



F. R. Moon

## F. R. Moon Marks Thirty Years WE Company Service

Thirty years with Western Electric Company will be celebrated by Francis R. Moon (4360) on Aug. 20. He will be honored with a luncheon.

Mr. Moon started with Western Electric Company in 1929 and in 1932 was transferred to Teletype Corporation, a subsidiary of Western Electric. He worked for two years in operating engineering, one year in business methods, and the remainder of the time in personnel administration before coming to Sandia in 1952.

At Sandia he started work in expediting, and moved on to receiving, purchasing and program administration. In August 1956 he was promoted to Manager of Purchase Service Department.

Mr. Moon received a Bachelor of Science degree in Business Administration from the University of Illinois.

He is a member of the American Institute of Management, an organization for supervisory people.

## Face Lifting of Sandia Parking Areas Progressing on Schedule

Current face lifting of Sandia Laboratory parking areas is progressing according to schedule. Dave Tarbox, Plant Engineering Department Manager 4550, reports.

C. R. Davis Construction Company, working under AEC contract, is cleaning, sealing, and providing some new paving for five Sandia parking lots. In addition the contract calls for construction of several new sidewalks in Tech Area I, cleaning streets, cleaning and sealing Tech Area II roads and constructing an access road to Area III.

Parking Lot A, south of Tech Area I, is back in use this week after cleaning and sealing operations. Currently work is being done in Parking Lot D, south of Bldg. 800, and the new paved parking area should be completed Aug. 15.

Scheduled for completion Aug. 11 is Parking Lot B, north of Bldg. 880. Aug. 27 is the com-

# 'University Night' Aug. 10 Marks Start of Fourth Year of Educational Aids Program

"University Night at Sandia" on Aug. 10 will unofficially mark the start of the fourth year of the Corporation's Educational Aids Program.

Numerous employees have received financial assistance for further college work through the plan.

Under the program the Corporation pays half the tuition for an employee who successfully completes a job-related course at an accredited university.

Beginning with the coming fall semester the procedure for participation in the Educational Aids

Program will be changed.

The first step will be for the employee to submit Form 4555, "Application for Educational Aid," through his line supervisor. This form will be available in late August from departmental secretaries or from Section 3131-2,

Bldg. 301.

The completed application must be received by Section 3131-2 at least one week prior to UNM registration Sept. 18 and 19. As soon as the application is approved by Section 3131-2 the employee will receive a tuition payment form.

During registration the employee-student will present to the UNM cashier this tuition payment form representing 50 per cent of the tuition cost.

If the employee should fail to complete with a grade of "C" or better the course (or courses) for which he has enrolled, the employee will be required to reimburse the Corporation for the amount advanced for the course at the beginning of the semester.

"University Night" is a joint meeting of University of New Mexico faculty members and Corporation employees interested in attending classes. This year the meeting will be at 7:30 p.m. on Monday at the Coronado Club.

New employees planning to enroll in the Educational Aids Program are urged to take this opportunity to receive individual counseling in their field of study from university representatives.

Prior to the general discussion UNM faculty representatives, several Sandia Corporation management representatives and members of the Technical Development Committee will attend a dinner meeting to talk over the status of current programs at the University and the recently announced program of advanced training for selected new technical staff members.



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## Patent for Time Delay Generator Issued Sandians

A patent in the name of the Atomic Energy Commission has been awarded to B. J. Carr and Vernon D. Peckham for their invention of a precision time delay generator. The device was invented while the men were working on a project for Radar Advanced Development Division.

The invention is a precision time delay generator circuit which exhibits a low time delay jitter and which will generate a pulse time delay with repeatable precision.



PHOTOGRAPHIC CRAFTSMAN degree, a high honor for members of the Professional Photographers of America, is bestowed upon J. J. "Mike" Michnovicz, right, during national convention of the organization in Los Angeles. At left is Maddison Geddes, PPA president, and Morris Gordon, WE Magazine photographer and official of the American Society of Magazine Photographers.

## J. J. 'Mike' Michnovicz Earns High Photo Honor From PPA

The degree of Photographic Craftsman was awarded to J. J. "Mike" Michnovicz by the Professional Photographers of America during the national convention of the organization in Los Angeles last week. Mike is supervisor of Photo and Reproduction Division 3462.

A high honor for photographers the degree, must be earned by having prints selected for national exhibition and by participating in programs of the organization. A merit system is used by the association with one merit awarded for

each photograph selected for display and merits for program participation. Twenty-five merits must be earned to achieve the degree of Photographic Craftsman.

Mike joined the organization in 1946. His first exhibition print was accepted in 1949 and was one of 300 selected from the thousands entered.

He has had seven prints accepted for national display. The remainder of his merits were earned by giving talks, lectures and programs for the organization as well as being an official representative of the association.

Mike helped found the New Mexico Professional Photographers Association and served as Vice President of the organization. He has been active in the Rocky Mountain Regional Association. In 1957 he was a featured speaker at the International Industrial Photographic Conference in Washington, D. C.

He attended in 1958 the Industrial Photographic Management Seminar at Winona School of Photography sponsored by PPA.

## Livermore Parking Lot Rearranged

Livermore Laboratory has rearranged its parking lot with an emphasis on pedestrian safety and easier entrance and exit. The parking lot capacity will be 620 cars and it is expected in late August Lawrence Radiation Laboratory will move into its new engineering building which will allow additional space in the parking lot. 10

## New Changes Announced for Sick Leave Plan

The Corporation's sick leave plan was further improved recently by the addition of a provision whereby a portion of the sick leave used during an extended illness is restored automatically a short time after the employee returns to work.

As the employee body matures there will be more employees with the maximum sick leave accrual, 90 work-days, but there will also be a likelihood of longer and more serious illness. Sometimes these extended illnesses use up almost all of the accrued sick leave of an employee and it takes quite a long time to re-accumulate a substantial sick leave accrual. Meanwhile sickness might strike again. That's when the restored credits would come in handy.

The changes in the sick leave plan are applicable to all employees and became effective July 6, 1959.

When an employee is absent for more than 14 consecutive full calendar days due to personal sickness, sick leave credits which have been used subsequent to the fourteenth day shall be restored as follows:

Credits shall be restored after a period of 90 calendar days, starting with the day the employee returns to work after the personal sickness absence and will include all time worked and all time absent for the following reasons:

Saturdays, Sundays, holidays, vacations, jury duty, election service and voting time, occupational disability pay, peacetime training, local emergency service, absence for any other reason which does not exceed one week.

The percentage of credits used subsequent to the 14th consecutive full calendar day of personal sickness absence which shall be restored shall be in accordance with the employee's Term of Employment as follows:

**Term of Employment at Time Sickness Absence Began—Per Cent Restored.**

2 yrs. but less than 5 yrs.—25%.  
5 yrs. but less than 10 yrs.—50%.  
10 yrs. or more—75%.



PLANS FOR DEVELOPMENT of the Tonopah Range on a permanent basis were disclosed recently by the Atomic Energy Commission and Sandia Corporation. Program participants at a dinner hosted by the Corporation for Tonopah

businessmen and state officials were (L to R) Nevada Gov. Frank Sawyer, C. C. Campbell, Sandia Area Office Manager, AEC; G. A. Fowler, Vice President—Research, Sandia Corporation, and Ray Downs, Nye County Economic Development Board.

## Polio — Some Important Statistics

The following article was prepared by Dr. S. P. Bliss, Sandia Corporation Medical Director (3300).

For those employees who are under 40 years of age, having dependents under this age, who have not had the full series of polio immunization, the recent statistics from the New Mexico Department of Public Health should be very important.

Cumulative total cases in U. S. for period Jan. 1, 1958, through July 25, 1958 — 791 (Of this number, 387 were paralytic)

Cumulative total cases in U. S. for period Jan. 1, 1959, through July 25, 1959—1462 (Of this number, 956 were paralytic)

These figures show that nationally there has been an 85 per cent increase in incidence of the disease, with a 20 per cent increase in the paralytic type as compared with last year's experience.

In New Mexico there have been 18 cases reported, 13 of these were paralytic. Of the 13 cases, 12 had received NO Salk Polio Vaccine. The one case which received vaccine only received two injections and those were given in 1955. Although the New Mexico figures show a relatively small number of cases, they do demonstrate the effectiveness of the vaccine.

These figures, therefore, demonstrate the value of the immunization program and indicate that no one can afford not to receive full immunization series.



C'MON IN, the water's fine. This hearty invitation is issued from a soaking wet Bobby Grebe, age 8, who is obviously enjoying his swim session at the Coronado pool. His father is Don Grebe (5254).

## Dream Dance

The 2500 Midsummer Night's Dream dinner-dance will be held Aug. 8 at the Coronado Club. This festive evening commences with free punch from 6 to 7 p.m., dinner from 7 to 9 p.m. and dancing from 9 p.m. to 1 a.m. Prior to the dancing, a short skit featuring "local characters" will be presented. Prizes will be presented for various "achievements" during the evening.

All 2500 employees are urged to get tickets as early as possible. H. C. Olson, ext. 28132, has names of ticket sellers and tickets will also be available at the door.

## Back on the Job

Department 4110 welcomes back C. B. Inberg (4113) after an extended illness.

Members of Department 4230 are glad to welcome back their manager, R. S. Lemm, after his lengthy illness.

## Military Returnees

Back at their jobs at Sandia following military service are Hubert Filusch and Frank D. Baca. "Herb" was stationed for two



H. Filusch F. D. Baca

years at Kirtland AFB. He is an engineer in division 1224.

Frank served two years in the Marine Corps. After eight months at Barstow, Calif., he was sent to Okinawa. He is a record clerk in division 3442.

## Moving Time

Howard (4514) and Joyce Johnson (4152) are settled in their new home at 4005 Delamar NE.

Other new home owners include Wayne (4513) and Theresa Phelps (4152) whose address is now 4812 Hilton Ave. NE.

After marriage vows are spoken Sept. 20 Kenneth E. Johnson (4232-3) and his bride will move to a new home on Buena Vista NE. The bride is the former Grace Christopherson of Decorah, Iowa.

It will be moving day soon for Mr. and Mrs. Philip Class (1261-2). Their new home is at 1001 Field Drive NE.

Mr. and Mrs. Roy Griego (4153) are settled in their new home at 305 General Stillwell NE.

At Livermore Dick Dickson (8233-1) and his family, recently transferred from Albuquerque, have moved into their new home at 1327 Columbus Ave.

Moving day came in July for Bob Thompson (5121) and family. Their new address is 3301 Pitt NE.

Mr. and Mrs. C. E. Abraham (5121) have moved into their new home at 3908 Maderia NE.

## Heir Addition

Mr. and Mrs. Joseph Gordon have welcomed into their family nine-month-old Steven Joseph. Joe is with Section 2713-5 (St. Louis area).

## Congratulations

### Born to:

Mr. and Mrs. D. W. Sasser (5121) a daughter, Lori Alane, on July 24.

