a minor inconvenience.

When they got to their destination, after seven days driving, Gwen looked around and found the teaching job, sold the rig, and flew back to Albuquerque.

If you're sledding through Fortuna Ledge this winter, stop by and say "howdy."



FORTUNA LEDGE, that's where Gwen Warnick (3412) will be for the next nine months.

Supervisory Appointments



O'NEILL BURCHETT to supervisor, NDT Advance Technology Division 7362, effective July 1.

O'Neill first joined Sandia about a year and a half ago and worked in the Organic Composites and Carbons Division 5412. Last fall he transferred to Composite Materials Analysis 5415 where he worked until his present promotion.

Prior to joining Sandia, he taught engineering for eight years at Oklahoma State University and for one year at Arizona State University.

He has BS, MS and PhD degrees in mechanical engineering from Oklahoma State. As a graduate student, he held an Honors Fellowship.

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

O'Neill, his wife Charlotte, and their two children live at 12612 Loyola NE.



CHARLES WELLS to supervisor of newly formed Western Division 2492, effective July 16. He also was named supervisor of Rocky Mountain Section 2492-1.

A Sandian since 1949, Charles worked with a quality assurance organization for 11 years before transferring to an inspection scheduling group in 1960 and then to a field operations group in 1961. He has been a section supervisor since 1953. His duties have involved inspection and acceptance of Sandia-procured materials specially designed by commercial suppliers.

He studied business administration for two years at UNM.

A World War II veteran, Charles served in an Army ordnance unit in Africa and Europe for three years.

Charles and his wife Peggy live at 9005 Lagrima De Oro Rd. NE.

Service Awards 20 Years



David Hake
4515



William McDonald
7636



Leslie Minnear
7222



June Moore
3421



Maury Orrell
3520



Edgar Thompson
9222

15 Years



Frank Comiskey
4153



Robert Gray
2615



M. J. McLaughlin
7636



Jean Naughton
3421



Michael Ryanczak
4512



Warren Schaefer
7637



Stanley Spray
1652



Doris Willard
4152



C. S. Williams
2625

10 Years

John Todd 3114, William Bailey 7233, Neal Nelson 7324, Jack Mortley 7334, Esther Rickert 8245, Glenn Herreid 9126, Paul O'Brien 9522, Douglas MacMillan 9125, Eddie Garcia 7324, Dusan Pegan 8162, Joanna West 9412, and Fedelino Edw.: 4575.

Tennis Anyone?

A group of Sandians is starting a tennis ladder. If you play tennis, hotshot or tyro, you are welcome to join.

Purpose of the group is to provide the opportunity for as much tennis as the players wish.

There will be a singles ladder and a doubles ladder. Initially all players will be ranked. From then on, you may challenge the players one or two rungs above you. If you win, you move to his rung.

To get in on the play, call O. J. Foster (3121), tel. 264-7775, and tell him if you want to play singles, doubles or both.

The group will organize Wednesday, July 23, at 10 a.m. in Bldg. 610 in the center-west classroom. For additional information, call William Shurtleff (7334), tel. 264-2345.

Events Calendar

July 18, 26—"Cosi Fan Tutte"; July 19, 25, "The Magic Flute," Santa Fe Opera.

July 18-20—"The Rope Dancers," Old Town Studio, 1208 Rio Grande NW.

July 18-20—Tennessee Williams' "Orpheus Descending," Corrales Adobe Theater.

July 20—Exploratory trip in the Mount Taylor area. N.M. Mountain Club, leader Bill Stamm, tel. 255-2640.

July 21, 28—Lectures under the Stars, UNM Administration Bldg.

July 25—Indian dances Taos, Santa Ana, and Cochiti Pueblos.

July 26—Puye Cliff Ceremonial at Santa Clara Pueblo.

July 26-27—Two-day backpack in Gold Hill area of Carson National Forest. N.M. Mountain Club, leader Hack Hickman, tel. 298-3804.

