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SANDIA LABORATORIES • ALBUQUERQUE NEW MEXICO • LIVERMORE CALIFORNIA • TONOPAH NEVADA

Rain Erosion

Nosecones Get Peeled Noses Too

A group of Sandians will fire a series of six Terrier-Recruit rockets through storms off the Virginia coast starting next week. These flight tests, part of a continuing study for the Air Force Space and Missile Systems Organization, will gather data on the effects of rain, snow and ice particle erosion on missile nosecone and heatshield materials.

Launched from Wallops Island at an angle 35° above the horizontal, the Sandia rockets will achieve a velocity of about 9000 feet per second (about 6100 mph) by the time they gain an altitude of 10,000 ft. (within six and a half seconds). Following the flight, the payload with instrumentation will be recovered from the Atlantic some 22 miles southeast of Wallops Island.

The erosion of the nosecone material is measured by a novel method — small tracers of short-lived radioactive material are placed within the nosecone at predetermined depths and locations. A scintillator cell/photomultiplier tube system detects the decrease in total

radioactivity as each tracer is sequentially swept away by the airstream. Thermal sensors, magnetometers and accelerometers complete the instrumentation.

The payload recovery system consists of a ribbon pilot parachute, a guide surface main parachute and a ram air inflated flotation bag. The flotation bag holds the payload at the surface while a beacon transmitter emits a signal to aid the recovery operation.

During the rocket tests, meteorological data are gathered by radar systems at Wallops Island and by a special aircraft which flies through the storm to measure the rain, snow and ice particles. This meteorological support is provided by the Air Force Cambridge Research Laboratories.

Sandia has been involved in the program since 1971, firing a total of nine rockets into a variety of storms. All of these flights produced satisfactory data and eight of the nine payloads were recovered.

Ken Cole, supervisor of Geophysical Fluid Dynamics Division 5644 and project director for the rain erosion tests, reports that Sandia data gathered during these tests have provided a credible demonstration of the effects of particle erosion on missile materials. The studies have also provided direction for the Air Force in other investigations of aerothermal/particle erosion phenomena.

Rush Robinett (9310) is the Sandia Test Director for the rocket series. Meteorologists are Hugh Church and Jack Reed (both 5644). Larry Rollstin (5624) is the aerodynamicist responsible for the rocket systems; Bob Fellerhoff, Jack Bahlman and Jim Gallagher (all of 5623) are responsible for the mechanical design and assembly, and Don Johnson (5626) for the recovery system. Roy Lanes and Ken Shrock (both 9483) are responsible for the instrumentation. Bill Riggan (1411) designed the scintillator cell/photomultiplier tube system. • dg

Air Pollution Alerts

Meteorological conditions in Albuquerque during the winter months favor occasional temperature inversions, and smog — principally from automobile emissions — results. Depending upon the smog's severity, the city plans to call air pollution alerts and Sandia Labs, as

well as other employers, has been asked to urge employees to make car pool arrangements for riding to and from work during the alerts.

Since last spring, LAB NEWS has offered a computerized car pool service to readers, under which a tab run of

employees who reside close to each other is furnished to the interested employee. This service is still available and, if you are interested, we suggest you refer to your office copy of Sandia Bulletin, Vol. 24, No. 12 dated April 20, 1972, which carries complete information about this car pool service.

Afterthoughts

What's In A Week?--The Congress has tinkered with the calendar and a number of holidays so that by law many of these holidays now fall on Mondays, giving all us deserving citizens several 3-day weekends. It seems to me the precedent is thus set for us to examine the calendar itself, whose arrangement, after all, is at least partly arbitrary. Take the business of the 4-day vs 5-day work week, for example. People who have gone from the 5 to the 4-day schedule, while still putting in 40 hours, like the long weekends but concede that the 10-hour day gets to be a grind. Clearly, what is needed here is a different kind of week, I'd say one that is either 6 or 8 days long. In the 6-day week we'd work 4, have off 2 days. In the 8 make it 5 and 3. Another way of looking at this is in terms of the percentages of days at work and not-at-work for a "week":

Duration of Week	Days at Work	Days Off
7	5 (71%)	2 (29%)
7	4 (57%)	3 (43%)
6	4 (67%)	2 (33%)
8	5 (63%)	3 (37%)

The percentages suggest that a transition from the present 5 and 2 arrangement to, say, the 4 and 2 week would be much less abrupt than for a transition to the 4 and 3 week. It would be fun to name the new day in the 8-day week, but I sort of lean to the 6-dayer--we could stamp out Mondays.

* * *

Department of Curious Labels--On a bottle of cleanser: "Caution: Contains Synthetic Detergent." Not like Grandma used to make...

* * *

Whatever Happened to the Sensible Brogan?--Men, if you want to feel stodgy, take a look in a shoe store window. Heels are high, wide and wooden, looking like Carmen Miranda discards. Finishes are fuzzy or patent leather slick. Colors, well you can have most anything except brown or black. (You can have brown and black.) Even the humble sole becomes a fashion item--the climber's lugged sole, great for scrambling up mountains but of dubious qualification for strolling around the office, is suddenly chic. And buttons, bows, festoons, chains and rainbow-colored laces, batteries not included. Thomas Jefferson said, "In matters of principle stand like a rock, in matters of taste, swim with the current." Well OK Tom if you say so, I do incline to those fuchsia wedgies with the tassels...

*js

President Sparks Will Address AOA

Principal speaker at the Jan. 16 meeting of the Albuquerque chapter of the American Ordnance Association will be Labs President Morgan Sparks. Mr. Sparks' topic: "Living With Nuclear Weapons."

Harold Jeblick (1831) states that the meeting will be held at the O-Club, Kirtland West, and will start at six with a cocktail hour. Dinner (prime rib) will be served at seven. AOA members, wives, and guests are invited. Reservations may be made in advance but attendance is limited to 200. Tickets are \$5.50 per person and should be spoken for by today, Jan. 12. Call Harold, or Jack Hansen (7500), or John Dishuk (1651) if you are interested.