Mr. and Mrs. W. E. Lew (4152) a daughter, Mary Ellen, on July 24.

Mr. and Mrs. W. A. Davis (1262-1) a daughter, Alexis Ann, on July 20.

Mr. and Mrs. Howard Gerwin (1411) a son, Gregory John, on July 14. Dawn worked in 4623 assigned to 2231.

Mr. and Mrs. William Barlow (1411) a son, James Edwin, on July 21.

Mr. and Mrs. R. C. O'Boyle (1612-4) a daughter, Elizabeth Anne, on July 20.

Mr. and Mrs. Jessie E. Oden (8225-1) a daughter, Sandra Kay, on July 18.

Mr. and Mrs. Karl Tucker (8224-1) a daughter, Joni Lynn, on July 19.

Mr. and Mrs. Donald J. Gallagher (8223-1) a son, Stephen Francis, on July 26.

Mr. and Mrs. Eugene Foderaro (1612) a son, William Lance, on July 21. Violet formerly worked in 4611.

Mr. and Mrs. Jerry Cole (4254-2) a son, Ricky John, on July 19.

Mr. and Mrs. W. J. Costales (4254-2) a son, Michael Robert, on July 17.

Mr. and Mrs. Wayne Corbett (1431) a son, Gregory Michael, on July 2.



FIESTA HAT designer Mary Dunn helps Susan Bishop (4623) achieve the right angle. Hats are made to match in fabric and trim individually designed and world-popular fiesta dresses.

## Fiesta Hat Demand Prompts Husband To Provide Math Talents to Business

"I don't have a hat to wear with my fiesta dress" is a feminine complaint that Mary Dunn is trying to alleviate and her husband, Leo (1222), is helping, too.

Mary had long felt that it was difficult to find a hat which looked appropriate with the gaily decorated fiesta dresses, which are popular in the Southwest for both dressy and sports wear. "About two years ago I decided to do something about it and signed up for a millinery course at the Uni-

versity of New Mexico," she said. Since then Mary has been turning out big hats, half hats, tall hats and flat hats.

"If I can't find a frame the right shape to decorate," Mary said, "I get Leo to figure mathematically how to cut the pattern. He and our four children are my severest critics."

To date the Dunn-designed hats have appeared in fashion shows in Albuquerque, Los Alamos, Gallup and Durango, Colo.

## Weddings and Engagements

Betty Thompson (1600) and M. L. Heisler (1611) were married July 3 in Gallup, N. M. The couple honeymooned at Phoenix, Grand Canyon, Las Vegas, Nev., and Los Angeles.

Betty has been with the Corporation since 1951 and her husband has worked here four and one-half years.

Aug. 8 has been set as the wedding date for Mary Lou Milligan (2562) and Joe Polaco of Albuquerque. The ceremony will take place at Holy Family Church in Atrisco.

Mary Lou has been with the Corporation nearly two years.

## Sympathy

To Bonnie Montano (4573-1) for the death of his mother in Los Lunas on July 18.

To Carlos Candelaria (4573-3) for the death of his sister-in-law in Albuquerque on July 14.

To Carlos Ortega (4573-3) for the recent death of his father-in-law in Albuquerque.

To Martin Vigil (4411-3) for the death of his wife in Albuquerque on July 19.

To Catherine Cundiff (4613) for the recent death of her father in Albuquerque.

## Funeral Service Held For W. G. Parkhurst

Funeral services were held July 29 for Walter G. Parkhurst, 26, who died July 26.

Mr. Parkhurst had been employed at Sandia as a draftsman



W. G. Parkhurst

(4413) for a year and a half and had been an Albuquerque resident for 12 years.

Survivors include his widow, Margalee (4413), his mother and three grandparents—all residing out-of-state.

## Sick List

Wishes for a fast recovery are extended to Pat Scott (4111) who is home recuperating from surgery.

Joe Weihe (5122) is at home recuperating from major surgery.

Employees of 4212 send get well wishes to Joe Roof, who has been ill for quite some time.

Get well wishes are extended to Charles Horner (4211), who has been hospitalized.



A PAIR OF 20-POUND SALMON are shown off by Bruce Johnson (8115-1) which he caught from a charter boat outside the San Francisco Bay several weeks ago (July 19). Other members on the fishing trip were: George Steinhauer, Morris Mote, Joe Darginis, Rudy Johnson, and Charles Arthur, all of 8115.

## Man on a Horse

Jim Wade (4211-3) participated in the rodeo in Los Alamos on July 25 and 26 bringing home a first place in the cutting horse contest. He was mounted on his quarter horse "Sage."

## Chester F. Sishc Dies July 30

Chester F. Sishc, a Corporation employee for six years, died July 30 at the age of 38.

He had been in the field test organization at Sandia Labora-



C. F. Sishc

tory for five years and in July 1958 transferred to Livermore Laboratory. Mr. Sishc was a staff member in Division 8124.

Survivors include his widow, Geraldine, and an infant daughter in Livermore; two sons and a daughter in Albuquerque; his father and a brother in Farmington.



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Staff: Donald E. Graham, Cherry L. Burns, June Leonard, William A. Jenkins, Livermore Laboratory, Livermore, Calif.

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

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Janet Willis (5131)

## Take A Memo, Please

You can get a permanent injury from a temporary job. At work or at play the only way is the safe way. Be alert to safety hazards.

## Tech Paper by J. W. Reed Tells of Atomic Test Meteorological Findings

A technical paper by Jack W. Reed (5111-1) will be included in the program of the National Conference on Stratospheric Meteorology in Minneapolis, Minn., Aug. 31-Sept. 2.

Title of the paper is "Summary of Acoustic Temperature and Wind Observation from Atomic Tests." Mr. Reed presents an analysis of sound patterns around atomic blasts in Nevada and the Marshall Islands giving winds and temperatures in the warm layer of air from 100,000 to 160,000 ft.

## Sandia Colloquium Meetings Scheduled August 12 and 19

"Atmospheric Turbulence" will be discussed at a meeting of the Sandia Research Colloquium Wednesday, Aug. 12. Speaker will be H. A. Panofsky, meteorology professor, Pennsylvania State University.

On Wednesday, Aug. 19, Dr. James Easley (5150) will discuss "Radiation Effects in Semiconductor Devices." Dr. Easley is on loan to Sandia Laboratory from Bell Laboratories, Whippany, N. J. He is currently working on a research project studying bombardment damage in semiconductors.

Both meetings will be held in the basement conference room of Bldg. 802 beginning at 9:30 a.m. Tickets will not be required.

In the paper, Mr. Reed contends that since sound has been recorded upwind from nearly every large shot, it follows that temperatures at these levels must be higher than at ground level. This is in disagreement with temperature data from blasts gathered by rocket soundings which generally show maximum temperatures below freezing at 150,000 ft. However, an assumption of considerably higher temperatures below 500,000 ft. is necessary to obtain densities calculated from satellite orbits.

The conference is sponsored by the American Meteorological Society.

## Sandians Helping Organize Base Carnival, Youth Activities Benefit

Jack Hansen, Director of Development Shops 4200, is serving as Sandia Corporation representative to the General Committee of the second annual Sandia Base Carnival. The huge affair, scheduled for the Labor Day weekend Sept. 4-7, is aimed at raising funds for Sandia Base youth activities.

The cooperative effort of military and civilian personnel of Sandia Base last year contributed more than \$5,000 to such Base organizations as the Teenage Club, Little League Baseball, Girl and Cub Scouts and the Junior Gun Club.

Plans for this year's Base Carnival call for the same kind of show with more emphasis on bigger and better attractions.

Other Sandia employees serving on Carnival committees include B. C. Campbell (4320), chairman of the Promotion committee; H. W. Maglidt (3460), member of Operations committee; A. J. Clark, Jr. (1232), member of the Food and Drink Concessions committee, and H. E. Burrell (4224), chairman of the Underprivileged Children's committee. H. E. Viney (5540), who was chairman of last year's promotion committee, is serving again as senior executive advisor of promotion.

W. C. Kraft (2550) has been

appointed to head Sandia Corporation ticket sales. Serving as Deputy is C. E. Foster (2555), and A. V. Engel, Jr., (1215), M. J. Snyder (2225) and A. E. Bentz (5213) are assistant sales managers.

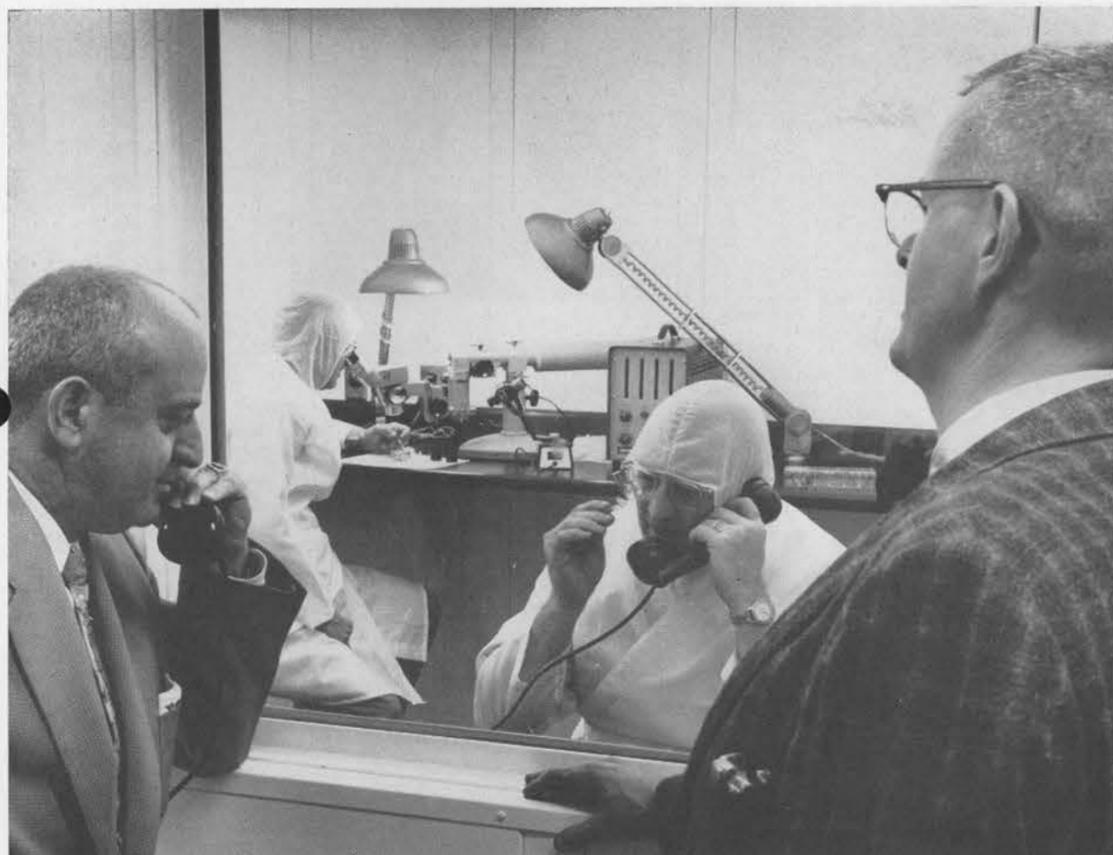
A sales force is currently being organized to offer tickets to employees in each department. Advance tickets will be available next week. Regular price of the ride tickets is 25 cents each, but advance tickets will sell five for a dollar.

