LAB NEWS

VOL. 24, NO. 1 JANUARY 7, 1972

SANDIA LABORATORIES • ALBUQUERQUE NM • LIVERMORE CALIF • TONOPAH NEV

Annual Interview With President Hornbeck Deferred

Our customary state-of-the-Labs interview with President Hornbeck has been deferred at his suggestion until after President Nixon presents his Budget Message to the Congress later this month. Discussion of programs and plans for Sandia Labs will be more appropriate after budget information pertaining to the AEC and its contractors has been announced.

'71 Payroll Figures Announced

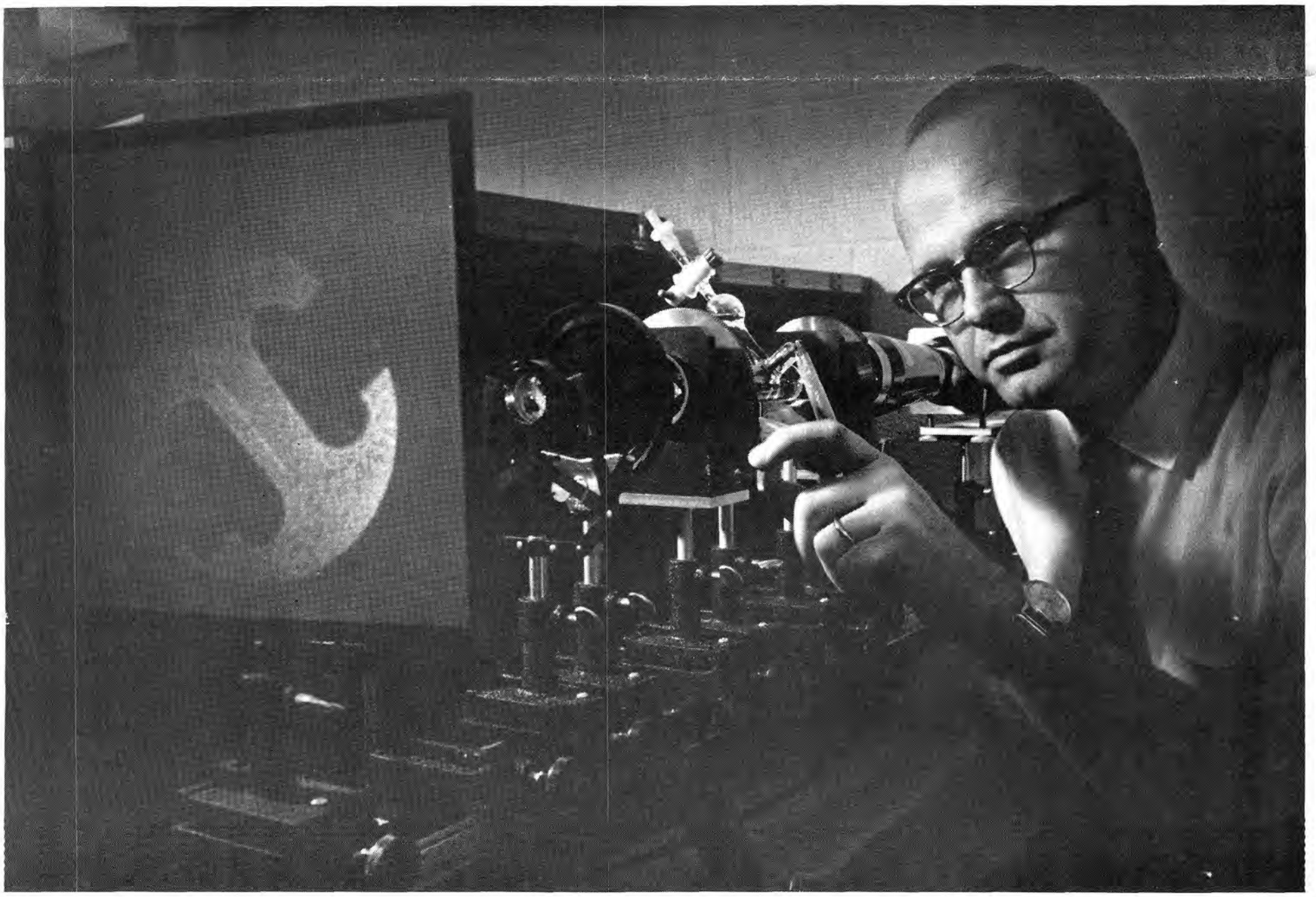
Sandia Laboratories payroll for calendar year 1971 amounted to approximately $101.8 million, including the $13.8 million payroll at Sandia Laboratories in Livermore, Calif. The figures for 1970 were $99.8 million and $13.3 million, respectively.

The number of persons on roll during the year averaged 7413, including 1003 at Livermore. The figures for 1970 were 7770 and 1048, respectively.

The Atomic Energy Commission's installations operated by Sandia were valued at $292.5 million at the end of 1971, compared to $286.4 million in 1970. These figures represent undepreciated value of the buildings and facilities in Albuquerque and Livermore, and at Tonopah Test Range in Nevada.

Purchases by Sandia in New Mexico totaled approximately $28.8 million in 1971, based on actual figures for the first 11 months and estimated for December. The figure does not include purchases from other AEC contractors. In 1970, purchases in the state amounted to $26.7 million.

Approximately 99.2 percent of the amount spent in New Mexico in 1971, or $28.6 million, went to Albuquerque firms.



STAN BOOKER of Sandia's Primary Standards Laboratory experiments on an electro-optic bench developing new ways to optically measure pulse voltage. See feature article on Lab on pages 4 and 5.

Afterthoughts

And Now...Electromagnetic Pollution--An item in the KAFB Bulletin entitled "Microwave Ovens" prompted us to call a Major Kinsley in the Base Radiological Health Section. Seems that certain older models of microwave ovens leak enough microwave energy to pose a health hazard. These are mostly two to three year old imports from Japan. But present models, built to stringent federal standards, should offer no hazard. Except to people wearing cardiac pacemakers. According to the Major "even small amounts of microwave energy from an oven can zap the pacemakers enough to interfere with operation." An interesting if morbid example of all the modern inconveniences.

