

MEMBERS of the Heights YMCA Open House committee which planned arrangements for the event held last weekend, are shown here completing a preview tour of facilities of the new 20,000 sq. ft. building. From left are K. A. Smith (3400), member of the Heights YMCA Board of Governors; Mrs. Mary H. Beighley, Board of Governors member; The Rev. Charles Fish, St. Marks on the Mesa Episcopal Church; A. W. Hollister, Executive Secretary of Albuquerque YMCAs, and Sydney Webber, Exec. Dir., Heights YMCA.

Skip those costly greetings

Sandia Employees Urged To Have True Christmas Spirit

A tradition among Sandia Corporation employees will be observed again this year. Each year as Christmas approaches, many Sandia organizations give to charity rather than go to the expense of exchanging Christmas cards with fellow workers.

Much of this Christmas giving is done through the Albuquerque Council of Social Agencies.

The Council especially welcomes cash contributions as it often means benefits may be extended through the year rather than limited to the Christmas season.

ited to the Christmas season.

The Council, composed of representatives of Albuquerque health and welfare agencies, serves as a "clearing house" for donors and recipients. The Salvation Army, Department of Public Welfare, Catholic Charities and Elks Club also cooperate in locating families needing help.

In past years, Sandia employees have undertaken charity projects such as "adopting" a family at Christmas time or purchasing hot lunches for needy children.

Other groups have collected food, clothing and toys for distribution.

As the Lab News learns of these activities, the charity projects in lieu of exchanging Christmas cards will be reported.

Direct Tax Refund Queries to G. Newlin

Sandia employees who have filed for tax refunds under the new federal law authorizing refunds of federal income tax, paid on reimbursement made by Sandia Corporation for new hires' moving expenses, are requested to direct any questions about the status of their claim to G. C. Newlin (6011), ext. 44145.

IRE Meeting Will Feature Buffet, Talk By Paul W. Klipsch

The Albuquerque-Los Alamos Section of the Institute of Radio Engineers will meet at 8:15 p.m., Thursday, Nov. 17, at the Sandia Base Officer's Club. A buffet from 6:30 p.m. will precede the meeting.

Speaker will be Paul W. Klipsch who will discuss "Stereo Geometry."

Mr. Klipsch received his BS degree in electrical engineering from New Mexico State College and the degree of Engineer from Stanford University. He is a Fellow of the Audio Engineering Society and a member of the American Institute of Electrical Engineering, the Acoustical Society of America, Tau Beta Pi, and Sigma Xi.

Tickets for the buffet are \$2. For reservations or additional information call K. D. Hardin (1431), ext. 32143.

Lab Employees Give \$120,400 To ECP, Tally Not Complete

A total of \$120,400 had been contributed to the Sandia Laboratory Employees Contribution Plan as the Lab News went to press. With still 240 employees remaining to be contacted and returns from a second appeal not complete, the total above is not a final tally.

Seventy-five per cent of Sandia Laboratory's 6615 employees have joined the Employees Contribution Plan, which calls for a minimum gift of \$12. Average contribution of this group is \$24.57. Other employees contributed an average cash gift of \$4.30.

Eighty-four per cent of the Sandia Lab employees made some contribution.

The total figure includes \$366 contributed by Sandia Laboratory

Federal Credit Union employees and \$325 donated by Anderson-Dunham, Coronado Club concessionaire. One hundred per cent of Credit Union employees contributed.

"It is significant," W. R. Rosenberg (4360), EPC committee chairman, said, "that while the total number of employees at the Laboratory is about 200 less than last year, the funds collected total about the same. Average gift of members of the plan has increased \$1.47."

"The committee urges," Mr. Rosenberg continued, "that employees who still have payroll deduction cards in their possession turn them in immediately. Second appeal re-evaluation cards that were distributed to all employees

last week are also due."

Of the funds collected by the ECP drive, 73 per cent goes to the 24 health and welfare agencies of the Albuquerque United Fund. The remainder will be divided on a percentage basis among nine other national health service agencies in this area.

These agencies are American Cancer Society, Albuquerque Association for Retarded Children, Bernalillo County Heart Association, Cerebral Palsy Association of Bernalillo County, Muscular Dystrophy Association of America, National Arthritis and Rheumatism Foundation, National Multiple Sclerosis Society, New Mexico Society for Crippled Children and Adults and the Albuquerque Association for Mental Health.