F. R. Moon (4360) has been appointed ticket sales collection manager for Sandia Corporation and A. M. Granum (4362) is assistant collection manager.

Sales team captains and their organizations to solicit are as follows:

P. D. Bishop, 2200; L. H. Stradford, 2500; J. P. Gaynor, 2600; R. A. Miller, 2700; F. E. Mitchell, 4100; A. W. Porter, 4200; L. R. Neibel, 4300; J. T. Dempsey, 6000; O. B. Tjeltweed, 1200; R. S. Pinkham, 1300; N. Sannella, 1400; D. Essad, 1500; C. N. Giles, 1600; K. E. Sutton, 3100; K. V. Atkisson, 4400; R. D. Flaxbart, 4500; G. L. Miller, 5200; G. L. Baumgartner, 3200 and 3300; F. B. Phillip, 3400, and W. M. O'Neill, 5500.

Others working for the carnival will be listed in the next issue.



COMMUNICATION with men working in Sandia's new clean-room facility is by means of a telephone. This limits the amount of entering and exiting into the dust free room. Here E. J. Newfield (4742) talks

with M. J. Madlener (1322-2) about work in progress. P. H. Kolb (1322-2) is at the microscope and J. I. Hegge, Jr. (1320), is shown at right. The facility will be utilized by various Sandia groups.

## 'Super-Clean' Room Established For Sandia Component Work

Tell a housewife that her freshly cleaned home contains 377,000 or more particles of dust per cubic foot and she is most likely to raise an eyebrow.

Actually this record for dust content is pretty good. The place truly is sparkling clean. But for assembly of tiny precision components developed by Sandia engineers and scientists this "clean" situation is greatly inadequate.

Now located on the second floor of Building 802 is a newly-completed "clean" or "white" room which provides an environment more than 45 times cleaner than the freshly cleaned house mentioned above. The new Sandia facility limits "dirt" to 8,000 or less particles of dust per cubic foot when the room is not occupied. With a maximum of six occupants this limit is 15,000. Comparison-wise with living areas, this could be called "super-clean".

### Precision Tolerances

Technical specialists perform assembly of such tiny devices as "inertia-acceleration sensors" calling for precision tolerances of 20 millionths of an inch (several times more precise than tolerances utilized in ordinary machine work). Adjustment, testing, and "post-mortem" are also performed on such devices and others in the new clean room.

A dust particle of micron size is 1/25,000 of an inch in diameter. If it were lodged in the tiny device, it could possibly cause serious malfunction. In the various precision parts of a delicate appearing but rugged timing device, similar malfunction could be caused by extremely tiny particles of dirt. An example of a miniaturized timer for which this kind of problem must be guarded against is one that has been miniaturized to the size of a woman's compact, a decrease in size to about 1/30 the size of the previous components of this type.

"The design of electromechanical components, in order to keep up to date with current broad trends and needs," J. I. Hegge, Jr., Manager of the Electromechanical Development Department 1320, says, "requires our activities to move more and more into the miniaturized super-precision type of devices. The extreme examples given here are under development today, but they will be typical examples of electromechanical

components to be available as production items in the near future."

The new super-clean room is for development groups and is an experimental laboratory for determining methods and procedures to be utilized by manufacturing organizations.

Following coordinated development work in all the affected areas at Sandia, production work is contracted to organizations outside Sandia for manufacture. Working as a team Sandia Manufacturing, Quality, Inspection and other groups work with suppliers to meet specifications based on experience and information obtained by this team previously at Sandia in facilities like the new clean room. Manufacturers will be required to produce the components in similar facilities.

### Protective Clothes

Sandia technicians enter the clean-room clad in special protective clothing—nylon smocks, hoods and plastic boots. For some operations inside the room they will wear special nylon gloves with plastic finger tips for gripping. This prevents skin oils or moisture from contaminating the components.

There is an ante-room located in front of the clean-room entrance where protective clothing is put on. If the ante-room door is open, the clean-room door must remain closed. The clean-room maintains a slightly positive pressure greater than outside air in order to ensure an outflow of air when the door is opened. The clean-room contains 150 sq. ft. of space, yet its air conditioner is large enough for a six-room house. Its filtering system continually filters stray particles from the air of the room. Temperature and humidity of the air inside the room are closely controlled.

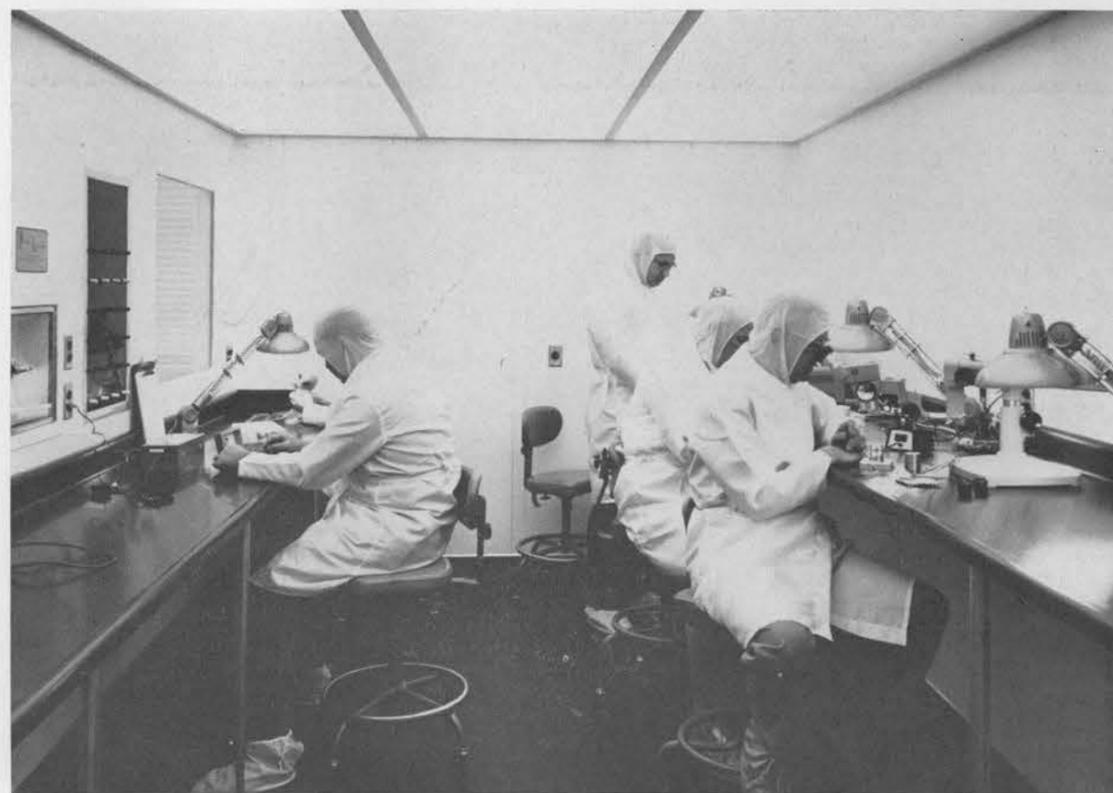
When the clean-room is in operation, entering and exiting is kept to a minimum. Occupants will remain in the room for about three hours at a stretch. No smoking is allowed, and no food or beverage can be brought into this room. Special lint free paper and ball point pens are used for any note-taking that is required. Any drawings that are needed for assembly of components are kept in plastic containers.

Jack panels are provided for electrical connections so that com-

ponents can be tested on the bench with the test equipment kept out of the clean room. A telephone is provided for outside communication. A brightly lit, comfortably appearing room, one wall contains large areas of glass.

The present clean-room is also serving as a pilot for other planned clean-rooms at Sandia.

Hal Baxter (4543) was the Plant Engineering project engineer who prepared the specifications and other plant engineering work for the new facility. E. J. Newfield (4742 assigned to 1320) performed most of the organizing and planning effort as needed from the 1300 and 1400 groups. He worked to provide the clean-room facility for use by members of 1300, 1400 organizations and other interested organizations. This required considerable research and surveying of similar facilities in other companies, as well as assistance from members of Departments 1320 and 1330.



CLEAN ROOM OPERATION and protective clothing worn by technicians is shown in the above photo. The men are performing delicate assembly operations of tiny components requiring dust-free

environment. From left are C. C. Bates (1432-4), W. R. Armstrong (1321-2), C. O. Weaver (1332-4) and P. H. Kolb (1322-2). The new Sandia facility is located on the second floor of Bldg. 802.

# Supervisory Appointments

**EDWARD F. BARNICLE JR.**, to manager of newly created Department 6030, designated "Attorney."



Ed came to the Corporation in May 1958 as an attorney in Organization 6000. He has been with Western Electric since 1952 and, prior to transferring to Sandia, was an attorney in the legal division at the Hawthorne Works.

From 1947 to 1952 he worked in the legal department of the Cities Service Oil Company in Chicago.

Ed received his law degree from the University of Chicago in 1947. He is a member of the Illinois and New Mexico Bars, the American Bar Association, the Chicago Bar Association, the Albuquerque Bar Association, the New Mexico State Bar Association and the Workmen's Compensation Lawyers of Illinois.

**LEE E. DAVIES** to manager of the Product Development Department 8150, Livermore Laboratory.



Lee joined Sandia in 1949, working in handling equipment design. He was promoted to supervisor of a project engineering division in 1952 and was transferred to Livermore in that capacity in 1958.

During World War II Lee served in the Pacific Theatre with Army Ordnance, assigned to the 1st Cavalry Division as a 1st lieutenant. He is a graduate of New Mexico State University where he received his BS degree in Mechanical Engineering in 1943. Before joining Sandia he worked three years for the Mountain States Telephone and Telegraph Company in El Paso, Texas.

He is a registered professional engineer in the State of New Mexico.

**ROBERT J. TOCKEY** to supervisor of Nuclear Support Section 8123-2, Field Operations Division, Livermore Laboratory.



Bob joined the Corporation in 1954, working in the Electron Tube Development Division at Albuquerque. He was transferred to Livermore in July 1956 and was assigned to the Nuclear Support Section before his promotion.

A graduate of Nebraska University, Bob received his BS degree in Electrical Engineering in June 1954. He is a member of IRE, Eta Kappa Nu, electrical engineering honorary, Pi Mu Epsilon, mathematics honorary, and Sigma Xi, general science honorary society.

