SANDIA CORPORATION

LAB NEWS

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

VOL. 17, NO. 4 / FEBRUARY 12, 1965

New Construction Geometry Helps Optics Shelter Withstand Hurricane

Dean Gladow of Range Optics Division, while providing a design for an easily-handled field cover for a battery of plate cameras, came up with a unique construction method that may result in wider applications.

Dean developed a strong (it withstood a hurricane), lightweight, collapsible shelter with special construction geometry. The new structure resembles a geodesic dome in that it uses many individual flat segments and has a high strength-to-weight ratio.

It also has two other important features —the structure is completely collapsible without having to be dismantled and the individual flat segments are all adjacent segments of a single, flat sheet, a factor which greatly simplifies construction.

Five of the structures were built in Sandia's Development Shops to protect optical instrumentation used last fall in the RFD-2 aerospace nuclear safety test at Bermuda. The shelters, mounted on heavy tripods, provided complete protection to the plate cameras even during the 85-mph winds of Hurricane Brenda which hit Bermuda during the test operation. Although the tripods were blown over, the shelters survived intact and performed their job.

The structure can be built by either of two techniques: rigid panel or rib and fabric. The rigid panel method uses either plywood or polypropylene plastic in thickness of 3/32 to ¼ in. Plywood requires addition of hinges but when polypropylene is used, "integral hinges" can be molded or cold worked into the material itself.

The rib and fabric technique consists of stretching a weatherproof fabric, such as vinyl-coated nylon, across flat or rod-shaped, metal ribs. Slender ribs of three to five straight sections have been used, but other configurations are possible. Ribs are attached to fabric at meridian folds.

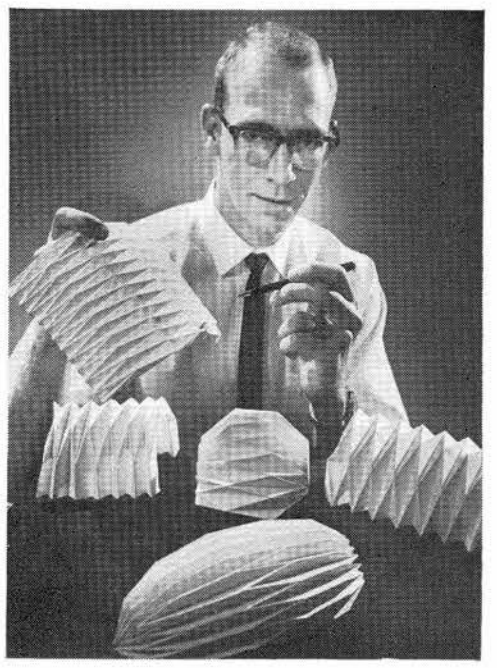
The structures can be made either semicylindrical or semispherical. The latter is accomplished by pinching together the folds at the bottom of the semicylindrical structure. A pivot is then formed by attaching the ribs to hinges.

Dean sees no limitations in size to the structural method. With proper materials, his method could be used to build a structure as large as a football stadium.

Dean discarded several conventional solutions to the flexible shelter problem before coming up with his unique construction method. Strength plus easy handling characteristics could not be combined in any rigid structure. Before any design work was performed, he made dozens of small folded paper models.

"Finally," Dean says, "I arrived at a geometry that looked promising and then I got out the slide rule for the strength calculations."

Although the optical instrumentation covers are the only applications Sandia has made of the construction method, several other uses are under consideration. The method might be used in a collapsible cover for telescope and tracking camera domes.



DEAN GLADOW displays small folded paper models of types of collapsible structures possible with his construction method. Size is no limitation. With proper materials, folding structures as large as a football stadium could be built.

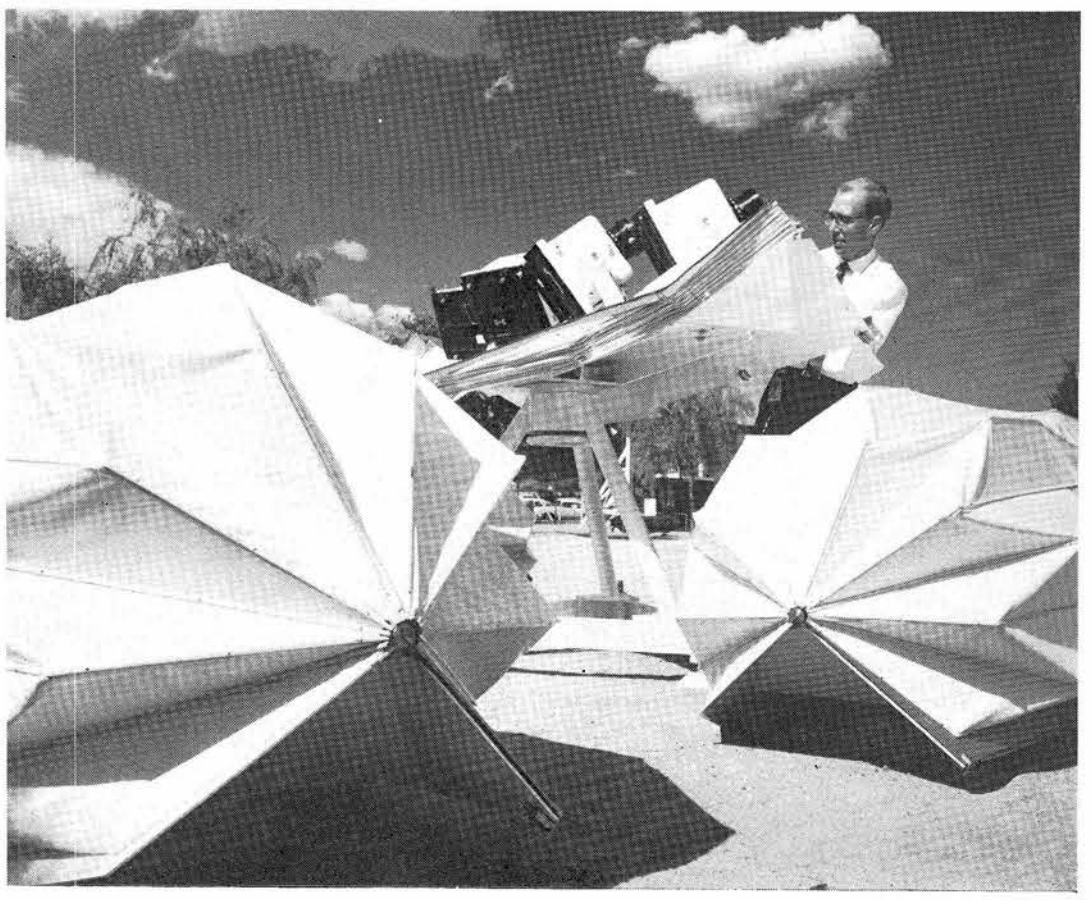
ECP Contributions To Agencies Total $43,705 to Date

Sandia Laboratory employees, members of the Employees Contribution Plan, have given a total of $43,705 to the United Community Fund and seven other agencies since the new contribution period began in December. As the January checks, totalling $17,764, were mailed this week, the following distribution has been made:

	Jan.	Year-to-Date
United Community Fund	$14,566	$35,334
American Cancer Society	852	2,097
Bernalillo County Heart Association	746	1,821
Nat'l Arthritis & Rheumatism Foundation	266	653
N. Mex. Society for Crippled Children and Adults	533	1,307
Cerebral Palsy Ass'n of Bernalillo County	142	347
Muscular Dystrophy Ass'n of America	248	598
Reserve Fund	177	427
	$17,764	$43,705*

*This total includes cash contributions and specific donations made at the beginning of the ECP Drive. During the last contribution year, Sandia Laboratory employees contributed $182,428.

COLLAPSIBLE SHELTERS developed by Dean Gladow of Range Optics Division provide strong, lightweight, and easy-handling protection for batteries of plate cameras. Although heavy tripods were blown over, the shelters survived and performed the job during 85-mph hurricane winds.



Governor's Scientific Advisory Committee to Visit Sandia Lab

Members of Governor Jack M. Campbell's Scientific Advisory Committee will meet in Albuquerque Feb. 26-27. Glenn A. Fowler, Vice President 9000, a member of the Committee, will host the group for a tour of Sandia Laboratory Friday afternoon, Feb. 26.

The tour will include visits to the Sphere of Science, Wind Tunnel Facility, Plasma Jet Laboratory, Materials Laboratory, and Computer Center.

Other members of the Advisory Committee are Victor H. Regener, Research Professor and Chairman of the Department of Physics and Astronomy, University of New Mexico, chairman; Thomas G. Barnes, Professor of Physics and Director of Schellenger Research Laboratories, Texas Western College; Joseph S. Lambert, Associate Professor of Electrical Engineering, UNM; Sidney N. Stone of J-Division, Los Alamos Scientific Laboratory; L. K. Abernethy, Dean of Engineering, Texas Western College Harold A. Daw, Professor and Chairman of the Physics Department, New Mexico State University.

C. I. Ricketts, Director of the Physical Science Laboratory, New Mexico State University; Harold L. Walker, Director of the Office of Research Services, UNM; Marvin H. Wilkening, Professor and Head of the Department of Physics and Geophysics, New Mexico Institute of Mining and Technology; and Harold M. Busey of K-Division, Los Alamos Scientific Laboratory.

RAPPELLING down a steep rock formation will be among the techniques of mountain rescue taught by Dave Saylors.

GARY HOLCOMB and fellow climbers took turns dropping 70 ft. into this crevasse on Mount Rainier and then being rescued.

Experts to Present Program on Mountain Rescue Procedures

Two Sandia employees will present a program on mountain rescue procedures Feb. 14 based on actual experience and on training received on the slopes of Mount Rainier last summer.