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Opening Ceremonies Held for New Heights YMCA Building

Some 2500 visitors streamed through the facilities of the new Heights YMCA building during Open House activities last weekend.

The event was a culmination of efforts beginning in 1956 when the capital fund drive to construct the building was approved by the Albuquerque United Fund. Instrumental in the efforts that followed was a group of Sandians who have long been active in the YMCA organization.

Some 40 Sandians have already purchased charter memberships in the new Heights branch. Other Sandians have served and are serving as officers.

Serving on the downtown YMCA Board of Governors are R. W. Henderson (100) and R. B. Powell (3000). Members of the Board of Governors for the new

Heights YMCA are K. A. Smith (3400), L. J. Heilman (2600), D. J. Jenkins (3130), W. R. Rosenberg (4360) and John McLay (1420).

Present for opening ceremonies were Archie Westfall, president of the Greater Albuquerque Chamber of Commerce; The Rev. Simon Nieto, president of the Albuquerque Ministerial Alliance who made the dedicatory benediction; and The Rev. Charles Fish who addressed the group.

Inside the gleaming 20,000 sq. ft. building, located on Indian School Road near San Mateo NE, visitors viewed the large 25x75 ft. heated swimming pool, crafts room, social activities room, kitchenette, lounge and club room.

"We are all very pleased to see this long-sought goal accomplished," K. A. Smith said. "It represents the combined efforts

and generosity of many civic-minded individuals and groups."

As chairman of the program planning committee for the new YMCA building, Mr. Smith stresses that the new facility will place high priority on establishing programs and facilities for family participation.

Activities memberships are available in the Heights YMCA, AL 5-6393. They are youth memberships, 8 to 15 years of age, \$12 annually, or 15 to 18 years, \$15 annually; adult memberships, 18 years and older, \$18 annually; and family memberships, father, mother and children under 18 years of age living in the same household, \$50 annually.

The new Heights branch will augment the long established service provided by the downtown YMCA and South Broadway branch. Youth organizations sponsored by the YMCA include Indian Guides, Hi-Y, Tri-Hi-Y, Jr. Hi-Y and Gra-Y.

Future plans for the new building include addition of more space and a gymnasium wing. The design is adaptable to add another 13,000 sq. ft. to bring the total to 33,000.

Hartley Jensen Will Moderate Panel at Shock Symposium

Hartley Jensen (8122-3) will moderate a discussion on the Zero Shift in Piezoelectric Transducers at the 29th Symposium on Shock Vibrations and Associated Environments to be held at the Oakland Naval Supply Center Nov. 17.

Hartley and Ted. E. Smart (7311) will present papers on the subject describing work in this field at Livermore and Sandia.

Nike-Zeus System Subject of Talk For Colloquium

Dr. D. P. Ling, Bell Telephone Laboratories, will speak at a research colloquium on Wednesday, Nov. 16, at 9:30 a.m. His subject will be "The Nike-Zeus System."

Tickets are required for the meeting which will be held in Bldg. 815.



SAFETY DISPLAY BOARD, one of two recently installed at Livermore Laboratory, is changed daily by Dorothy Thompson of the Safety Section, 8231-3. The boards provide space for monthly safety

posters, as well as records for manhours and days worked. The figures shown represent the Livermore safety record through Oct. 27. Safety figures on Nov. 7 were 1726 days and 3,980,000 manhours.

Editorial Comment

Classified Information vs Classified People

All Q-cleared persons here at the Corporation are familiar with the two common classes of classified information — documents and materials.

CLASSIFIED DOCUMENTS

CLASSIFIED MATERIALS

Another much larger and more sensitive class exists, however.

CLASSIFIED PEOPLE

We can lock documents in a safe or we can burn them; we can cover and put a fence around materials. But the Q-cleared individual who possesses classified information, or even sensitive information, even in bits and pieces, must ultimately control himself to protect that information. He must lock his tongue against all unauthorized or careless discussions. He must fence himself against all outside contacts that might subvert him. He must follow the rules of security to do his duty as a citizen when dealing with classified information.

Emily Gilmore Delegate To Business Women's National Convention

Emily Gilmore (3452) was official delegate for the Albuquerque charter chapter at the American Business Women's Association national convention in Indianapolis last month.

More than 4000 women from all parts of the United States attended the conclave. One of the main functions of the association is granting scholarships to worthy girls.