**FLORENCIO BACA** to supervisor of Janitor Service Section 4574-2, Transportation and Services Department.



"Baca" has been employed at Sandia seven years; first in assembly work and for the past three years in maintenance millwright work.

Previously he had been in construction business in Albuquerque for himself from 1946-49 and with various firms for the next three years.

From 1941-45 he was in civil service at Kirtland AFB as foreman of the cable and tubing shop in the maintenance organization.

Baca graduated from high school in Albuquerque and attended several trade schools.

**H. E. HANSEN** to supervisor of Nuclear Test Division I, 5231.



"Ed" came to Sandia in 1952 and in May 1958 was promoted to supervisor of Systems Development Section in Full-Scale Test Division.

Immediately prior to his employment here Ed had attended the State College of Washington where he received a BS degree in Electrical Engineering (Electronics). He has taken graduate studies in EE at the University of New Mexico.

In 1953 Ed assisted in evaluation and procurement of a new micro-barograph system which was used in the field during Operation Upshot/Knothole. Ed was Program 34 Director for Operation Hardtack and was project officer for Pandora Project.

During recent months he has participated in Project Rover, conducted at the Nevada Test Site.

He is a member of the American Institute of Electrical Engineers, Sigma Tau, and Tau Beta Pi, both engineering honoraries.

From 1945-47 he was a radio chief in the Army.

**MARVIN W. CAUSEY** to supervisor of Section 1282-2, Structural Analysis Division.



Marv came to work for Sandia Corporation nearly three years ago after five years as a civil engineer for the U. S. Forest Service, Region Three, in Albuquerque.

Prior to that he did similar work for the Albuquerque district of the Corps of Engineers for two years.

Marv received his BS degree in civil engineering at the University of New Mexico and his Master's in civil engineering at Massachusetts Institute of Technology.

During World War II he served five years in the Air Force, part of the time in the European theater.

He is a member of the American Society of Civil Engineers and the New Mexico Society of Professional Engineers.

**R. JAMES MARTIN** to supervisor of Section 1322-2, Advanced Development Division.



Jim has been at Sandia nearly five years, first as an instructor in the Technical Training Division and since April 1957 in the Advanced Development Division.

Before coming here he was commanding officer (Lt. Cmdr.) of the Naval Reserve Training Center in Freeport, N. Y.

From 1947-51 Jim taught undergraduate courses in physics and electrical engineering at the U. S. Merchant Marine Academy at Kings Point N. Y. At the time he left he was acting chief of the physics section.

Jim's teaching background also includes high school science and math courses at Livermore Union High School, Calif., and science courses at Lincoln High School, La Crosse, Wis.

He holds a BS degree in physics from State Teachers College in Milwaukee, Wis., and an MS in physics from New York University. Jim is a member of the American Physics Society.

During World War II Jim served three years in the navy as a deck officer.



**FIRE EXTINGUISHER** demonstration is conducted by Ted Rosenwald (4542), foreground right, as part of regular Sandia Corporation fire prevention activities. He is explaining the proper use of dry chemical extinguisher to occupants of Bldg. 892. Other types were demonstrated also.

## Welcome Newcomers

July 20-31

Albuquerque	
William A. Bailey	2622
*Sophie S. Castillo	2243
Jeanne T. Cummings	4731
Fedelino Edwell	4574
Eddie S. Garcia	4766
Anna S. Goodwin	4752
*Nancy S. Hagedorn	4623
Frances S. Manzanares	4623
*Imogene M. Maxwell	4723
*Mary R. Mayes	4623
Bessie E. Mazzioffi	4623
*Orlinda R. Medina	4723
Wanda L. Peirce	4623
Patsy Jo Scrimshire	4621
Joyce E. Scroggin	4623
Joyce A. Scheaffer	2562
Deyce T. Stark	4723
Nadine L. Turner	4623
Joanna B. West	4132
Iowa	
Jack L. Mortley, Iowa City	1614
Minnesota	
Neal M. Nelson, Perley	1217
New York	
Robert L. Johnson, Islip	5216
Ohio	
John S. Todd, Columbus	4722
* Denotes rehired	
Returned from leave (Albuquerque unless otherwise noted)	
Frank D. Baca	4742
Betty F. McKinstry	4762
Betty G. Montoya	4623
Martha E. Carlmark	1612
Hubert J. Filtusch	1225
Priscilla G. Sanchez	4623
Andrew D. Sayers, Jackson, S. C.	1312

## 'We Have Been Lucky - And Careful'

# Fire Prevention at Sandia Fights Statistics Day-to-Day

"You fight the statistics," Ted Rosenwald of the Inspection and Fire Prevention Section 4542-1 says. "You do your job. You make inspections, conduct demonstrations, drills, and check equipment."

Fire prevention at Sandia Corporation is a day-to-day job. In the back of the inspectors' minds loom the appalling national statistics—1,315 lives lost from fire in 1958, \$1,305,000,000 in property loss.

"At Sandia we have been lucky," Ted says, "and we have been careful."

So far in 1959 the Corporation has experienced 10 minor

incidents with fire. Total loss for the fires has been \$30.

A \$10 loss was charged to a small vehicle fire. A Corporation ambulance developed a short in the siren wiring system. In Bldg. 860 a \$20 loss was charged against a fire in a temperature chamber. Combustible pipe insulation, part of a temperature test in the oven, smoldered and burned.

The other incidents ranged from a cigaret caused wastebasket fire, to static discharge igniting ethyl alcohol being poured from a polyethylene bottle. No property loss occurred in these incidents.

"Although minor, these incidents prove," Ted says, "the value of developing an awareness of fire prevention. Any one of these small sparks or sudden flameups could have spread and could have caused untold damage."

With 37 years in the fire prevention business, Ted speaks with authority. He started as a volunteer fireman with the Las Vegas, N. Mex. fire department in 1922.

Inspection and Fire Prevention Section is headed by Ward Hunicutt. Men of the section periodically direct the checking and servicing of all Sandia fire extinguishers and conduct extinguisher demonstrations. Building fire teams receive instructions and hold practice drills with the Fire Prevention inspectors.

The section inspects all continuously operated test equipment or apparatus. Inspectors issue temporary welding permits and inspect the permanent welding areas periodically. Sprinkler systems in Laboratory buildings receive continuous "spot checks" to make sure they are functioning properly. Sandia buildings contain 80 such automatic sprinkler systems.

All buildings are inspected regularly for fire hazards. The Inspectors look for electrical defects, bad insulation, flammables in storage areas and general housekeeping appearance.

During non-operational hours, security inspectors of the Patrol Division 3242 are constantly alert for fire hazards and report their findings to 4542 for action.

In addition, the section conducts an educational campaign for fire prevention culminating each year in October with Fire-Prevention Week.

"You develop a critical attitude," Ted says, "and look with suspicion upon every waste paper basket, every electrical wiring connection, cleaning supplies in storerooms, stacks of paper, ash trays."

This is not a bad idea for all Sandians. "Fire prevention is everybody's business," Ted says. "This is an old slogan, but it's always true."

## Archers Hold Meet At 8 a.m. Tomorrow

Sandia Archers will meet tomorrow at 8 a.m. for a Handicap Tournament on the field range on Sandia Base. There will be two 14 target rounds with awards to be given to the winners.

All Sandia Corporation personnel are welcome to enter. Entry fee is 50 cents.

A novelty shoot will be held Aug. 22. For further information contact Nick DeLollis (1625), ext. 47270.

## Three Tie for First Place in Golf Tournament

Three employees tied for first place in the Corporation golf tournament held in Santa Fe recently.

Bernard Clouse (2632), Jim Leonard (1247) and Harry Wild (2221) each shot 78's to come in first in low gross play.

Low net winners were Dennis Chavez, first, Horace Lucero, second, and Barney Myers, third.



**JIM LEONARD** (1247), one of three golfers who tied for first place in the recent Corporation golf tournament at Santa Fe, slams one down the fairway as Harry Wild (2221), another winner, looks on. Bernard Clouse (2632) was not available for the picture.

# Atom Must Continue to Be Our Guardian of Peace - McCone

"The atom must . . . continue as the guardian of peace and the protector of our way of life." So spoke John A. McCone, Chairman of the United States Atomic Energy Commission on June 6. He was speaking on "The Atomic World of Affairs" before the graduating class of Pennsylvania State University.

Mr. McCone spoke on the peacetime applications of the atom and then discussed at length the need for continued use of nuclear power in the defense of the free world. Following are his words:

"The atom must also continue as the guardian of peace and the protector of our way of life. When World War II abruptly ended with the capitulation of Germany and the surrender of Japan, the world looked forward eagerly to



John A. McCone

peace. Men had suffered for the cause of justice and freedom, and they determined to now go their way of life in a peaceful world.

"Our leaders did likewise. They felt that the arrangements agreed upon among the victorious allies would be honored. A peaceful world for years ahead was their confident hope.

"We, therefore, turned away from conflict. We were confident that differences, if they arose, would be resolved through understanding, not military conflict or the constant threat of war.

"We found, however, the Soviet dictator felt differently. Joining the Free World in its bitter fight against Nazism was merely an incident in the Communists' plan to dominate all people and subject all people to their dictates.

"We demobilized; they did not. We opened our country freely; they created an Iron Curtain around theirs. We urged nations throughout the world, many of which had been occupied and destroyed, to rebuild and to develop politically as they freely chose. They occupied one country after another, subjugating all to their will, destroying individual freedom and eliminating the most precious of all of man's rights, the privilege to worship as he chooses.

"The Soviets intensified the war of international Communism against the Free World. A war designed to destroy our way of life and to replace it with theirs.

"It is a 'cold war,' but back of it to guarantee the Communist dictator's success are 175 line divisions, trained and fully equipped; supported by vast air power and now a missile capability of alarming proportions.

"The West faced a danger of being crushed by the sheer weight of the manpower of the East. It was apparent that only through strength could we counter the ruthlessness of the Soviet dictator. How could we provide this strength so necessary for our security? It would be futile to

match him man for man or division for division. Hence, we determined to build our defenses around nuclear weapons—a new and mighty source of power which providentially had fallen into our hands.

"This we have done with great determination and skill. Because we have done this well, there is no 'hot' war today. Nuclear defense has guaranteed freedom for ourselves and for our allies.

"The decision to build our military security around the atom was a wise one. It was a decision of all of America and has stood the test of passing years. I believe the decision valid today, just as it was originally. Nuclear weapons are costly, yet cheap compared to the cost of the massive armies necessary to balance the manpower of the Soviets.

"The atom has provided for our security and for the protection of you and of your families. We must never let it deteriorate or take a second place in the armament race in which we are now unfortunately engaged. If we do our strength will disappear. Free men throughout the world will fall to the domination of the Soviet dictator. Gradually our own freedom would be lost.