Talking to Bill Kingsley of Environmental Health Department 3310 about the above, he related something even wilder. A number of pacemakers use a plutonium isotope as a power source, so some deep thinker has outlined a scenario in which a number of pacemaker users, presumably attending a Pacemakers Convention, crowd into the elevator, form a critical mass, and...well you know the rest.

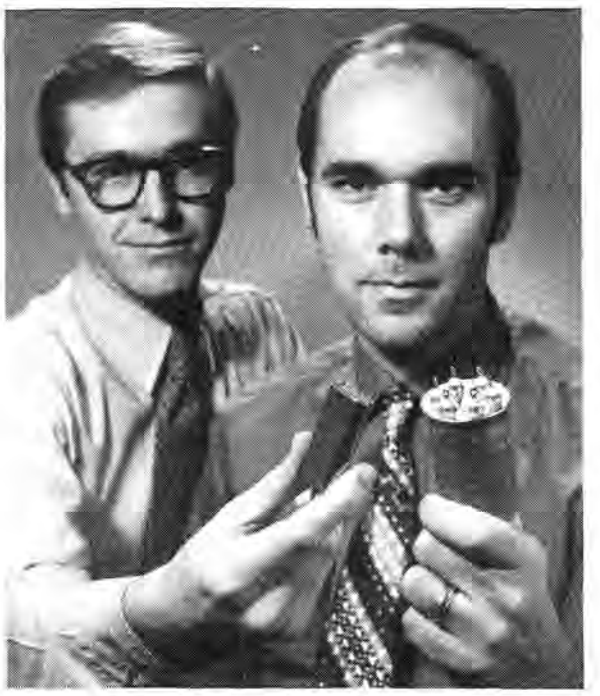
* * *

Viewpoints with an Edge--"Work consists of whatever a body is obliged to do, and play consists of whatever a body is not obliged to do." --Mark Twain

"War hath no fury like a non-combatant."--Charles Montague

* * *

Wow-of-the-Month--"The times they are a-changing" says Bob Dylan and the utter truth of this was brought home upon examination of the new military pay schedule. Not a few Sandians reading this will recall that first Army payday--twenty one bucks a month--minus laundry, bonds, the Chaplains Fund, etc. Today's Private gets $268.50/month. Of course, he needs all that extra loot for hair styling costs and such... • js



THERMAL BATTERY, held by co-inventor Ken Grothaus (1912), left, reduced the size and doubled the output of conventional device, held by Bob Clark (1913), right.

Patent Awarded for Thermal Battery

The AEC recently was awarded a patent for a thermal battery invented by Bob Clark (1913) and Ken Grothaus (1912).

Conceived in December 1963, the battery made possible a new generation of smaller, more powerful thermal batteries. At the time, the smallest available high-voltage thermal battery was capable of generating 3 milliamperes at 500 volts for 60 seconds. It occupied 6.6 cubic inches and weighed half a pound. The Clark-Grothaus design cut the weight in half, reduced the space to less than two cubic inches and doubled the output.

The significant factor in the development was a radically new cell stack which did away with conventional pelletized pyrotechnic material. The design used series stacking of cells in electrically insulating, but thermally conducting tubes. The pyrotechnic material was placed outside the tubes. This permitted a large increase in the number of cells per unit area and protected the cells from thermal shock.

Bob has been at Sandia since 1961, joining the company after earning a PhD in chemistry from the University of Illinois.

Ken joined Sandia in July 1963 after earning an Associate of Chemistry degree from Ohio College of Applied Science. He received a BS degree in math in 1969 from the University of Albuquerque under Sandia's education aids program.

Variable Annuity Unit Value

January 1972	**1.559**
December 1971	**1.572**
Average 1971	**1.628**

LAB NEWS

Published every other Friday

SANDIA LABORATORIES

An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO
LIVERMORE, CALIFORNIA
TONOPAH, NEVADA

Editorial offices in Albuquerque, N.M.
Area 505 264-1053
ZIP 87115

In Livermore Area 415 455-2111

John Shunny is Editor &
Don Graham Ass't. Editor.

Norma Taylor Pitches In &

Bill Laskar is the Photographer.

In Livermore, Matt Connors &
Lorena Schneider are
Writers, while
George Hosoda is the Photographer.

Bill Russell Named To Nat'l Committee

Secretary of Transportation John Volpe has announced the appointment of Bill Russell, head of Traffic Division 4363, to be a member of the National Defense Executive Reserve in the Office of Emergency Transportation.

Under an Executive Order, the National Defense Executive Reserve acts in case of a declared National Emergency to provide central control and direction for the allocation and use of transportation of all modes to meet essential needs.

Bill has been with Sandia since 1948 and in his present position since May 1970.

Authors

M.L. Lieberman (5313), C.R. Hills and C.J. Miglionico (both 5522), "Growth of Graphite Filaments," Vol. 9, No. 5, CARBON.

P.S. Peercy and B. Morosin (both 5152), "Single Crystal Raman Study of Tetramethylammonium Cadmium Chloride," Vol. 4, No. 1, OPTICS COMMUNICATIONS.

C.D. Lundergan (5163), "Discussion of the Transmitted Wave-Forms in a Periodic Composite," Vol. 42, No. 11, JOURNAL OF APPLIED PHYSICS.

R.E. Sheldahl, G.F. Wright, Jr. (both 5628) and E. Muehlberger (Plasmadyne), "A Channel Test Device for Arc Jet Material Ablation Studies," Vol. 8, No. 11, JOURNAL OF SPACECRAFT AND ROCKETS.

LIVERMORE NEWS

VOL. 24, NO. 1 LIVERMORE LABORATORIES JANUARY 7, 1972

Retiring

BILL CHAPIN (8168)

Sympathy

To Jim Muir (8181) for the death of his mother-in-law, in Livermore, Nov. 13.

To Connie Visbeck (8155) for the death of his mother in Whitinsville, Mass., Nov. 3.

To Al DuCharme (8254) for the death of his mother-in-law in Livermore, Dec. 2.

To Herman Wink (8257) for the death of his wife in Castro Valley on Nov. 19.

To Jim Muir (8181) for the death of his mother in Marion, Ill., Dec. 12.

To Lloyd Rothacker (8257-2) for the death of his brother in Rugby, N.D., Nov. 21.