Emily accepted several awards for the Albuquerque chapter in recognition of their accomplishments during the past year.

Recovering

Ernie Fuentes (2444-3) is now at home following major surgery. He is doing well and expects to return to work about Nov. 18.

Sympathy

To Leslie N. Schofield (5112) for the death of his father Oct. 26 in Tierra Amarilla.

To William F. Leverenz (4253-1) for the death of his father-in-law Oct. 25 in Albuquerque.

To A. R. Eiffert (8230) for the death of his father-in-law in St. Louis, Mo., Oct. 16.

To Earle A. Paxton, Jr. (8233-2) for the death of his father in Muskegon, Mich., Oct. 3.

To C. D. Crawley (8222-1) for the death of his father in Weleetka, Okla., Oct. 16.

To Lorraine George (8211-3) for the death of her father in San Francisco, Calif., Oct. 26.

To J. Wayne Ellis (7243) for the death of his wife Nov. 3 in Albuquerque.

To William H. Seelbach (4252-4) for the death of his mother on Oct. 25.

To Roger H. Johnson (4251-1) for the death of his father-in-law on Oct. 25.



Marilyn J. Thomason (2541)

Take a Memo, Please

You can come down a ladder faster than you can climb one—unless you are careful.

Get Well Wishes

Get well wishes are extended to Virginia Epps (8213-1) who is recovering from recent surgery.

Family Addition

A daughter, Janet Rose, was born to Mr. and Mrs. Jim Shindelar (8123-1) Oct. 27. They have two other children—Marilyn, seven months, and Timmy, two and one-half—whom they adopted in the past seven months.

Weddings

Helen Hakes (4151-3) and Powell M. Henderson (3242) were married Oct. 21 in an afternoon ceremony at La Mesa Presbyterian Church. Afterwards friends and co-workers entertained them at the Western Skies.

Helen has been with Sandia eight years and Powell has been at Sandia Laboratory six and a half years.

Dorothy Shaffer (7240/3126) will be married Nov. 19 at the First Methodist Church to Edmund E. Cory of Albuquerque. After a honeymoon the couple will be at home at 5700 Euclid NE.

Dorothy has been at the Corporation two and a half years.

Ann Edwards(8213-3) and Robert R. Bennett were married Oct. 22 at the Pinegrove Community Church, Pinegrove, Calif. Ann has been with Livermore Laboratory since May 15, 1960.

Wedding bells will ring for Lucille Blake (4135-1) Nov. 30 in London, England. She will marry Laurence Moore, retired from the United States Information Agency. The couple will make their home in Ankara, Turkey, where Mr. Moore will be a free lance correspondent. Lucille has worked for Sandia Corporation nine years.

Congratulations

Born to:

Mr. and Mrs. C. R. Mehl (5111) a daughter, Nina Elizabeth, Oct. 21.

Mr. and Mrs. Don Gorsline (7241-1) a son, James Neal, on Oct. 11.

Mr. and Mrs. Willis E. Sharp (7243-2) a daughter, Phyllis Ann, on Oct. 25.

Mr. and Mrs. Robbie Chapman (3466-1) a son, Gary Lloyd, on Oct. 17.

Mr. and Mrs. Paul D. Darrah (4253-2) a son, Richard Paul, on Oct. 27.

Mr. and Mrs. Julio Pardo (2543) a son, Brian Timothy, on Oct. 23.

Mr. and Mrs. Henry C. Rumm (2544) a son, Christopher Kenny, on Oct. 28.

Mr. and Mrs. Richard A. Holt (8141-1) a son, Christopher Allen, on Oct. 26.

Mr. and Mrs. S. C. Cook (8122-1) a son, Christopher Scot, on Oct. 8.

Mr. and Mrs. R. D. Sturkie (8122-1) a son, David Cameron, on Oct. 9.

Mr. and Mrs. Jerry Cole (4252-7) a daughter, Valerie Sue, on Oct. 23.

Kappa Sigs to Dance

All Kappa Sigma alumni are invited to attend a UNM Homecoming dance, Nov. 18 at 8 p.m. at the Albuquerque Tennis Club. Live music will be provided.

For additional information contact Bill Cheek (7117), ext. 24161, or Murl Moore (4543), ext. 25266.

Sandian Who Serves

Pete Fessia — Teen Club Director — Helps Make New Building Possible

This is another in a series of articles describing the community activities of Sandia employees.