"To avoid deterioration of the bulwark of our military strength, the atom has had to keep pace with the latest technological developments. As weapons systems have changed and become more complex, nuclear weapons have had to change and improve.

"For example, delivery of nuclear weapons by aircraft poses entirely different problems from delivery of nuclear weapons by missiles. Development of new, improved and more efficient nuclear weapons require developmental tests to prove evolving concepts.

"Such testing is as necessary for nuclear weapons as for any other military equipment, or for that matter commercial products. Testing is equally essential for developing your automobile and your television set."

After a discussion of some of the difficulties involved in trying to work out a plan for testing of nuclear weapons he said:

"It is our fervent hope that through patience and careful negotiation the questions can be satisfactorily disposed of. We believe, as I have said, that a dependable and safe agreement to stop nuclear weapons tests is a first hopeful step towards disarmament. This step, if taken properly, and with understanding, could lead to others and better understanding among people will result.

"If disarmament, both conventional and nuclear, could be achieved eventually, and an initial step taken now, tension would be relieved. The fear that entire cities, indeed nations, will be instantly destroyed by weapons of unbelievable power will disappear. Then, the full efforts of the nations of the world can be devoted to meeting man's needs and to his welfare and his betterment.

"This must be our objective. It must represent a goal which we must seek with determination. But in seeking our goal, we must not reach for it recklessly. We must not lay down our arms until we can assure the people of the world that others are doing likewise."



Jo Ann Romero (4723)  
—one envelope, used properly, does the work of 14—

## Sound Idea Going Astray by Lack of Special Envelope Use

It was a beautiful idea.

Simply this: Provide a standard envelope that could be used many times over for inter-office correspondence. Provide space for the addressee's name and the organization and the name of the sender. The receiver would save the envelope and use it when he had some correspondence going to another Sandia organization.

This would continue until the envelope went through Laboratory mail fourteen times. This would save money. The envelope, SC 1881, has been a general stores item at Sandia Corporation for several years.

But somewhere between the beautiful idea and general practice, something went astray. The envelopes were not being fully used. A quick check of incoming mail will show that only the top lines on the envelopes are being used.

General Stores organization reports that about 2,750 of these en-

velopes are requisitioned each month. They cost a little less than a penny each. The cost isn't much but the obvious point is that full value from the envelope is not being received. One envelope should do the work of 14.

Surplus usable envelopes should be returned to organization 2472 for re-issue. In line with the same idea, it sometimes is not necessary to enclose inter-office correspondence in an envelope. The red arrow stamp pointing to the addresses is sufficient to speed the message on its way.

Larger correspondence can be enclosed in large used envelopes with a routing slip attached. The routing slips, SC 1805-A, are handy when mailing correspondence to a series of addresses. Space is provided for routing to several organizations.

A good guide for handling any sort of in-plant mailing at Sandia is the Corporation's Correspondence Guide, Internal Correspondence section, page 14.

## Tiny 'Go-Kart' Racing Gets Sandia Employees' Attention

Add to micro midget and quarter midget racing the rapidly growing sport of "Go-Kart" racing in Albuquerque.

Every other Sunday the bodyless cars powered by 2½ to 5 hp engines zoom around the parking lot of a North Wyoming super market. Participants are likely to number quite a few Sandians and their families. Active enthusiasts include W. S. Sharp (4224-1), W. J. Denison (1224), Paul Callies (2551), Carmon Paschal (4252) and his son David (3464), Roy Mullins (4412), Bill Laskar (3462) and "Tommy" Thompson (4574).

Since the racers are merely four wheels, a frame, a seat and a motor, an adult or a child can

use the same car. Clearance is so low that it is almost impossible to "roll" a car yet at the same time the nearness to the ground gives a feeling of greater speed than the 30-40 mph it is possible to obtain.

The tiny racers cost about \$125-\$250 although some persons prefer to construct their own car from a kit. Since 1957 when the little cars were introduced more than 40 manufacturers have entered the field. Weight of the cars is 70-110 lbs. For competition purposes three classes are set up based on engine displacement.

Last October the Albuquerque Go-Kart Association was founded to promote interest in the sport. Paul Callies is currently secretary-treasurer.



CRASH-HELMETED drivers have throttles wide open as they race their go-karts around a marked off course. All ages are enthusiastic about this growing sport. There are 40-45 cars in Albuquerque.



Sandia Corporation Has Worked  
50 Days  
Without a Disabling Injury

### HERE'S WHY...

Our employees know that an accident-prone worker is a person who over a long period of time lacks that alertness on the job which is the essence of safety. That lack of alertness may be due to family troubles or worry. Not only is he unable to give his concentrated attention to work, but even his muscular coordination may be impaired.

# Question: 'What Should be Done to Stop Inflation?'



F. S. "Stan" Brooks, security guard: "I'd like to see the national debt curbed a little bit, since it is already about 288 billion dollars. It appears an impossibility to eliminate the debt in our lifetime, but by gradually reducing it we might avoid passing along the cost of today's government to succeeding generations."



R. B. Yoder (4131): "Inflation always has existed to some extent and probably it will continue somewhat in relation to the prosperity of the nation. I believe the present relationship can best be preserved if each family will control their living standards within their income, pay their debts, and save or invest a little each month."



Mary Hurst (4762): "Get the government to economize by cutting down to bare essentials. I don't see how we can afford to pay higher taxes when other living costs have doubled in recent years. Maybe if everyone would stop trying to keep up with the 'Jones' and try to live within their means that would help halt inflation."



Virgil Erbert (1261): "Under present economic and political world conditions, I do not believe that it is practical to stop inflation in the U. S. economy. The strongest inflationary pressure comes from our defense spending for national security, but a drastic cut here would be selling the soul of freedom for a false hope of financial security."



A. H. "John" Archuleta (2221): "A balanced budget, then a full scale investigation into government subsidies, such as the farm commodities, and a non-duplicating military program. Finally, enactment of laws establishing a committee comprised of labor, management, and government personnel to study inflation causes."



THIS IS NOT NEW MEXICO! Leonard Tyahla (4411-6) took his fishing tackle along to La Verendrye Park, Quebec Province, Canada, and caught this 40 inch 15 lb. great northern pike in the Ottawa River.



IT'S A DRAGSTER. Racing tire makes a comfortable perch for Sharon Glenn (2561-1) on this speedy dragster, built by Delmar Gronseth (4514). Custom Car Show on Sunday will include this and several other competition vehicles at Civic Auditorium.

## Custom Car Show Aug. 9 Will Have Sandia Employees Participating

Several Sandians have been actively participating in arrangements for the Custom Car Show to be presented at the Civic Auditorium from 10 a.m. to 10 p.m. on Sunday, Aug. 9.

The show is sponsored by the Road-Runners Car Club whose president is Bill Palmer (6021). The group was formed two years ago with charter members including Jim Tichenor (6021), Howard Garcia (3464) and Bud Leonard (3464).

Any show-worthy car is invited to participate in the event, proceeds of which will go towards building a drag strip for Albuquerque.

Among the cars on display will be dragsters, roadsters, modified sports cars (one a Corvette valued at \$18,000), full-custom and semi-custom cars and competition coupes and sedans.

Trophies will be awarded the winners in the various classes.

Dragsters will include the one in the accompanying photograph. This was built by Delmar Gronseth (4514) and three friends.

With its Chevrolet V-8 motor it can go from a standing start to 135 mph in a quarter mile. This vehicle is used only for straight-away drag racing. Delmar and his friends take turns driving it in competition at Roswell and Hobbs, N. M., and Pueblo, Colo.

## National League Wins 4-1 in All Star Game

The National League team defeated the American League, 4 to 1, in the recent Sandia Corporation all-star softball game.

Three runs in the sixth inning by the National League were the deciding factor in the ball game. The game was scoreless until the fourth inning when the National team scored a run. In the fifth the American team came back with a run to tie the score.

Pitchers for the winning team were Dan Grim and Cliff Rudy.

## Your Political I.Q. Quiz Answers

Give yourself one point for each correct answer. A perfect score qualifies you for the title, Senior Statesman; fifteen-nineteen points, Solid Citizen; twelve-fourteen points, Ward Boss; eight-eleven points, Part-time Patriot; under eight points, Slacker. The correct answers are as follows: (1)—B; (2)—B; (3)—D; (4)—C; (5)—A; (6)—B; (7)—3, New Mexico; C, California (8)—B, New Mexico; C—California; (9)—D; (10)—C; (11)—B; (12)—A; (13)—B; (14)—B; (15)—D; (16)—D; (17)—C; (18)—D; (19)—C; (20)—D.

## Sandia All-Stars Score Double Win Over Military Team

Corporation All-Stars scored a double victory over the Military All-Stars this week in this second annual softball event.

Cliff Rudy (4543) was winning pitcher as the Corporation team took the Monday game 4-3. The Tuesday tilt went into nine innings as the Corporation team downed the Military 5-4. Cliff Taylor (5254) was the winning pitcher.



NATIONAL LEAGUE players emerged victorious in the recent Sandia Corporation all-star softball game. Pictured above are: (L to R first row) Max Gasta (4100), Vic Sirwinski (4100), Lee Schultz (1400), Cliff Rudy (4600), Jack Martinek (2500), Dan Grim (2500) and Paul Spence (4400-II). In the rear are (L to R) Tom Thompson (4400-II), Frank

Duggin (4300), Jay Davidson (4600), George Chandler (2500), Gordon Ross (4600), and Arthur McMullen (1400). Not present for the picture were Don Roth (1200-II), Ken Medearis (1200-II), John Monko (4400-II), R. E. Ledbetter (4100), Jack Thompson (4100) and George Banos (4100). The National League defeated the American 4-1.

## Certified Professional Secretary Title Earned by Joanne Boyd

Joanne Boyd (4250) has passed the Certified Professional Secretary tests for basic knowledge of secretarial skills which are given once a year by the National Secretaries Association.



Joanne Boyd

The two-day tests are made up of six sections: business law, business administration, secretarial accounting, secretarial skills, secretarial procedures and human relations. Out of 2,000 secre-

taries taking the examination throughout the nation this year only 245 passed.

The honor was established in 1951 and since then 1,711 women in the United States have been titled Certified Professional Secretary.

Joanne has been a secretary for 10 years. She has worked at Sandia Corporation for seven and a half years and for the past five years has been a departmental secretary.

The certificate will be awarded her during a local chapter meeting of the National Secretaries Association.

Good government depends, in large degree, upon the extent to which individual citizens keep up to date on the structure, function and activities of the American political system. President Eisenhower has said: "The better our citizens understand the precepts, principles and functions of the Republic, the better they can fulfill their responsibilities and safeguard our priceless heritage of democracy."

Here are a few questions to test your knowledge of governmental structure and responsibilities. You'll find the correct answers on page

(1) The Federal Government is composed of three branches, each with its own special powers. The branches are ..... (A—The Congress, the Supreme Court, and the Treasury. B—The Legislative, Executive and Judiciary. C—The Senate, the House of Representatives, and the State Department.)