The program, which is open to interested persons, is co-sponsored by the New Mexico Mountain Club and the Albuquerque Mountain Rescue Council. Participants will meet at Eastdale Shopping Center at 9:30 a.m. and proceed from there to the Sandia mountains.

Both Gary Holcomb of Advanced Development Division and Dave Saylors of Systems Programming and Training Division have had extensive experience in climbing. Gary's climbs in the past eight years have been mostly in Colorado, New Mexico, and Wyoming. Dave did lots of rock climbing when he lived in Wisconsin and during the past 12 years has ascended high peaks in the Rocky Mountains, both in this country and Canada, the Sierra Nevadas, and ranges in the Pacific Northwest.

The climbing camp seminar the men attended included four days of intensive instruction in snow and ice techniques, followed by a climb of 14,410-ft. Mount Rainier. Members of the seminar stayed at 10,000-ft. Camp Muir which is close to the extensive glacier area.

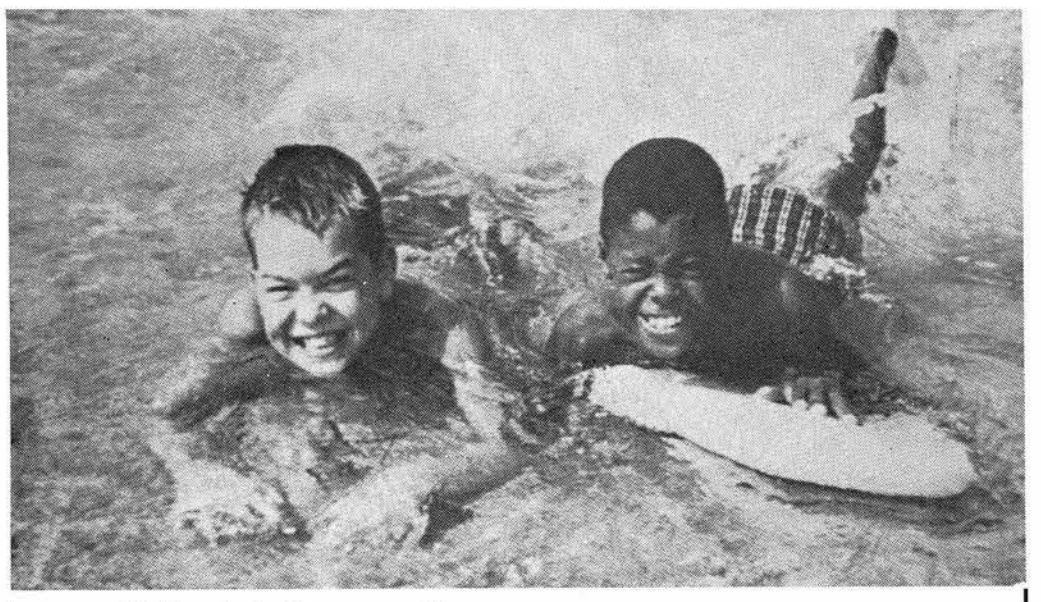
The techniques taught included: ice axe arrest; glissading; crevasse rescue and glacier travel; ice climbing and step chopping; "team" arrest (with a rope); and evening sessions on equipment, expedition climbing, weather details, and high altitude camping.

Dave's class in July was comprised of nine men, while Gary's in August included 10 men and three high school girls.

"One of our instructors was Lute Jerstad, who made the ascent of Mount Everest as a member of the American expedition," Dave recalled, "and one morning we also saw Jim Whittaker, the first American to reach the 29,141-ft. summit, and the famous guide, Tenzing, who reached the summit with Sir Edmund Hillary. The pair was returning from a climb up Mount Rainier."

Admittedly climbers won't encounter glaciers and crevasses 200 ft. deep in New Mexico; however, experience in rescue work on steep slopes and from high-angle rock areas is suitable.

As Gary pointed out, "Many of the principles of climbing are learned from reading a book, but you'd better go out and experiment before trusting them. Climbing accidents happen very fast."



(Editorial Comment)

Don't Let Them Catch It From You

In medicine there is a term to describe those people who do not apparently have a disease but are actually carrying it. The disease doesn't seem to affect them outwardly but they are spreading it to everyone with whom they come in contact. They are known as carriers.

This disease is prejudice.

Prejudice has been demonstrated in many terribly dramatic episodes. Take the plight of the Jews at the time of World War II. Prejudice resulted in six million Jews being put to death. Indirectly, prejudice resulted in 16.5 million World War II battle deaths.

Today's children are reared to acquire the beliefs and attitudes of their parents. While religion teaches brotherhood, the child experiences conflict . . . he speaks the Pledge of Allegiance but finds as he grows older that "liberty and justice" are compromised.

The National Conference of Christians and Jews sponsors National Brotherhood Week (Feb. 21-28) as a brief moment out of a year in which all Americans are called on to renew their religious commitments and rededicate their lives to the democratic heritage of freedom and equality for all.

It also is a good week for us to be sure we are not "prejudice carriers"—don't let your youngster catch it from you.

It's Best To Be Understood

Lexicographers report that the longest word in the English language is this 310-letter choker (they got it from Ripley of Believe-It-Or-Not fame):

* ORNISCOPYTHEOBIBLIOPSYCHOCRYSTARROSCIOAE-ROGENETHLIOMETEOROAUSTROHIEROANTHROPOICHT-HYOPYROSIDEROCHPNOMYOALECTRYOOPHIOBOTANO-PEGOHYDRORHABDOCRITHOALEUROALPHITOHALOMO-LYBDOCLEROBELOAXINOCOSCINODACTYLIOGEOLITHO-PESSOPSEPHOCATOPTROTEPHRAONEIROCHIROONYCHO-DACTYLOARITHSTICHOOXOGELOSCOGASTROGYROCER-OBLETONOCENOSCAPULINANIAC.

There are other impressive English words though they are not as overwhelming as the above. Some are indispensable. The others? Many have suitable substitutes which usually can be better used.

Next time you are tempted to fly high with words listed in the column on the left try writing the substitute word at the right.

to be cognizant of	to recognize
pertaining to	on
despite the fact that	although
to be accomplished	to be done
the greater percentage	more
it should be noted that	note
it is essential that	must
utilize	use
modification	change
optimum	best
fabricate	make
characterize	describe
component	part
deficiency	lack
heterogeneous	varied
identical	same
incision	cut
orifice	hole
prognosticate	forecast

This is only a small sample. There are hundreds of such words clogging the channels of communcation. Use the shorter word—it will be easier written or spoken and probably better understood. This advice is based on the principle that we are writing to express not to impress.

***Definition: "A deluded human who practices divination or forecasting by means of phenomena, interpretation of acts or other manifestation related to the following animate or inanimate objects and appearances: birds, oracles, Bible, ghosts, crystal gazing, shadows, air appearances, birth, stars, meteors, winds, sacrificial appearances, entrails of humans and fishes, fire, redhot irons, altar smoke, mice, grain picking by roosters, snakes, herbs, fountains, water, wands, dough, meal, barley, salt, lead, dice, arrows, hatchet, balance, sieve, ring suspension, random dots, precious stones, pebbles, pebble heaps, mirrors, book passages, name letterings, laughing manners, ventriloquism, circle walking, wax, susceptibility to hidden springs, wine, and shoulder blades."**

Your Emotions And Physical Health

Part I

Presented here is the first of a series of articles based on information gathered by the American Medical Association. The articles are presented with this premise: When people reach a better understanding of their common emotional stresses and are able to come face to face with them instead of trying to ignore them, there will be a reduction in those illnesses that strike out at people through their own inner conflicts.

Physicians know that mind and body work together as one, with the body reacting on the mind and the mind upon the body. As a result, illnesses are being considered and treated in relationship to the whole person.

Even though this concept of medicine is generally practiced by most physicians, it is widely misunderstood by the layman. Let's look at a few misconceptions.

After listening sympathetically to a coworker's detailed account of her latest symptoms, a friend said, "My suggestion is that you forget about them, as they are only in your mind. You know, you are only imagining that you are sick."

Noticing an associate at a nearby desk grimace with apparent pain, a friend asked, "How is your backache these days? I understand that a lot of such pains are imagined —they are all in your head. If you could just forget about those pains for a couple days, they'd probably go away."

And there is the case of the worried husband, who, when told of his wife's illness being of an emotional origin, said, "Well, that's a big relief. If she only thinks she's ill, nothing is likely to do her any harm."

In the first case, the friend fully meant to reassure her coworker, but she did her a disservice. Pains resulting from an emotional disturbance are real pains. Her friend should seek professional advice.

In the matter of the back pains, the well-wisher thinks the pain is assumed or made up. It is false to think that the sufferer can make them disappear by forgetting them.

In the last instance, the husband feels false comfort in the thought as long as his wife's ailments are emotional they can do no physical damage. They can and they do.

In order to see that many ideas concerning emotional disturbance are mistaken, the next in this series of articles will examine the effects of emotions on the body. These effects to be studied are not only from illness, but from everyday situations with which we are all familiar.

