

AUTHORS Kenneth L. Goin (left) and Alan Y. Pope are checking over an experimental shape in Sandia Laboratory's supersonic wind tunnel.

Sandia Scientists Authors of New Book On Wind Tunnel Testing

A book by Alan Y. Pope and Kenneth L. Goin on "High Speed Wind Tunnel Testing" has been accepted for publication and will appear in print in about a year.

Aimed primarily at college-level training for aeronautical engineers, the book includes design elements and testing in near sonic, transonic, supersonic and hypersonic tunnels. Hypervelocity tunnels are touched on briefly.

The reviewer for John Wiley & Sons, Inc. of New York, the publisher, felt that the book would be useful in acquainting laboratory engineers with the different types of tunnels which have been developed recently. In addition, college teachers and students would obtain practical knowledge of wind tunnel operations, designs and measuring devices.

This is the first book the two men have collaborated on. Mr. Goin is supervisor of Aerodynamic Testing Section and Mr. Pope

is manager of Aero- and Thermodynamics Department.

Mr. Pope is also author of "Wind Tunnel Testing," "Aerodynamics of Supersonic Flight," and "Basic Wing and Airfoil Theory." The first two books have gone into a revised second edition. "Aerodynamics of Supersonic Flight" is used as a textbook at the U.S. Air Academy.

Mr. Pope came to Sandia in 1951, after teaching aerodynamics at Georgia Institute of Technology for 10 years. He received both BS and MS degrees from the same school.

Mr. Goin has been at Sandia Laboratory since 1958 and was previously with Convair's Ordnance Aerophysics Laboratory in Texas and the National Advisory Committee for Aeronautics (now NASA) at Langley Field, Va. He received his Bachelor's degree in mechanical engineering from the University of Oklahoma.

Fifth VEEP Program Will Be Launched Here Sept. 28

The Fifth Value Engineering Education Program (VEEP) Workshop will be presented by Sandia's Value Engineering Division, Sept. 28-Oct. 9. The 44-hour workshop will consist of two weeks of training sessions in which participants in the program are divided into project teams, each of which applies Value Engineering techniques to a piece of typical Sandia hardware.

"The object of each project team's work is to reduce the cost of the hardware without compromising its reliability, quality, or safety," Elmer Devor, supervisor of the Value Engineering Division, points out. "Each team studies VE techniques and puts them to use."

The Fourth VEEP "Short Shop," a three-hour VE orientation workshop for Sandia supervisors at division level or above, will be held on Sept. 16 from 8-11:45 a.m. in Bldg. 817. Supervisors who wish to attend should contact Lee Stinnett, tel. 264-3609, on or before Monday, Sept. 14.

The purpose of the Short Shop is to acquaint management personnel with the concepts and techniques of the Value Engineering process carried on in the 44-hour program.

The Value Engineering Division will conduct a two-week VE Workshop at Livermore Laboratory, Oct. 19-30. Some 25 Livermore Laboratory employees will apply VE techniques to Livermore Laboratory projects. Coordinating the program at Livermore Laboratory are R. C. Wishart of Specification and Standards Section; and members of Product Evaluation Division, supervised by A. D. Ford, Jr.

To date, 135 Sandians have attended the 44-hour VE Workshop; 125 have attended the "Short Shop"; and 11 representatives from organizations outside of Sandia have received VE training under the Sandia program. Within Sandia, training has been received by representatives of 21 directorates.



EIGHT HUNDRED AND TEN Sandia employees, who contribute their fair share—an hour's pay per month—to the Employees' Contribution Plan, are eligible to wear this pin and to belong to the Fair Share Club. R. W. DeVore (2110), center, is Chairman of the 1964 Employees' Contribution Plan Committee. Betty J. Langell (4211), left; and Jasper Hadady (4253), right, are members of the Fair Share Club. Are you?

ECP Committee Honors Employees Giving Outstanding Help to Plan

The Employees' Contribution Plan Committee this week honored 865 Sandia Laboratory employees for their outstanding performance in connection with the Plan. The Committee established two awards to be given to ECP members who qualify through their contributions to the 36 health and service agencies supported through ECP. Those who contribute an hour's pay per month are eligible for membership in the Fair Share Club, and those who contribute one per cent of their annual salary are eligible for membership in the One Per Cent Club. Pins with the letters "FS" (Fair Share) were given to 810 employees who qualified for the Fair Share Club, and 55 received the one per cent pin.

R. W. DeVore, Chairman of the ECP Committee, said when announcing the program, "The Employees' Contribution Plan has had the Fair Share giving goal since its inception in 1957. The ECP Committee feels in approving this program that these contributors deserve this 'thank you' from the Committee for their cooperation in helping meet the ECP goal. Their understanding displayed for the needs of the community and their generosity toward those in need of their support rightly qualify them for this outstanding citizenship award. They can wear their pins with justifiable pride."

He said that organized labor established the Fair Share idea of an hour's pay per month which is now used in United Fund campaigns across the country. The idea of the One Per Cent Club was established by United Fund and Community Chest groups. The local United Community Fund has a similar awards program which recognizes those outstanding citizens who contribute their Fair Share.

Mr. DeVore added that the ECP Committee will recognize those who become eligible for either award during the 1964 campaign and campaigns in future years.

Seven Years Night Classes Earn Degree For George Power

George E. Power, Surveillance Division, recently received a BS degree in economics in graduation exercises at Austin Peay State College, Clarksville, Tenn.



Except for two courses under Sandia's educational aids program, all of George's class work was taken during seven years attendance in the Austin Peay night school.

George came to Sandia in February 1956 and has been with Systems Test Section at Clarksville since then.

GRADUATING Apprentice Machinists were presented with Certificates of Completion of Apprenticeship by Sandia's Director of Development Shops, R. J. Hansen (center), on Aug. 31. Graduates included (l to r) William D. Lynch, Robert O. Baca, Charles D. Salazar, Donald L. Greene, and Kent J. Bowen (not pictured). Apprentices completed 8,000 hours of training for certification.





Sandia V.P. Reports Power Devices Are Gaining New Space Status

Radioactive power sources ultimately will become commonplace on space missions, but how quickly they achieve this status depends on how smart the users are in employing them, Glenn A. Fowler, Vice President, Development, said in Geneva, Switzerland this week.

Mr. Fowler discussed "Aerospace Safety of Isotopic and Reactor Power Sources," in a paper presented to the Third United Nations International Conference on the Peaceful Uses of Atomic Energy.

Radioisotope generators and nuclear reactors show promise as highly reliable, long-lived sources of electrical power, he said. This makes them particularly useful for space missions. They are more compact and lighter than batteries of equal power, unaffected by space radiation and, unlike solar cells, are not affected by eclipses. He pointed out they have a power range from a few watts to megawatts.

These units, called "Systems for Nuclear Auxiliary Power" (SNAP), have one major disadvantage, Mr. Fowler noted. This is the fact that they derive their power from radioactive materials which are potentially dangerous to human life.

Recognizing this, the United States Atomic Energy Commission has placed great emphasis on the safety aspects of SNAP systems. The designer is required to provide a thorough safety plan for each system throughout its factory-to-orbit sequence, Mr. Fowler pointed out. In addition, Sandia Corporation, an AEC prime contractor, makes an independent assessment of the adequacy of the safety plan for each system.

Questions of safety which arise during the factory-to-missile launch sequence are readily treated and can be assessed by conventional analysis and testing techniques, he said. Additional data regarding pressures and temperatures which might be encountered during a launch pad explosion and fire are being gathered through a launch pad instrumentation program.