Aug. 1-3—New Mexico Arts and Crafts Fair, State Fair Grounds.

Sympathy

To Marilyn Taylor (3520) for the death of her father in Dover, Ohio, June 9.

To Lloyd Wilson (4574) for the death of his sister in Necho, Mo., July 3.

To Aaron Kine (4213-1) for the death of his mother in Jackson, Mich.

Young America Football Leagues Set Registration Activities Tomorrow

The Young America Football League is starting its fourth year of tackle football for youngsters in Albuquerque. Kids eligible to participate are between the ages of 10 and 14 in grades five through eight. Some 900 players are expected to participate this year.

A special registration is scheduled tomorrow from 9 a.m. until noon at Adobe Acres Shopping Center and at Winrock from noon until 3 p.m. Players are still needed in two weight categories—the lightest (less than 72 lbs.) and the heaviest (over 113 lbs.). Prospective players in other weight ranges may also register but may be placed on a waiting list if the teams in his district are filled.

The North and South Valley teams are particularly in need of more players. Tony Lopez (4212) and Phil Alarid (4315) are coaching in these districts. Any boy from this district (west of the freeway) may be registered at the special registration or by contacting Don Hogue, tel. 299-9521.

About 30 Sandians have been active in the Young America Football League program since its beginning here in 1966.

Nuclear Effects Papers Given at IEEE Meet

A number of technical papers were presented by members of Radiation Effects in Solids Research Department 5110 at the 1969 IEEE Conference on Nuclear and Space Radiation Effects, held July 7-11 at Pennsylvania State University.

The Sandia presentations were: L. A. Harrah, "Chemical Dosimetry with Doped Plastic Films"; R. G. Kepler, "Radiation Induced Conductivity in Organic Crystals and Some Speculation About Polymers";

C. W. Gwyn, "An Analysis of Ionizing Radiation Effects in Four-Layer Semiconductor Devices"; H. H. Sander, C. W. Gwyn, and B. L. Gregory, "Impurity Effects on Transistor Current Gain and Radiation Tolerance at Low Temperatures";

B. L. Gregory, "Minority Carrier Recombination in Neutron Irradiated Silicon"; C. E. Barnes, "Thermal and Injection Annealing of Neutron-Irradiated P-Type Silicon Between 76°K and 300°K"; and H. J. Stein, "Electrical Studies of Low Temperature Neutron and Electron Irradiated Epitaxial n-Type GaAs."

Marvin Moss Heads Montessori School Again

It came as no surprise when Marvin Moss (1224) was re-elected to his sixth term as president and chairman of the Albuquerque Montessori Society, which operates the Montessori School.

"Originally my two daughters attended the school, then they became too old and now — in a sense — the school has become my child," he explains.

The Montessori School, located at 1334 Wyoming NE, has an enrollment of 100 and uses a special method of education (appealing in particular to a child's five senses) to teach pre-school children.

According to Marv, a development committee is looking into the possibility of setting up an elementary school. "We hope to add first grade in September 1970 and one grade a year thereafter," he says.

Right now the curriculum is being expanded to include the Cuisenaire method for teaching abstract mathematical principles through use of graded rods, and the Orff-Kodaly method for teaching music education through rhythm concepts.

"We are also adding a modest program for helping 12 retarded and special-problem children," Marv says.

Other Sandians active in the Montessori society are Milton Clauser (5151), treasurer, and Mrs. Marilyn Mathews (wife of Floyd, 7342), vice president.

SHOPPING CENTER

CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication unless changed by holiday. A maximum of 125 ads will be accepted for each issue.

RULES

1. Limit: 20 words
2. One ad per issue per person
3. Must be submitted in writing
4. Use home telephone numbers
5. For Sandia Laboratories and AEC employees only
6. No commercial ads, please
7. Include name and organization
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

FOR SALE

MISCELLANEOUS

POODLE, brown miniature, papers, \$75 or trade; stroller, baby crib, grooming table, junk tvs, old IRE Proceedings, Johnson, 298-7356.