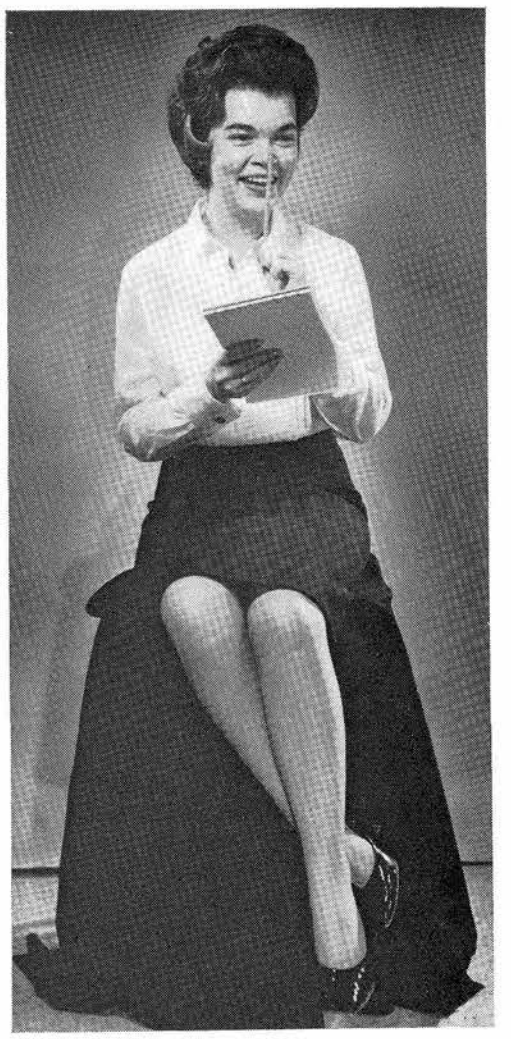
Sandia Speakers

R. H. Schultz of Environmental Research and Operations Department, "Environmental Testing at Sandia Corporation," American Society of Mechanical Engineers, Jan. 18, Amarillo, Tex.

L. S. Nelson of Aerospace Physics Division, "The Combustion and Explosion of Zirconium Droplets Ignited by Flash Heating," seminar at Naval Ordnance Test Station, Jan. 15, China Lake, Calif.

V. E. Blake of Aerospace Nuclear Safety Department, "Space Power Supplies," American Nuclear Society meeting, Jan. 15, Santa Fe.

J. H. Armstrong of Area I Laboratory, "A Stroboscopic X-ray Photographic System Undergoing Evaluation," spring convention of the Society for Non-destructive Testing, Feb. 25, Los Angeles.



Linda Ward (3126/3143)

Take A Memo, Please

Think about possible safety hazards at your work location or at home—and ways they can be eliminated. You may be the person to benefit the most!

Take Note . . .

A. F. Cone, manager of Quality Control Department, has been appointed chairman of the Quality Assurance Practices Committee of the Electrical Industries Association.

EIA is a national industrial organization of electronic manufacturers in the United States.

One of Mr. Cone's duties will be to serve on the EIA General Standards Committee. He previously was chairman of the Western Quality Assurance Practices Committee for four years.

* * *

Kappa Chapter, University of New Mexico Dames will hold its spring membership tea and fashion show Saturday, Feb. 13, at the hospitality room of Albuquerque Federal Savings and Loan, 8321 Menaul, NE.

Membership in the Dames is open to married women enrolled as students at the University of New Mexico and to wives of full-time or part-time students.

For more information call Barbara Rothwell, Dames vice president, tel. 243-7532; or Mrs. J. L. Starkovich, membership chairman, tel. 298-5847.

Employee Injured in Fall; Safety Record Ends at 16 Days

A Sandia Laboratory employee was injured Monday, Feb. 1, when he fell from a fork lift.

The injured employee was taken to a local hospital by Corporation ambulance, accompanied by members of Sandia's Medical staff. He underwent surgery and is still under observation in the hospital.

At the time of the accident, Sandia Laboratory employees had worked 16 days without a disabling injury.

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ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

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National Engineers' Week to Be Observed by Sandia Lab Employees

An "All Engineers' Luncheon" will highlight the observance of National Engineers' Week here Feb. 21-27. Herbert Grier of Edgerton Germeshausen and Grier, Inc., will be the featured speaker. His talk will reflect the theme of this year's National Engineering Week—"Engineering for Human Needs."

The luncheon will be held at the New Mexico Union, University of New Mexico campus, Feb. 25 beginning at 12 noon. R. L. Dineen of Structural Analysis Division is chairman of the luncheon. Tickets are available from him or any member of the National Engineers' Week committee.

Sandians serving on the committee include R. G. Scharrer of Diagnostic Instrumentation Division, H. E. Kinney of Advanced Systems Development Division, L. J. Seligman of Polymer Chemistry and Electrical Properties Research Division, and D. K. Yearout of Electronic Development Division.

Other National Engineers' Week activities will include an Open House at the University of New Mexico Engineering Department and the display of several exhibits in a number of downtown and Winrock locations.

One of the displays, prepared with the help of Community Relations Division, will feature the RFD-2 vehicle which was used by Sandia in a recent test demonstration of aerospace nuclear safety.

National Engineers' Week is sponsored by the National Society of Professional Engineers. Locally, five technical societies are cooperating in promoting the event. They include local chapters of NSPE, American Society of Mechanical Engineers, American Society of Civil Engineers, American Institute of Industrial Engineers, and the Institute of Electrical and Electronics Engineers.

Congratulations

Mr. and Mrs. R. A. Hill (5122), a son, Gordon Lester, Jan. 27.

Mr. and Mrs. Antonio Garcia (4253), a son, Jan. 28.

Sympathy

To V. J. Domme (4511) for the death of his mother-in-law in Albuquerque, Jan. 17.

W. H. Kingsley Invited To Serve on Health Association Committee

W. H. Kingsley, manager of Environmental Health Department, has been invited to serve on the Occupational Health Subcommittee of the Program Area Committee on Environmental Health.

This subcommittee was established by the Executive Board of the American Public Health Association. Jack C. Rogers, director of the Radiological Health Division of the Los Angeles County Health Department, is its chairman.

One of the duties will be to draft a handbook entitled "Guide for Local Health Officials in Occupational Health" which will contain sections on industrial hygiene, benefits to communities having an occupational health program, legislative needs, and examples of in-plant services.

PLAN CONFERENCE—Members of the New Mexico Area Chapter of the American Institute of Industrial Engineers discuss plans for the organization's Spring Conference Mar. 19. From left are Al Kaping, program chairman; Jerry Ramsey, chapter president; and Don Arquette, conference chairman.

James E. Webb NASA Administrator To Speak Here

James E. Webb, Administrator, National Aeronautics and Space Administration (NASA), will be the banquet speaker at the Spring Conference of the New Mexico Area Chapter of the American Institute of Industrial Engineers. S. P. Schwartz, Sandia Corporation President, will be a luncheon speaker at the Mar. 19 conference.

The conference will be held at the New Mexico Union building, University of New Mexico. Registration will begin at 8 a.m. and sessions will be held concurrently through the day. The luncheon will be at the Union building and the banquet is scheduled for the Holiday Inn.

Conference title is "Cost Optimization," and the theme is "Increased Pay-off with Cost Optimization Through the Latest in Engineering and Management Technology." Conference chairman is Don W. Arquette of Electronic Development Division. Program Chairman is Al Kaping of Purchasing Administration Division. President of the New Mexico Area Chapter of AIIE is Jerry Ramsey of Value Engineering and Cost Reduction Division. Conference plans and arrangements are well underway, according to Mr. Kaping. Sessions will feature outstanding speakers from several engineering fields.

Session topics will include Planning for Profit, Value Engineering and Your Individual Contribution, Application of Value Engineering, Payoff Through Industrial Engineering, Contribution of the New Technology to Utility Economics, and The Changing Concept of Industrial Engineering.

Welcome Newcomers

Jan. 25 - Feb. 5

Albuquerque

Hortensia S. Blythe	3126
Michael A. Chavez	3413
Norman R. Grandjean	3413
Rudolph D. Lewis	3413
Roy Palmer, Jr.	3413
Dolores M. Stuart	3126

Arizona

Paul R. Dodge, Mesa	7245

Delaware

John R. Dick, Wilmington	1311

Texas

Jon A. Reuscher, Dallas	5223

Plant Engineering, Maintenance Places New Emphasis on Safety

Men of Plant Engineering and Maintenance organization daily perform jobs that range over the entire Laboratory area, outside and inside. Seldom are any two jobs alike. In addition, men of the Motor Pool Division annually drive hundreds of thousands of miles on Sandia Base and in Albuquerque. Safety is a continuing concern requiring constant alertness and ingenuity from all employees.

About a year ago, the organization embarked on a concentrated safety campaign to create a new safety emphasis within the organization. Robert Findlay, manager of Transportation and Services Department, headed a committee of supervisors charged with the responsibility of conducting the campaign. Bill Allison of Safety Engineering Department was appointed a permanent member of the committee.

"Weekly safety meetings in our maintenance shops and service groups were a long-established tradition," Mr. Findlay says, "but we felt that the meetings had a routine sameness. Something new was needed. Also, we wanted to take a good hard look at 'near-miss' accidents. These would be an indication of the kinds of things that needed correcting before injuries occurred."

The safety committee launched several new activities. One section supervisor was appointed for each two-week period of the year to make a thorough safety survey of all work areas of the organization.

"This proved to be a most valuable activity," Mr. Findlay says. "By rotating the assignment among different supervisors, new viewpoints surveyed the work areas each month. Many possible hazards were identified and corrected as they were pointed out."

The safety representatives recommended a number of corrective measures ranging from general housekeeping to replacement of tools and equipment. They also looked at work practices and suggested new ways to perform repair and maintenance jobs.