The safety problems which are receiving the most attention are those which arise when a SNAP system reenters the earth's atmosphere, Mr. Fowler reported. Intact reentry with impact in a designated area is desirable but quite difficult with present technology, he said, so efforts have been concentrated on utilizing reentry burnup and dispersal of particles in the upper atmosphere to dispose of the radioactive material remaining in each SNAP unit.

Mr. Fowler emphasized that Sandia's aerospace nuclear safety organization and its subcontractors have gathered and are continuing to gather fuel burnup information in three principal areas: effect of heat on properties of materials used in the units, the size of droplets formed when the radioactive materials are melted, and the dispersal of these droplets in the atmosphere.

By placing full or scale models of SNAP units in wind tunnels, he said, it is possible to establish the aerodynamic heating to which actual units will be subjected during reentry. Computers are then used to determine whether the heat incident to reentry is sufficient to melt the fuel container and allow ablation of the radioactive material. More information on how heat affects the properties of the various ma-

rials in the units is thus needed to permit the design of units which ensure complete melting of the radioactive debris during reentry.

Particle size and distribution information has been available from analytical and laboratory techniques. However, experimental techniques have been developed which show promise of providing additional particle size information for materials of interest. An effort is also underway to develop an analytical model to trace the fall and dispersion of particles injected into the atmosphere.

Flight testing is the final step in demonstrating the safety characteristics of SNAP units under reentry conditions, Mr. Fowler pointed out. The first flight test of a full scale instrumented mock-up of a reactor assembly was conducted in May 1963 to verify disassembly features and to obtain indications on fuel rod ablation rates. A second flight test is planned this fall to obtain similar information about an isotopic power supply.

Frank Moon Observes 35th Anniversary With Teletype Corporation

"Take every job that is given to you and do your very best." That was the advice offered by Frank Moon, Manager of Security, Safety, and Purchasing Department in Livermore, following a luncheon held in his honor at the Castlewood Country Club.



In 1929, Frank became a resident inspector for WE at the W. S. Dickey Clay Plant in Macomb, Ill., shortly after graduation from the University of Illinois. In 1931, he transferred to the Teletype Corporation, newly acquired by WE, where he remained until 1952. During those years, Frank progressed from inspector to engineer's assistant, then from personnel investigator to employment manager.

On loan from Teletype Corporation, he came to Sandia Laboratory in Albuquerque in 1952 as supervisor of Mechanical Expediting Division. In September 1956, Frank was appointed manager of Purchase Service Department, and in April 1957, became Assistant Purchasing Agent, heading what is now Purchasing Department IV.

In January 1956, Frank transferred as manager of Security Department to Livermore Laboratory.

Frank and his wife, Ruth, and their four children live in nearby Pleasanton.

His off-hour pleasures include working on the 36-year-old, five-bedroom, Spanish-style home that he purchased shortly after coming to Livermore.

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LAB NEWS

SEPTEMBER 11, 1964

SANDIA CORPORATION

LAB NEWS



ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

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Editorial Comment

How to Beat Highway Hypnosis

Highway hypnosis has long been a hazard out here in the West where long, straight, high speed stretches of road are not uncommon. Now, with the advent of the high-speed turnpikes, it has developed into a nation-wide problem.

You've probably heard of accidents caused by highway hypnosis. Drivers have plowed into the car ahead in broad daylight, without even hitting the brakes.

On clear roads, cars have careened across lane dividers head-on into oncoming traffic. Others have crashed through plainly marked barriers and missed clearly-indicated turns.

What happened? The drivers were asleep. They were lulled by boredom and unnoticed fatigue of long stretches of "perfect" driving. Speed isn't to blame, for the modern highways are made for safe speed.

The problem: It isn't easy to keep alert for hours on a perfectly banked, beautifully engineered turnpike. There's the song of the tires to lull you and the absence of start-stop distractions. All you have is the smooth harmony of a fast car on a fine road.

You can beat this driving menace, the "Illinois Bell News" points out, by following a few safety rules for turnpike driving. In fact, these rules are good for driving on any road.

Keep alert every minute. One way is to note out-of-state licenses; call out road signs, town names, makes of cars, etc.

Check your dashboard instruments. Even if you are driving alone you can call out the speedometer readings and mileage to yourself—out loud of course. Don't forget the gas gauge. Running out of gas is bad enough, but a parked car becomes a hazard for other drivers.

Be sure you are in good shape yourself. If you get tired, pull off the road at a safe spot and rest. On long trips chew gum, sing out loud, sit on a board, drive with your shoes off for a while.

Stop every now and then even if you don't feel tired. Climb out of the car during the stops. Have a cup of coffee, slap some cold water on your face, relax for a few minutes.

Watch everything around you. You slip under the spell of the highway when you stare straight ahead. It's a good idea to follow the car mirror rule: Take a mirror check every five seconds.

Don't be lulled into putting blind faith into signs and signals. You may have the right of way, but what if the other driver ignores the stop sign?

Remember to give others a break by signalling in plenty of time whenever you change lanes.

If you stay awake and stay alert, you'll stay alive.

Hit-And-Run in Parking Lots

Hit-and-run drivers are a lowly lot. Think of a hit-and-run accident and we think of broken bodies in a roadway and a car roaring into the distance.

There's another type of hit-and-run incident, much less severe, but aggravating. This accident occurs in the parking lot. A door is scratched, a fender dented, a bumper marred, a window cracked. Damage is done and the culprit goes on his way.

Laws can be quoted, insurance benefits reviewed, and the moral aspects of the whole affair discussed. It doesn't do much good, though, and these hit-and-run events continue.

To their perpetrators we can only recommend a reading of the Golden Rule.

Award Given Two Sandia Authors

Kenneth E. Sutton, supervisor of Security Information and Education Division; and F. O. Carleton of Clinical Psychology Division have been named to receive the Gordon Hardwicke Award for the Outstanding Article of the Year in the *Journal of College Placement*.

The selection was based on an article authored by the two Sandians when Mr. Sutton was supervisor of the Employment Division and Mr. Carleton was staff member in the Employee Research and Testing

Division, and titled, "The College Recruiter — A Critique." The article appeared in the April 1964 issue of the *Journal of College Placement*.

The Gordon Hardwicke Award was created a few years ago by the Middle Atlantic Placement Association. Award plaques for the two authors will be presented at the Association's Fall Conference at Bedford Springs, Pa., Sept. 27-30. J. L. Wheeler, Employment Division, who will attend the conference, will accept the awards in their behalf.

W. N. Dehon Earns Master's Degree from Montana State U

William N. Dehon of the Lab News staff completed requirements Aug. 17 for a Master of Arts degree in English from Montana State University. Title of Bill's thesis was "The Novels of James Gould Cozzens: A Study of the Theme of Passion and Reason, Self-Division's Cause."



Bill has been at Sandia Laboratory since June 1961. Previously, he taught at Powell, Wyo., High School and instructed extension courses for the University of Wyoming. He held a graduate assistantship at Montana State University in 1957. Last year, Bill taught an evening class in the English Department at the University of New Mexico.



DEAN PEDERSON checks new safety system developed for production testers. The sign, "Interlock Cheated," lights up when the interlock safety system has been bypassed by someone working in the rear of the machine.

RED DANGER SIGN in the rear of a production tester serves as a constant reminder to follow safe procedures when calibrating the machine. The new warning system will be incorporated in all new production tester design. Dean Pederson was project engineer in the development of the safety interlock system.



Added Margin of Safety Is Given Sandia Lab's Production Testers

A continuing concern for safety brings an innovation to the design of production testers. These instruments, designed by Product Test Equipment Development organization, are used in manufacturing plants throughout the country to check quality and reliability of Sandia weapon components while in production.