AIR CONDITIONER, refrigerated, Admiral Model No. 140, 14,000 BTU/hr., 220 volts, \$150, Langley, 298-5667.

8 X 10 TENT, \$40; car rack, \$7.50; combination TV, \$100; 4 cots w/mat., \$3 ea.; bicycle, w/o pedals, \$3. Disch, 299-0765.

GARAGE SALE: ceramics, clothes, misc. items, Holiday Park area, 11617 Versailles NE, Sat. & Sun., July 19, 20, 10-5 p.m. Defore, 299-1639.

FENDER guitar amplifier, dual Lansing 12" twin reverber speakers, microphone stand; 4 x 8 ft. utility trailer, high sides, Shock, 877-3728.

GRANT DRAWER slids, 2 pr., for \$1. length about 13". Henry, 256-2467.

POLAROID 95B, case, flash, filter, light meter, color or std., \$25; skill saw, 7/4", \$25; Sear's BB gun, \$5; want .22 pistol or pump rifle, Zaluga, 344-1564.

FREE kittens, gray striped, 6 wks. old, Binder, 299-2937.

ONE-WHEEL trailer, lt. weight, ideal for small loads, \$25. Runyon, 255-6719.

GLOBE CHIEF 90A transmitter w/modulator & power supply, \$45; Heathkit VFO, VF-1, \$20; tuneable 2-meter 522, \$40. Bassett, 898-1840.

STEREO COMPONENTS Eico tape deck, Eico pre-amplifier, Dynakit ST35 power amplifier, Heath FM tuner, Weathers turntable, Garrison, 255-7267.

GOLF CLUBS, matched set, 3 woods, 9 irons, all leather bag, made in Scotland, \$50, Robertson, 296-4613.

REEL MOWER; binoculars; 20-gal. tank; fruit wood gun case; amateur radio mobile glass antenna; 19" cabinets, Wilson, 282-3225.

FREE kitten, male, gray, 4 mos. old, Allen, 298-9437.

PLAYPEN, Cosco, beige, net sides \$10; bathinette, Pride, tub not used, \$5. Parks, 296-2261.

NYLON CARPET, 9x12, beige w/pad, \$35; swivel rocker, early American, \$15. Anderson, 256-3135.

HEATH AA-100 stereo amp., AJ-32 AM-FM-stereo tuner, AD-50 changer, 2 3-way 12" speakers, folded horn corner enclosures, \$145. Wenz, 299-5488.

ADMIRAL stereo phono w/AM-FM & FM stereo, \$125; Danish modern couch, \$125; rattan chair; 50" 12"-dia. flexible ducking; 4 4-bo't chrome wheels for VW, \$65. Campbell, 268-8445.

DRUM SET, "Premier," 4 drums, blue; 3 Zildjian ride cymbals, High Hat, including stands & stool, \$250. Whitlow, 296-7249 after 5.

PIANO, spinet cable, blonde wood. Fears, 256-3956.

TOY COLLIE PUPS, AKC reg., 6 wks. old, will bring pups to you for selection, call collect — Bosque Farms, 1-636-2049. Martin.

LUGER, 1913, \$90; 9mm ammo, 10c/rd. Brammer, 265-8194.

DRILL PRESS, Rockwell 15", pedestal model production table, 6 step pulleys, never used, below cost, \$210 less motor. Courtin, 298-6934.

2-WHEEL TRAILER, size 8'x5', brake & signal lights, 1/4 tons load, trailer \$60, hitch \$25; both \$75. David, 10420 Gloria Pl. NE, 298-3744.

3/16" PLATE GLASS mirror, 52" x 67", \$30; 2 sizes cardboard wardrobe storage boxes: 18x35x7 & 18x27x14, 75c ea.; misc. cardboard boxes for moving. Roberts, 255-9527.

PAIR 10' drapes, 5' ea. pleated width, 7' long, white background, early American design, cotton, lined, \$20. Reed, 299-7425.