(2) The Senate—or upper house of Congress—is made up of ..... Senators. (A—96. B—98. C—50. D—200.)

(3) The number of Senators representing each State is ..... (A—Determined by the state's population. B—Always one. C—Determined by the area of the state. D—Always two.)

(4) Who serves as President and presiding officer of the Senate? (A—The Senator with the longest term in office. B—The leader of the majority party. C—The Vice President of the United States.)

(5) One-third of the Senate is elected every two years to a ..... year term. (A—Six. B—Two. C—Four.)

(6) What happens in case of a tie vote in the Senate? ..... (A—A filibuster results. B—The President of the Senate casts the tie-breaking vote. C—The question is referred to the House of Representatives.)

(7) The Senators representing your state are ..... (A—Montoya and Morris. B—Chavez and Anderson. C—Kuchel and Engle.)

(8) They are members of the ..... party (ies). (A—Republican. B—Democratic. C—One is a Republican, the other a Democrat.)

(9) At present there are 436 members of the House of Representatives. Each state must have at least one representative, and additional representatives are assigned to the states on the basis of ..... (A—The number of votes the state has in the Electoral College. B—The number of Senators it has. C—Its total area. D—Its population as determined by a census taken every ten years.)

(10) The presiding officer (or Speaker) of the House—one of the most influential men in the nation's government—is ..... (A—Joseph W. Martin. B—Lyndon Johnson. C—Sam Rayburn. D—J.E.B. Stuart.)

(11) What is the party alignment, in terms of members, in the present Senate? ..... (A—72 Democrats and 26 Republicans. B—64 Democrats and 34 Republicans. C—64 Republicans and 34 Democrats.)

(12) What is the party alignment in the House of Representatives? ..... (A—283 Democrats and 153 Republicans. B—220 Democrats and 216 Republicans. C—220 Republicans and 216 Democrats.)

ocrats and 216 Republicans. C—220 Republicans and 216 Democrats.)

(13) The President is elected by ..... (A—Direct popular vote. B—By a group of state representatives (the Electoral College), elected to vote for presidential candidates. C—A two-thirds majority of Congress.)

(14) The ..... follows the Vice President in the line of succession for the office of President if the President dies or resigns or is removed from office. (—Secretary of State. B—Speaker of the House. C—President pro tempore of the Senate. D—Secretary of the Treasury.)

(15) How much would it cost each U. S. family in additional taxes to pay off the national debt this year? ..... (A—Over \$500. B—Over \$1000. C—Over \$3000. D—Over \$6000.)

(16) How much did it cost during the past year (fiscal 1959) to run the federal government for just one day? ..... (A—Over \$500 thousand. B—Over \$2 million. C—Over \$50 million. D—Over \$200 million.)

(17) The Supreme Court is made up of ..... (A—Twelve Justices. B—A Chief Justice and eleven Associate Justices. C—A Chief Justice and eight Associate Justices.)

(18) Who is the present Chief Justice of the Supreme Court? ..... (A—Felix Frankfurter. B—Herbert Brownell, Jr. C—John Marshall. D—Earl Warren. E—William O. Douglas. F—Oliver Wendell Holmes.)

## Service Awards

### TEN YEAR PINS



Jack Redburn  
2722  
July 26, 1949



Merlin H. McGirk  
1222  
Aug. 8, 1949



C. S. Sandoval  
4511  
Aug. 8, 1949



John P. Cody  
1230  
Aug. 10, 1949



Henry A. Saavedra  
4211  
Aug. 4, 1949



Frank Speakman  
2251  
Aug. 12, 1949



Gerrit J. Hof  
1621  
Aug. 15, 1949



Dennis E. Murphy  
5546  
Aug. 15, 1949



George Blea  
4153  
Aug. 12, 1949



Raymond E. Glass  
5223  
Aug. 19, 1949

### Five Year Pins

Aug. 8-21

Fred A. Thurow, Jr. 4413, Peter J. Komen, Jr. 1413, Elwood F. Ingledue 8122, Lionel R. Chandler 5513, Robert W. Kulterman 5132, Wentzel W. Wagoner 1263, E. F. Wienckowski 4252.

Dorothy P. Alderman 4962, A. R. Iacoletti 5242, Harry Mason 1451, William K. Dolen 1626, Hobson E. Houston 1463, Rexford A. Rozelle 4253, Horace Moore 2552, Carmel Pugliese 4252.

Marion D. Wickham 1521, Faurest A. Dubois 4581, Robert C. Bass 5254, James D. Appel 1263, Herman P. Nieto 4518, Carlos Chavez 4574, Amadeo Aragon, Jr. 4575.

Joseph H. Valdez, Jr. 2711, Marian H. Jacot 4721, M. Evelyn Hunter 2623, S. Elinor Coberly 4653, George G. Shelton 2711, T. Vincent White 4411, Barbara R. Hammond 4623.

(19) What happens to a bill that is vetoed by the President? ..... (A—It is submitted to the Supreme Court for a ruling. B—It cannot become a law. C—It can become law without the President's signature if again passed by a two-thirds vote of both Houses of Congress.)

(20) What is the average citizen's largest annual expense, ..... (A—Food. B—Housing. C—Clothing. D—Taxes.)

(Answers on Page 6)

### SHOPPING CENTER

#### CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication unless changed by holiday.

#### 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.

#### FOR SALE

3 BRM HOME and den, 1840 sq. ft., 26 foot living room, fully landscaped, wall to wall carpeting, drapes, fireplace. Ross, AX 9-1526.

RADIO CONSOLE, \$10; medium dog house, \$5; toy tractor, \$10; car air conditioner, \$5; circuit-breaker box and meter base, \$6. Summers, AL 5-1016.

'49 PLYMOUTH stationwagon, all metal body, good running car for fishing and camping, \$325. Longfellow, AL 5-5334 after 5.

MAPLE BED, solid, nearly new, \$20; chrome dinette, \$10; occasional chair, \$5; tank type vacuum cleaner, \$5. Pinkerton, AL 5-2505.

WEBCOR MODEL BR48111, 4-speed changer, new, still in carton, \$29. Calvery, AX 9-5800.

10 ACRES irrigated land near Los Lunas, will subdivide, small down payment, small monthly payments. Tiley, Star Rt. 2, Box 40, Los Lunas, N. M., ext. 71229.

KIDDY KOOP, \$20; combination baby carriage-stroller, new, \$25. Cotter, AL 6-0326.

CHILD'S WARDROBE, 4-drawer, w/large closet space, \$15. Laskar, AX 9-1024.

TAP & DIE set, 1/4 to 1/2", Standard & S.A.E., \$9.50; 6" Dunlap hand power saw, \$20; 1/2 hp motor, \$8.50. Pitti, AL 6-1629.

HI FI AMPLIFIERS, one 60 watt amplifier w/separate voltage regulated power supply, \$100; one 20 watt Heathkit model W4-AM, \$35. Bowen, AX 9-6570.

'55 VOLKSWAGEN, low mileage. Will trade for car or pickup. Ballentine, AL 5-7374 after 5.

'55 BUICK, super 4-door, black and white, 32,000 actual miles, cash or terms, \$1050. Wright, AM 8-4128.

SASH WINDOW, 3423 steel, complete w/glass and screen, \$10. Rappleyea, AL 6-2214.

3 BRM HOME, 1 3/4 baths, brick, on quiet street, convenient to Sandia, redecorated, priced right to qualified buyer. Causey, AX 9-0089.

'48 NASH club coupe, dependable transportation, \$70. Wheeler, AL 6-7284.

COLT 45, single action, \$95; clothes dryer, \$125; '59 Ford country sedan. Burbidge, Ext. 32289 after 5.

3 BRM HOME, Hoffmantown, wall-to-wall carpeting, draperies, walled back yard, landscaping, other extras, \$13,950, 4 1/2% loan can be transferred. Drake Ext. 25163.

WIRE FENCE, 43"x47"; 6' gate post w/brace and fittings, 5-6' steel posts, all for \$20. Goris, AL 5-4861.

17" TV, RCA table model, \$55; also Admiral Console, \$35. Reimholz, AX 9-5107.

WIRE FENCE pool-vinyl tank, 15 to 18 inches deep, 10 feet in diameter, holds 885 gallons, \$20. Adams, AM 8-3529.

34' TRAILER, 1 bedroom, well-cared for, \$1500. Williams, DI 4-4574.

WESTINGHOUSE 3/4 ton refrigeration air conditioner, used one season, uses 110 volts, \$85. Koetter, AM 8-1009, 1108 Indiana SE.

DEFRACTION HORN tweeter, \$20; Hallcraft S72-L portable short wave radio, \$20; Danish walnut china hutch and other household furniture, James, AL 6-1617.

CAMPING TRAILER, \$575; two-burner Coleman stove w/stand, \$10. Slaton, Ext. 40166.

HIDE-A-BED DAVENPORT, green frieze, Simmons, \$25. Martin, AL 5-8030.

VENETIAN BLINDS, 36" sandalwood; electric hairdryer; TV antenna; figure skates, black, size 6; rough cut 2x4 and 2x6 wood, poor man's exercise. Calek, AL 6-6737.

TWIN BEDS, two, blond, w/box springs and mattresses. Kindschi, 1040 Princeton NE.

'50 FORD convertible, 8,000 miles on rebuilt motor, racing heads, not much on looks, but dependable. Kellum, AX 9-6018.

'58 CORVETTE, yellow w/black interior, R&H, positraction, stick shift, whitewall tires, low mileage. Lucas, CH 3-8697 or CH 3-4661.

'52 HUDSON, twin Hornet, \$15 monthly payments, good second car. Robinson, AM 8-8281.

'51 BUICK Riviera, \$275, terms, will trade; power mower, \$20; old Ford engine, \$15; square battery, \$4.50. Villella, AX 9-7915.

ICE SKATES, one pair boys, \$4. Hilderbrand, AM 8-0392.

SOLOVOX, \$200, will trade for electric refrigerator of equal value and condition. Ogden, CH 3-4723.

LIVING ROOM SUITE, 3 piece, rose beige, sacrifice, \$125. Willson, AX 9-0278.

'51 PLYMOUTH hardtop, \$300. Piper, Ext. 4-3274.

'57 V8 FORD country sedan, power steering, Fordomatic, R&H, 48,000 actual miles, \$1895. Pickel AX 9-1291.

APEX DISHOMATIC automatic free standing dishwasher; built-in hot water booster heater, 115v - 60 cycle, \$75. Vinson, AL 5-6962.

'56 ALLSTATE (Vespa) scooter with accessories, \$160. Whitford, AX 9-4271.

TELEKTRO TAPE RECORDER with 4 tapes included; also hook-up to record direct from radio or television, \$60. Bonney, AM 8-3107 or AL 6-4134 after 5 p.m.

SERVEL REFRIGERATOR, 10 cu. ft., \$50. Derrick, AM 8-8104, or see at 809 Alvarado SE.