Consisting of a single cabinet or multi-cabinet units, the testers are built with an interlock system that automatically shuts off the power whenever the back of a cabinet is opened. The new system provides additional safety features.

However, access to the back of testers is necessary occasionally to calibrate or "troubleshoot" the instruments. When calibrating, it is also necessary to have the power on. Therefore, conventional tester design allowed a technician to "cheat" the interlock and manually turn on the power by resetting the interlock switch from the rear of the cabinet. Closing the rear cabinet door automatically resets the interlock system.

It was assumed that the calibration technician would be knowledgeable and capable and would follow proper procedures for the operation.

The system worked and seemed safe.

However, there was still a question in the mind of William C. Kraft, now manager of Systems Test Equipment Development Department. A new interlock system, providing additional safety features, was needed.

What would happen if a technician was working in the back of the cabinet with the power off and someone turned on the power switch from the front? This could only occur if the interlock switch was in the cheated position and the power had

been turned off from the front. Bill was concerned also that the casual passer-by had no way of knowing that lethal voltages might exist inside the open-doored tester.

There was one instance reported when this situation actually did arise. Fortunately, the technician working in the back was not injured, but the incident could have resulted in serious, if not fatal, injury.

Special Device Test Division, under George H. Donaldson, was asked to come up with a warning system that would prevent further such occurrences and generally improve the safety of the production testers.

Personnel of the Division produced such a system. Simple, foolproof, and inexpensive, the system consists basically of two warning lights. In the front of the cabinet, mounted next to the power switch, is a small indicator that lights up when the interlock system has been cheated. This light is independent of all other power in the tester and will light any time that the rear of the cabinet is opened and the interlock switch is bypassed.

In the rear of the cabinet, a larger red panel will light and report "Danger—Power On" to anyone working in the rear of the cabinet. Even if the technician bypasses the interlock system and turns the power on from the rear, the danger panel will light up. This serves as a constant reminder to follow safe procedures.

Safety Engineering Department is enthusiastic about the new safety system and is advocating additional applications in other rack-mounted electronics.

Some retrofit of production testers, now in use in suppliers' plants, is planned.

All future designs of tester equipment will incorporate the new safety system.

Voters to Decide on Establishing Technical-Vocational Institute

On Sept. 22, in a special election, Albuquerque property owners will decide upon an issue that will have far-reaching effects in our community for years to come. The question is the creation of a Technical-Vocational Institute District.

Once the District is created, plans can proceed to establish the Institute. No question of additional tax levies will be decided in the Sept. 22 election. If the District is created, the tax question will be decided by the general election coming up in November. A property tax of two mills will be proposed at that time to support the Institute.

Several Sandians participated in the Advisory Committee appointed by the superintendent of Albuquerque Public Schools, which performed the studies establishing

the need for the Technical-Vocational Institute in Albuquerque.

Mel McCutchan, supervisor of Technical and Trades Training Division, was chairman of the sub-committee which surveyed the available vocational and technical instruction in Bernalillo County. Statistics compiled by his committee showed that about 72,000 persons in Albuquerque could benefit from attending such an institute in the next few years.

"Unemployment is a major social problem," Mel says. "Two out of every three students now entering their senior year in high school and who do not attend college will seek and not find jobs next summer."

Primary purpose of the proposed Institute would be to provide unemployed persons an opportunity to obtain skills which will enable them to become employed. The Institute would also train technicians demanded by modern industries. The Institute would cooperate with Industry and Trades organizations and provide inservice training programs and apprenticeship programs.

The Institute would be designed as a post-high school training center but would be open to all persons needing job skills to become employable. No tuition would be charged. It would be administered by the Albuquerque Board of Education.

It is possible that some classes could begin as early as January 1965 if the creation of the Institute and the tax levy for its support are approved by the voters. General operation of other aspects of the Institute would not go into effect until September 1965. A Public Schools building, located at 525 Buena Vista SE, is available for the first Institute classes.

"There are many advantages to creating the Institute," Mel says. "In terms of people and productive lives, its impact would be incalculable. In terms of dollars and cents, everyone in Bernalillo County would benefit."

Mel points out that the welfare costs in New Mexico will be \$36,000,000 this year. The educational program of the proposed Institute could halt the rising cost of welfare and make productive, useful citizens of welfare recipients. The long-range benefits include reduction of crime and juvenile delinquency as well as reduction of unemployment.

AEC-ALO Gets Reorganization in Management Posts

A reorganization at the Albuquerque headquarters has affected four management positions and five divisions within the organization.

In the interest of efficiency and economy, two Assistant Manager positions and the post of Deputy Assistant Manager for Operations have been eliminated. A new position of Assistant Manager for Plans and Budgets was created to supervise the performance of four divisions. The title of the Assistant Manager for Operations has been changed to Assistant Manager for Weapons.

Under the reorganization, Paul W. Ager, ALO Assistant Manager since May 1962, has been appointed to the position of AEC-ALO Resident Representative at the Commission's laboratories at Livermore, Calif.

W. Lee Hancock, ALO Assistant Manager since April 1964, has been appointed ALO Assistant Manager for Weapons. He succeeds James L. McCraw, who earlier was appointed Deputy Manager of ALO.

Don Johnstone, ALO Deputy Assistant Manager for Operations since October 1960, has been appointed to the newly-created position of Assistant Manager for Plans and Budgets. Mr. Johnstone's former position is one of the three that have been eliminated.

Reporting to the Assistant Manager for Plans and Budgets under the reorganization are the new Division of Management Analysis, the Requirements and Facilities Division (formerly titled Plans and Analysis Division), the Research and Classification Division, and the Budget Division.

The ALO Operational Safety Division, which has been a part of the Office of Administration, will now report directly to the ALO Manager.

Under the reorganization, R. P. Johnson remains as Assistant Manager for Administration, with F. D. Peel as Deputy Assistant Manager.

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TOURING AREA III, a group of Naval Reservists watched a rocket sled test on Sandia Laboratory's 3000-ft. track. Dave Bickel, supervisor of Track and Guns Section, points out features of the track. The reservists were attending a Naval Reserve Seminar held at Sandia Aug. 9-22.





SINCE HE WAS ONE MONTH OLD, this young man has been admitted 34 times to the Children's Hospital of the East Bay, another United Crusade agency. Last year 83 Livermore youngsters were cared for at the hospital, located in Oakland.



LEARNING TO WALK is not easy, especially when you know from experience that falls hurt. Your UBAC dollars will help youngsters such as this one walk, run, play, and live. Your contribution does so much more when you give your fair share.

There Is Only One Way We Can Ease Personal Tragedy - Through UBAC

An earthquake, a broken dam, or a ram-paging fire brings disaster to a community and the spontaneous outflow of help for its victims is immediate and heart warming.

But no dramatic news story, no heart rending photographs announce the every day disasters that strike countless families in every community: illness, a crippling disease, accidents, loss of income, a broken home, a teen-age problem. Yet, help is needed here; it is just as necessary and equally appreciated.

However, compassionate we may be, we are not able to give our personal response

to these remote crises but we can help in these times of need, for the agencies of the United Bay Area Crusade are there—with help made possible by the generosity of people such as those working at Livermore Laboratory.

We provide day nurseries, maternity homes, rehabilitation services, medical care, and even love with our support of the UBAC.

Somebody pays when you don't give—children, the handicapped, distressed families, the sick, the aged, the community, the country.