ENGLISH Springer Spaniel pups, have permanent shots, hunters, watchdogs, companions, pets. Roepka, 209-0198.

30" O'Keefe & Merrit gas range w/top grill, cost \$250, sell for \$75. McIlroy, 299-4977.

EARN a German Shepherd puppy, care for an exceptional dog for 6 mos., receive a choice from litter. Villella, 298-7955.

WASHING MACHINE; elec. dryer; 15' freezer; lawn mower; 4-cycle piano; baby grand, make offer. Schowers, 911 Chama NE, 255-9279.

327 CU. IN CHEVY engine, complete & in running order, best offer. Dyer, 299-5329 after 5:30.

RABBIT HUTCH plus mature buck & doe, \$10; bunn's, \$1.50 ea.; used trumpet, \$15. Lemmon, 255-2028.

CHILD'S swing, needs repair, come & get it. Larson, 299-2384.

MEN'S golf clubs, 4 irons, 3 woods & putter, \$30. Kelsey, 842-8263.

STUDIO BED w/legs, \$15; roll-a-way bed w/inner-spring mattress, \$10. Farley, 298-0208.

MOTORCYCLE, Yamaha Twin 100, '68 model, first \$325 takes it. Duvall, 299-8744.

TV, large RCA portable, \$25; slide projector, Argus 500, plus 19 auto. slide changer magazines, \$50. Krug, 298-4712.

DAMASK ROSE Heirloom sterling, 4-place settings plus service pieces, wish to complete 8 settings or sell. Leeman, 299-9149.

PLASTIC sheeting, 6 mil, clear or black, 1/2c per sq. ft. Pope, 816 Val Verde SE, 255-6702.

2 REFRIGERATORS, one big, one small, one works, other doesn't, \$35 for both, \$35 for worker. Shummy, 265-1620.

HAMSTER cage, cost \$6, sell for \$3. Gutmann, 299-7031.

NORGE GAS DRYER, copper-tone, '67 model, 16 lb. capacity, \$135. Beroldi, 299-1061.

INSULATED, Jacquard, damask, coin gold drapes, 2 pr., 63"x72" 3 pr. 84"x96"; used TV w/weak picture tube, \$5. Reuter, 298-7320.

DINING TABLE, Duncan Phyfe, mahogany, extension, \$50 or best offer. Collis, 255-0470.

900 950x14 ELIMINATOR SLICKS w/tubes, mounted on Chevy wheels, 6"x14, all for \$85. Harlow, 299-1495.

MATCHING cocktail & end tables, \$50. Rebarchik, 298-1017.

FASCINATION POOL TABLE, \$275; ebony piano, contemporary, \$475; kitchen table & chairs, \$25; motorized lounge chair, \$30. McCutcheon, 299-6655.

STUDENT DESK & chair, \$20. 3804 Stardust Dr. NE, Coon, 298-0845.

DELUXE slide-in camper shell, made by Cavalier, fits long, wide box pickup, Causey, 299-0089.

PENSHIRE'S Sweet Bippy, Pembroke Welsh Corgi puppy, permanent shots, \$100. Dauphinee, 255-6367.

TENT, Coleman 10x12, used twice, cost \$75, sell for \$50. Stephenson, 299-3914.

CARS & TRUCKS

'55 FORD pickup, 260 V8 engine, 4-spd. trans., \$600 or best offer. Mullin, 842-5362.

'65 GMC 3/4 ton, 10' Travel Queen camper, sleeps six, \$2700 or best offer. Binder, 299-2937.

'60 COMET, AT, 2-dr., 50,000 miles, one owner, \$450. Davis, 298-1957.

'66 VW squareback sedan 41,000 miles, one owner, radio, AC, radial tires, \$1395. Casper, 268-4464.

'60 JEEP station wagon, 4-wd., many extras. Kavet, 299-1793.

'64 GMC w/chassis mount Open-Road camper, self contained, super single tires, gas, electric refrigerator, many extras. \$2800. Norton, 282-3749.