Kaiser Prepaid Health Care Plan Offered at Livermore

A prepaid form of medical service which utilizes Kaiser Foundation physicians and facilities is being offered at Sandia/Livermore as an alternate choice to the present Equitable Health Care Plan.

One of the underlying principles of the "Kaiser Plan" is preventive medical care through which emphasis is placed on keeping members in good health. Members are urged to have periodic checkups, seek medical advice, and get prompt attention at the first sign of illness.

The Plan includes: hospitalization coverage (room and related costs) for the first 150 days per year, normally at no charge and the remaining 215 days a year at 50 percent of prevailing rates; surgeon's fees at no charge; physician's office service (out-patient) at a charge of $1 per visit; prescriptions from Kaiser pharmacies at wholesale cost; maternity care and delivery at a total charge of $60; and an out-of-area emergency benefit of $3000 per incident. Details of the Plan are covered more specifically in a brochure being distributed to employees.

Enrollment is being conducted during the month of January with coverage to begin Feb. 1. All eligible employees may elect this new coverage if they desire, and each year during the month of November will have the option to elect either Kaiser or Equitable coverage for the subsequent calendar year.

Kaiser membership will cost the single employee $2.05 a month and the employee with dependents $7.44/month, with payment handled through payroll deduction. These premiums reflect the additional costs for the Kaiser Plan over the present Equitable Plan. Sandia contributions to the Kaiser Plan will be equal to those made by Sandia to the Equitable Plan.

An optional Major Medical Expense Insurance Plan through Equitable Life Assurance Society is also now available as a supplement to the Kaiser Plan to cover certain hospital and medical services which, while infrequently required, could cause large, out-of-pocket expense to Kaiser members. This plan, designed as a supplement and not as an alternate to Kaiser benefits, will be available to the individual employee for an additional $1.26 a month and the employee with dependents for an additional $2.74/month.

Employee meetings to explain these plans in greater detail are being scheduled by Benefits Division 8236 for the week of Jan. 10. A health maintenance plan is under active development for offering to Sandia/Albuquerque employees. Details are expected to be available in the near future.

Take Note

Hartmut Spetzler of Materials Division 8314 is the author of the article "Discrepancies in Elastic Constant Date for NgO Polycrystals and Single Crystals," which appeared in the October issue of the *Journal of the American Ceramic Society*. Hartmut also presented a technical paper titled "A Model to Explain Results of Ultrasonic Measurements of Polycrystalline Samples," at the annual Western meeting of the American Geophysical Union held in San Francisco Dec. 8.

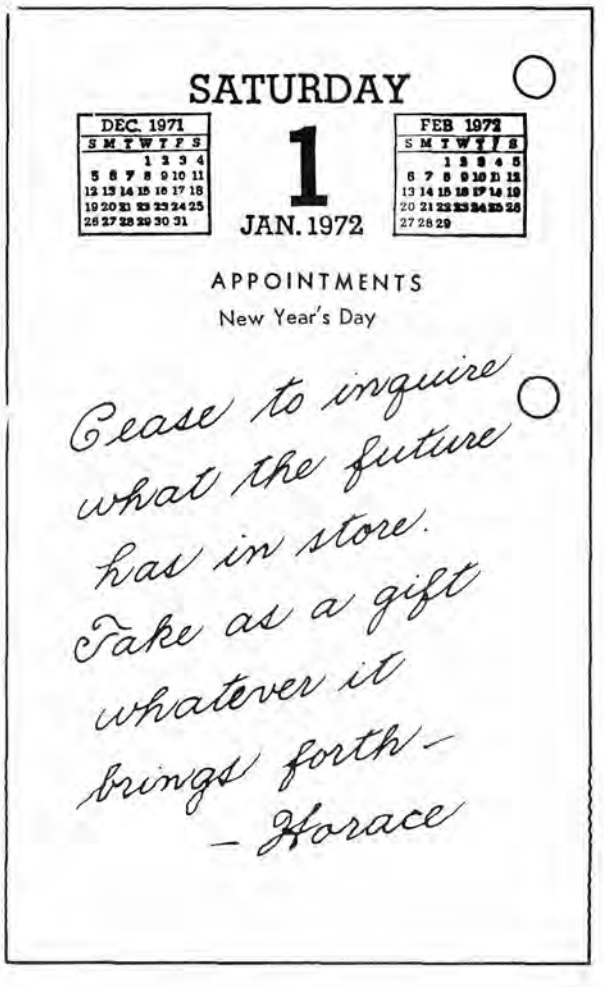
* * * *

Tony Thompson of Metallurgy Division II 8313 spoke at the Fall meeting of the American Institute of Metallurgical Engineers (AIME) held in Detroit. Title of his presentation was "The Influence of Grain Boundaries on Fatigue Crack Propagation." Tony is also the author of a technical article entitled "The Comparison of Yield and Fatigue Strength Dependence on Grain Size" which appeared in the October issue of SCRIPTA METALLURGICA.

Don Benton, supervisor of Data Processing Division 8411, was named "Boss of the Year" recently at the "bosses' night" banquet held annually by the Livermore Valley Charter Chapter of the American Business Women's Association. Eleven Sandia women are currently members of the chapter, including two who are serving as this year's officers — Mary Monser (8256), vice president, and Nancy Hunt (8433), treasurer.

* * * *

Martin Abrams of Aerothermodynamics Division 8351 and Prof. R. Viskanta of the Mechanical Engineering Department at Purdue University are the coauthors of an article, "Thermal Interaction of Two Strains in Boundary-Layer Flow Separated by a Plate," which appeared in the September issue of the INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER. Martin, who was formerly assigned to Sandia/Albuquerque, returned to Livermore this past summer after receiving his PhD in mechanical engineering from Purdue University under the Laboratories' Doctoral Study Program.



Sandia Operates Primary Standards Laboratory for AEC

In medieval England, length of a rod was determined by lining up the right foot, heel to toe, of 16 men selected at random as they left church on Sunday morning. This became the standard measurement for that village. Needless to say, there was a lot of confusion determining borders and pastureland between villages.

Nowadays, maintaining standards is one of the most exact and demanding of sciences since it serves all science. Sandia's Measurement Standards Department 7450 under Jim Jones maintains a primary standards laboratory serving the AEC's complex of nuclear weapons research, development and production agencies.