In Livermore, California

1964 United Bay Crusade Begins Monday

Monday, Sept 14, marks the beginning of the 1964 United Crusade campaign at Livermore Laboratory. Employees will be contacted by the solicitor assigned in their organization in the hope of reaching the \$14,000 goal set for the Laboratory.

During the week, a short movie, "Somebody Knows," will be shown at the Laboratory. This is a new movie showing many of the actual uses of United Crusade dollars. It is planned that everyone will see the film, and solicitors will have the schedule for their respective organizations.

Payroll deductions will again be available. Deductions of \$1 per month or more may be made for monthly-paid employees,

or 25 cents or more per week for hourly-paid personnel.

Pledge cards will be given to each employee by the solicitor. These pledge cards are to be signed and returned to the solicitor, whether or not the individual contributes to the United Crusade. Company auditors request this procedure to assure proper tabulation of Crusade funds. For those who do not wish to sign, the pledge card is to be returned personally to Barth Riedy, Management Systems Division, campaign auditor for Livermore Laboratory.

Contributors will also receive receipts for income tax purposes, along with window stickers to show that they have contributed.

Squad leaders and solicitors conducting the campaign this year are:

Squad Leaders

Val Black (7257), Roy Wilcox (8110), Ralph Morrison (8115, 8116, 8118), Dean Hitchens (8120), Bert Barker (8140), Otto Schreiber (8150), Ruth Powers (8160), Jerry Wackerly (8210), Bill Schmedding (8220), Joe McManus (8230), Howard Henry (8240), and Gerry Hauer (9120). E. W. Baldwin (8210) is executive solicitor, assisted by Dick Cook of 8200 and Al Ford for 8100.

Solicitors

8110: Larry Brown (8114-1), Murry Brenton (8114-2), Ron Puckett (8114-3), Dick Shimada (8114-4), and Charley Crawford (8114-5). Carl Schoenfelder (8115-3), John Weelock (8116-2), and Hap Stoller (8118-1).

8120: L. E. Dighton (8121-1), T. F. Wieskamp (8121-2), J. J. Garrett (8121-3), P. L. Stewart (8122-1), D. N. Bray (8122-2), R. W. Slice (8122-3), H. W. Olson (8123-1), R. W. Stammer (8123-2), J. R. Martin (8123-3), J. A. Casey (8124-1), H. R. Easton (8124-2), and R. F. Carrell (8124-3).

8140: R. E. Rychnovski (8141-1, 3), Keith Banko (8141-2), C. A. Shulver (8144-1), Dick Heinz (8144-1), Ann Crow (8144-2), and Jim Wright (8145-1, 8125).

8150: R. F. Facer (8151-1), E. E. Smith (8151-2), H. Quock (8152-1, 2), W. C.

An Important Message . . .

"SOMEBODY PAYS—WHEN YOU DON'T GIVE!" This is the theme of the 1964 United Bay Area Crusade, and one which has a direct meaning for all. Monday, you will be asked to contribute your fair share to support United Crusade agencies. It is not necessary to remind you of the magnificent job these agencies are doing nor of the need that exists for your help. But what happens when you don't give?

When you don't give, someone must pay. It may mean that a call can't be made by a visiting nurse to an ailing patient, or a child in need of therapy is turned back into the street. It may mean that the entire community must pay through increased costs of crime prevention, through greater juvenile delinquency, through over-crowded and understaffed welfare agencies and other tax-supported functions.

Our goal this year of \$14,000 is a reasonable one, and we can achieve it if everyone will give his fair share: one hour's pay per month. For most of us, this is less than we would contribute to independent collections throughout the year if there were no United Crusade. And Sandia Corporation makes giving easy through payroll deductions.

You are the only one who can recognize the extent of your obligation to yourself and to your community. What better way is there to meet our obligations to those who are less fortunate within our own community than through giving the united way?

Critical Year Ahead For Crusade Agencies

The situation is serious. For several years, total donations to the United Bay Area Crusade have remained on a virtual plateau. During the same period, our population has increased 22 per cent. Nearly every United-Crusade-supported agency has been forced to turn away people in need. A few agencies have had to close their doors for short periods.

United Crusade services are as varied as human needs: health and rehabilitation services, family counseling services, community centers, services to the aged, maternity homes, the Red Cross, USO, Salvation Army, and many others.

In Livermore, 245 persons received counseling through the Family Service Agency of Central Alameda County, 400 persons were served by the Council of Social Planning—220 through Christmas projects and

180 through counseling services—and 1949 youngsters participated in programs of the Boy Scouts sponsored by the Oakland Council.

If the United Bay Area Crusade campaign fails in 1964, its 171 member agencies will very likely be forced to return to the old catch-as-catch-can system of every agency for itself. This could mean a separate campaign almost every working day of the year with all the inconvenience and excessive costs that would occur.

Operating Costs Kept Low

More than 90 cents of every dollar donated through the United Crusade goes directly to helping people. However, the costs of separate, independent appeals range from 20 per cent to 50 per cent of the amounts raised, and some are even higher. Independent drives represent a chaotic and expensive method of fund raising that has proved to be inadequate here—and elsewhere—again and again.

Bradley (8152-3), O. C. Thomas (8153-1), K. E. Loughlin (8153-2), and R. D. Cozine (8154-1, 2).

8160: E. D. Ward (8161-1), Jim Grady (8161-2), Joe Genoni (8161-3), John Miller (8165-1, 2), Don Roth (8166-1, 2), and Max Schell (8168-1, 2).

8210: T. L. Beckley (8212-1, 4), V. I. Mohr (8212-2), Dorit Mathers (8212-3), C. D. May (8213-1), R. D. Bryant (8214-4),

J. Mount (8214-2, 3), and J. R. Allen (8214-1).

8220: James Harter (8221-1), Larry Wil-lour (8222-1), Ray Newton (8222-2), Jess Floyd (8222-3), Paul Mutschler (8223-1), Emory Padgett (8223-2), Kathy Callow (8223-3), Glenn Alexander (8223-4), and Joyce Moore (8226-1).

8230: D. V. Knetzer (8231-1), M. J. Connors (8231-2), M. Wackerly (8232-2), E. K. Bodie (8232-1), B. E. Affeldt (8235-2), B. E. Pajari (8235-1), B. R. Branch (8232-5), M. A. Zumwalt (8233-1, 8234), M. M. Bond (8233-2), and E. H. Dopking (8233-3).

8240: Art Hopper (8241-2), Verne McNabney (8242-1), Pat Leigh (8243-3), Lorraine George (8243-4), and Karl Tucker (8243-5).

Goals Within Reach If More Contribute

We have two goals to reach for this year's United Crusade drive at Livermore Laboratory: \$14,000 total employee contribution, and at least 95 per cent participation.

For the past three years, the goal at SCLL has increased \$1000 per year, which is somewhat less in proportion than the increased needs of United Crusade agencies serving Livermore and surrounding communities. The goal is perhaps too low, considering the needs of these agencies, but it is one that we should be able to meet.

Ninety-five per cent participation is also a realistic goal. While 100 per cent is probably possible, we should be able to better the 75 per cent participation reached for the past several years.

Simple arithmetic shows us that a small contribution by everyone amounts to more than the large gift usually given by only a few. For example, an average employee deduction of \$3 per month amounts to a total employee contribution of more than \$36,000 annually!

The UBAC theme, "Somebody Pays - When You Don't Give," can be translated into dollars quickly when you consider that, without the agencies represented by United Crusade, our tax dollar might be stretched beyond the breaking point.

From this viewpoint, it becomes a simple matter of good business sense to contribute your fair share to the United Crusade.