'73 Holidays

Feb. 19, Monday, Washington's Birthday
 April 20, Friday, Good Friday
 May 28, Monday, Memorial Day
 July 4, Wednesday, Independence Day
 Sept. 3, Monday, Labor Day
 Oct. 22, Monday, Veterans Day
 Nov. 22, Thursday, Thanksgiving
 Dec. 24, Monday (1/2 day), Christmas Eve
 Dec. 25, Tuesday, Christmas Day



CHECKS worth \$158,909.96 were presented to representatives of the health maintenance organizations as comprehensive prepaid health service programs became effective Jan. 1 for some 3300 Sandia Albuquerque employees and their 9000 dependents. In top photo, Dave Tarbox (3200), left, and Tex Ritterbush (3242), right, present check to Robert Gettys, president of New Mexico Health Care Corporation (Mastercare). In lower photo, recipients of Sandia's check are David Wilson, group representative for The Equitable Life Assurance Society which underwrites the Lovelace-Bataan Health Program, and David Vogel, Lovelace-Bataan Health Program manager.



Events Calendar

- Jan. 13-14 — NM Ski Touring Club, Chama area, Gulf Mart, 7 a.m.
- Jan. 20 — Albuquerque Symphony Orchestra, Popejoy Hall, 8:15 p.m., 277-3121.
- Jan. 20 — NM Mt. Club, Jemez Red Rock area, Gulf Mart, 8:30 a.m.
- Jan. 20 — NM Ski Touring Club, San Pedro Parks, Gulf Mart, 7:30 a.m.
- Jan. 21 — NM Mt. Club, snowshoe hike in Sandias, Western Skies, 8:30 a.m.
- Jan. 23 — ASUNM Lecture Series, Charles Evers, Mayor, Fayette, Miss.; civil rights leader, Popejoy Hall, 8 p.m.
- Jan. 24 — Broadway hit "Sleuth," Popejoy Hall, 8:15 p.m., 277-3121.
- Jan. 25 — Travel Film, "Trails of the West" (NM to Alaska), Popejoy Hall, 7:30 p.m.
- Jan. 26-28 — Albuquerque Little Theater, "Dangerous Corner," Jan. 26 — 8 p.m., Jan. 27 - 6 & 9 p.m., Jan. 28 - 2 & 8 p.m., 242-4750.

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SANDIA LABORATORIES

An Equal Opportunity Employer
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 as does norma taylor while
 bill laskar takes/makes pictures

&
 in livermore lorena schneider does all

High Ratings

Labs Educational TV Successful

"For the first time, relevant education is available at our doorstep."

"The TV link is an extremely good system, and I would like its use expanded."

"Any shortcomings in the system are insignificant compared to the time and expense of commuting to campus. The quality of the education process does not suffer to any measurable extent."

These are typical comments gained in a survey conducted among technical staff members and supervisors enrolled in Sandia/Livermore's educational television program. They are now viewing graduate engineering and science courses via live, closed-circuit TV from both the University of California at Davis and Stanford University.

In 1971, a relay system was installed on a microwave tower atop Mt. Diablo to beam signals from the UC/Davis campus to the LLL television center and then on to Sandia via cable. This past September, an additional relay system was installed to beam television signals from the Stanford campus. Signals from the Stanford campus are beamed to a microwave tower on Black Mountain (near Los Altos), then across San Francisco Bay and on to the Mt. Diablo tower.

During the current academic year eight Davis courses, a like number of Stanford courses, as well as several video-taped programs from other sources, are being offered to Sandians. A total of up to 75 viewing hours is programmed each week by the SLL television center located in Mobile Office No. 4. Here special TV classroom facilities, designed by Art McMullen of Telemetry and Instrumentation Systems Division 8183, make it possible to receive simultaneously several classes for individuals or small groups. Printed information handed out to students on campus can be transmitted by means of a telecopier to the Sandia classroom and distributed within minutes so that all students receive the same instructional material.

Classrooms in the Livermore facility are so set up that students can talk freely among themselves, as well as with the professor on campus, as in a regular classroom situation. Another feature of the system permits a student to consult privately with faculty members on one of the nine TV monitors installed in faculty offices; facilities affording this capability are located at LLL.



A STANFORD UNIVERSITY materials science class in progress in Sandia/Livermore's educational television facility. Designed by Art McMullen (8183), the facility incorporates video-tape recording and a solid-state, electronic switching system that makes it possible to receive several different classes simultaneously on the 13 monitors.

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Overall, however, the opportunity to make up missed classes is decidedly one of the big plus factors. All live classes are video-taped in the Sandia television center for such make-up use.

Training specialist Jim Smith of Benefits Division 8236 notes that most students find the Sandia ETV classroom to be most conducive to learning and concentration because it is devoid of usual campus classroom distractions. "Use of the individual nine-inch monitors, the padded head sets, and the talk-back feature," he says, "promotes attentiveness and leaves the student with the feeling of directly interacting with the instructor."

The amount of time used by Sandians under the Educational Aids Program has decreased significantly. Savings from first-year reductions in travel time have offset much of the initial cost of the ETV equipment and facilities.

Design of the Livermore/Davis system is being adopted by the University of California as a trial model for its Extended University System under which off-campus degree programs will be offered to adult students throughout California. Western Electric's corporate education center in Princeton, N.J., has also expressed interest in the Sandia/Livermore ETV facility.



GRAND PRIZE WINNER in the "Security Is..." Poster/Caption Contest held monthly at Sandia/Livermore over the past year is Tony Thompson (8313), left. His winning entry, "Security Is Responsibility Switched On Every Day," entitled him to an all-expense paid, round trip to Livermore's Crosswinds Restaurant recently for lunch with Security Department Manager Marv Glaze (8260). The contest was part of the Laboratories' continuing security education program.