"The principal missions of the primary standards laboratory are the development of new measurement standards and systems, maintenance of the primary reference standards for the member laboratories, and performance of technical surveys and audits to assure adequacy of measurements made by member laboratories," Jim says. "We also are available as consultants on special high accuracy measurement problems."

Sandia's primary lab certifies more than 3000 reference standards and instruments annually. Accuracies to a few parts in a million are common in standards work, both in physical standards and electrical standards.

Physical standards — length, mass, humidity, pressure, temperature, alpha radiation, neutron pulses, etc. — are the responsibility of Physical Standards Division 7451 under Bob Erickson. John Southwick and Electrical Standards Division 7452 are responsible for standards of resistance, capacitance, inductance, voltage, pulse voltage and pulse current, microwave impedance, etc.

They work closely with the National Bureau of Standards (NBS) in Washington, D.C., and Boulder, Colo. All of the physical standards and measurement instrumentation in Sandia's primary laboratory are certified and calibrated with NBS periodically. These, in turn, are used to calibrate and certify the standards and instruments used by the standards laboratories of the 15 nuclear weapons agencies in the AEC complex.

"We work to highest possible accuracies," Bob Erickson says, "in everything — temperatures, pressure, vacuum, acceleration . . . . We can measure a gas leak so small that it would take 323 years to fill a volume of one cubic centimeter, a space about the size of a sugar cube. Much of our work is in areas where the National Bureau has not established standards. Pulsed neutrons, for instance. So we establish working standards in these areas for the complex."

Sandia has also made innovations in electrical standards. The Kerr cell system which makes high voltage pulse measurements, was conceived in Division 7452 and later refined and adopted as a national standard by NBS. Sandia has perfected a portable standard volt, contained in an extremely stable environment oblivious to outside temperatures and pressures, and an automated standard cell comparator system.

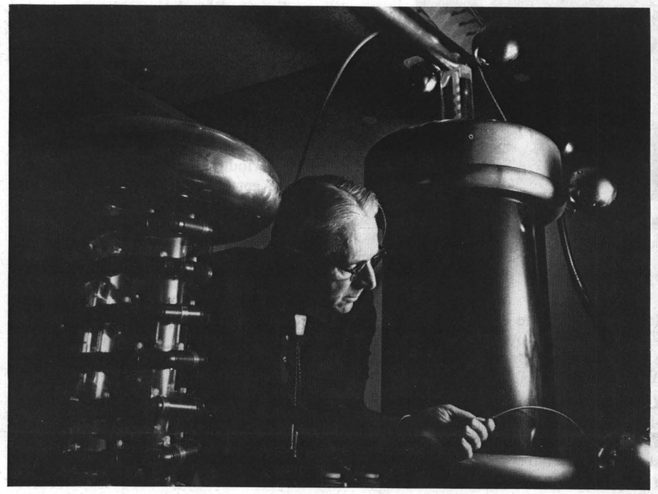
Dave Braudaway (7452) was instrumental in this work and is currently on temporary assignment with NBS in Washington to aid in design of an automated standard cell comparator for NBS use that will resolve one part in 10^8.

This illustrates the close working relationship with Sandia to NBS. Several Sandians serve on national standards committees including President Hornbeck who is chairman of the National Academy of Sciences Institute for Basic Standards and a member of the executive committee of the Standards Evaluation Panels advising NBS.

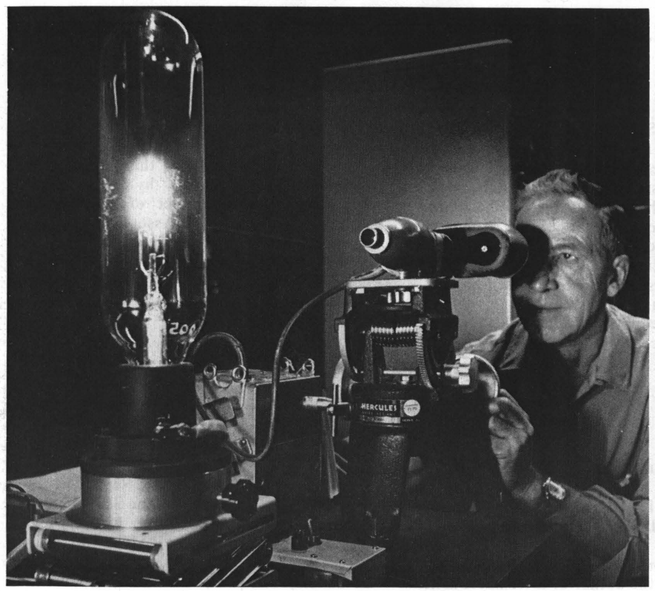
Joe Moody (7451) helped write a basic textbook for the standards profession and has served on several national committees studying problems relating to the U.S. conversion to the metric system.

Photographs on these pages show the variety of advanced equipment and technology used by Department 7450 in its work. They can measure anything. And just in case you need an Egyptian cubit to build a pyramid, they have one of those too. ● dg

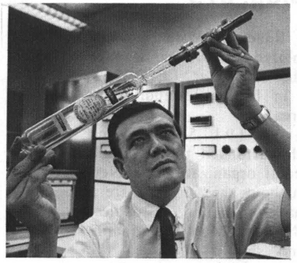
PHOTOS BY LASKAR



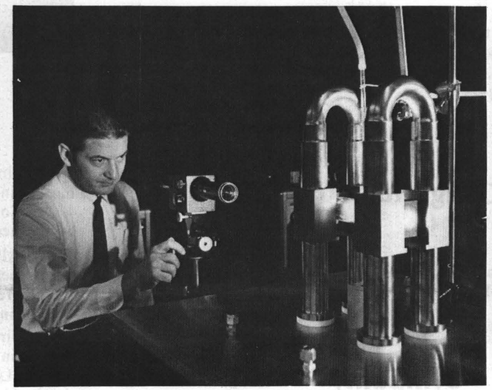
BOB McCALLUM works on equipment in the high voltage laboratory before calibrating high voltage divider instruments.