3 BRM HOME, Inez brick, 1 3/4 baths, w/w carpeting throughout, air conditioned, sprinklers, drapes, landscaped, many extras, \$17,900. McCullar, AX 9-0638, 7603 Prospect Ave. NE.

2 BRM HOME, drapes, carpeting throughout, landscaped; near elementary, Jr. high and high schools. Smith, AX 9-5697.

CUSTOM FENDER SKIRTS, new, white, never used, \$30. Mares, AL 5-4273.

#### NEXT DEADLINE

FOR SHOPPING CENTER ADS  
Friday Noon, Aug. 14

GAS RANGE Maytag dutch oven, \$50 or best offer. Checketts, AX 9-1783.

ENGAGEMENT RING, diamond approx. 1/4 carat with one chip each side, platinum mounting, priced to sell. Rudd, Ext. 4-8190 after 5.

STROLLER, Peterson, collapsible with basket and canopy, \$12. Schuster, Ext. 3-2189.

RIFLE, Higgins Model 50 Caliber 30-06, complete with 4X scope, sling, case, ammo, loading equipment, \$160. Rowe, AL 5-5373.

'58 FORD WAGON 11,000 miles, 4 dr., white 9-pass. country sedan, all vinyl interior, 332 engine, cruise-o-matic, P.S., H.T.G. Will take trade. Suttman, AX 9-6754.

'53 FORD V-8, customline 2 dr., R&H, standard transmission, new seat covers, recent overhaul, \$400, will take trade; revolver, new 22-caliber with holster, \$15. Netz, AX 9-7036 after 5:30.

LADIES SHOES, beige pumps, size 8A, practically new, cost \$19, best offer over \$5. Joseph, AX 9-6989.

TRICYCLE, large tires, \$5. Neubauer, AL 6-7068.

'58 MOTORCYCLE, Harley Davidson 165, windshield, crash bars, buddy seat, low mileage, \$299.99. Padilla, AL 5-6381.

HEATHKIT LABORATORY oscilloscope, model O-11, \$47.50. Cundiff, AL 6-4649.

FUR CAPE, \$350 original price, sell for \$75. Arning, AL 6-9229.

HOTPOINT AUTOMATIC WASH'R, \$150; RCA tape recorder, \$100; Rolleicord camera, \$60; Speedqueen ironer, \$20; Lionel train, \$15. McKay, AL 5-9779, 4809 Trumbull SE.

DRILL MOTOR 1/2 in., with full set of twist drills in index 1/16 to 1/2 in increments of 1/64. Pass, AL 6-9663.

3 BRM HOME, 1 3/4 baths, carpeted, raised WB fireplace, shutters, walled, \$19,750. Evans, AX 9-0633, 10900 Princess Jeanne NE.

KLIPSCH HORN; 3-way loud speaker system, fully tested; walnut cabinet; 1 Heath W-3 amplifier preamplifier, recently tested. Anna Aneryt, AX 9-7116 after 5:30 p.m.

BICYCLE, Schwinn, light weight, 3-speed, hand brakes, seat cover, carrying bag, extra handle bars, \$42.50. Howard, AL 6-2525.

TYPEWRITER, L. C. Smith standard, elite type, grey, fine for student or home use, \$35. Sherwin, AL 5-8866.

SEWING MACHINE, MW, portable, open arm, featherweight, sews over pins, forward and reverse, \$45. Roth, AM 8-4018.

3 BRM HOME, brick, 1 3/4 tiled baths, 2 woodburning fireplaces, air-conditioning, disposal, double garage, sprinklers, landscaped, \$21,750. Brown, AX 9-4755, 2813 Utah NE.

RIFLE, 30-30 Savage, bolt action, \$30 or trade for building material; original price \$80. Scott, AX 9-3412.

WINDOW FAN, 3-speed reversible motor, 20", \$15; portable evaporative cooler, \$15, or both for \$25. Comstock, AX 9-6051, 11018 Snow Heights Blvd. NE.

RIFLE, Winchester 94, .32 Sp., \$65; Remington 7.62MM, \$25, both with peep sights and shells; Gibson guitar, case, music stand, \$35. Klett, AM 8-8750.

'53 CADILLAC Coupe Deville, all power, factory air, wire wheels, white walls, continental kit, automatic dimming. Calles, AX 9-2660.

TARGET PISTOL, Ruger Mark I, w/muzzle brake, fleece lined carrying case, holster, 50 rounds ammo, cost \$80, sell, \$40. Allen, DI 4-7540.

'53 FORD, 4-door country sedan station wagon, R&H, overdrive. Salazar, Ext. 32280 after 5.

CRIB, MATTRESS, matching chest, solid birch, \$35; stroller, \$5; play pen w/pad, \$5; Teeter chair, \$3.50; car bed, \$4. Scott, AX 9-7893, 2912 Wisconsin NE.

GYM SET; 20" fan, two-speed; child's upholstered rocking chair, Ault, AX 9-2054.

PEDAL MURRAY TRACTOR, boy's large size, will sell or trade for boy's 28 in. bike. Kochmann, AX 9-5133.

'55 FORD V-8 PICK-UP, get for hunting season, good tires, new paint, R&H, best offer over \$845. Creveling, CH 2-3790.

'37 FORD 2-door sedan, good transportation, \$150 or make offer. Opperman, DI 4-2859, 540 Muckatell NE.

FURNITURE—dining table-desk combination, \$35; matching trundle beds, chest, chair set, \$45; Hollywood bed, headboard, legs, \$9.50. Sisler, Ext. 25173.

'53 DODGE WHEEL RIM 15 in. with 6:70 x 15 tire, whole package \$3. Weir, AX 9-1160.

'50 BUICK super, two-tone, \$185; German Shepherd pup, 9 wks. old; males, \$10, females, \$8. Gregory, Ext. 2-9239 or UN 7-2432, Bernalillo.

'47 DODGE sedan, R&H, best offer. Newman, AL 5-6354.

3 BRM HOME, 1 3/4 baths, family room, mahogany paneling, w/w carpet, air-conditioned, landscaped walls, no qualifying, 4 1/2% GI, \$18,500. Sivinski, AX 9-6014, 10712 Bellamah NE.

ELECTRIC RANGE, Hotpoint, deluxe model, \$100. Whitlow, AX 9-6623.

FORMICA TOP for kitchen sink, 8 ft. by 4 ft. left hand L with cut out for standard double sink, stainless steel edging, \$25. Gustafson, AX 9-3270.

'56 MERCURY Montclair, 2-dr., Mercomatic, power steering and brakes, R&H, 2-tone, whitewall tires, EZI glass, original owner, \$1500. Daut, AL 5-2529.

FRIGIDAIRE ELECTRIC RANGE, double automatic oven, warming oven; Frigidaire electric washer (filter flow), both for \$235. Ferguson, 6401 Rogers NE.

KITCHEN COUNTERTOP, 96" x 26"; double sink, 32" x 21"; window sash and windows. Green, AL 6-7507 after 4:30 p.m.

BURRO, young male type that likes young small type people, \$60. M. L. Berg, Ext. 3-7249, Box 626, Frost Rd., Edgewood.

9-PIECE DINING ROOM SET, like new, \$100. Gallegos, AX 9-2302.

2 BRM HOME, w/b fireplace, pitched roof, etc. Assume existing GI loan, FHA available, Fatima area, owner moving, under \$15,000. Torres, AL 6-6600, 3817 Mackland NE.

BALL BEARING reel type mower, \$5; high chair, \$8; steel casement window w/screens, approx. 4' x 4', \$15, two sprinkler heads, \$5. Olson, AL 5-8360.

#### WANTED

WOMAN FOR CHILD CARE, daytime hours, light house work, 5 day week. Engle, AM 8-4241.

CHILD CARE in my home near Hoffmantown shopping center. Moery, AX 9-3630.

DRIVING TO Great Falls, Mont., via Salt Lake or Denver about Aug. 16, return in 2 weeks. Want person to share expenses. Willson, AX 9-0278.

CHILD CARE in my home, will keep two children five days a week. Markle, AL 6-1280, 228 Gen. Patch NE.

CHILD CARE in my home, walled yard, good lunch and care, Blagg, AX 9-8624, Buena Ventura Estates.

USED CORNET, B Flat. Groll, AL 5-9638.

HOMES FOR KITTENS, two black & white, one black w/white boots, one white w/grey tail, semi-long hair. Burns, AM 8-2157.

CHILD CARE in my home. Burbidge, Ext. 32289.

SOAP BOX axles and wheels. Mitchell, CH 2-6550.

DINNER PLATES, Cambridge Square. Moeller, AX 9-6055.

GERMAN WORLD WAR II ribbons, medals, helmets, etc. Deeter, AL 5-5789.

GRASSHOPPERS, live, one inch and larger, 1c per 10. Luhn, Ext. 48196.

HOMES FOR Calico Kate's 18th litter of kittens, previous users have first choice. Johnson, AL 5-8851.

GEM GRINDING equipment, will trade electronic or radio components; will trade bench model drill press stand for floor model. Holloway, AL 5-6938.

#### FOR RENT

3 BRM HOME, rent or lease, \$120 per month; water and garbage paid; available Sept. 1. Gallegos, AX 9-2302, 1432 Espejo Nt.

ROOM AND BOARD for girl; \$80 per month including laundry, maid service and meals; can arrange for room only if desired. Pat Miller, DI 4-5252.

NE HEIGHTS, 3 bedroom, bath and half, air-conditioned, carpeted, \$115.00 per month. Herrmann, AX 9-5598, 2601 Garcia NE.

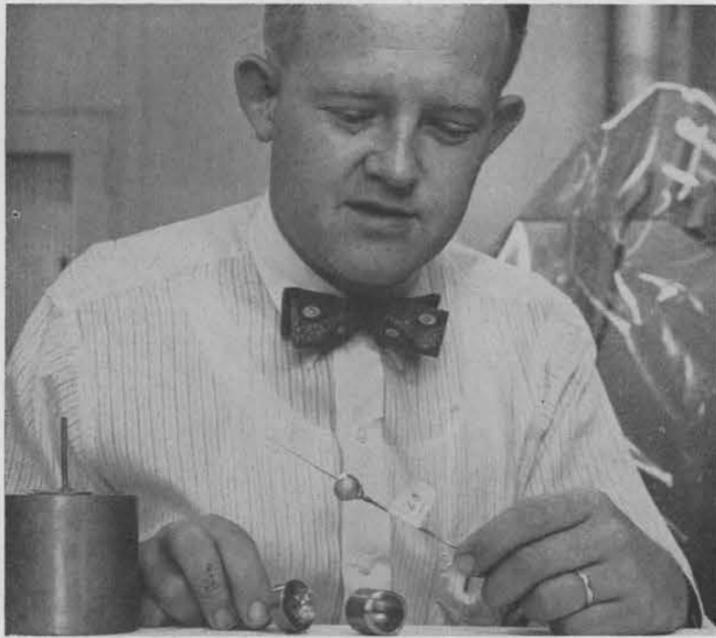
#### LOST AND FOUND

LOST—Tan plastic card case in vicinity of Civic Auditorium w/ID of David T. Reed; topaz ring; South Western State College silver band ring; lock cap for gas tank; keys with ID holder; shell turquoise earring; keys in brown zipper case. Lost and Found, Ext. 26149.