VISITING NURSE ASSOCIATION, a United Crusade agency, helped this man to learn to walk again following a serious automobile accident. In 1963, there were 96 home nursing visits made by the Association to families in Livermore.



Somebody pays
—when you don't give





ALL-STARS—Sandia Laboratory's slow pitch softball All-Stars placed second in the recent Intra-Base Tournament. In the first row are Bobby Collins, Bobby Jaramillo, David Sanchez, Bill Saric, Jim Clark, Bruce Nevin and Norb Siska. In the second row are Phil Zuni, Ted Garcia, Charlie Troell, Leo Klamerus, Joe Abbot, and John Marcon. Standing are Winsor Alexander, Mike O'Bryant (coach), Tony Satroplus, Alton Cox, Ben Gardiner, and Gino Carli. Not shown are team members Pat Sanchez and C. R. Looney. Sandia Base took the tourney by dropping Sandia Laboratory 27-13 in the final game.



SANDIA LABORATORY SOFTBALL ALL-STARS took third place in the recent double elimination Intra-Base tourney. Sandia Base defeated Kirtland AFB for the championship. From left, clockwise, are C. R. Martel, D. J. Burns, J. D. Aragon, C. E. McCarty, C. D. Longeroft, P. T. Lubeck, L. L. Strawderman, C. J. Cron, J. K. Fjelseth, D. L. Mangan, H. J. Filusch, D. E. Grim, and G. W. Smith. Not shown are R. G. Dosch and R. J. Baughman.

Your 'Free' Feet Deserve Protection Of Safety Shoes

It didn't happen at Sandia, but it's a good message anyway.

An employee of a southern construction company walked into the company's safety store and asked to be fitted with a pair of shoes.

As the clerk sat down to try a pair for size, he was amazed to find the man had two artificial feet. Now people with wooden feet don't buy safety shoes every day, and this clerk was inquisitive.

"Why in the bright blue world do you want a pair of these shoes?" he said. "It's a sure bet nothing can hurt those feet."

"Well, I'll tell you," the man drawled. "Maybe a piece of steel fallin' on these feet of mine wouldn't hurt me much, but it sure would kill me financially. You got your feet free. I paid 300 bucks for mine. At those prices I aim to protect my investment."

It seems that the nerve that connects with the pocketbook is the most sensitive of all. Are your "free" toes worth the price of a pair of safety shoes?

Adult Dance Classes To Be Offered for Coronado Club Members

A new 10-week series of basic and advanced dance instruction will be offered to Coronado Club members beginning Monday, Sept. 14.

The Basic Course from 7 to 8:30 p.m. will include instruction in both American and the Latin Dances.

The Advanced Course from 8:30 to 10 p.m. will include advanced material in the dances taught in the basic course plus Swing and the latest Latin dance, the Bossa Nova.

Registrations for both courses will be taken prior to the first lesson, Sept. 14. Advance registrations will also be taken at the club office.

The American dances will be taught by Gail and Jennifer Ward and the Latin dances by Charles and Holly Balistrere.

The fee per course: \$15 per couple.

Completing Paved Area For Sandia Laboratory's Trailer Parking

Construction is almost complete on a new instrumentation trailer check-out area southwest of Bldg. 880. The asphalt-paved area, some 9400 sq. yds., will have space for 50 of the big trailers. They are used for various test operations in the field by the Field Test and Aerospace Programs organizations.

Included in the construction project was installation of two 300 KVA pad-mounted substations as part of the primary power system plus an underground secondary power distribution system.

About 550-linear ft. of curb and gutter installation was included in the project. John C. Snowdon was the Plant Engineering Department project engineer.

ECP Committee Announces Plan For Fund Distribution

Allocation of ECP funds to the various agencies is done by the ECP committee. The formula takes into consideration all of the money raised in Bernalillo County for charitable purposes and determines the percentage of the total raised by each agency.

ECP funds to be raised in the coming year will be distributed as follows:

United Community Fund	82.0%
American Cancer Society	4.8%
Bernalillo County Heart Association	4.2%
Cerebral Palsy Association of Albuquerque	0.8%
Muscular Dystrophy Association of America	1.4%
Arthritis Foundation of America	1.5%
National Multiple Sclerosis Society	1.3%
New Mexico Society for Crippled Children	3.0%
Reserve	1.0%

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 Corporation and AEC employees only
6. No commercial ads, please
7. Include name and organization
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

FOR SALE

MOTORCYCLE, '62 Harley Sportster XLCH, 9500 miles. Suttan, 298-7036.

BOY'S SCOOTER, push type, \$5; 8'x10' light brown wool rug, \$10. Duvall, 299-8744.

GE ELECTRIC STOVE, 40", white, \$75. Baehand, 299-5167.

OPEN, 3-bdr. den, a/c, cfa heat, landscaping, sprinklers, trailer/boat space, garage, carpeting, drapes, 1550 sq. ft., assume 5 1/2% GI, under \$18,000. Van Deusen, 299-4328, 10805 Claremont, NE.

LIMED OAK DOUBLE BED w/matching dresser; maple dining room table w/4 chairs. Libby, 299-5948.

A GARAGE SALE: misc. household furnishings, etc. at 607 Parkland Circle, SE, Saturday, Sept. 12, 10 a.m. to 2 p.m. Baecker.

TRUMPET B flat w/case and music stand, \$75. Koone, 256-6217.

'63 Triumph TR-4, low mileage, black, R&H, wire wheels, tonneau cover, \$2150. Durgin, 298-3581.

RCA TAPE RECORDER: .22 rifle; twin bed mattress and springs; luggage carrier; 35mm slides of Japan, Italy. Cotter, 298-3820.

'57 FORD 4-dr., \$675. Jacobs, 877-2701 9 a.m. to 3 p.m. or weekends.

'62 MUSTANG motorcycle, accessories; '53 Spartanette trailer, 33'x8', located near base. Jordan, 298-4706.

'56 CHEV. 2-ton dump truck, 2-speed V8, \$900. Sanchez, 864-8801.

MALE DACHSHUND, 4 yrs. old, thoroughbred, \$25; snare drum, \$15; Pedler "C" flute, \$75. Garcia, 256-6609.

'64 TEMPEST, fully equipped, \$300 below Blue Book, 9000 miles. Snidow, 298-1932.

'56 OLDS Holiday 88, PS, PB, AT, new seat covers, \$325. Martelli, 299-0833.

BABY CAR SEAT, \$2.50; infant bath tub w/hammock, \$3. McKinley, 268-4779.

TWIN BED w/box springs, mattress, bookcase headboard; chest of drawers; stereo; folding ping pong table, old rusty touring car body model "T". Pritchard, 268-9618 after 5.

NE HEIGHTS, 4-bdr., pitched roof, walled yard, carpet, drapes, fireplace, Grant-Los Altos schools, \$650 down FHA. Mason, 299-2836.

WOODEN PLAYPEN, \$4; Teeter-Babe, \$5; aqua and copper bread box, \$2. Smith, 298-0557.

TIRES & WHEELS, 2 each, size 7-50x14, mounted, \$30. Morris, 877-3782 after 5.

MAN'S 3-stone diamond ring, appraised at \$550, sell for best offer; '64 DKW, R&H, take over payments. Risk, 299-7205.

REK-O-KUT 2-speed turntable, Graco lab series arm, white and walnut base, \$130 new, sell as unit \$50. Smith, 268-5138.

MOTOROLA radio, phonograph, TV combination, mahogany cabinet, \$75. MacPherson, 268-8925 after 5.