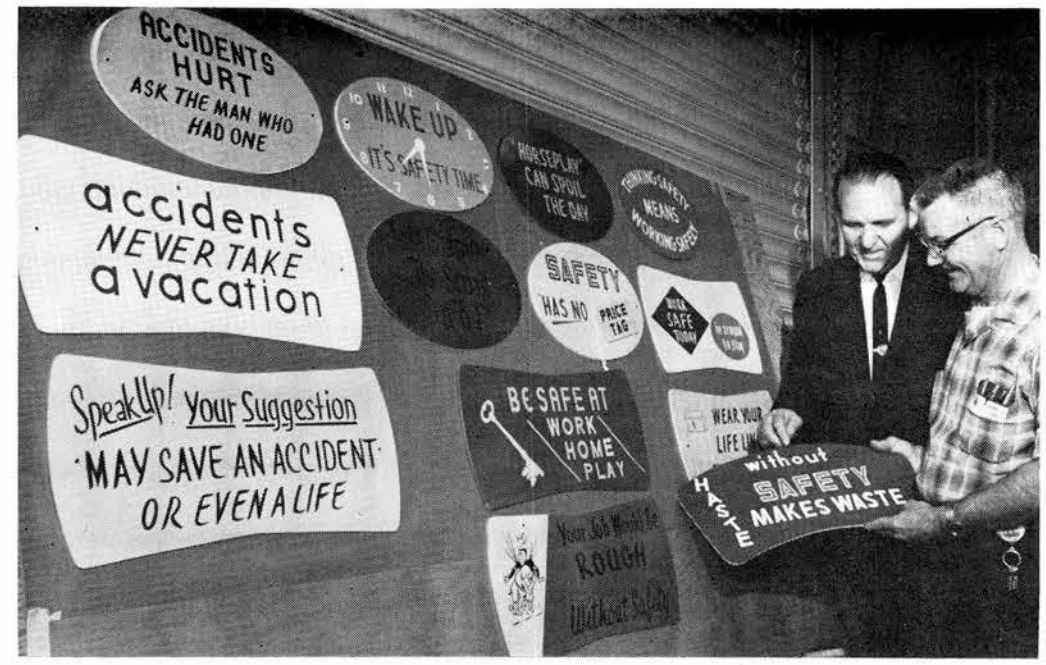
Not only hazards affecting 4500 were reported. The entire Laboratory area was open to the safety suggestions. For instance, one representative reported obstructions to the view of motorists at a Tech Area I intersection. Rough sidewalks were reported and repaired. New insulation was recommended for electrical lines and steam lines. The representatives reported approximately 50 items a month. The record was impressive. Hundreds of possible hazards were corrected.

Safety Education Division conducted a safety course for 4500 supervisors. Copies of "Safety Education—Articles and Information for the Prevention of Accidents" were distributed. The material helped in conducting the weekly safety meetings. Assignments were also made to the tradesmen of the organization to report on safety practices. The men contributed suggestions and ideas to the campaign. Mr. Findlay credits the success of the campaign to the cooperation of all 4500 employees.

The Safety Committee continues to meet each month to recommend corrective action in problem areas. The committee also selects the monthly 4500 safety slogan.

"These slogans are suggested by the men of the organization or picked from the National Safety Council material. The criteria for selection is the appropriateness for our personnel," Mr. Findlay says.

Placards with the slogans are prepared by Ken Stiver of Painting Section. The signs are displayed throughout the 4500 shops and changed each month.



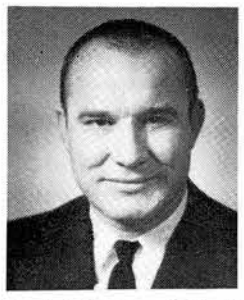
SAFETY SLOGANS, part of the concentrated safety campaign of the 4500 organization, are reproduced on signs created by Ken Stiver, right, of Painting Section. He discusses the campaign with Robert Findlay, chairman of the 4500 safety committee.

In addition to the above activities, a bi-monthly meeting of all employees is planned and conducted by two Division supervisors. Their plans may include safety films, talks by employees, or presentation of other material. A recent meeting presented the film, "Safe As You Know How." The film made the point that each workman is his own safety expert. Only the man performing the job can do it safely.

"This is the basic message of our campaign," Mr. Findlay says. "Safety is everybody's business. It is an individual responsibility."

In 1963, six employees in the 4500 organization suffered disabling injuries. In 1964, the record dropped to four injuries. The Safety Committee, through its continuing effort, hopes to see an improvement in 1965.

Supervisory Appointments

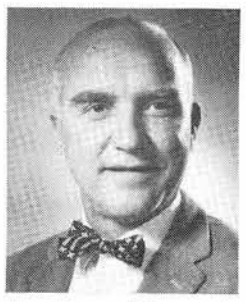


B. G. EDWARDS to supervisor of Range Electronics Division, Test Range Department, effective Feb. 1.

"B.G." has been with Sandia since 1953. He served six years at Salton Sea Test Base and five years at Tonopah Test Range. B.G. has been with Range Electronics Division at Sandia Laboratory since last June.

He was graduated from Texas Technological College with a BS degree in electrical engineering and is a registered professional engineer in New Mexico. He is also a member of the Institute of Electrical and Electronics Engineers.

B.G. served two years in the Navy.



DANIEL PARSONS to supervisor of Range Optics Division, Test Range Department, effective Feb. 1.

Dan has been with Sandia 14 years and has been associated with Field Testing Organization the entire time. His work has mainly been in instrumentation development here and at Salton Sea Test Base and Tonopah Test Range. He participated in Operation Dominic.

Prior to joining Sandia, Dan operated his own precision optical shop for three and a half years in San Francisco.

He has a BS degree in mechanical engineering from the University of California at Berkeley and is a registered professional engineer in New Mexico. He is a member of the Society for Photographic Instrumentation Engineers.

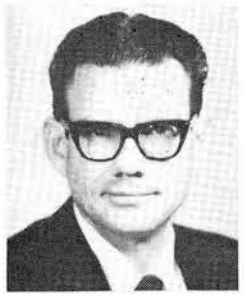
Dan served there years in the Navy.

LOUIS M. BERRY to manager of Materials and Process Department III, effective Feb. 1.

"Lou" has been with the company nearly 13 years working with ceramics lubrication, protective coating, electro chemistry, development of cleaning processes, and contaminant identification and control. From April 1961 until last June he headed Materials Application Division at Livermore Laboratory. Since his return to Sandia Laboratory, Lou has been supervisor of Special Materials Division.

His previous experience as a chemist includes three years with the Texas Company in Port Arthur, Tex., three years at Los Alamos Scientific Laboratory in methods development, and two years with Gulf Oil in Port Arthur.

He received a BA degree in chemistry from North Texas State College.

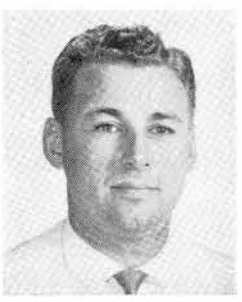


ROBERT D. PACE to supervisor of Air Force Eastern Test Range Operations Section, DOD Range Operations Division, effective Feb. 1.

Bob has been with Sandia since August 1952 and has been assigned to various divisions within Field Testing since 1954. In his present job he is assigned to Cape Kennedy, which is the missile launching center for AFETR, but his responsibilities also include providing test support for the Air Proving Ground Center at Eglin AFB, Fla.

After graduation from Port Arthur College (Tex.), Bob served briefly as a shipboard radio officer in the Merchant Marine. For several years prior to employment by Sandia Corporation, he worked in the radio broadcast industry as transmitter engineer and announcer.

He was in the Army during World War II.



DONALD D. WAGNER to supervisor of Wage, Labor Relations, and Benefits Division at Livermore Laboratory, effective Feb. 1.

Don joined Sandia on July 1, 1957, in Albuquerque, where he was employed in the job evaluation organization. He transferred to Livermore Laboratory wage administration organization in October 1959.

A graduate of North Dakota State University. Don was awarded his BS degree in June 1957. He majored in industrial engineering and minored in mathematics.

Don served more than three years with the Army during the Korean conflict.

BRUCE VAN DOMELEN to supervisor of Analytical Methods Division II, Materials and Process Department II, effective Feb. 1.

Bruce has been at Sandia since August 1960 in organizations with interests in thin films, microcircuitry, physical metallurgy, and analytical methods.

He has a BS degree from Kalamazoo College, and MS and PhD degrees from the University of Wisconsin. All are in the field of physics.

Bruce is a member of the American Physical Society and Sigma Xi, honorary society.

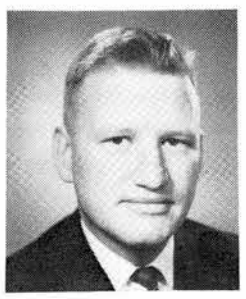
GEORGE W. DYCKES to supervisor of Elastomers, Molded Plastics and Foams Division, Materials and Process Department I, effective Feb. 1.

George has been assigned to Materials and Process Development organization during his eight years at Sandia.

Previously he was two years with Peninsular Chem Research Inc., Gainesville, Fla., as a project leader in development of new silicone elastomers. He also was with Applied Research Section of Lord Manufacturing Co., Erie, Pa., for five years as leader of a group responsible for the design of special polymers and adhesive systems used in vibration control mountings.

George received a BS degree in chemistry from Gannon College, Erie, Pa., and did graduate work at Western Reserve University, Cleveland, O.

He is a member of the Polymer Division of the American Chemical Society.



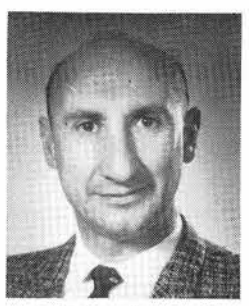
STEWART A. INGHAM to supervisor of Sandia Effects Instrumentation Division, Test Support Department, effective Feb. 1.

Stu's original assignment at Sandia in July 1956 was in Manufacturing Relations Engineering, but the majority of his time has been in Field Testing.

He transferred to Livermore Laboratory in 1959, and returned to Sandia Laboratory in 1963 in a telemetry development organization.

Stu was graduated from the University of Wyoming with a BS degree in electrical engineering. He is a member of the Institute of Electrical and Electronics Engineers, Sigma Tau and Chi Gamma Iota, honorary societies.

During the Korean conflict, he served four years in the Navy.



SAM N. GAETO to supervisor of Logistic Division and Fiscal Activities Division, Systems and Procedures Department, effective Jan. 16.

Sam has been with Sandia since July 1957. His work has been in Systems and Procedures Department and Budget and Disbursements Accounting Department.