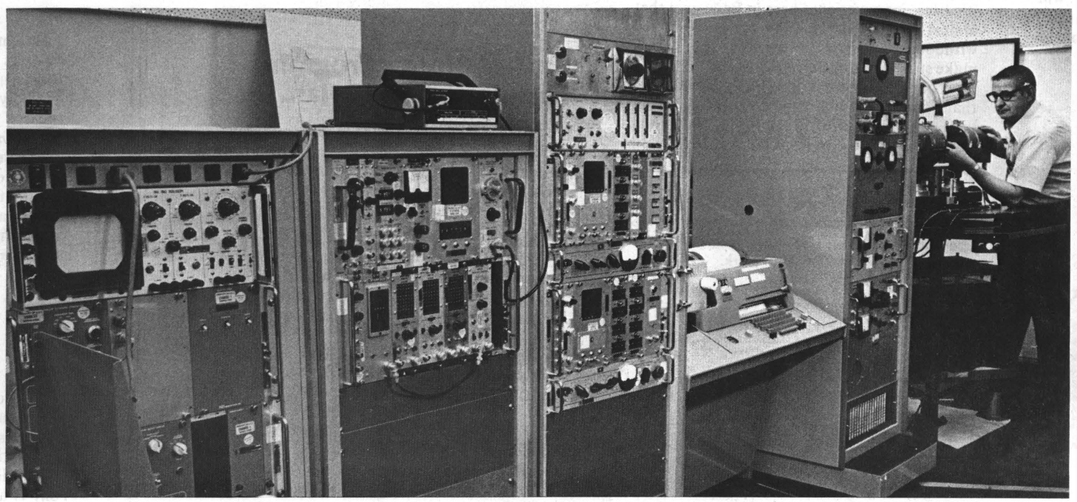
TUNGSTEN LAMP of a known brightness temperature is used by Roy Winter to calibrate an optical pyrometer.



JAY CHAMBERLAIN examines a standard leak — a glass vessel which leaks helium gas at a known rate. The standard is used to calibrate leak detection equipment.

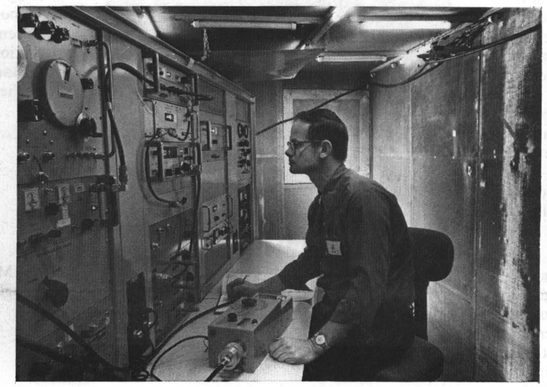


SPECIAL MEASUREMENTS PROJECT is conducted by Bob Foster to calibrate high temperature sensors used in reentry vehicles.

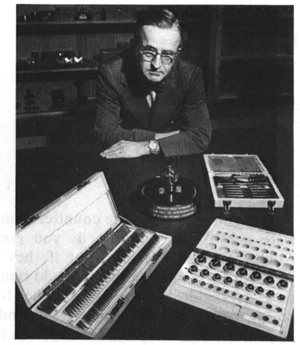


NEUTRON DETECTORS used by agencies throughout the AEC are calibrated by Dick Eifert. Where the National Bureau of Standards has not established standards, Sandia provides working standards consistent within the AEC.

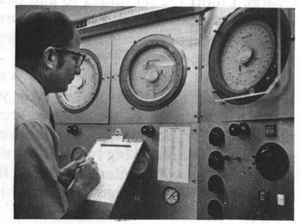
NORM ELLIOTT adjusts the target assembly of a Cockcroft-Walton accelerator used to calibrate pulsed neutron detection standards.



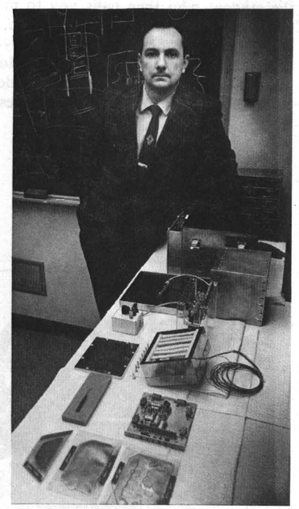
IN SPECIAL SCREEN ROOM of the microwave measurements laboratory, Bob Moyer makes attenuation measurements. The area is screened completely from random RF noise.



JOE MOODY, an authority on length and mass measurements, displays a few primary standards. The measuring balls are used to compare and calibrate special geometry.



USING THE primary lab's two-pressure humid atmosphere generator, Bill Huff calibrates instruments which measure relative humidity.



DAVE BRAUDAWAY displays components of a portable standard volt which he developed. He is currently on temporary assignment with NBS helping develop an automated standard cell comparator.

Project Refer

What Do You Want To Be When You Grow Up?

Do you remember the countless times you were asked that question as you grew up? Adults ask the question, but if they would recollect for a moment most would remember that as children they hadn't the foggiest notion of how they wanted to spend their adult lives. This situation is not much changed today. Very few graduating seniors in high school have any real sense of vocation, and one consequence is that many enter a tight job market with few specific skills to sell.

Think back to your final year in high school. Whether you planned to go on to college or not, would it have helped to talk to someone who actually worked in the kind of job you thought you might be interested in? George Elliott (3251) thinks so and has come up with an idea and a project which promises to help many young people to head toward the right career for them.

Like most good ideas, George's is simple. It consists in getting people like you — already in your job as a machinist, secretary, physicist, clerk, accountant, or whatever — to spend a few hours talking to a student who has expressed a possible interest in your field. If you are willing to sign up, here is how "Project Refer" works.

Your name, occupation, and location are given to high school counselors throughout the city along with similar data from other Refer consultants. A student, usually a senior, comes to talk to the counselor about his future and shows interest in your field of work. The counselor looks at his list of Refer consultants, selects your name, and gives it to the student who then calls you to make an appointment to talk with you. Time, place, and duration of meeting are between you and the student, although the counselor will generally try to avoid pairing up a student and a consultant who live on opposite sides of the city.

GEORGE ELLIOT (3251), the Project Refer man, believes too many young people have too little information about possible careers.