17" PORTABLE TV in useable condition, \$15; or trade for something of equal value. DeVargas, 299-0477.

STOREY & CLARK mahogany spinet piano, \$350. For, 298-4980.

BENJAMIN Pellet Pistol, \$20; 9x12' tent, \$25; Coleman 2-burner stove, \$5. Young, 268-9210.

'55 FORD V8 Tudor, R&H, Automatic, dual exhaust, \$250, 9700 Morrow Rd. NE. Cooper, 298-7157.

TROPICAL FISH AQUARIUM, 15 gal. w/reflector, filter, lights, pump, gravel, plants, and fish. \$25. Cope, 298-1674.

TENT-TRAILER, sleeps 6 adults, includes hitch, spare tire, jack, foam mattress, 3-burner camp stove, double-mantle lantern, folding table, \$300. Thayer, 299-3127.

'62 INT'L TRAVELER, 3-spd., V8, PS, deluxe trim. Luikens, 3500 Dakota, NE.

ALTO SAX w/case; clarinet w/case. Kuhn, 299-1898.

21" RCA TV model 21S-362M, \$35. Stromberg, 255-6131.

'59 DKW. \$550, recently overhauled plus new brake linings, can be seen at 2100 June NE. Gauerke, 299-5806.

21" TV, blond Magnovox console, \$25; Frigidaire electric range, light yellow, \$95; braided rug, 6x9' \$10; 1 pr. twin bedspreads, blue, \$15. Hempen, 268-7989.

CENTER PEDESTAL STEEL TABLE w/wood top, approx. 54"x38", \$18. Illing, 299-7378 after 6.

DEER RIFLE, .30-06 completely customized w/Monte-Carlo stock, glass beaded, 4 to 7 power variable scope, padded case; approx. 200 rounds ammo., will deliver. Little, 255-7864.

HOLLYWOOD TWIN BEDS, Sleepaire, complete; set of 3 blond tables; Hide-a-bed; adjustable ironing board, all used only 2 weeks. Holliday, 298-1333.

'59 CHEVROLET BELAIR, 2-dr., Power Glide, PS, a/c, two tone, blue and white, seat belts, \$800. Wilder, 256-7045.

FIVE ACRES mountain land, close-in, electricity, water. Crosby, 898-0705.

DOUBLE roll-away bed, \$20. Pierce, 255-7923.

GAS RANGE, white, 26" wide, 36" high, 40" long, \$10. Fisher, 344-5319.

'50 CHEV. New tires, clutch, valves, exhaust system, ignition, \$100. Guist, 299-9060.

'55 FORD 4-dr. sedan, manual transmission, 6-cyl., \$225. DeMontmollin, 299-4059.

'58 PONTIAC Convertible, AT, Power equipped. May, 299-6782.

3/4-TON FEEDERS casement air conditioner; 1/2 HP - 3400 RPM special casement window exhaust fan; Coleman floor furnace w/controls. Raisen, 265-0227 after 5.

FORD TRACTOR w/loader and plows 8N, \$995 Patterson, 877-3158.

HELPER SPRINGS, \$5, coil type, increase load capacity to 1500 lbs., fits all cars w/elliptic springs. Olajos, 256-1649.

SINGER MODEL 301, slant-needle sewing machine, attachments, fitted maple table, zip-zagger, button holer, zipper foot, carrying case, \$125. Allen, 243-7085.

CAMERA, Argus (Argoflex), 75 mm., \$10, original cost, \$37.50. Coughnour, 299-0914.

BUNK BEDS, convertible to trundle or twin beds, cost \$60, sell for \$30. Cano, 255-0211.

2 1/2x3 1/4 SPEED GRAPHIC CAMERA, cut film holders, cut film developing tank. Burd, 256-6040.

MOSSMAN 3-bdr., 1 1/4 bath, double garage, a/c, sprinklers, patio, landscaped, near schools, below appraisal. Stevens, 298-2894.

RCA 21" television, table model, \$30. Yingst, 268-2896 after 5.

'58 BUICK CONVERTIBLE, white w/black top, red interior, R&H, w/w tires, top 1 yr. old, recent valve job. Allensworth, 298-5981.

SINGLE BED, walnut bookcase w/coil springs, \$30. Jaramillo, 299-3441.

STOCK INVESTMENT BOOKS FOR RENT; also recent issues of weekly NYSE and ASE stock charts for sale. Cole, 298-1464.

1940 FORD PICKUP 1/2-ton, 4-speed, 2 new tires and tubes. Stone, 298-4879.

'60 RAMBLER WAGON, R&H, 6-cyl., OD, factory air, new tires, 25mpg, one owner, \$1150. Johnson, 298-1011.

ELECTRIC RANGE, Westinghouse dbl. oven, fully automatic, \$50; Admiral upright freezer, \$100; Remington typewriter, \$45. Felsen, 299-4861.

HALLICRAFTER shortwave receiver, model S-38, \$25; Bendix automatic washer, seven years old, \$25; child's tractor tricycle, \$9.50. McIntire, 298-6145.

'63 VOLKSWAGEN BUS, deluxe, will trade. Capaldi, 318 Mesilla NE.

REFRIGERATOR, large two-door, Frigidaire, white, \$80. Wycoff, 299-1833.

'63 MOTORCYCLE, JAWA, 175cc, 3600 miles, \$325. Winkler, 299-1735 after 5.

GE PORTABLE air conditioner w/stand, cost \$39.95, sell for \$20; hair dryer, GE, white carrying case, used 5 times, cost \$20, sell for \$12.50. Cowham, 298-4249.

AKC REGISTERED, young male Schipperke, all shots, sacrifice to good home. Barber, 299-4287.

3-BDR., 1 1/4 bath, large terraced backyard, carpet, built-ins, terms. 4015 Ponderosa. DeZeeuw, 344-7392.

100" rose frieze upholstered sofa. \$50. Holt, 255-1426.

FLYING CLUB MEMBERSHIP, Sigma aircraft club, members limited to six total, Cessna 172, membership value, \$1500. Risse, 299-5002.

SAVAGE MODEL 24, \$35; over and under .410 and .22 LR. Nogales, 247-1178.

JEEP, Universal model CJ-3A, 4-w. dr., full metal cab, bucket seats, gun and boat racks, Warner hubs, tow bar, engine rebuilt. Alberts, 298-2922.

BLOND BEDROOM SET: bookcase headboard, innerspring mattress, box springs, double dresser; maple desk. Cone, 256-2583.

WALNUT END TABLE, \$4; black 3-bullet pole lamp, \$4; steel TV pole and lead wire, \$5; house and cabin plans, \$3/ea., table lamp w/2 shades, \$4. Dusek, 299-7087.

'63 CHEVROLET IMPALA Super Sport, Powerglide, PS, V8, R&H, wsv tires, \$2295. Starkey, 298-4001.

14' ALUMINUM RUNABOUT, 20 HP Mercury motor, factory built trailer, lots of extras, \$375; Jigsaw, \$12.50. Pliner, 256-1907.

'51 CHEVY station wagon, recently overhauled engine, plywood floor behind front seat, used as camper. Henry, 255-2536.

6 YEAR OLD BAY Morgan gelding, very gentle but has spirit, has won ribbons, \$165. Brannan, 898-1932.

'62 OLDS F-85 Cutlass, sport 2-dr., automatic, PS, R&H, a/c, tinted glass, white, \$1895. Thomas, 2316 Gen. Bradley NE, 299-6118.

'59 MERCEDES 220S, R&H, a/c. Harshman, 243-4369.