Prior to coming to Sandia, Sam was a high school teacher in Belen, N. Mex., and was in public accounting in Albuquerque. He is a Certified Public Accountant.

Sam has both Bachelor's and Master's degrees in business administration from the University of New Mexico.

During World War II he served as an officer in the Navy.

DONALD R. ADOLPHSON to supervisor of Metallurgy Division, Materials and Process Department III, effective Feb. 1.

Don has worked in the Materials and Process Development organization since he came to Sandia in August 1957.

He has a BS degree in metallurgy from Illinois Institute of Technology and a MS degree from the University of Illinois.

His memberships include Tau Beta Pi, honorary society, and the American Society for Metals.

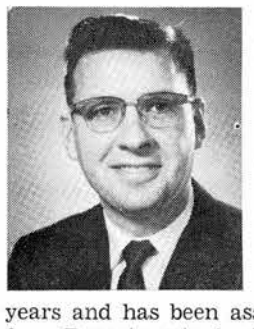
Don served two years in the Army.

E. DEAN THORNBROUGH to supervisor of Effects Instrumentation Division, Test Support Department, effective Feb. 1.

Dean has worked in Field Testing organization since joining Sandia in June 1952.

While with the company he has participated in Operations Ivy, Upshot-Knothole, Wigwam, Redwing, Plumbbob, Hardtack I and II, pre-Gnome, Gnome, Rover, Cowboy, Dominic, Storeax, Dominic II, Nougat, Dribble, and preliminary phases of Chariot.

He received his degree in physics from Texas Technological College and has done graduate study at the University of New Mexico. Dean is a member of Kappa Mu Epsilon and Alpha Chi, honorary societies.



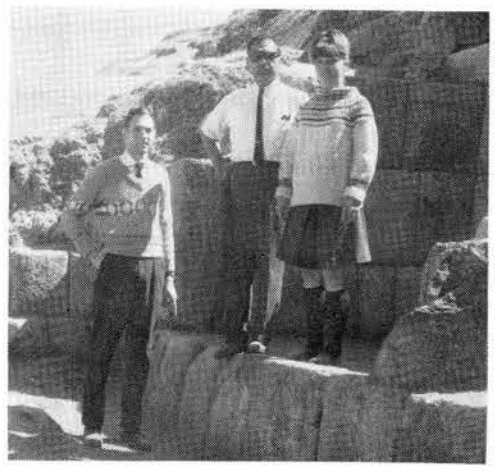
C. RICHARD ANDES to supervisor of Budget Division/ 2000, 3000, 4000, 6000/ and Coordination; Budget and Disbursements Accounting Department, effective Jan. 16.

Dick has been at Sandia nearly seven years and has been assigned to each of the four Departments in the Comptroller's organization.

Previously he was with the U. S. Army Audit Agency for three years—while in the Army and also as a civilian. His headquarters was in San Antonio, Tex.

Dick worked for the auditing department of the University of Oklahoma for two years and received both his Bachelor's and Master's degrees in business administration from the same school.

He is a Certified Public Accountant and a member of Beta Gamma Sigma, honorary society, and the National Association of Accountants.



SACSAHUAMAN RUINS in Cuzco, Peru, are visited by Sandian Andy Chacon (center) and Peace Corps Volunteers Frank Fouque and Susan Hardwick.

Andy Chacon Sends Report on Work With Peace Corps

After nearly four months in Peru, J. A. "Andy" Chacon reports, "It certainly makes one feel proud to be an American to see what the Peace Corps Volunteers are doing throughout this beautiful country."

Andy is on a two-year leave of absence from Sandia Corporation to administer the new Peace Corps program, "Coopernacion Popular," in that South American country.

Andy and his family arrived in Lima in mid-September to work out initial assignments and to allow Andy time to complete a survey of sites in the jungle area of Tingo María, Pucallpa, and Iquitos.

On Oct. 5, his 42 Cooperative-trained volunteers (including 10 women) arrived in Lima for several days of orientation and talks by Peruvian officials representing several agencies with which the volunteers would be in direct contact.

At present, the volunteers have active programs in such fields as rural electrification, credit unions, agriculture, production, fishing, housing, cooperative communities, health, a cooperative university bookstore, and a cooperative school. He adds, "It is possible that shortly we may become involved in a dairy products marketing cooperative."

During the "settling-in period" Andy reports that "our host-country relations have . . . been excellent.

"Logistic, housing, and transport problems, although always of the small variety, are the most frustrating. Everything gets done 'mañana'," he says. Health and morale of volunteers is reported "on the whole excellent."

In conclusion, Andy reports, "Our effectiveness should be a more assessible factor at the end of our first year."

Sandia Authors

G. J. Simmons of Advanced Systems Development Department and L. W. Rook of Reliability Department, "A Description of the Computer Organization Imposed by Large Iterative Systems," bound Proceedings of the IEEE Conference on Computer Organization, to be held in April.

H. H. Baxter of Buildings and Facilities Design Division II, "Suggested Design Criteria for Standards Laboratories," March issue, **Plant Engineering** magazine.

C. W. Harrison, Jr. of Advanced Electronics Systems Division and C. S. Williams, Jr. of Statistics and Components Division, "Transients in Wide-Angle Conical Antennas," March issue, **IEEE Transactions on Antennas and Propagation.**

C. W. Harrison, Jr., "Response of Balanced Two and Four-Wire Transmission Lines Excited by Plane-Wave Electric Fields," March issue, **IEEE Transactions on Antennas and Propagation.**

A. T. Fromhold of Electron Structure of Solids Division, "Structure Model for Low Temperature Thermal Oxidation Kinetics," March issue, **Journal of Applied Physics.**

R. L. Davis of Electronic Components Division, "Design Formulas for Nonreactive High-Voltage Pulse Resistors," March issue, **IEEE Transactions on Component Parts.**

Pete Palmer Has Two Worlds And In Both of Them He Uses Cameras

Photographically, M. A. "Pete" Palmer, Research Assistant in Radiation Physics Division, Nuclear Burst Physics Department, inhabits the best of two worlds.

For Sandia, he photographs "the new landscape" of scientific phenomena, a vast expanse of micro-particles lighted by pulses of high-voltage energy. For himself, during "off hours," he aims his camera at "the quiet places" of the everyday world.

Pete's pictures are one of the highlights of a photographic exhibit prepared by Sandia Laboratory which was recently placed at the University of New Mexico. Until February, when the exhibit becomes part of a traveling show to Universities in a five-state area, it will be on display in Sandia's Sphere of Science.

One of the pictures in the photo exhibit is reproduced here. Typical of Pete's scientific photography, the picture is a photographic measurement of the motion of gases heated to tens of thousands of degrees above zero in Sandia's "Charybdis" machine, a device which enables the study of the emission, absorption, and flow of radiant energy.

The photograph is a valuable part of the measurements made during experiments with the machine. As research assistant in the division, Pete designs and develops optical and spectrographic instrumentation and techniques used in research programs, methods of measurement which are applied in the laboratory and in the field as well. He has participated in full scale test operations concentrating on equipment and exposure requirements for acquiring nuclear burst data with photographic and spectrographic techniques. In most experiments he employs the photographic process to measure intensity in terms of absolute energy. Involved is the precise calibration of photographic materials and instruments.

A recent project was to measure, using photographic spectroscopy techniques, the temperature of a rocket-spread cloud of trimethylaluminum at altitudes above 80 miles.

In addition to being valuable scientific records and measurements, some of these photographs approach the artistic merits of much of what is called "modern abstract art."

"Forget it," Pete says. "These pictures are produced for just one purpose—to provide scientific data. While they are visually interesting, their value is purely scientific."

Pete does create photographs during off-hours which could hang alongside the masters in the art. He produces ultra-sharp, crisp, detailed, full-range prints exhibiting absolute technical control of the medium. Using a view camera, Pete exploits the full possibilities of equipment and film. Each exposure, development, and print is calculated to utilize the full sensitivity curve of the photographic emulsion. Remarkable detail is held through a complete range of black, middle grays, and white.

It might be assumed from looking at Pete's photographs that he received much specialized instruction, but he has had no formal training in photography. His interest started early and it has been only a self-taught hobby through the years.

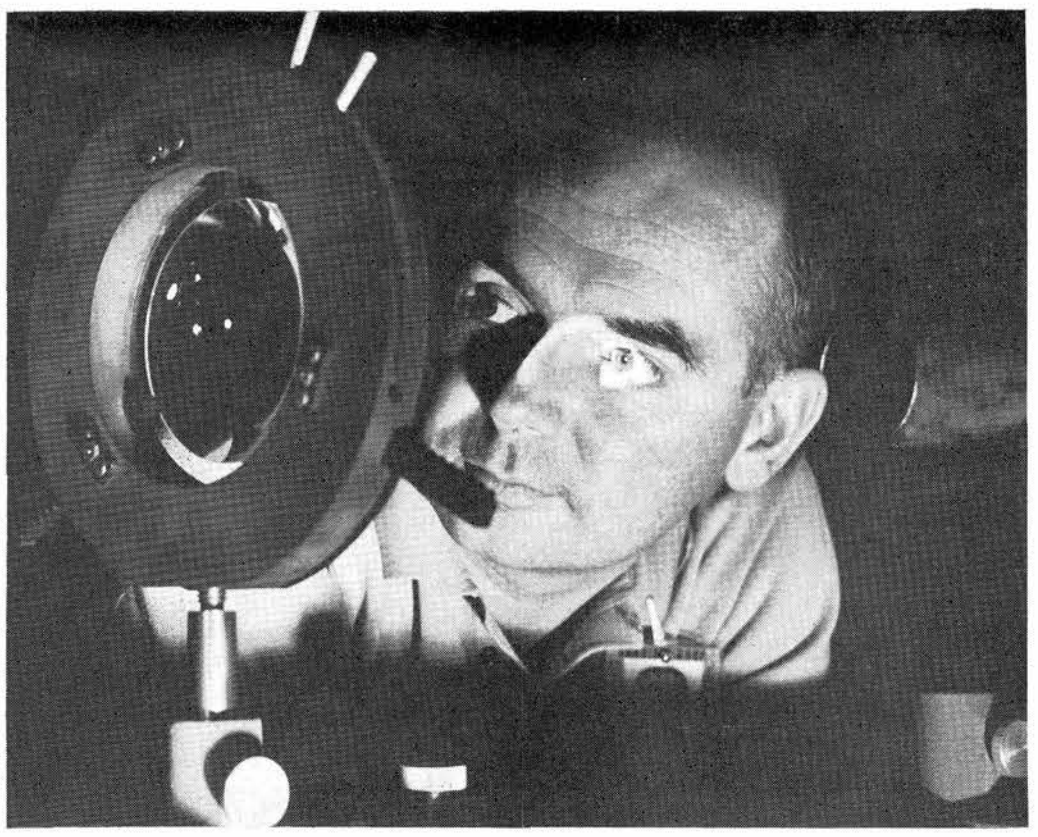
Pete holds a degree in Humanities from Washington and Lee University. He studied cello 11 years at the Eastman School of Music and worked for several years as a professional playing bass in dance bands. He now plays cello with the Albuquerque Civic Symphony and is a member of the Symphony board of directors and orchestra committee. He is a past president of the organization.