'59 DESOTO wagon, PS, PB, AC, new battery, brake system, fuel pump & filter. Barber, 299-1752.

'51 INTERNATIONAL pickup, \$250 or best offer. Archuleta, 344-1005.

'64 RAMBLER station wagon, one owner. Marquess, 296-1443.

'61 FORD station wagon, V8, AT, overload springs, \$400. Martin, 256-7015.

'60 PONTIAC Bonneville, 300 hp, factory air, recent trans. overhaul. Hall, 299-0009.

'68 CHEVROLET, 2-dr. Biscayne, white, 6-cyl. std., positraction, MD suspension & brakes, new Polyglas tires, other extras, best offer. Bennett, 268-5157.

'68 VW Fastback, AC, \$2150. Norris, 299-8282.

'60 RAMBLER, 4-dr., std. trans., R.H. AC, needs universal, \$250. Carriere, 265-0460.

'68 VW sedan, radio, vent rear windows, below Blue Book for quick sale. James, 296-2175.

'68 FORD 1/2-ton pickup, 360-V8, 4-spd., long wide, positraction, 2 tanks, custom cab, radio, big bumper, 13,000 miles, transferable warranty. Kist, 298-3602.

'69 FORD Falcon, 200 cu. in., 6-cyl., AT, low mileage. Reif, 296-5725.

'64 CHRYSLER Newport convertible, PB, PS, AC, radio. Warnick, 268-4122 after 6.

'65 CHEVROLET Belair V8, 4-dr., AT, underdash air, tinted glass, ermine white, \$1185, sole owner. Simpson, 255-4805.

'60 KARMAN GHIA, \$400; '66 Honda trail-90, 400 miles, \$300. Hill, 265-4577.

'57 FORD 1/2-ton pickup, 4-spd. trans., 6-cyl., wide box. Gay, 299-5625.

'50 CHEVROLET pickup, \$400. Cropp, 344-4358 after 5.

'53 STUDEBAKER Commander V8, 2-dr. coupe. R.H. \$150. Gallagher, 268-1988.

REAL ESTATE

MOUNTAIN CABIN on lg. lot, modern, furnishd. elec. kitchen, fp, screened porch, 3 hrs. Albuquerque, good fishing, Brazos, Parker, 268-5844.

3-BDR., den, cfa, AC, carpeting, screened porch, miniature golf course, \$13,500 total, \$750 down plus closng., 314 Chama NE. Landis, 255-5067.

4-BDR., den, corner lot, camper pad, many extras, \$26,000, \$8500 down or terms, \$160 mo. 8716 Bellhaven Pl. NE, Clark.

ASSUME 4 1/2 GI loan, \$79 mo. T&I incl., \$3500 equity, \$12,200 total, 3-bdr., 1 bath, Mankin, walled back yard, corner lot, pitched roof, attached garage. McBridge, 298-6057, 301 Gen. Hodges NE.

MOSSMAN 4-bdr., FR, entry hall, w b fp, brick front, built-ins, 1 1/2 baths, carpeted, pitched roof, dbl. garage, 7300 Kathleen NE. Einsmann, 255-7547, eve. 255-2060.

MOBILE HOUSE & LOT in Meadow Lake, chainlink fence, storage shed, fruit trees, utility facilities, sell mobile house or lot separately. Lerke, 296-3236.

4-BDR. HOME, almost like taking over payments, 8137 Hannett NE. Downs, 299-1537.

3-BDR., LR-DR, 1 1/2 baths, paneled den, dbl. garage, 1/2 acre, sprinklers, fenced, North Valley, \$27,200. Railey, 344-5077.

TRIFLEX, one 3-bdr., 1 1/2 baths, garage, two 2-bdr., on two lots, NE, \$21,500 mortgage bal., \$14,800. Baca, 255-8452.

FOR RENT

4-BDR. & DEN, w/b fireplace, dining area, in kitchen, unfurnishd, \$140 mo. Gallo, 298-1089.