'62 OLDS F-85 Cutlass, sport 2-dr., automatic, PS, R&H, a/c, tinted glass, white, \$1895. Thomas, 2316 Gen. Bradley NE, 299-6118.

'59 MERCEDES 220S, R&H, a/c. Harshman, 243-4369.

'62 OLDS F-85 Cutlass, sport 2-dr., automatic, PS, R&H, a/c, tinted glass, white, \$1895. Thomas, 2316 Gen. Bradley NE, 299-6118.

1940 FORD Fordor, \$150. Windsor, 344-6557.

ONE SET ranch oak bunk and trundle beds w/Simmons innerspring mattresses, \$80; 4-drawer chest, \$10. Ortega, 242-1587.

CORRALES HOME on one acre, 3 fireplaces, 3-bdr., electric kitchen, corral, double garage, independent efficiency apts. Swiss, 898-2083.

39 VOLUMES plus detective handbook, Hardy Boys books, \$23; grey foam studio couch, opens into full bed, \$45. Gabe, 298-0204.

'55 OLDSMOBILE 88, 4-dr. sedan, R&H, \$295. Krahe, 425 Indiana SE, No. 1, 268-6256.

DRAPES, brand new custom made, green predominating, below cost of material alone, see anytime, 508 Hermosa SE, 3 large pair. Williams, 256-6008.

PICNIC TABLE and benches, \$15; children's large slide, \$20; swing set, \$12. 1423 Columbia NE. Killion, 255-1786.

1941 CHEVROLET, call Jeanne Hall 256-3051 or see at 3529 Thaxton SE. MacCallum.

'54 CADILLAC, runs but needs work, make offer. Hueter, 242-1620.

TWO TWIN SIZE studio beds, Simmons mattresses, \$40 for both. Hickerson, 268-7605.

'57 VOLVO PV 444, new rebuilt engine, \$375 cash. Wilson, 298-0049.

BABY BED, mahogany refinished, cost \$75 new, asking \$35. Bray, 298-2334.

JEEPSTER CONVERTIBLE, R&H, \$400. Bedeaux, 344-6277.

24 VOLUMES Encyclopedia Britannica, 3 yrs. old; finished bookcase and World Atlas, make offer. Kutac, 298-7024.

BRICK 3-bdr., garage, den w/fireplace, pitched roof, carpet thru-out, a/c, sprinklers back and front, 1104 Dakota SE. Valdez, 268-5375.

AUTO SEAT, \$1; baby dressing stand, \$1.50; infant seat, \$1; auto bed, \$5; '57 English Ford, \$150. Baxter, 298-1567.

BOY'S BIKES: 26", large frame, \$20; 26", \$12. Hicks, 268-8640.

'55 MERCURY 2-dr. HT, AT, R&H, \$150. Berger, 202 San Pablo SE.

TWIN BEDS, walnut finish w/cane trim; 1 twin mattress and box spring; table lamp, approx. 40" high. Mick, 299-5814.

RED BRICK HOME on 3/4 acre in South Valley, with all the extras, \$35,000. Starkey, 877-0905.

COMPLETE SET Encyclopedia Americana, take over payments; National steel guitar, case. Simon, 265-0967.

'52 JEEP 4wd wagon, new engine, best offer over \$500; '54 Ford V8, stick, \$300. Schwiner, 255-9262.

SHOTGUN, 16 gauge, Winchester Model 12 w/7 boxes ammunition, \$65. Bruce, 299-2542.

'59 PLYMOUTH 4-dr. sedan, rebuilt V8 engine, \$425. Hutchinson, 299-2125.

'61 MERCEDES 300SL roadster, 2 tops, Tonneau, all-hand radio, air. Patrick, 255-3784 after 5.

CONN TROMBONE and case, \$125. Reineke, 344-5138.

TRAILER, 15' home made, w/4-burner butane stove, make offer. Salazar, 255-1301.

WANTED

RIDE or join car pool from Princess Jeanne (Lomas & Claudine St.) to bldg. 880. Wilson, 298-0049.

MICHELIN-X or Pirelli Centurato tires at a discount price. Kotoski, 298-1732.

HOME for 3 kittens, housebroken. Carlisle, 299-5239.

RIDE, vicinity Eubank and Candelaria (10300 Matthew NE) to bldg. 880. Hammond, 298-6162.

HOME for a one year old male Basenji. Steck, 299-2315.

CHILD CARE in my home, large fenced yard, no weekends. Aden, 298-5182.

PORTABLE DISHWASHER, .22 pistol. Pritchard, 268-9618.

CAR POOL MEMBER for established car pool, from Collet Park area to 880 parking lot. Gallagher, 298-0565.

AKC stud registration books. Becker, 299-2539.

TRADE POCKET BOOKS, about 50 novels to swap for an equal number in good condition. Hall, 256-7282.

ROADRUNNERS' SQUARE DANCE CLUB starting new adult beginners' class Sept. 9. For additional information call 255-9427 or 256-7959. Wladika, 255-9166.

MOTORCYCLE NEEDED for transportation, 4-cyle twin preferred. Johnson, 298-0024.

USED TIRES, 2 7.60-15. Krahe, 268-6256.

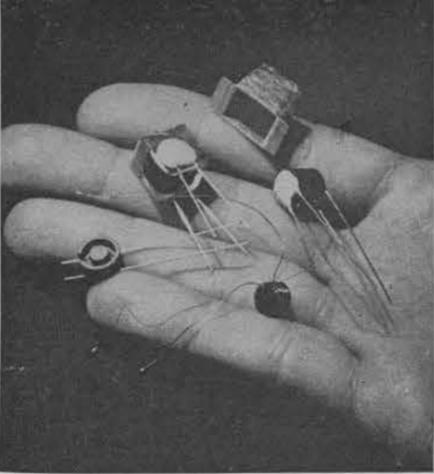
TRAILER, one-wheel luggage type. Coleman, 255-7480.

DOES ANYONE WANT to sell any surplus 40-slide trays for the discontinued Golde 35mm projector? Mozley, 299-4204.

FOR RENT

2-BDR. unfurnished apartment, w/w carpet, garbage disposal, built-in range, a/c, drapes, water-garbage paid. Imrisk, 256-9063.

RENT OR SELL: 5-bdr. house, detached garage, adjoining University, shown by appointment only; 623 North University. Hueter, 242-1620.



THESE PIECES are assembled to make an encapsulated transformer; they're typical of some of the work performed by Sandia's Transformer Section. Clockwise from 8 o'clock: cup, encapsulated transformer, encapsulation mold, assembled transformer, bobbin.



THIS TINY TOROIDAL transformer was carefully wound by hand in Sandia's Transformer Section. It's inspected here under an illuminated magnifier by Helen Agats, who uses tweezers to separate hairlike lead wires.

Hundred-Year-Old Principles Used In Work of Transformer Section

In 1831, speaking before the Royal Society in London, the English chemist Michael Faraday described an experiment which later played a major part in the development of the Industrial Revolution:

"Two hundred and three feet of copper wire in one length were wound round a large block of wood; other two hundred and three feet of similar wire were interposed as a spiral between the turns of the first coil and metallic contact everywhere prevented by twine. One of these helices was connected with a galvanometer, and the other with a battery . . ."

Faraday found that, when electrical current was passed through one helix, there was a sudden and very slight effect on the galvanometer, an effect that was repeated when he broke contact. This slight galvanometric response indicated that an electrical current was induced in the other helix, but during the time when the current was passing through the helix, no response at the galvanometer could be perceived.