Pete was working daytime hours as an assistant buyer for a large department store in Richmond, Va., and playing in a dance band evenings in 1951 when it was necessary to move west for his wife's health.

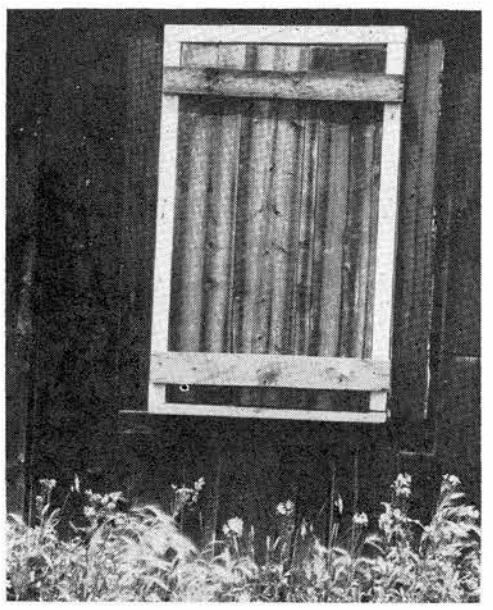
"The move was the greatest thing that ever happened," he says. "I found a job as a photographer-report writer with the New Mexico Institute of Mining and Technology which was performing a government research project at Sandia Base. When this project ended, I moved into a similar spot with Lovelace Foundation, and in 1956 I became a member of Sandia's technical photography group in the Field Test organization."

Pete transferred to Radiation Physics Division in 1960 and continues to develop optical and photographic instrumentation and techniques to exacting requirements.

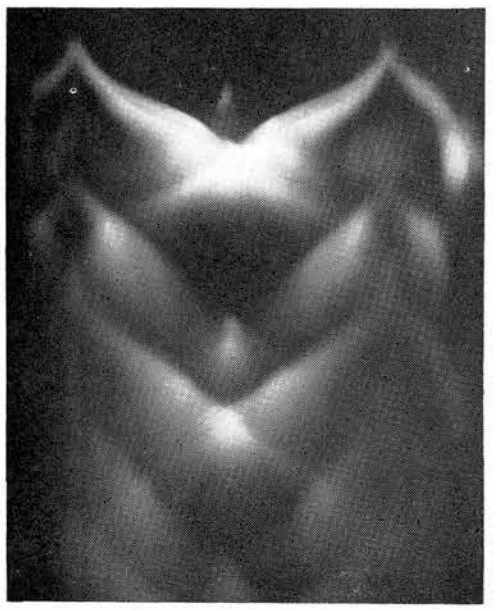
And the hobby continues. Pete is working at home in a recently-completed darkroom. "At work or on my own time," he says, "I enjoy photography. Like music, art, or any activity that one is committed to, the value is in the degree of involvement."



PETE PALMER aligns components on an optical bench. At Sandia he designs and develops optical and spectrographic instrumentation and techniques for projects of Radiation Physics Division. This is one of Pete's two worlds.



PERSONAL PHOTOGRAPHS of Pete Palmer are technically superb. He utilizes full potential of equipment and film for full control of photographic process. This leaning mine shack in Leadville, Colo., is symbolic of Pete's private world of photography.



SCIENCE OR ART? This streak photograph by Pete Palmer represents seven microseconds of an energy pulse in the Radiation Physics Division's Charybdis machine. Although the film is a measurement of energy, Pete feels it is also a unique image similar to some abstract art.

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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

2-BDR HOUSE near Highland High, large walled yard, landscaped, redecorated inside and out. See at 4900 Pershing SE. Causey, 299-0089.

PORTABLE stereo phonograph, detachable speaker, $50. Grimsley, 268-1427 after 5.

'55 PONTIAC, 4-dr., AT, PB, R&H, original owner, $285. Dailey, 299-2284.

BOOKCASE, $3; piston pump for aquarium, $4; electric hair clippers, $3; '54 Pontiac, $50. Naumann, 298-3559.

SET OF PISTONS, valves, hyd. lifters, and cam for 283 Chevy; also parts for Volvo PV444 engine; tricycle and baby car bed. Wilson, 298-0049.

PICKET fencing, 400 linear ft. w/4x4 posts, 24" high when installed, 10c per ft. Bertrand, 268-4191.

BLOND upright piano. Hall, 298-3774.

'55 CHRYSLER Windsor 2-dr., HT, R&H, V-8, AT, $375 or best offer. Fjelseth, 1509 Garcia NE, 299-4539.

REFRIGERATOR, 10 cu. ft., $120; single bed mattress, box springs, metal frame, $35. Hook, 255-1897.

SMITH & WESSON K-38 Masterpiece Model 14, 6" barrel, $55. Long, 527 Utah SE.

POODLES, toy and miniature, AKC registered with papers. Tessler, 344-1843.

WOOL CARPET, 8½ x 14, beige w/pad, $25; lady's 6½ Snyder precision shoe skates, full plate, toe stop, $50 or offer. Abel, 298-5139.

PLAYER piano, 1962 model Hardman Duo, full keyboard, cost $1595, sell for $995. Includes 50 new music rolls. Allen, 243-7085.

TWIN and bunk beds w/mattresses; mahogany desk; black naugahyde modern chair; end table and matching corner table. Otts, 299-3423.

TIRES, 6.50 x 13; screen door w/ornamental trim; baby bassinet; Crosley engine parts; 6 volt sports car heater. Lasker, 299-1024.

BRITTANY spaniel puppies. AKC, natural hunters. Heames, 2919 Carolina NE, 255-2291

COMBINATION high chair, rocker, stroller, carriage, bassinet, car seat, car bed, "Stroll O'Chair", $85. Pelletier, 298-6336.

2 USED steel casement windows, 51" high by 37" wide, 2 lites x 4 lites w/crankout on 3 lower lites, $8 each. Roberts, 255-9527.

3-BDR, DEN, 1¾ baths, many extras, near schools, park, bus, Eastdale shopping, wide lot, priced below market, $17,500. Van Deusen, 299-4328.

'62 OLDS 88 Fiesta station wagon, R&H, PB, PS, $2150. Kepler, 298-5652.

GUITAR, Gretch Anniversary w/case, $175; '61 BSA motorcycle, 650cc twin, low mileage, many extras, $425. Barsic, 243-5846.

LARGE 12' x 18' oval braided rug, one year old. Rogers, 268-8682.

CORRALES, 3-bdr. Pueblo style, carpeted, beamed ceilings, 3 fireplaces, independent apt. w/kitchenette, bath, fireplace, double garage, corral, 1 acre. Swiss, 898-2083.

FIGURE SKATES, boy's size 5, or trade for size 7. Hollowwa, 255-6938.

ASH BEDROOM suite: chest of drawers, dressing table w/glass covers, night stand, bed, box springs, mattress, $125. Cox, 299-0480.

TV SETS: 21" RCA, $25; 12" Admiral console, $10. England, 299-0464.

ANTIQUE vanity commode, rose marble top, burled walnut panels, figured walnut large mirror, $95; misc. items including Lugers. Smitha, 299-1096.

COMMAND receiver 6 to 9 mc, $10; also free puppies. Nogle, 299-3863.

3-BDR HOUSE NE, Foothill Estates, $13,000. Also living room, bedroom and kitchen furniture to settle estate. Larsen, 255-6407.

SKIS: Men's and children's ages 6, 9, 11. Also bindings, poles, boots, pants, etc. Illing, 299-7378.

$120 or best offer, 1953 De Soto. Rosenzweig, 344-1086.

GAS hot water heater w/controls, used, 50 gal., $5. Rogers, 256-9677.

GERMAN shepherd cross with all shots, needs good home, male, one year old. Bauhs, 282-3497.

2-BDR HOUSE near Sandia Base, move in for $450, monthly payments of $73. Becker, 255-8497.

'55 MERCURY Montclair 2-dr., HT, AT, 61,000 miles, $200. Delivery about Mar. 1. Olajos, 256-1649.

WARD'S deluxe 12 cu. ft. refrigerator, $60; '59 Siesta camp trailer, thermostat controlled furnace, sleeps 6, 16' x 7½', $1000. DeWitt, 298-8211 after 5.

FLEXSTEEL couch, 6' green nylon frieze, $25. Mason, 299-2836.

DEEP SEA fishing rod and Penn No. 49 deep sea reel. Wormeli, 255-8459.