FOUND—Mother of pearl penknife; Timex watch; prescription sunglasses in case marked Dr. Roy Menning; ladies Movado gold watch; rhine stone ring found in ladies restroom of 894; prescription safety glasses; gold key holder with 2 keys on top snap and 7 on bottom found downtown. Lost and Found, Ext. 26149.

#### LIVERMORE FOR SALE

'50 AUSTIN sedan, good tires, \$345; convertible daybed, \$35; 9-piece dining room set, \$100; chrome dinette set, \$15; 2-piece living room set, \$45. Murar, VErnon 7-6633.



EARLY AND LATEST versions of krypton 85 cell are shown by Russell L. Maxwell (1332-4). Uncoated glass ball was previously placed within a metal container which functioned in the same manner as the carbon coatings do in the present model.

## After 14 Years Harvey Kubiak Still Recalls 'Awesome' Nagasaki Blast

A thick layer of clouds blanketed the city of Nagasaki on August 9, 1945. One hundred miles away a B-24 bomber was on a routine mission.

Suddenly the men on the plane saw a mushroom cloud forcing its way up through the heavy overcast. The second atomic bomb had been dropped on Japan.

A Sandia employee, Harvey Kubiak (2631-1) was the bombardier on that B-24. "It seems like an awfully long time ago," is Harvey's reaction today. "All of us got goosebumps on the back of our necks when we saw that awesome cloud rising."

Harvey said that after the first bomb was dropped on Hiroshima U. S. planes were ordered to stay away from that city. "Before starting our mission on Aug. 9, we were told not to choose Nagasaki for a secondary target if our primary objective failed," Harvey recalled. "We had a pretty good idea, therefore, that another bomb was going to be dropped." "Even expecting the drop, we had no idea of the magnitude of the bomb," he commented. "We



Harvey Kubiak

"goosebumps on the back of the neck"

all wondered about the destruction it must have caused."

Those were the last days of the war. Harvey flew only a couple more missions. On his last flight, they were going after a Japanese battleship, the Haruna, which Colin Kelly had supposedly destroyed three years before.

"I missed it, too," Harvey said, "so it never did get sunk."

### Nebraska Alumnae Meet

University of Nebraska Alumnae Club of New Mexico will meet at the Albuquerque Country Club Saturday, Aug. 22, with a social hour at 6 p.m. and dinner at 7.

James S. Pittenger, assistant to the chancellor of the University, will speak. For reservations call Ted Gunderson, AX 9-5724.

### To Attend Conference

Two members of Division 5126, C. M. "Bill" Williams and "Wally" Jungmeyer plan to attend the SHARE meeting (exchange of information on IBM equipment) in Seattle, Wash., Aug. 18-21.

## Mountain Club Hits Trail to Canonicito

Canonicito trail to the southern rim of the Sandia range will be the New Mexico Mountain Club's destination Sunday, Aug. 9.

The trail begins on the eastern side of the mountains near the Cole Spring picnic area and winds through the woods most of the way. The ascent takes about two hours allowing plenty of time for lunch and siesta at the summit.

Club members and guests will meet at Nob Hill at 7 a.m.



PUTTING A GOOD IDEA TO WORK, the Livermore Laboratory Security Division has started issuing paper pyramid signs like this to remind co-workers not to leave classified material on the desks of absent employees. Looking approvingly at the sign are Matt Connors (8231-2) of Security Education, and Roy Tackett (8162-3), who told Security about the novel idea.

# Small Nuclear Cell Is Source Of Minute Electrical Energy

One of the advanced development projects in Division 1322 is a nuclear cell one-half inch in diameter which is an almost continuous source of minute electrical energy.

Each cell is capable of 100-1000 micro-micro amperes with voltage up to 5,000 volts. A typical cell produces 900 micro-micro amperes at 3,000 volts. As much as several watt-seconds of energy from the nuclear cell can be accumulated at various voltages on a suitable capacitor for practical applications, such as power for nuclear cell resistor-capacitor timers or a pulse of energy for triggering circuits. A possible use could be as a power source for a radiation monitor about the size of a pack of cigarettes.

To make the cells, a thin glass ball mounted on a tubular stem is coated with a carbon compound and with copper. When it is filled with a radioactive gas—in this case krypton 85—electrons (Beta particles) are radiated which penetrate the glass and are absorbed by the carbon coating. The copper coating performs the function of a secondary collector and physical shield.

The carbon-copper coating is the negative terminal, while the positive terminal is the gas and the stem of the ball. The stem, which also serves as the filling tube, is constructed of Kovar, a special metal with a temperature coefficient of expansion which matches that of glass.

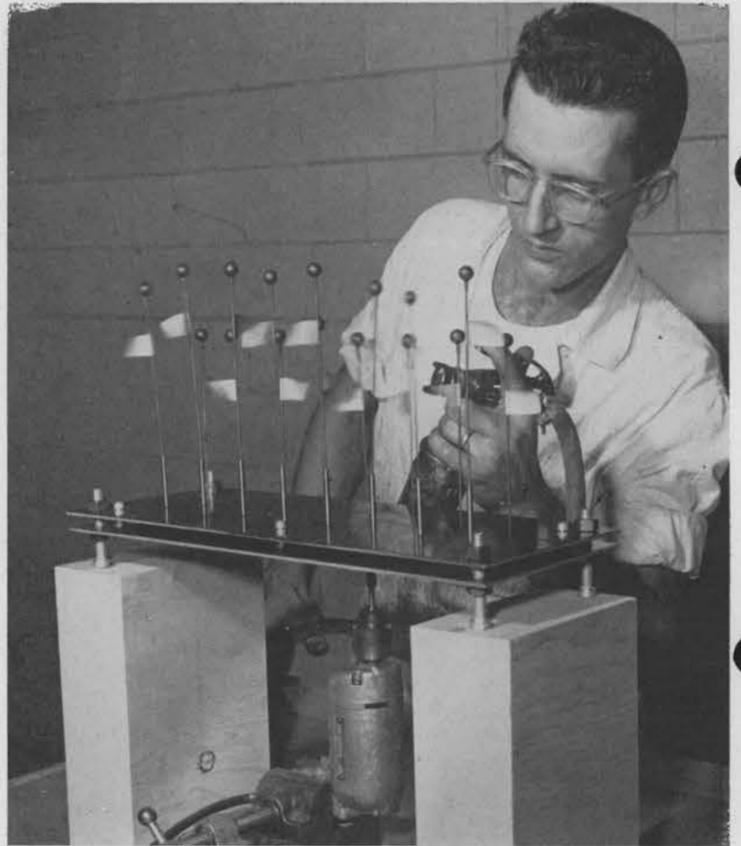
### Krypton 85

Krypton 85 gas has a half-life period of about 10 years and, due to natural radioactive decay, it emits electrons (Beta particles) with considerable velocity.

Other laboratories have experimented on nuclear cells using strontium 90 and tritium (hydrogen 3). The krypton 85 cell has an advantage over these nuclear cells in that the radioactive gas contained in the tiny glass ball is relatively non-toxic.

In circuitry application 10,000 megohms is considered a short circuit; however with the krypton cell the potting compound between the positive and negative terminal is required to be 10 to the 13th-power ohms or greater.

A disadvantage of the cell is the existence of external radiation, although this is so small that a man can handle a krypton cell at 12 inches or more distance during an entire work week and still be absolutely safe under AEC standards. Tritium (a hydrogen isotope) has no external radiation, but strontium (an alkaline-earth metal) has about double the



HIGH LEVEL of free-hand skill with a touch-up gun is needed by painters in Section 4221-2 to apply carbon coating .040 of an inch thick. Bruce Higgins sprays 16 glass balls on "gear train."

amount of radiation as krypton 85 for the same current output.

Only half the problems in this particular project have been of an engineering nature: the rest have been of physical nature and have been solved with the help of the craftsmen in Specialties Division A 4221.

### Measurement Problem

The glass ball itself must be hand-blown, of size approximately 1/16th of a cubic inch in volume, with sides .004 of an inch thick. Measurement of the glass thickness is a problem in itself.

Vernon E. Arnold (1621) and George D. Cosgrove (1413) made the first balls but the bulk of the order has been made by a scientific glass firm. Tolerance was plus or minus .001 of an inch.

Joe Langdon, Ray Sanchez and Bruce Higgins of the Model Shop Paint Section 4221-2 experimented in coating the balls with electro-film. At first each ball received 80-90 coatings and had to be cured in an oven after each application.

Now 40 coats of an electro-film (graphite and silicone resins) and graphite compound are used. Each

coat is .040 of an inch thick. After each three coatings have been applied with a spray gun the ball is cured 10 minutes in an oven at 300 degrees F. The final bake is 400 degrees F. for two to three hours.

Finally a thin silver spray coating is applied to provide a better conductive surface which aids the copper plating operation.

### Copper Plating

Peter Ferketich in Model Shop Plating Section 4221-3 is given the job at this point and gives the balls .040 of an inch coat of copper plating. This is done by immersing the balls in a fluoborate copper bath with a current density of 2 amperes at 3/8 volt. The copper is deposited at .006 of an inch per hour, which means it takes about seven hours for the copper coat to reach proper thickness.

Then there is the job of loading the krypton gas into the balls. H. A. Lacey (1626-3) has developed a system to load the gas by liquifying the krypton 85 gas with liquid nitrogen. When the liquid is allowed to boil, by removing the liquid nitrogen, the gas is forced into the glass ball. Unused gas is again liquified to insert into the next cell. With the copper housing generally used the gas is commonly pressurized to about 90 psi. Cost of the gas is approximately \$1.75 for each cell.

To determine the amount of krypton 85 in each cell a calorimeter (radiation balance), developed originally in 1910 by a member of the Imperial College in London for measurement of radiant energy, has been adapted by Alex Thom (1626-3). The apparatus includes a heavy copper cylinder containing two wells surrounded by thermocouples. A "dummy" or dead cell is placed in one well and a hot cell is placed in the other. By measuring the amount of reverse current required through a thermocouple to cool the radioactive cell to the temperature of the dead cell, the radioactive krypton 85 content of the cell can be calculated.

At the present time it takes a half day to measure the krypton content of one cell. After a standard is established only spot checks will be made to assure that the cells are within the limits of uniformity.



KRYPTON 85 content of each cell can be calculated through use of a calorimeter. Alex Thom (1626-3) places a dead cell in one of copper cylinder's two wells. A hot cell will be inserted in other well.