FOR LEASE, 3-bdr. house, AC, dbl. garage, den, fp, 1 1/2 baths, Holiday Park area. Williams, 296-3504.

WANTED

SET of twin-size Hollywood beds, reasonable. Tholburn, 298-8146.

CHEAP, old (or cheap new) easel. Hayes, 298-4682.

BACK ISSUES of Scientific American; May '68, Jan-May '67, others. Thomas, 256-7775.

CARTOP CARRIER for '65 Rambler Classic wagon; swap carrier for '60-'62 Rambler wagon, or cash; 4-bdr. house, under \$200 mo. Frauenglass, 345-0119.

CAR POOL members from area of Comanche & Wyoming NE to gate 1 or 2. Long, 296-7351 or 295-5248.

A COUPLE to live in our house for 5-6 weeks while we're on an extended vacation, free rent, interested? O'Neill, 255-6355.

RIDERS for car pool, vicinity of Pennsylvania & Comanche NE. Siska, 298-5756.

BICYCLE, girl's 20" or will swap girl's 24". Coleman, 299-2377.

ELECTRIC MOTOR, 1.5, 1 1/2 HP, 110 VAC or similar. Stephenson, 299-3914.

MIXED and women couples to play in Beta Sigma Phi bridge marathon, for details call Smallwood, 296-2931.

LOST AND FOUND

LOST—Black softball glove, RX safety sunglasses, RX glasses in gold case, lunch box, Polaroid sunglasses, man's plastic raincoat. LOST AND FOUND, tel. 264-2757, Bldg. 610.

FOUND—Single key on chain w Sandia medallion, ladies watch, 2 blue alloy keys. LOST AND FOUND, tel. 264-2757, Bldg. 610.

Coronado Club Activities

Roaring Twenties Party Set Tomorrow

A speakeasy was a Joe-sent-me place where the natives restlessly shimmied and shaked in fringed dresses and racoon coats while the band played a loud Mickey-Mouse Dixieland kind of music and waiters served bathtub gin in coffee cups. The good old days sound remarkably modern and worth repeating for one night (like tomorrow) at the Coronado Club.

Dig out the striped jacket, bow tie and add a little fringe to the mini skirt and you'll be right in style. The Roaring Twenties Party at the Club is a costume affair and reservations are required. Manager Jim Noonan says that he will part his hair in the middle for the occasion.

Gappy Mestas will provide the Charleston music while the Club's kitchen staff will provide the 10-oz. New York steaks. The affair costs \$3.75 for members (guests \$4.25) and gets underway about 7 p.m. Call the Club office right now (264-4561) for reservations and tell them that the LAB NEWS sent you.

* * *

Social Hours

If it has been one of those Fridays today, then join the TGIF regulars at the Club about 5 p.m. Special prices will prevail until 8 p.m. The Club's famous chuckwagon roast beef will be the menu feature while a rock group called Rod King and the Knights occupy the amplified bandstand. The spread costs \$1.75 for members, \$1.50 for kids. You can join the family on the patio and transport your refreshments in paper cups if you prefer sunshine dining.

On Friday, July 25, the Aristocrats will play for dancing while the fried chicken buffet is spread.

Elton Travis will play the sagebrush shuffle for social hour Aug. 2. Westerners take note.

* * *

Annual Meeting

The Club's annual meeting and election of new directors is scheduled Monday, Aug. 4 at 8 p.m.

Candidates for the board include Bill Weinbecker (4254), Howard Romme (4117), Pete Gallegos (2352), Chet Fornero (4335), Don Graham (3432) and Bill Bickley (AEC).

Free refreshments will be served.

* * *

Bowlers to Organize

Coronado Club bowling leagues (adults and children) will meet to organize teams for the coming season on Wednesday, July 23, at 7:30 p.m. in the El Dorado Room, downstairs at the Club. Refreshments will be served.