ONE ACRE home site in Holiday Hills, city electricity and water available. Elder, 268-7479 after 5.

FERTILIZER spreader for lawns, new, $10. Miller, 268-5577 after 5:30.

ARGUS Argoflex Model E twinlens reflex camera, leather case, instruction book. Make offer. Shieler, 344-8617.

'61 CHEVROLET Impala, 2-dr., $1392. Morgan, 299-8192 after 5:30.

HOUSE TRAILER, 8' x 35'. 1951 Pontiac. Kern, 265-1042.

ACCORDION, 120 bass, 5 treble shifts, 3 bass shifts, large keyboard, $80. Sisson, 299-7133.

FRIGIDAIRE refrigerator, 11.4 cu. ft., $50 or best offer. Thayer, 299-3127.

TWO FILLIES, ready to ride. Tucker, 282-3204.

AQUARIUMS and equipment; barbells w/bench; three traverse rods and drapes; guitar; 10 gal. crock; baseball gloves; bongos. Best, 255-9873 after 5:30.

LATE '61 VW sedan, low mileage, for Blue Book value $1100. Haymond, 299-4909.

PEDIGREE toy poodles, AKC registered, 8 weeks old, 3 male, 2 female, black, white, silver, very reasonable. Shipley, 298-2433.

'63 BUICK Special station wagon, AC, PS, PB, AT; Higgins camping trailer, heavy canvas, sleeps four, new tires, best offer. Schmierer, 299-2352 after 5.

'65 FORD Victoria 2-dr. HT, 292 stick, overdrive, R&H. Guist, 299-9060.

'58 CADILLAC 4-dr. 62 series, 45,000 miles, all power, new tires, $1200. Harlow, 299-1495.

NEAR UNIVERSITY, 3-bdr., 1¾ baths, dining room, fireplace, utility, enclosed patio, hardwood floors. Lites, 255-1201.

'55 LINCOLN 4-dr. sedan, $300. Trade saddle, horse trailer. Gentzler, 282-3425.

2-BDR and den, hw floors, w/w wool rugs, appliances, drapes, 10 min. from Base, 1213 Willmore Dr. SE, $10,900. Undercounter dishwasher w/guarantee. Brown, 344-9675.

KITCHEN table w/4 red chairs, $25; red tub chair, $15; 2 turquoise lamps, $10. Paul, 256-6228.

'61 VW panel, below book; motorcycle, Triumph Tiger Cub. Waldorf, 344-1017.

NO QUALIFING, 3-bdr., 1¾ baths, enclosed courtyard, fireplace, AC, CH, built-ins, $13,500. Carlton, 299-6041.

SELL OR trade '58 Volvo, new tires, battery; '49 Ford ¾ ton pickup with rebuilt '53 engine. Tarbell, 256-1322.

NIAGARA massage chair, $250. Risk, 242-4963.

TWO 24" girl's bicycles; 2-piece sectional; one twin spring and mattress. Blaine, 299-1036.

21" HOFFMAN TV, mahogany cabinet, rabbit ears and brass TV stand included, $60 or best offer. Walter, 256-1534 after 6.

FRIGIDAIRE 10 cu. ft., $40; bassinet, $4; stroller, $5; boy's 20" bike, $14; treadle sewing machine $10. Harrington, 282-3188.

1932 MODEL "B" FORD pickup, 4-cyl., sell for best offer. Young, 837 Valencia Dr. SE, 255-8193.

2 R-1 LOTS across from Hawthorne Elementary School at Erbbe and Domingo NE, $4500 for both, paving paid. Sanchez, 298-5330 after 5.

'62 ALFA ROMEO, 2 liter roadster, dual overhead cams, 5-speed gear box, 8409 Comanche NE, Apt. 49. Lemmon, 299-0647.

SILVERTONE CONSOLE TV, 21", swivel base, wood cabinet, antenna included, $35; shopping cart, $5. Yingst, 268-2896.

'56 CHEVROLET BEL AIR station wagon, 4-dr., 9-passenger; '60 Deville trailer, 15', camping, will take rifle, (.243 cal.) on either. Hilkerson, 268-7605.

'56 CHEV. 2-dr., V-8, automatic, make offer. Karnes, 299-9033.

DESK, 4-dwr., finished maple color, top needs sanding, $7; charcoal grey suit from Stromberg's, size 16, $10. Duvall, 299-8744.

DOORS, interior and exterior, some mahogany, new, used, or slightly damaged; some new screen doors. Hyde, 268-2885.

LAWSON 4-cycle engine, $15; metal go-cart frame, $4 or best offer. Adams, 268-5943.

ROBERSON 3-bdr., den, FP, 1¾ bath, double garage, pitched roof, built-in range/oven, a/c, landscaped, patio, $18,800 FHA. Meyer, 298-4825.

'59 FORD, 4-dr., R&H, V-8, automatic, best offer. Ezell, 268-4686.

ROBERSON 3-bdr., den, carpeted, electric kitchen, landscaped, sprinklers, private courtyard, Mitchell, Sandia schools, $17,500 FHA or assume VA. Martin, 299-1748.

LOT 72, UNIT III, Glenwood Hills, approx. 14,000 sq. ft., paid $5000, asking $4600, assessments extra. Frazer, 268-8109.

'61 CORVETTE, fuel injection, 4-spd, positraction, HT, red with w/w's. Keizur, 256-7958.

'63 NOVA CHEVY II sta. wag. std. trans., air, 28,000 miles, $1700. Gregory, 299-2461.

2-BDR. HOUSE, large patio, near bases, shopping and school. Davis, 299-0472.

'53 CADILLAC, R&H, w/w, hydromatic. PS, seat belts, antronic eye, '65 plates. Souther, 299-2964.

'59 and '54-'55 Olds and Merc. manuals; fireplace screen, folding; 15" wheels 2 Merc. and 1 Ford; 17" TV console. Erni, 255-8350.

GE APT. size refrigerator, $60. Chapman, 256-6632.

WATER HEATER, 40-gal, for LP gas, $12.50. Toya, 125 El Pueblo Rd. NW, 898-0491.

'54 FORD PICKUP, 8-cyl, std. shift, $300 cash. Sanchez, 242-4556 after 5:30.

THREE TABLES for $50: blond mahogany round cocktail table; lamp table, new; drum table; Early American lamp fixture. Avallone, 256-0403.

SCHWINN BICYCLE, thorn proof tires, $15. Hudson, 344-1154.

WANTED

TRADE: '63 VW sedan for VW bus of comparable value. Shea, 255-8092.

OWNERS MANUAL and/or shop manual for '59 Buick. Bassett, 898-1840.

HOME FOR spayed female, long-hair Tabby cat. Whited, 298-3807.

TWO WOMEN employed on Sandia Base to share 3-bdr. home. Snyder, 298-3577.

PORTABLE washing machine. Tessler, 344-1843.

WANT TO RENT 2-4 car garage for car club use. Comiskey, 256-0617.

RIDE to bldg. 806 from 900 Valencia SE. White, 255-4472.

PIANO: console or studio type, must be reliable name brand and in good condition, also interested in upright in good condition. Dickerson, 299-3449.

TAPE RECORDER 7 in. for dictation use, quality relatively unimportant, but need pause control and fast rewind/fwd. speed. Swain, 265-0098.

THREE more riders to join car pool from vicinity of Hoffman Dr. and Prospect NE to east end of Tech area I. Nevin, 298-0383.

TRADE B&S set 0-6 inches micrometers for lightweight hunting rifle. Adams, 268-5943.

YOUTH SKIS w/safety bindings, approx. length 5'9". Hart, 299-8832.

RIDE from 528 San Pablo SE. Dey, 256-1970

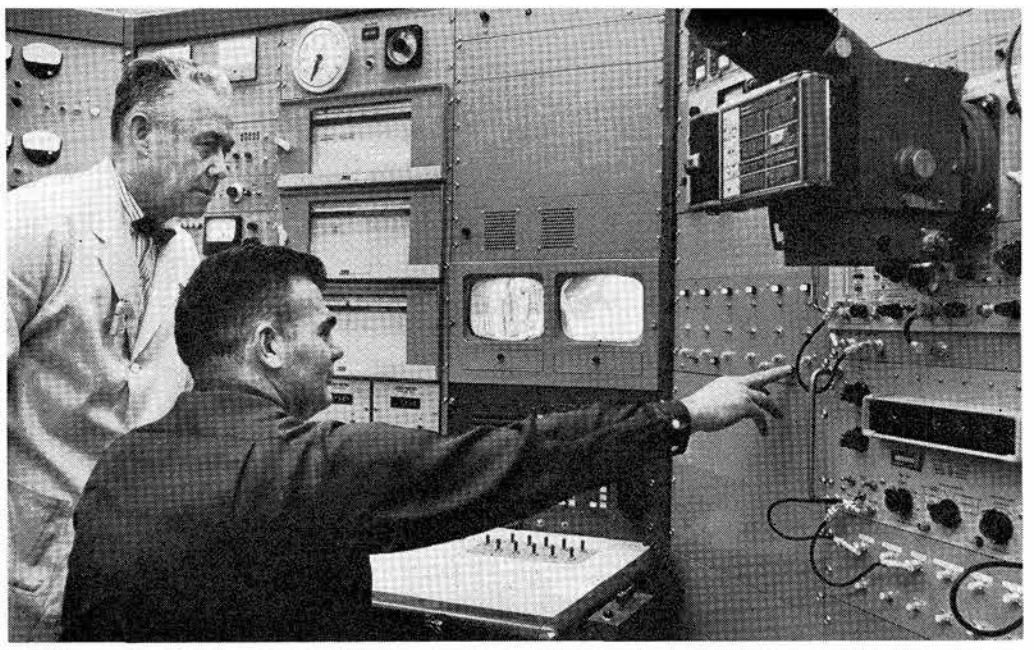
FOR RENT

UNFURNISHED 2-bdr. apt, stove and refrigerator, no children, one month free, $105, 945 B Louisiana SE. Weinberg, 268-4728.