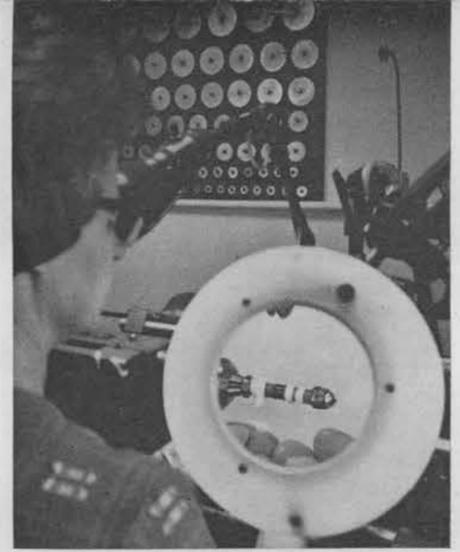
The results of this experiment and others led Faraday to the discovery of one of the great principles of electricity—that having to do with induced electrical currents—a principle applied today in electrical motors, coils, transformers, and other electrical apparatus. The principle of induced currents, along with others, is applied today in Sandia's Transformer Section, supervised by E. M. Hopkins.

"The modern-day transformer uses principles defined by Faraday and others," Mr. Hopkins states, "in much the same way that they were described in the early experiments."

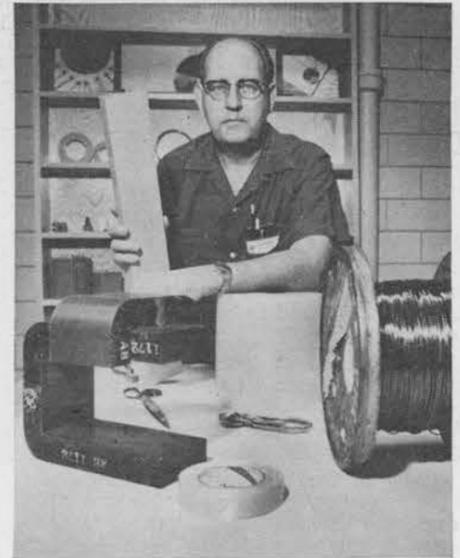
A transformer in its simplest form consists of windings of copper wire similar to those described by Faraday. Electrical energy applied to one winding (the "primary coil") induces a current in the other winding (the "secondary coil"). The voltage output of a transformer is determined by the turns ratio in its coils. Some transformers contain numerous secondary coils, each of which produces an induced voltage of specified value. Such voltages all may be induced from one primary coil.

Some of the large transformers prepared at Sandia are wound with wire up to one-fourth in. in diameter on cores up to 18 in. long. Some of the transformers and other coils are wound on machinery similar to a wood lathe; others are wound carefully by hand. Some of the transformers, especially the toroids, are so tiny, and utilize such fine wire that they must be prepared by hand under magnification. The work requires precision and great patience.

"Many of the transformers and other such equipment we use today are becoming more and more miniaturized," Mr. Hopkins continued. "Some of the tiny toroidal—donut-shaped—transformers we're winding are no larger than a pencil eraser, and they're wound with wire only a third the diameter of a human hair."



MECHANICAL WINDING of transformers is accomplished on winding machine which resembles a lathe. Henrietta Checchio of Sandia's Transformer Section winds wire on a mandrel as first step in making a transformer coil.



RAW MATERIALS all come together in Sandia's Transformer Shop and emerge as transformers, coils and other pieces of electrical gear. Typical materials assembled here and displayed by Henry Wellers include laminated transformer core, enameled copper wire for windings, plastic sheeting for insulating windings, a square cardboard mandrel, and tools for handling materials.

Service Awards 15 Years



Eugene A. Aas
8168
Sept. 12, 1949

Joseph E. Sylvestre
4253
Sept. 13, 1949



E. Randall Parsons
7214
Sept. 13, 1949

Eugene M. Hopkins
4233
Sept. 21, 1949



John P. Stark
7613
Sept. 21, 1949

Paul J. Krogdahl
2132
Sept. 22, 1949

10 Years

Vernon E. Kerr 4543, W. D. Stoppkotte 1424, Robert E. Pedersen 2511, George L. French 4412, Carthel D. Henry 4614, Sherry L. Smith 7256, Robert D. House 7432, Lyle Diamond 2525.

Congratulations

Mr. and Mrs. W. J. Rogers, Jr. (7441), a daughter, Nancy Lynne, Aug. 13.
Mr. and Mrs. J. A. Corll, (5132), a son, David James, Aug. 28.
Mr. and Mrs. Orie Montoya (1121), a son, Mark Edward, Aug. 21.
Mr. and Mrs. R. A. Silva (4573), a daughter, Rita Elizabeth, Aug. 17.
Mr. and Mrs. K. R. Jones (4411), a son, Thomas Alan, Aug. 17.
Mr. and Mrs. B. D. McConnell (4512), a daughter, Gail, Aug. 14.
Mr. and Mrs. T. R. Gourd (7613), a daughter, Mary Carmen, Aug. 15.

Year's Third Disabling Injury at Livermore Lab

Aug. 18, the Livermore Laboratory safety record tumbled for the third time this year.

A material handler was involved in an accident which resulted in the amputation of the tips of two of his fingers. After surgery at Valley Memorial Hospital, the injured employee was released to his home to recuperate.

The injury occurred because the employee was riding on a load of material, and the load was not properly secured.

At the time of the accident, Livermore Laboratory had worked 76 days or 380,815 man-hours since the last disabling injury in June.

Accidents Mar Sandia Laboratory Record

A series of four accidents recently caused Sandia Laboratory's safety record to be rolled back to zero.

One of the incidents involved an employee who suffered a hernia from pushing on a large wheeled mock-up unit. He underwent surgery, recovered, and has now returned to work.

Another injury occurred at Kauai Test Range in Hawaii. An employee suffered sprains to both ankles and a hairline fracture of the left ankle when his legs were caught under the tongue of a water tank trailer he was unhitching from a truck. The employee has recovered and returned to work.

Another employee spent several days in the hospital as a result of a back strain. The injury occurred when a work piece came loose from a surface grinder. As a reflex action, the employee jumped back from the grinder and strained his back. He has now returned to work.

The other injury was a strained neck muscle suffered while an employee carried several pieces of bar stock on his shoulder. The man has recovered and returned to work.

Since the safety record fell, Sandia Laboratory employees have worked 27 days or 945,000 man-hours without an injury. There have been 21 disabling injuries thus far in 1964.

Supervisory Appointment



Division.

GUNNER L. SCHOLER to supervisor of Advanced Development Division 8153.

Gunner joined Sandia at Livermore in September 1956 to work in project engineering. In November 1958 he was promoted to section supervisor in Project Engineering

Before coming to Sandia, Gunner owned the Scholer Engineering Company of Alamo, Calif., where since 1952 he manufactured a water softener of his own invention.

Previously, he was vice president of the Van-S Laboratories, Oakland, Calif.

Gunner received his Bachelor's degree in mechanical engineering from Stanford University in 1942. For two years he studied engineering at the Royal Technical Institute, Copenhagen, Denmark.

Welcome Newcomers

Aug. 10 - Sept. 1

Albuquerque	
Nell A. Arnett	4333
Cloie G. Baran	2524
Rhoda R. Bockelman	7612
Pat D. Brinkley	4574
M. Rita Carabajal	3126
*Barbara S. Curry	3126
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Sandia's

Safety

Scoreboard

Sandia Laboratory:
27 DAYS
945,000 MAN HOURS
WITHOUT A
DISABLING INJURY

Livermore Laboratory:
21 DAYS
106,000 MAN HOURS
WITHOUT A
DISABLING INJURY