Project Refer is city-wide, not just Sandia. Refer consultants from businesses other than Sandia have an advantage in that they can generally invite the student to view their work on site. George notes "Our Sandia Refer consultants obviously will have to be careful if they happen to be doing classified work. But it's been our experience here in Personnel that almost any job at the Labs can be described without getting into the specifics that might make such a description classified."

Your investment is not likely to be more than four or five hours per month, according to George. Interested? Then fill in the coupon below and return it to LAB NEWS. • js

---

Project Refer To: Lab News - 3162

Please include my name and occupation on the Project Refer list as a source of information for a student interested in my field of work.

Name _____

Telephone _____
Home Office

Occupation _____

Location _____
Home Address

_____
Sandia Organization

Additional Info. Concerning Your Work _____

_____

Bandelier Wilderness Proposal Program Set Jan. 14 in Bldg. 815

"Proposal for Bandelier Wilderness" is the title of a colored slide/magnetic tape presentation to be shown at 12:15 p.m., Friday, Jan. 14, in Bldg. 815 auditorium (inside the Tech Area).

Milo Conrad (9115), ardent conservationist who arranged the program, says, "Environmental organizations in New Mexico and throughout the nation share a firm conviction that the lands in the roadless area of Bandelier National Monument qualify as wilderness and should be given the protection of the 1964 Wilderness Act. They believe that a wilderness classification is consistent with the archaeological purpose for which the Monument was established."

The hearing record on the Bandelier proposal remains open until Jan. 17. Milso suggests that if you are interested in supporting the proposal, mail a letter or statement to Park Superintendent, Bandelier National Monument, Los Alamos NM 87544 by Jan. 17, and ask that it be made a part of the hearing record.

Congratulations

Mr. and Mrs. Michael Gleicher (5421), a daughter, Kara Nichole, Dec. 25.

Sympathy

To Delores Weinberger (5111), on the death of her husband, Dec. 14.

Out-of-Hours Program Enrollment Starts Jan. 10

Some 100 courses are listed for the coming semester in the new Out-of-Hours Education Program catalog distributed today. Enrollment period is Jan. 10-21. Enrollment cards are contained in the catalog.

Among the courses offered for the first time are Oceanography, Introduction to Ceramics, Slide Rule, Communications Theory, PDP-11 Software and Data Processing and Programming Techniques.

By popular demand, Meteorology instructed by Jack Reed (5644), is offered again.

More than 2000 Sandians participated in the Out-of-Hours program during the fall semester. Classes meet during the lunch hour or after work and are taught by qualified Sandia instructors.

Questions about any of the listings in the catalog or about the program should be directed to Gene Bates (3132), ext. 3247.

Speakers

W.V. Hereford (9425), "Real Time Data Presentation of Penetrometer Data," Arctic Institute of North America Symposium, Nov. 3, Hershey, Pa.

C.H. Seager (5134), "Electronic Transport Measurements in the AsTeI Chalcogenide Glasses," Battelle Memorial Institute, Nov. 18, Columbus, Ohio.

O.J. Burchett (9462), "Analysis Techniques for the Inspection of Carbon Composite Structures by Holographic Interferometry," Seminar at Texas A&M, Nov. 19.

E.J. Graeber (5522), "X-Ray Crystallography," Eldorado High School, Nov. 24.

L.W. Bickle (1442), "Numerical Techniques for Improving Measurement System Response Characteristics," AF Special Weapons Center Seminar, Nov. 26, KAFB.

D. Emin (5134), "Small Polaron Theory," University of Chicago, Nov. 29, University of Pittsburgh, Nov. 30, and Michigan State University, Dec. 2.

G.A. Samara (5130), "High Pressure Studies of Phase Transitions in Solids," AICHE Meeting, Nov. 29-Dec. 2, San Francisco.

J.T. Foley (1543), "Transportation Shock and Vibration Descriptions for Package Designers," Engineering Institute Course, Nov. 30, University of Wisconsin.

A.C. Saxman (5513), "A Description of the Energy, Frequency Time Distribution of Picosecond Light Pulses and Their Application in the Measurement of Atomic and Molecular Systems," Physics Colloquium, Nov. 30, University of California, Santa Barbara.

E.H. Beckner (5240), "Interaction Mechanisms for E-Beam/Plasma Focus Studies": Beckner with D.A. Freiwald (5245), "Pulsed Relativistic Electron Beam/Dense Plasma Focus Interactions"; P.E. Bolduc (5223) and E.L. Patterson (5243), "Interaction of a Pulsed Relativistic Electron Beam with a Single Ended Magnetic Bottle"; P.A. Miller (5223), J.B. Gerardo (5243) and J.W. Poukey (5241), "Electron Beam Propagation in Low Pressure Gases"; M.J. Clauser (5214), "Effects of Prelase on Laser Produced Plasmas"; A.J. Toepfer (5241), "Plasma Effects in High Current Field Emission Diodes"; J.W. Poukey (5241), "Numerical Simulation of Self-Pinched Electron Beams"; D.A. McArthur (5223) and J.W. Poukey (5241), "The Return Current Induced by a Relativistic Electron Beam Propagating into Neutral Gas"; J.G. Kelly (5223), "Generation and Transport of an Annular, High Current, Relativistic Electron Beam Between Concentric Cones with Feedback Through the Cathode"; C.L. Olson (5241), "Cone Focusing of Intense Relativistic Electron Beams"; J.N. Olson (5214), E.D. Jones (5214) and G.W. Gobeli (5210), "Picosecond and Nanosecond Laser Irradiation of CD_2"; D.W. Swain (5243), "Ionization of a Background Gas by a Weak Relativistic Electron Beam"; T.H. Martin and L.P. Bradley (both 5245), "Parametric Study of Sharp Edge Cathodes to Generate Intense Electron Beams"; J.R. Freeman, J.W. Poukey (both 5241), E.L. Patterson, and P.E. Bolduc (both 5223), "Magnetic Focusing of a Relativistic Electron Beam: Theory"; L.P. Bradley (5245), J.G. Kelly (5223), J.E. Boers (5245) and T. H. Martin (5245), "High Nu/Gamma Electron Beam Injection," Annual Meeting of the Division of Plasma Physics and American Physical Society, Nov. 15-18, Madison, Wisc.