LOST AND FOUND

LOST—Burner motorcycle helmet, car keys w/ Credit Union tag, tan leather glasses case, 1 pr. black fur lined men's gloves, 1 pr. brown pigskin men's gloves, 15 keys on large ring, prescription sunglasses w/white frames. LOST AND FOUND, tel. 264-2757.

FOUND—2 car keys on ring, man's brown leather glove, lady's black fabric glove, lady's red and white scarf, lady's figured scarf, single car key in tan case, gold ear clip, hubcap, lady's brown glove, key on ring, small ivory button w/ magnet. LOST AND FOUND, tel. 264-2757.



CONTROL CONSOLE of the Sandia Pulsed Reactor Facility provides for five different modes of operation of the fast burst reactor. Closed circuit television gives two views of the reactor and experiments which are conducted inside a shielded concrete hemisphere. At the console are Jennings Conant, left, and John Snyder of Reactor Division.

SPR Given New Versatility for Radiation Effects Experiments

Fast burst reactors, such as the Sandia Pulsed Reactor (SPR), normally have two modes of operation—super-prompt-critical bursts and low-power steady state operation. Through modification and innovations, Sandia Laboratory's Reactor Division has produced three additional modes of operation in SPR.

As described in a recent report issued by P. D. O'Brien, supervisor of the division, the new Sandia-developed operating techniques have increased the versatility of fast burst reactors and provided a significant contribution to reactor technology. The new methods of operation were developed by the organization to meet specific requirements of radiation effects experiments.

In a conventional burst operation, the reactor is assembled in a super-prompt-critical configuration. In this configuration, the reactor will pulse when triggered by spontaneous-fission neutrons. The time of burst initiation is unpredictable and may occur several seconds after the reactor is assembled.

Once triggered, the power level rises rapidly and "peaks" at about 7000 megawatts approximately 200 microseconds after initiation. This peaking occurs because of the prompt self-shutdown characteristic of the reactor which occurs automatically with the thermal expansion of the fuel assembly. Plotted on a power vs. time graph, the power spike has a half-width of about 50 microseconds and is followed by a one-megawatt plateau (called the burst "tail") which persists until the reactor is disassembled, or "scrammed." A nominal yield burst produces 2×10^{16} fissions, of which approximately 25 per cent occur in the tail.

Two features of the conventional burst are objectionable to an experimenter: (1) the uncertainty in initiation time makes it impossible to synchronize recorders and other diagnostic equipment with the burst spike, and (2) the 25 per cent of the total dose delivered to a sample during the tail is delivered at a dose rate four orders of magnitude below the maximum dose rate which occurs at the peak of the burst spike.

By adding a pulsed neutron source as the triggering mechanism, the Division demonstrated that programmed burst initiation is feasible and that initiation time could be predicted within a few microseconds. Since the response time of the scram mechanism is well known, it is possible to program the scram so that the reactor is disassembled coincidentally with the decay of the burst spike, thus eliminating the tail.

In addition to eliminating the tail, another benefit accrues. Since the total amount of energy deposited in the fuel is one of the factors which limits burst size, and since the energy released by the fissions which previously occurred in the tail no longer contributes to this total, it is possible to increase the number of fissions occurring during the power spike. Peak power, and consequently the peak dose rate, is doubled to a value of about 15,000 megawatts in a nominal burst.

According to Mr. O'Brien, the "tail-less" burst has been used extensively by radiation effects experimenters on the SPR. It was almost inevitable that an experiment would call for a "burstless tail" operation. This occurred in late 1964 when an experiment required a dose rate comparable with that achieved during the one-megawatt "tail" of a non-programmed burst. The requirement also specified that the dose rate continue for hundreds of milliseconds and be relatively unperturbed by large transients such as the initial power spike of a normal burst.

The SPR control system was modified to permit delaying the automatic scrams by a controllable interval up to about 250 milliseconds. The required rapid rise to power was achieved by generating very small bursts in which the peak power is only a few megawatts (as compared with 15,000 megawatts in a normal tail-less burst). With this procedure, only five to 10 per cent of the total dose received by a sample is delivered at a rate higher than that corresponding to the nominal one-megawatt power in the tail of a non-programmed burst.

The third new mode of operation, called "square-wave" mode, was developed to accommodate experiments for which high dose rates, relative to those for steady-state operation, are required. The control system was modified so that very fast, manually controlled reactivity changes are possible. Starting essentially from zero, reactor power is increased on a one-second period to 15 kilowatts and held, virtually constant, until the reactor is scrammed at the command of the experimenter or by an automatic fuel-temperature scram which terminates the square-wave after about 45 seconds at power.

These new modes of operation have accommodated a wide variety of experimental requirements, according to Mr. O'Brien. The capability for programmed initiation has been incorporated in the design of at least two new fast burst reactors at other installations.

Since June 1961, when SPR went into operation, some 3900 operations (more than twice the total for any other fast burst reactor) have been completed. The facility has been used for radiation effects studies of Sandia Corporation and also by experimenters of other government agencies.

Sandia's Safety Scoreboard

Sandia Laboratory:

8 DAYS
280,000 MAN HOURS
WITHOUT A
DISABLING INJURY

Livermore Laboratory:

174 DAYS
885,600 MAN HOURS
WITHOUT A
DISABLING INJURY

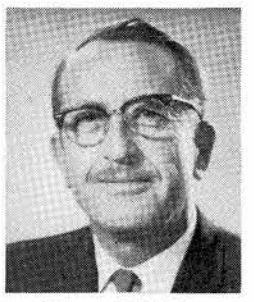
LAST MINUTE CHAMPS—Sandia's basketball champions emerged in the finals last week, losing the first game in the double elimination tournament, but bounded back to drop 7300 for the league crown 48-38, one of their most decisive wins. The champs established a 11 won, two lost record for the season but took most games by a narrow margin in the last few seconds of play. From left are Lou Sanders, Jim Hudson, Jim Freese, Dale McLachlan, Gil Baca, Al Disch, Dave Begeal, Bob Isidoro, Dick Bleyenberg, John Ayala, and Rea Chandler, coach.

E. H. DRAPER, Sandia Corporation Vice President, was opening speaker at the Eighth Value Engineering Workshop held recently at Sandia Laboratory. Mr. Draper stressed the need for continued cooperation with the Government's cost reduction program and emphasized the importance of getting dollar in value for every dollar spent. Mr. Draper recalled that the cost improvement program at Sandia started many years ago in Engineering organizations and quickly spread throughout the entire company. The two-week VE workshop will concentrate on methods employed to save and stretch out defense dollars.

Service Awards

15 Years

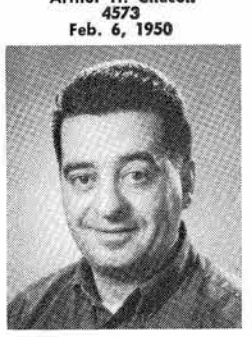
Arthur H. Chacon
4573
Feb. 6, 1950



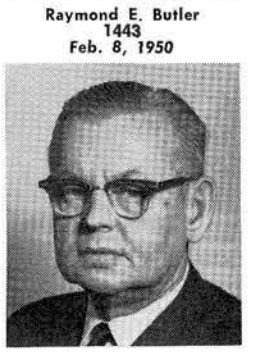
Raymond E. Butler
1443
Feb. 8, 1950

Mary M. Criswell
4112
Feb. 10, 1950

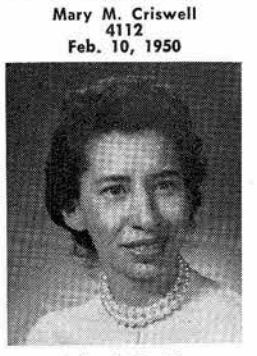
James M. Mesnard
5510
Feb. 12, 1950



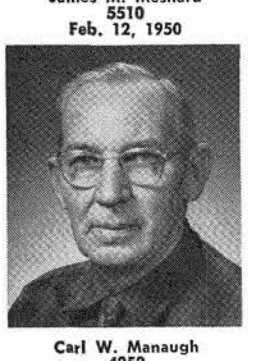
Samuel K. Tabet
4513
Feb. 13, 1950



Chester S. Wolowicz
8114
Feb. 13, 1950

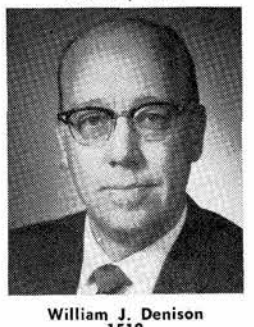


Anita E. Padilla
7300
Feb. 20, 1950

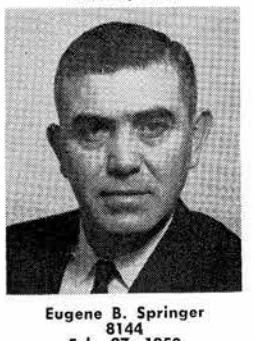


Carl W. Manaugh
4252
Feb. 22, 1950

Helen R. Smith
4400
Feb. 23, 1950



William J. Denison
1512
Feb. 27, 1950



Eugene B. Springer
8144
Feb. 27, 1950

Norman J. Renaud
8213
Feb. 27, 1950

10 Years

Feb. 13-28

Everett L. Westfahl 1411, Clarence H. Meyer 2213, Albert L. Gower 4541, John A. Anderson 1523, Kenneth S. McNabb 4573, Bernard Stiefeld 2543.

Donald J. Grab 1431, Thomas J. Williams, Jr. 1432, Robert L. Hannigan 2134, David L. Poli 2542, L. Alton Meador 2452, and William T. Owens 7324.