GAIL WILLIE (5221)

is the Sandwich Board girl promoting tomorrow's costume affair at the Club.

Beachcomber's Ball

August 9 is a date to circle on your calendar now. Dining, dancing, swimming and the works is scheduled for the Beachcomber's Ball. Max Newsom, entertainment director for the board, reports booking a swinging group of Polynesian dancers, professionals from the West Coast, to perform at half-time.

Variable Annuity Unit Value	
July 1, 1969	\$1.766
June 1969	\$1.770
Average 1968 Value	\$1.647



RECENTLY ACQUIRED by the technical library is this set of quadrangle maps of New Mexico — 127 maps in all. Drafted to scale of one inch per two miles, detail is considerable. Set is part of library's reference collection.

Take Note

Al Bridegam, supervisor of Precision Graphics and Programming Section 7653-1, is the newly-elected national chairman of the Association for Precision Graphics (APG). The organization held its third annual conference in Dallas last month. Al was one of the group of Sandians who pioneered the use of computers to prepare precision drawings for printed circuits and other engineering uses five years ago. Since then, the field has expanded rapidly. APG was formed to help facilitate exchange of information in the field.

* * *

Art Trujillo (9322) was in Washington, D.C., recently conducting tests in the wind tunnel facility of the Naval Ordnance Lab when he had the opportunity to attend a national conference for school board members from the Southwest. The meeting was concerned with educational programs in the public schools for Mexican-Americans. Art serves on the Albuquerque Chamber of Commerce Education Committee.

* * *

Nearly 60 students participating in the "Upward Bound" program at the University of New Mexico visited Sandia Laboratories July 2. The program is sponsored by the Office of Economic Opportunity and is designed to prepare students for college through eight weeks of "enriched" specialized courses.

The students, who were from Albuquerque and northern New Mexico, visited the Sphere of Science, the wind tunnel, and

ACPR and Hermes facilities in Area V. The tour was conducted by Community Relations Division 3433 and initial arrangements were made by Fred Norwood (1721).

* * *

The Rio Grande Horse Show being held at the New Mexico State Fair Grounds tonight through Sunday has a number of Sandians participating behind the scenes in arrangements.

Show manager Jim Shreve (9511) points out that the schedule of more than 180 classes includes five separate official breed shows, a new division for saddleseat riders, and an introductory set of American Saddlebred classes. Some 70 classes are open to horses of all breeds and to unregistered horses.

Randall Cole (5231) is publicity chairman, Clay Henderson (1911) and his wife are in charge of trophy and ribbon distribution, and Bob Butler (4383) and his wife are judges' host and hostess. Read Holland (5313) is official representative for saddlebred horses.

Baron of Bantry Bay Trophy, donated by Gerald Morrisroe (7614) and his family, will be presented to the high point overall junior English rider.

The evening performances (tonight and tomorrow) will be sponsored by the Albuquerque Civitan Club. That group's show committee chairman is Gil Cano (5235). Sandians helping him include Bob Ballach (5224) and Glenn Miller (5235).

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YOC Jobs at Sandia Related to School Work

A number — 13 — of the 132 YOC student hires are already applying material learned in school to their Sandia assignments.

The 13 students have either completed some college or have gained additional education in other schools. Four of the group have earned drafting certificates after two years of attending Northern New Mexico Technical-Vocational School. These men are assigned to the Design Information organization 7600.

The other nine have participated in the YOC program for at least two previous summers. They are assigned as math assistants, environmental test assistants or in various laboratories and shops.

Purpose of the program is to provide higher level engineering and scientific experience to the students in line with their education goals. At the same time, the summer hires help provide continued work coverage at a time when many regular employees are on vacation.

As is the case with all YOC students at Sandia, the summer of employment helps make possible their continued enrollment in school.



PERSONNEL INTERVIEWER Eleanor Kelly (3251) discusses mathematics job performed by Nancy Gonzales (1724), one of 13 summer hire students who is working in a higher-qualification job in Sandia's Youth Opportunity Campaign.