Authors

Mike Birnbaum (8352) and Dave Dean (8343), "The Application of Structural Analysis to Electrical Component Vulnerability," Vol. 2A, No. 4, JOURNAL OF DEFENSE RESEARCH.

Bob Huddleston (8321), "Variable-Step Truncation Error Estimates for Runge-Kutta Methods of Order 4 or Less," Vol. 39, No. 2, JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS.

Bill Ashurst (8354), Bill Hoover (LLL), and Dick Grover (LLL), "Exact Dynamical Basis for a Fluctuating Cell Model," Vol. 27, P. 1259, JOURNAL OF CHEMICAL PHYSICS.

Tony Thompson (8313), "The Influence of Grain and Twin Boundaries in Fatigue Cracking," Vol. 20, pp. 1085-1094, ACTA METALLURGICA; "Calculation of True Volume Grain Diameter," Vol. 5, pp. 366-369, METALLOGRAPHY.

Tony Thompson (8313), and B.A. Wilcox (Battelle), "Deformation and Fracture of Dispersion-Strengthened Nickel Charged with Hydrogen," Vol. 6, pp. 689-696, SCRIPTA METALLURGICA.



Visibility for the Invisible

An alcoholism program needs visibility. All of us, particularly those who suspect they have a drinking problem, need to be aware of what Sandia's five-month old program is doing — and how.

This then is a status report on the Labs' program to help employee alcoholics. Because identities of people in the program are zealously guarded, this story does not mention names — not even the names of those who have successfully reversed the progress of the illness. They'll never be cured, in the usual sense of the word. Like the diabetic, the alcoholic must learn to exercise a special kind of care for the rest of his life.

But alcoholism can be, and is being, arrested. Sometimes the alcoholic can fight the battle alone. Just like the other illnesses, the earlier it's identified, the better the chances for rehabilitation. Alcoholism is an insidious disease — by the time you admit to yourself that you just might possibly have a problem maybe, you may well be over the line. We all have a fantastic ability to kid ourselves — and the hazy distinction between social drinker and problem drinker reinforces a drinker's conviction that he still falls in the "social" category. The Johns Hopkins University Hospital developed the quiz on this page, and it's used on our alcoholism program to help potential alcoholics face the problem squarely — and early.

But the ego of Sandians is high — especially among the professional staff. "The alcoholic's chances of successful rehabilitation seem to be inversely proportional to years of formal education," says Jim Kelly (3301), the program administrator. "It's hard for a PhD to admit — even to himself — that he needs help from anyone. They seem to view seeking help as humiliation rather than as an intelligent act — doing something positive about a respectable illness."

Nevertheless several scientists and engineers are among the Sandians currently enrolled — and, incidentally, doing great. Before the program was formally announced last August, 19 alcoholics had been identified and were receiving treatment for the illness. Since then, that number has risen to 52. Most of these are at Sandia Albuquerque, but Livermore and Nevada locations are also represented — which says the program coordinators — Joe Darginis and Sid Thomas — are doing their jobs at each place.

Each of the 52 pursues a program of treatment worked out with his or her program coordinator. Treatment may involve professional counseling, attending AA

meetings, going to a special clinic, or some combination of these. "And some great things are happening," says Jim. "We're making progress. The thing is, it's a people-to-people program. Sure, Sandia is going to benefit if we can restore an alcoholic — if we can help him work up to his potential again — but all of us — the coordinators — are personally and

deeply involved with our people.

"We're on call 24 hours a day. We want to be there when an alcoholic hits bottom — and that's more likely to happen at two Saturday morning than at two Wednesday afternoon."

All three counselors know alcoholism, and they're easy guys to talk with. They try — hard — not to take credit for the successes. And they try not to blame themselves for the failures. "But you know," says Jim, "when one of our people doesn't show up on Monday morning, I get a feeling in the pit of my stomach just like I once got for a security infraction."

Suspension and termination are, in a sense, part of the treatment too. Relapses have to be dealt with consistently, and suspension is often enough to convince the alcoholic that he does indeed have a problem. And the threat of termination, when it's not an idle one, is enough to motivate most people to seek the help they need to arrest the disease. So both suspension and termination are a kind of necessary, albeit painful, treatment; they help the alcoholic strike bottom and head back for the top again.

As Jim points out, the program is doing good things for those alcoholic Sandians who have asked for help or who have been referred by their supervisor. "It's the others we're worrying about — we can't help them till we know who they are. And we've got to depend primarily on supervisors for referrals." The referral task is especially difficult for the supervisor who is also a close friend of the person who may be an alcoholic. He usually tries his best to avoid letting the employee even suspect that he suspects a problem. And, of course, that means the alcoholic goes on kidding himself that his problem must not be serious — after all, his supervisor hasn't said a thing about it.

So the supervisor has a key role in the program. Each has attended or will soon attend a conference with the program coordinator in his location. The conferences provide information on the program. They also help supervisors get prejudices and biases about alcoholism out into the open.

At that point, the supervisor can better accept the challenge posed by an employee whose job performance suggests a drinking problem. It's a difficult challenge to accept, but it's a vitally important one — for Sandia, for the organization, and, most of all, for the person whose life is beset by this affliction. •bh

Johns Hopkins University Hospital in Baltimore uses the quiz below in helping a patient decide whether he's an alcoholic:

1. Do you lose time from work due to drinking?
2. Is drinking making your home life unhappy?
3. Do you drink because you are shy with other people?
4. Is drinking affecting your reputation?
5. Have you ever felt remorse after drinking?
6. Did you get in financial difficulties as a result of drinking?
7. Do you turn to lower companions in an inferior environment when drinking?
8. Does your drinking make you careless of your family's welfare?
9. Has your ambition decreased since drinking?
10. Do you crave a drink at a definite time daily?
11. Do you want a drink the next morning?
12. Does drinking cause you to have difficulty in sleeping?
13. Has your efficiency decreased since drinking?
14. Is drinking jeopardizing your job or business?
15. Do you drink to escape from worries or troubles?
16. Do you drink alone?
17. Have you ever had a complete loss of memory as a result of drinking?
18. Has your physician ever treated you for drinking?
19. Do you drink to build up your self-confidence?
20. Have you ever been to a hospital or institution on account of drinking?