L.C. Bartel, L.R. Edwards (both 5132) and G.A. Samara (5130), "Pressure Dependence of the Curie Temperatures in Transition Metal Compounds and Alloys"; L.C. Bartel, "Calculation of the Pressure Dependence of the Curie Temperature for MnSb Using an Itinerant Model"; G.A. Samara, L.R. Edwards and L.C. Bartel, "Measurement of the Pressure Dependence of the Curie Temperature in $Fe_{0.65}(Ni_{1-x}Mn_x)_{0.35}$ Alloys to 20 Kbar"; R.R. Bartkowski (5152), "Conduction Electron Effects in the Esr of Gd in LaP"; W.J. Brya, R.R. Bartkowski and P.M. Richards (all 5152), "Light Scattering from Spin Fluctuations in MnF_2," Conference on Magnetism and Magnetic Materials, Nov. 16-19, Chicago.

STUDENTS from the Luna Vocational School in Las Vegas toured facilities at the Labs recently. Here T.A. Allen of Photochemical Laboratory 7123-1 points out mask chemically milled by his group.

1971 NATIONAL CHAMPION air pistol team members (l to r) Lynn Fisher (9485), Dave Bennett (1923), Ray Mosteller (9132) and Dick Vivian (1611) discuss the merits of three different air pistols. Four members of the Sandia Labs Rifle/Pistol Club won national individual awards in the NIRA-NRA Rifle & Pistol Matches. There were also individual and team winners in the regional matches. Anyone interested in target shooting is welcome and the club has equipment available. For more information call Dick Vivian, ext. 4355.

• SHOPPING CENTER • SHOPPING CENTER • SHOPPING CENTER • SHOPPING CENTER • SHOPPING CENTER • SHOPPING CENTER •

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

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

MISCELLANEOUS

¾ SIZE VIOLIN w/case & horsehair bow, shoulder pad, $45; machinist tools, two boxes, specials, Rettinger, 345-1258.

LESTER *Betsy Ross spinet; variable* power telescope, 15 x *30 x *45 x /60mm. Austin, 255-1746.

CAMERA, Canon FTQL, 50mm F1.8 std. lens, 135mm F2.5 telephoto, leather cases, $225. Hock, 256-0276.

LHASA APSO female puppy, 4 mos. old, AKC reg., show quality, championship background. White, 299-6411.

WHITE SHETLAND PONY, suitable for children age 5 to 8. Schwiner, 282-5207.

ROCKER, swivel, early American wing, dark green & gold, $25. Pearce, 265-9170 after 6.

GIRL'S 24" Husky bicycle, $25 or best offer; child's refrig. & stove set, $10. Sullivan, 298-0148.

'71 YAMAHA 350, 2300 miles, $625. Starkey, 877-7515 after 6.

MOTORCYCLE, '71 Maico Mx 400cc, used 2 months, 44hp, weight 228 lbs., $990. Chavez, 299-8194.

SLIDE IN Cavalier camper shell, fits long wide pickup box, roof vent, clearance lights, built-in cabinet, insulated. Causey, 299-0089.

GUITAR amplifier, Harmony model H-400, 3 inputs, 5 watt output, $20. Gray, 265-1883.

MERCEDES BENZ *manual, 780 cfm* Holley, 38-41 Ford transmission. Prevender, 299-5253.

MINIGOTE; ski boots, size 9; hifi; hair dryer; elec. curlers; make-up mirror; dresser; furniture. Chandler, 296-3323.

LARGE gold leaf mirror, $65; antique brass engraved table lamp, $45; old Indian dolls & artifacts. Smitha, 299-1096.

REFRIGERATOR, top freezer, white, GE, $75. Garcia, 600 Isleta Blvd. SW, 877-1562.

CARS & TRUCKS

'50 CHEV, make offer. Oberst, 299-1224.

'68 FORD Torino 2-dr., PS, AT, 43,000 miles, $1200. Solberg, 298-9248.

'69 AUSTIN HEALY Sprite, British racing green, radial tires, 40,000 miles, $1575. Merillat, 242-4873.

'64 CHEV 4-dr. AT, AC, PS, PB, V8, $395. Prekker, 898-5895.

'56 PLYMOUTH, 4-dr. sedan, V8, all power, AC, radio, trans. & body need work. Joseph, 268-5414.

'68 PLYMOUTH Fury III, factory air, PS, below book; '71 Honda CB-350 800 miles. Scott, 242-7339.

'66 DODGE Polara 2-seat station wagon, AT, PS, PB, orig. owner, new tires, $1050. Zickert, 898-3475.

'61 CORVETTE, 2500 miles on 327 cu. in. engine, 4-spd. trans., best offer. Simon, 344-4465.

'64 DODGE Polara, white, $595. Jercinovic, 255-8027.

OLDSMOBILE 442, 25,000 miles, AC, PS, radio, new radials. Pilkington, 265-2967.

WANTED

10-SPEED Continental or Supersport. Phillips, 265-0296.

UNICYCLE. Mickey, 255-8412.

HEEL TYPE step in release ski bindings. Zanner, 265-0210.

SKIS, Head Junior or equivalent, 160cm to 175cm. Harley, 898-0594

EXERCISE BICYCLE. Fite, 255-6943.

HELLER STOPWATCH, Sebring model. Campbell, 298-9265.

SET hard bound Edgar Rice Burrough's Tarzan books, complete if possible. Schulze, 299-0152.

WESTINGHOUSE ROASTER. Jacobs, 296-4522.

A BLACK KITTEN, male, 6-8 weeks old. Colgan, 344-3776.

BABYSITTING in my home, area Moon - Candelaria. Morrow, 299-0512.

MODEL 1894 Winchester in good condition, prefer 30-30 or 25-35 cal. Schwiner, 282-5207.

REAL ESTATE

BOSQUE FARMS, 3-bdr., den, fp, 1¾ bath, dbl. garage, full acre landscaped, no agents. McFadden, 869-2895 after 5.

LOST AND FOUND

LOST — Society of Chemical Industry publication, *Symposium on Molecular Sieves*(1968) — please return to Library; Master credit card, greenish gold leather coat button, lt. wt. blue windbreaker w/hood, silver cuff link w/turq. & coral set, silver pierced ear earring. LOST AND FOUND, tel. 264-2757, Bldg. 832.