One YES answer is a definite warning. Three YES answers suggest alcoholism.

On to Rio, Vegas & Spain

The Rio trip is go! At the last minute Bud Wheeler (3251), Club travel director, found a group of lawyers from San Antonio, Texas, to share the plane. He says he can take a few more Club members, but at this point the trip is all set for Feb. 18-25.

Las Vegas, Nev., is the destination Feb. 1-4. This package is open to Club members, friends and relatives. The group will leave Albuquerque at 11:20 a.m. Feb. 1 via Frontier jet, enjoy a steak luncheon and champagne en route and arrive in Las Vegas at 11:37 Nevada time. The package includes three nights at the Castaways, a prime rib dinner and wine there, and a late show at either the Sands, Frontier or Desert Inn. The group will leave Las Vegas Feb. 4 at 12:45 p.m., arrive back in Albuquerque at 2:45 p.m. Price of the package is \$129 per person for couples, \$154 for singles. Payment is due at the Club office Monday, Jan. 15.

Twenty Club members have already signed up for the trip to Malaga, Spain, set May 17-25. The package includes eight days at the new deluxe Holiday Inn at Malaga in the beautiful Costa del Sol area of Spain's Mediterranean coast. The Club is sharing the plane with the Elks Club and already more than half the plane is sold. The price is \$345 per person for double occupancy and a \$100 deposit is due at the Club office right away. Final payment is due March 1.

Bud reports that a trip to Italy — Rome, Venice, Florence, Capri — is in the planning stages for late September or early October. He's trying to arrange about 19 days at a reasonable package price. Final plans will be announced when they're nailed down.

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Materials Science Lecture Series

Effects of atomic arrangements on the physical and electrical properties of materials

January 11	Polymers	A. Keller, University of Bristol
January 18	Amorphous semi-conductor materials	A. Bienenstock, Stanford University
January 25	Amorphous semi-conductor materials	Morrel Cohen, University of Chicago (on leave to Cavendish Laboratory)
February 1	Domain structure in ceramics and alloys	S. Amelinckx, Centre D'Etude Nucleaire, Belgium
February 8	Ceramics/Glasses	G. Smith, Corning Glass Works
February 15	Semi-conductor materials	W. Shockley, Stanford University
February 22	Metals and Alloys	A. Seeger, Max Planck Institute, Stuttgart, Germany

Effect of atomic defects on the mechanical properties of materials

March 1	Polymers	P. Lindenmeyer, Boeing Scientific Research Labs
March 8	Metals and Alloys	D.K. Wilsdorf, University of Virginia
March 15	Ceramics/Glasses	R. Douglas, University of Sheffield

Effect of structure on the mechanical behavior of materials

March 22	Composite Materials	A. Kelly, National Physical Laboratory, Teddington
March 29	Metals and Alloys	M. Cohen, Massachusetts Institute of Technology
April 5	Metals and Alloys	M. Ashby, Harvard University
April 12	Eutectic Composites	R. Hertzberg, Lehigh University
April 19	Ceramics/Glasses	R. Charles, General Electric Company
April 26	Polymers	A. Peterlin, Research Triangle Institute

Effect of strain-rate and temperature on properties of materials

May 3	Metals and Alloys	J.C.M. Li, University of Rochester
May 10	Polymers	J. Hoffman, National Bureau of Standards

Distinguished Speakers Featured

A Nobel Prize winner, Dr. William Shockley, is among the 18 nationally and internationally known lecturers in materials science speaking at the Kiva at UNM this winter and spring. The series is sponsored by three universities — UNM, NM Institute of Technology, and NM State University — and by Air Force Weapons Lab, Los Alamos Scientific Lab, and Sandia Labs. These six institutions are inaugurating New Mexico's Joint Center for the Study of Materials Science, an outgrowth of the Governor's Committee for Centers of Excellence. The sub-committee to establish the Joint Center was chaired by Charles Stein, a former San-

dian. Dick Claassen (1400) is the current Sandia representative.

The lectures began Jan. 11 and continue through May 10. Each program consists of a review lecture on the topic, from 4 to 5:50 p.m., and a current research lecture, from 7 to 8:30 p.m. The 160 Sandia Labs tickets are intended primarily for members of technical staff in Orgs. 1300, 1400, 1900, 5100, 5300, and 5500. Sandians in these organizations should see their administrative assistants for tickets; persons not in these organizations should contact Jack Hueter (3131) at ext. 6508 for information on ticket availability.



BIENVENIDOS — President Sparks welcomed two members of New Mexico's congressional delegation to the Labs for briefings during the Christmas period. At left, he greets Congressman Manuel Lujan.

Above, with H.C. Donnelly, Manager of the AEC's Albuquerque Operations Office, he talks with Senator Peter Domenici.

Credit Union Reporter

By Bill Bristol, General Manager

The Credit Union closed its books for 1972 after registering another record-shattering year in almost all areas of volume and growth. Total assets climbed to \$16,555,802, an increase of \$1,969,628; up 13.5%. Shares increased \$1,596,999; up 12.7%. Outstanding loans at year end stood at \$12,319,379; an increase of \$1,078,606, up 9.6%. During 1972, 10,397 loans were made totaling \$17,292,301. This is an increase of 12.2% by number and 23.7% by amount. This phenomenal increase in loans was reflected by an increase in gross income to \$1,221,747 as compared to \$1,050,671 for 1971. Expenses remained well in line, dropping from 27.5% of gross income in 1971 to 26.3% in 1972; approximately 10% below the average of all Federal Credit Unions. The following financial statement gives a more detailed picture of where we stood at the end of the year.