FOUND — Tie chain (TC 12-56, NM A&M College), gold earring, brown & blue clipon tie, ladies gloves: black kid w/blue lining, white glove, black knit glove w/leather palm, beige cloth glove, fur lined black kid glove; man's tan glove, silver roadrunner tie tac, car key on rubber band, black triangle lace scarf, silver & black suit button, black key case w/car & house keys, yellow square scarf. LOST AND FOUND, tel. 264-2757, Bldg. 832.

Happy Hours Bigger, Better

BIG NEWS about Happy Hours these days is the new buffet menus. Tonight, for instance, fried shrimp (lots of it) will be featured. Frank Chewiwie will make the happy music and Denny Gallegos and guitar will entertain in the main lounge with a sing-along. Special prices will be in effect from 5 to 10 p.m. The buffet will cost $1.85 for adults, $1.60 for kids under 12.

Next Friday, January 14, Happy Hour will feature a "new" Mexican buffet which includes all the old favorites plus carne avoda, tacos, beef and cheese enchiladas. Margueritas will sell for 50 cents from 5 to 11 p.m. It's an extended Happy Hour in honor of Graciela Flores, noted entertainer, who will perform two shows during the evening. Sol Chavez and the mighty Duke City Brass will play for dancing. Yolanda Adent will entertain in the main lounge.

On Friday, January 21, Wildman Bob Banks will make the happy music while an oriental-type buffet will be spread. Sandia's own Hot Pants Models will present a style show from Omar's Boutique and Denny Gallegos will appear in the main lounge.

* * *

TOMORROW NIGHT teenagers can enjoy something called "Heart" which will be wired into the bandstand from 7:30 to 10:30 p.m. Chuck Logan of KQEO will emcee the bash. Member parents should pick up tickets for their youngsters.

FAMILY VAUDEVILLE NIGHT scheduled Saturday, January 15, will feature a concert and antics by the Shrine Pops Band. These clowns play for the fun of it and will perform a variety of selections before the movie is shown. An old Abbott and Costello classic called "Jack and the Beanstalk" is scheduled. Super sandwiches will be available and Happy Hour prices will be in effect from 6 p.m. The show should get underway about 7 p.m.

* * *

BIG EVENT this month at the Club is Casino Night scheduled Saturday, January 22. The casino will be going full blast from 8 to 12 p.m. (play money, of course, but it's great fun anyway). Door prizes will be awarded at midnight. Elton Travis and the Westernaires will play for dancing from 9 to 1 a.m. Admission will cost $1 for members, $2 for guests.

* * *

A NEW SERIES of dancing lessons will start Monday, January 10. Beginners will meet at 7 p.m. and the advanced class at 8:30 p.m. on Mondays for 10 weeks. Enrollment fee is $20 per couple which should be paid at the Club office before the first class starts.

* * *

SANADO WOMEN will meet Tuesday, Jan. 11, for a sherry luncheon. A program called "30 Minutes with Vincent" will be presented by Dr. Stuart W. Adler, an expert on the life of Vincent Van Gogh. Reservations should be made today with Mrs. D. S. Tarbox, 1305 Florida NE.

* * *

THE SPAIN/PORTUGAL trip is shaping up. The 16-day travel package scheduled for October 1972 costs $565. Those interested in making the tour should pay a $100 deposit at the Club office by Jan. 31. A minimum of 170 is required to make the package feasible.

Take Note

For the twelfth consecutive year, Office & Professional Employees International Union, Local No. 251, has sponsored a Christmas project. This year they chose to help make Christmas merrier for 45 needy families selected by the school principals of Stronghurst, Riverview and Coronado schools. Gifts for each family member and food baskets including a turkey were delivered to the families on Dec. 23.

Chairman of the project was Maxine Stephenson (7633), union president, and the assistant chairman was Nancy Barela, secretary-treasurer; other officers, chief stewards, stewards and many other Sandia employees helped.

Local No. 251 would like to thank every Sandia and Navajo Freight Line employee who made possible the success of this project.

* * *

Herb Sutherland - (5163) will present "Geometric Dispersion in a Fibre-Reinforced Composite" at the 5100 Staff Seminar Jan. 11. The seminar meets on Tuesdays at 8:30 a.m. in Rm. 201, Bldg. 806.

* * *

Ed Beauchamp (5334) was recently elected chairman of the New Mexico Section of the American Ceramic Society. Other Sandians who will serve as officers in 1972 include Gary McVay (5154), treasurer, and Gary Snow (1334), secretary. Al Nutt (LASL) is vice chairman.

* * *

Ted Alexander, retired Sandia historian, recently completed a journey he had dreamed of for years — visiting the South Seas including Tahiti and Moorea. The 18-day trip had many highlights including going on board the three-masted ship Merom, built in 1870 at Phippsburg, Maine, which was skippered by his grandfather and on which his mother was born during a voyage to the Orient. The ship is now engaged in inter-island trade.

Events Calendar

Jan. 7-9, 13-15 — "Hedda Gabler," Old Town Studio, 8 p.m.
Jan. 8 — N.M. Mt. Club, hike up Three Gun Springs Trail, Western Skies, 8:30 a.m.
Jan. 9 — N.M. Mt. Club, Cienega Canyon Snow Shoe (bring your own), Western Skies, 8:30 a.m.
Jan. 10 — Sierra Leone Dance Company, Popejoy Hall, 8:15 p.m.
Jan. 15 — "Hansel & Gretel," Opera sponsored by Albuquerque Symphony Women's Assn., perfomances 1 and 3 p.m., Popejoy Hall.
Jan. 15 — Basketball, Texas El Paso vs. UNM, UNM Arena, 7:30 p.m.
Jan. 16 — N.M. Mt. Club, climbing class, Eastdale Shopping Ctr., 8 a.m.
Jan. 18 — Christine Walevska, Cellist, Concert Series, Popejoy Hall, 8:15 p.m.
Jan. 19 — Basketball, Doane College vs. UNM, UNM Arena, 7:30 p.m.

ECP CHECK, the 1971 reserve fund of $1615, was allocated to the Salvation Army's Christmas project of distributing food, clothing and medical supplies to needy families. At left, Ken Sutton (3250), ECP chairman, presents the check to Brig. K.J. Bawden.