ASSETS (What we own)	
Cash and Certificates of Deposit	\$ 714,282
Loans to Members	12,319,379
Investments	3,214,593
Building and Equipment	173,508
Other Assets	134,040
Total	\$16,555,802

LIABILITIES (What we owe and net worth)	
Shares	\$14,136,926
Notes Payable	1,000,000
Other Liabilities	27,340
Reserves	1,118,065
Undivided Earnings	273,471
Total	\$16,555,802

Statements for the last quarter of 1972 were sent out a few days ago showing all share and loan activity during the last quarter. In addition, the statements show total interest paid on loans and total dividends credited during the full calendar year. These amounts are reportable for tax purposes for the 1972 tax year. Since these statements show all the information needed for tax purposes, individual 1099 forms will not be sent out.

At first glance your total dividends may appear to be excessive. However, beginning with the first quarter of 1972, dividends are now credited on the last day of the quarter rather than the first day of the following quarter. Therefore, the amount shown includes the four quarters of 1972 plus the dividend credited Jan. 1, 1972, covering the last quarter of 1971. Federal law requires credit unions to classify this income as dividends but for tax purposes it is considered ordinary interest income. Please remember the Credit Union does not receive payroll deductions on monthly-paid employees in December and your statement will not show any credit to loans or shares from this source.

At the December meeting the Board of Directors declared the fourth quarter dividend at an annual rate of 6%. This makes the fourth consecutive year your Credit Union has paid a 6% dividend, the maximum allowed by law. For the past two years dividends have been paid quarterly, resulting in an effective rate of 6.13% if earnings are compounded. Total dividends paid for 1972 amounted to \$776,384 as compared to \$667,848 for 1971.

In the Dec. 8 issue of the LAB NEWS the Credit Union announced it was sponsoring a Federal Income Tax Course starting Jan. 10. The cost of the course is \$10.00 which includes the textbook, Commerce Clearing

House's "Master Tax Guide." The class size is limited to 35 students and there are still some openings. Although the first session has already been held, there are nine more 2 1/4 hour sessions. Anyone interested in enrolling can do so by contacting Bill Bristol or Red Turner at the Credit Union.

The 25th Annual Meeting of the membership of Sandia Laboratory Federal Credit Union will be held at 5:30 p.m., Thursday, Jan. 25, 1973, at the Coronado Club. All members are urged to attend and take an active part in the election of Directors and Credit Committee members. Each member attending will receive a gift and a chance on the two portable color television sets offered as door prizes. Refreshments will be served immediately following the meeting.

Sympathy

To David Gomez (9443) on the death of his mother in Santa Fe, Dec. 7.

To Cecil Mock (7434) on the death of his father in Colorado, Dec. 20.

To Linda Chavez (6011) on the death of her father-in-law, Dec. 22.

Speakers Bureau

Talk Is Cheap — And Important

Sandians talk a lot. They cover subjects from ablation to zero-rate springs, from sonic booms and the history of Sandia Base to unidentified flying objects and extrasensory perception. Some of this talk is formal, organized, and requested. It arises as a result of an activity called the Sandia Speakers Bureau.

Outside groups that need speakers contact Phyllis Wilson who runs the Speakers Bureau in the Public Information Division 3161. She in turn locates a Sandian whose talk is appropriate for the requesting group.

Phyllis keeps on hand a list of speakers, their topics, and an explanatory sentence or two about each topic so that she has a guide to refer to when the calls come in.

She sends the non-technical portion of the list to each of Albuquerque's service clubs; they tend to be voracious consumers of speeches.

So do the schools. As career education grows, so grows the need for people willing to talk with students about their chosen fields.

The service has benefits all the way around — clubs and classes hear speakers discuss subjects they're interested in; the speakers get a chance to show off their elocutionary skills

Take Note

Stu Asselin (1652) was recently awarded his MS degree in nuclear engineering from the University of New Mexico. He completed the work under Sandia's Educational Aids Program. Stu has been at the Labs since 1958, working on weapons projects and weapons safety. He earned his BS in engineering from Stevens Institute of Technology, Hoboken, N.J. He is a member of the American Nuclear Society.

Attention Southeast Albuquerque Sandians — Do you live near Kathryn SE between San Mateo and Louisiana? Are you interested in city bus service to and from work? Then send your name, home address, and average number of days per week you'd ride the bus to: Kathryn Bus, Div. 3162. If there are enough responses to justify extending the present route (which now heads downtown) into Sandia, you'll have a convenient, economical and unhassled means to get to work and back. Please respond by Jan. 22.

YWCA Offers Evening Classes

The Albuquerque YWCA begins several Wednesday evening classes on Jan. 17: an all new Indian Arts lecture series; beginning, intermediate and advanced painting; Southwest cooking; ceramics; exercise; stitchery and embroidery; and a brush-up bridge course. Classes will be held at Christus Victor Church, 1300 Pennsylvania Ave. NE in the Winrock area.

Class booklets are available at the YWCA, 316 Fourth St. SW. For more information, call Mrs. Holtzworth at the YWCA.



and to share knowledge of a subject that interests them (they almost never get paid); and Sandia itself gains community good will. The Bureau arranges two to four talks per week.

"I'm revising the speaker list now," says Phyllis. "Some of the subjects aren't very current anymore — and some of the speakers are tired of giving the same talk over and over. So this is a good time for other Sandians to get on the list — just give me a call and we'll talk about it." She's at 4-4207.

Sandians and Big Blast

A blast and shock experiment involving several Sandians took place near Grand Junction, Colo., on Nov. 13. Sponsored by the Defense Nuclear Agency under Lt. Col. A.L. Knapper of KAFB, the event, titled Mixed Company, was aimed primarily at gaining cratering and ground motion data. It was also a weapons effects test, with the one million pounds of TNT simulating the airblast of one kt nuclear explosion.

The HE was composed of cast TNT blocks configured in a 27-foot diameter sphere. The sphere's center was located 13 1/2 feet above the ground, with the various targets (tanks, helicopters, personnel and aircraft shelters, etc.) deployed around ground zero.

Primary role played by Sandians was to provide airblast safety prediction services. Under Jack Reed (5644), the group was responsible for defining weather conditions under which hazards and off-site damage would be minimal. The group therefore made the weather observations and forecasts critical to determining the actual shot time and to this end, conducted a weather-watch at the Grand Junction Airport some 18 miles from the test site. Rawinsonde balloons, launched from the airport, provided temperature, wind direction, and wind velocity

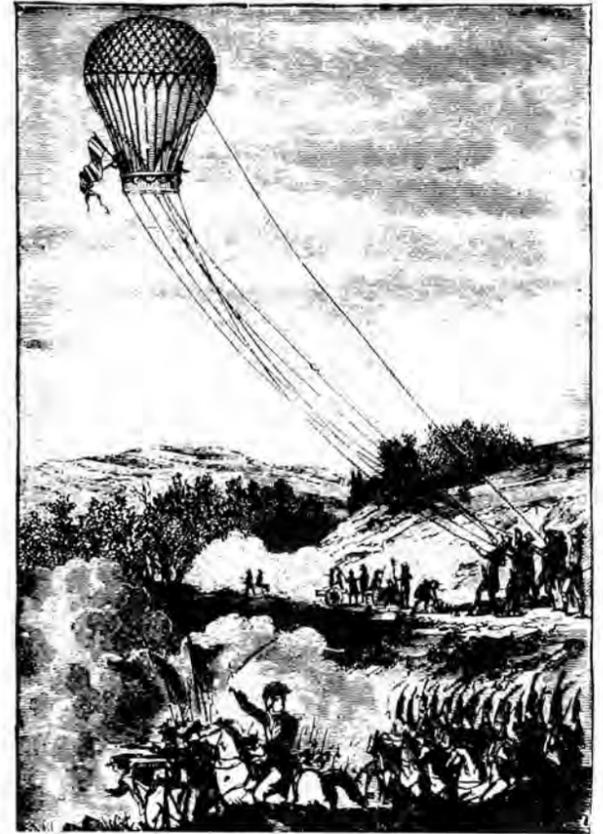
data from ground level to 30,000 feet. Such data are needed because under certain combinations of wind, temperature and altitude the explosion energy is refracted, ducted, or even focused, and damage at distances well off-site may result.

The shot, postponed twice because of rain and mud at the test site, went off at 11:40 a.m. on Nov. 13. It produced a crater slightly smaller than anticipated but did furnish useful data on weapons effects.

The Sandia group monitored the effects of the blast by making microbarograph measurements at six stations located 3 to 45 miles from ground zero. None registered unexpected (or damage-producing) overpressures. Al Church (9132) was in charge of the microbarograph operations.

In addition to Jack and Al, Don McFadden, Don Browning, Ray Mosteler, Freddie Shoemaker, and Ray Peabody (all 9132) were involved with the airblast safety predictions and measurements.

Two other services were provided by Sandians. In an intermediate range blast study under Luke Vortman (9111), the airblast was measured in the region between the close-in measurements made by the military and the region covered by Jack's group. Bobby Holt (9123) was in charge of making the



BALLOONS are still important data-gathering devices.

measurements; Stan Dains (9124) came in from NTS to assist.

Another study involved measuring the optical/thermal output from the HE detonation. Gene Acton and Ray Dzamba (both 9215) participated in this study. • bh

JUNK • GOODIES • TRASH • ANTIQUES • KLUNKERS • CREAM PUFFS • HOUSES • HOVELS • LOST • FOUND • WANTED • & THINGS

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

RULES

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

FOR SALE MISCELLANEOUS

- ALUMINUM Windows, 2x2, \$4, 3x3, \$7; aquariums w/gravel & reflector, 5-gal., \$7, 10-gal., \$13. Zaffery, 299-6939.
- SEARS oven broiler, used twice, new \$28, sell \$20. Brinegar, 299-7887 after 5:30.
- TAPE RECORDER, Craig 212, 2-spnd., solid state DC, \$20. Officer, 298-3318.
- FRIGIDAIRE elec. range, 30", white. Aeschliman, 298-7846.
- EIGHT FOOT Aspen non-cabover camper, stove, oven, sink, icebox. Hamilton, 255-4027.
- INDIAN JEWELRY, concho belts, Zuni needle-point necklace. Atkins, 266-4408.
- KEYSTONE Mo. 511 auto. slide projector, F3.3 lens, 500 watt, extra trays, \$25. Meikle, 299-4640.
- ROCK TUMBLER w/6-lb. capacity, used for one batch, \$20. Henry, 266-6467.
- SNOW TIRE, D78-14, Sears Dynaglass whitewall, \$8. Sherwood, 299-2169.
- ANTENNA TOWER, port., 75', folds to about 10', lt. wt., weighs about 100 lbs. Martin, 877-7989.
- IMAC SK506 glass chimney, new, \$6; assorted crystal & dynamic microphones. Richardson, 268-7843.
- TWO NEW black bar stools w/metal legs & padded seats, \$6 ea. Miller, 255-1324.
- REVOLVER, Smith & Wesson combat masterpiece, 38 spec., target grips holster, \$80. Parks, 296-2261.
- CAMPER SHELL for short wide bed, \$100. Bland, 298-8459.
- LEFT HAND men's golf clubs, 1, 3 & 5 woods, 3, 5, 7 & 9 irons, bag, putter, \$35. Bonahoom, 296-4450.
- DIAMOND engagement-wedding ring set, diamond graded 0/0/0 A.G.S.; appraised at \$600, sell for \$425. Falacy, 344-9548.
- VINYL recliner chair, needs upholstery repair, \$10; 2 26" girl's bicycles, \$10/ea. Peabody, 296-6239.
- STOCK RACK, fits lwb Dodge, steel pipe, \$20. Mautino, 877-4346.
- 140 FEET of 5' chainlink fence complete w/posts, drive-in gate & hardware; GE port. dishwasher. Maestas, 345-3292.
- SMITH Corona port. elec. typewriter, 12" carriage, \$50. Pope, 255-6702, 816 Val Verde SE.
- HAMMOND Extravoice organ, walnut finish, bench & music included, \$190; motorcycle helmet, lg. 7-3/8, SHCA approved, \$12. Key, 298-7988 after 4.
- '72 APACHE MESA solid state camper, blower heat, gas/AC/DC refrig., double gas, 12V battery, other extras. Romine, 299-4114.
- PEEK-POO PUPPIES, 7 wks. old, male & female. Newsom, 299-2074.
- 1/4-CARAT diamond solitaire ring plus matching band. Shepherd, 299-1507 after 6.
- GM infant (0-9 mos.) auto carrier,

- \$7; Beard, 298-9441.
- HOLLYWOOD head board, aquatuff, reg. bed frame, springs, mattress, \$50. Myers, 256-0642.
- RCA 18" Vista color TV, \$195. Lenz, 298-9121.
- AM-FM stereo tuner, Realistic model TM-8D, orig. price \$100, sell for \$35. Laval, 898-0518.
- TRANSPORTATION**
- '71 DATSUN 240Z, 1 owner, R&H, belted tires, 26,000 miles, \$3500. Shock, 877-3728.
- '68 VW stn. wgn., microbus, trailer hitch, radio, less than 42,000 miles, \$1695. Kaiser, 296-5215.
- '66 DODGE Polara wagon, AT, AC, PS, PB, radio. Nunez, 256-3492.
- '62 LINCOLN Continental sedan, low mileage, \$1200. Smitha, 266-9977.
- '59 FORD pickup, 64,000 miles, 4-spnd., short bed w/8' raise-up camper that sleeps 2, \$900. Lackey, 898-5175.
- '64 IMPERIAL Le Baron, all power, hitch, extra-heavy springs for lg. tow load, \$600. Norris, 299-4717.
- '70 VW Squareback, under book at \$1675, Shunny, 265-1620.
- '68 FORD F250 camper special, V8 custom, fully equipped w/Travel Queen camper, self-contained, newly decorated, both AC. Key, 298-7988 after 4.
- GIRL'S 20" bicycle, Sears spyder type w/banana seat, \$20. Gentry, 296-5876.
- '71 HONDA 450 street model w/faring & luggage bar. Roberts, 298-3062 after 4:30.
- 1930 MODEL A tudor sedan, new paint, top, windows & seat covers. Young, 298-6927.

- BOY'S OR GIRL'S 16" bicycle w/training wheels, \$20. Paul, 296-6500.
- '67 MERCURY Brougham, PS, PB, P windows, P seats, auto. dimmer switch, speed control, A-track tape deck. West, 268-6464.
- '68 1/2-ton CHEV. pickup, V8, AT, lwb, insulated shell, \$1600. Russell, 298-4949.
- '66 CORVETTE fastback w/all factory optional equip. Snelling, 268-5895.
- 10-SPD. BICYCLES: wide price range. Kjeldgaard, 296-2212 after 5:30.
- '54 WILLYS JEEP, metal cab, 4-wd., new motor, 6 wheels & tires, at Pie Town, \$800. Berlier, 864-8825.
- '68 VW BUG, 32,000 miles, stereo tape deck. Ballard, 299-4530.
- '67 CUTLASS wagon, V8, std. trans., \$925; 4 new seat belts, \$10. Schwiner, 281-5207.
- '58 WINDSOR engine in dune buggy, \$35; 64 Impala 427, 4 on floor, bucket seats, new Sears battery, \$380; 350 Honda; skis. 344-0361.
- '64 FORD Falcon, 4-cyl., 3-spnd., air, radio, front bucket seats, 44,000 miles. Hernandez, 268-5000.
- '72 CAPRI 2000 w/R&H, decor group, stereo, 4-on-the-floor, low mileage, dark green. Mares, 296-7145 evenings.
- '61 PLYMOUTH stn. wgn., 9 pass., V8, R&H, std. trans., new battery & alternator, \$175 or best offer. Clark, 298-4913.
- '69 DODGE Polara, 4-dr., AT, AC, PS, one owner, 44,000 miles. Schamaun, 298-5192.
- 20" BOY'S BIKE, Murray, thorn-proof tires, \$15. Lang, 299-8934.
- '68 TOYOTA Corona, 1900cc, 2-dr. H.T., 4-spnd. trans., below

- book retail, includes 2 extra wheels. Vigil, 296-3590.
- WANTED**
- SOFA or sofa bed in good structural condition, fabric condition is unimportant. Nelson, 867-2746.
- 14' ALUMINUM fishing boat. Skogmo, 898-6013.
- TO RENT: 3-bdr. home for 6 mos. period beginning 2/1/73, family of three, no small children. Birdsong, 299-3529.
- BABYSITTER wanted for nights from 5 to 11 p.m., please furnish own transportation, prefer older woman or college student. Hodges, 294-4427.
- WILL TRADE hay for calves. Patterson, 877-3158.
- BOAT, tri-hull open bow, 16-18', 2-4 yrs. old, inboard/outboard preferred, water skis, ski belts, etc. Chandler, 296-3323.
- 3 TO 6 HP gasoline engine, 3/4" horizontal shaft for go-kart. McClelland, 296-3661.
- MERCURY tester for leak check on gas pipe. Zaffery, 299-6939.
- NEED RIDE Quemado, NE — Bear Canyon Village — to Area I. Neiswander, 294-1312.
- FOR RENT**
- HOUSE FOR LEASE, 6 mos. min., 3-bdr., 1-3/4 bath, \$190/mo., first, last plus \$100 damage deposit required. Bartlett, 299-4861.
- LOST AND FOUND**
- LOST — Man's gray sweater, gold cuff link w/Nat'l. Rifle Assoc. emblem, man's brown left glove, small red thermos, several keys on chain. LOST AND FOUND, tel. 264-2757, Bldg. 832.
- FOUND — leather gloves, lady's leather gloves, small gold earring. LOST AND FOUND, tel. 264-2757, Bldg. 832.

New Cinema Classics Program Starts

TONIGHT at Happy Hour the Club's chuckwagon roast beef will top the buffet spread while Sol Chavez and the mighty Duke City Brass play for dancing. Barbara Clark, an entertainer who has appeared locally at the Summit House and with the Albuquerque Light Opera, will conduct festivities in the main lounge from 9 to midnight. Next Friday, Jan. 19, Denny Gallegos and guitar will be in the main lounge while Italian food is spread for the buffet and Paul Plus II (formerly of Country Express) play for dancing. Yolanda Adent will return to the lounge on Friday, Jan. 26, when fried shrimp will be spread for the buffet and the Prisoners are on the bandstand.

* * * *

TOMORROW is Family Vaudeville Night at the Club with an act called EJJ booked to start the entertainment. EJJ is a trio of guys who worked last summer as lifeguards at the pool and who are now making it as entertainers. The movie is "Babette Goes to War" and has something to do with Brigitte Bardot as a secret weapon in WWII. In addition, a new serial starts and it's called "The Phantom Empire" starring Gene Autry. Nobody remembers this one but it's about a cowboy who stumbles onto a science fiction futuristic city. How about that? Admission is free to members and families. Happy Hour bar prices will be in effect and super sandwiches will be available. The evening starts around 6 p.m.



GREAT MOVIES from the 30's and 40's is the idea behind the new Cinema Classics program at the Club. Once a month, the Club will show the great oldtime movies primarily for adults and teenagers. You can bring the little kids but please keep them quiet. Starting the program at 7:30 p.m. Saturday, Jan. 20, will be "Gold Diggers of '37" and "Little Caesar" plus a couple of Betty Boop cartoons. "Gold Diggers" features fantastic choreography by Berkley Busby and "Little Caesar" with Edward G. Robinson was the first (and possibly the best) of the gangster movies. Betty Boop, if you don't remember, was a pretty racy little chick. Admission is free to members, guests pay \$1.

* * * *

LA CUEVA (The Cave) is the new name of the Club's basement room B-5. A \$5 bill goes to Roscoe Champion (1211) who won the name-the-room contest.

Lab News and C-Club Sponsored

Special Photo Contest Announced

The LAB NEWS and the Coronado Club announce a photo contest. It's simple and direct: Send us black and white prints, with or without caption or headline, that could be published in the LAB NEWS to plug the Coronado Club, either as an institution (it's a great place) or for a specific event (Soul Session, Happy Hour, Latin Fiesta, Casino Night, etc.).

The LAB NEWS staff and Club President Emeritus Chet Fornero (4361) will be final judges. Prizes will be tickets to Coronado Club events. The contest is open to all Sandia employees — that includes Livermore, Tonopah and Pantex, but collecting the prize is your problem.

The ingredients of the photo are up to your imagination. You know we like pretty girls. They don't have to be Sandia employees but that would be a plus factor in the judging.

Send your prints to Photo Contest, LAB NEWS, org. 3162. It is a continuing contest for the next six months. Winners will be published (with appropriate credit) when we get them. We could use the first one next issue; deadline is Friday noon, Jan. 19.

In addition to the regular Friday night Happy Hours and buffets, here is a list of events scheduled at the Club through June.



... than that third repeat of the I Love Lucy show. Irene Chavez (4154) suggests you join her at the Club for the monthly showings of cinema classic. "Little Caesar" with Robinson, E.G. is one of the first — Saturday, Jan. 20.

- | | |
|------------------------------|-------------------------------|
| Feb. 3—Family Vaudeville | Casino Party |
| Feb. 10—Teen Go Go | April 21—Kids Easter Egg Hunt |
| Feb. 14—Cinema Society | |
| Feb. 17—Kids Carnival | April 25—Cinema Classics |
| Feb. 24—Soul Session | April 28—Soul Session |
| March 3—Teen Go Go | May 5—Sanado Ball |
| March 10—Family Vaudeville | May 12—Family Vaudeville |
| March 14—Cinema Classics | May 16—Cinema Classics |
| March 17—St. Patrick's Party | May 19—Latin Fiesta |
| March 24—Soul Session | May 26—Pool Opening Party |
| March 31—Cribbage Tournament | June 9—Family Vaudeville |
| April 7—Teen Go Go | June 13—Cinema Classics |
| April 14—Hard Times | June 16—Teen Go Go |
| | June 23—Luau |
| | June 30—Soul Session |

One other point. If we don't get a winner, we won't publish one. We still have LAB NEWS photographer Bill Laskar who's been doing a great job on this assignment for years. The pictures must do a job for us. All you smart guys who have kidded Bill about what a soft job he has, it's now your turn. Good luck!

Variable Annuity Unit Value

January	1.873
Dec. 1972	1.792
Average 1972	1.738

ALWAYS KEEP SAFETY EQUIPMENT HANDY...



Safe Sandia City Police