Helping with plans for a new Sandia Teen Club building has kept Pete Fessia, club director, busy these past few months.

The club is open to all teenagers who are children of Sandia Corporation, AEC or Sandia Base military personnel. Dues are 75 cents a month.

Grand opening of the building, located east of the Sandia Base Library, will be Nov. 18 at 7 p.m., and will mark the third anniversary of the Teen Club. All teenagers, as well as their parents, are invited to attend the anniversary dance.

Pete spent four years as assistant director of a teen club in Chicago with 500 members before coming to Albuquerque. He continued his youth work by taking over duties as advisor for an Explorer Post on Sandia Base.



—Pete Fessia—

He became director of the Sandia Teen Club in July of this year. "The teenagers plan their own activities and programs," he said, "but we still would appreciate more adult volunteers to work with the group." If anyone is interested, Pete may be reached at his home ext. 42181.

Pete can be found at the club directing activities from 7 to 10:30 p.m. on Fridays, and from 1 to 4 on Saturday afternoons. He advises the Junior Board (composed of teenage officers), and also attends the Junior-Senior (adult leaders) joint board meetings in an advisory capacity. Pete is also responsible for the annual budget.

He has been at Sandia since July 1956, and is a draftsman in 4412.

Transfers to Long Island

Charles A. Wells, supervisor of Section 2715-3, has been transferred from Albuquerque to Long Island, N. Y., where he will be supervisor of New York Area 2713-1, of Field Inspection Division. The move was effective Nov. 1.

Wedding Anniversary

Hermenes Chavez (4624) and his wife will celebrate their 20th wedding anniversary tomorrow, Nov. 11. They will observe the day in Magdalena where they were married.



REPORTER OF THE YEAR at Livermore Laboratory, Betty Lou Crocker (8123-1), receives fountain pen set from R. E. Poole, Vice President at Livermore, for her contributions to Sandia LAB NEWS.



LIVERMORE LABORATORY reporters for the LAB NEWS attended the annual reporters' luncheon, held Oct. 7. At the speakers' table (rear) are (l to r), Bob Harks, assistant editor, R. S. Gillespie, LAB NEWS Editor, Dick Dickson, assistant editor, and R. E. Poole, Vice President at Livermore.

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Electronic Reader Known As 'OSCAR' Helps Keep Tab On Performance Tests

Two "OSCARs" are the new darlings of Analysis Section 7511-1 of the Quality Assurance Department. At least they are most fondly thought of by the section's data reduction clerks Bertha Vencill, Josephine Norwood, Hazel Boyden and Myrtle Mauldin.

The OSCAR is an electronic device which "reads" data recorded during performance tests on weapons in storage. A third OSCAR is used by Data Reduction Section 8123-2 at Livermore Laboratory for environmental and flight test data. The machines, technically known as semi-automated oscillogram record readers, read data on oscillograms, report it on a light bank, type it on an electric typewriter and punch it into IBM cards.

The Livermore OSCAR punches data on paper tape for processing on an Elecom digital computer.

Previously it was necessary to manually measure peak readings

at many points on the oscillogram, record the data by hand, then manually punch it into cards. Since the oscillograms are 150 feet long and contain 36 lines of information, this was a formidable task.

With the OSCARS it is necessary only to position the reading head on the machine at various data collection points on the oscillogram. The rest is automatic.

"By eliminating the painstaking job of measuring," Data Reduction Clerk Myrtle Mauldin points out, "the machines allow us to read a roll in about half the time we previously needed."

Phil Bircher, section supervisor, adds, "The machines are enabling us to keep up with an expanding work load and at the same time give us more accurate data. And all at less cost than when it was done without the aid of an OSCAR."



JOSEPHINE NORWOOD operates one of the new "OSCAR" machines recently installed for use by Analysis Section of the Quality Assurance Department

7510. The machines have cut the time required for reading test oscillograms by half while accuracy of the readings has increased.

Group Travel to Europe at Reduced Rates Sponsored by Coronado Club

The Coronado Club is offering to sponsor chartered vacation travel to Europe at reduced rates for its members if enough inter-

est is shown to go ahead with plans.

Between 75 and 90 persons would have to sign up for the trip in order to charter a plane, according to George Banos (3122), who has been appointed trip chairman by the Coronado Club Board of Directors.

Coronado Club members who are sincerely interested in making such a trip should contact the club office, ext. 37276, and give name, organization and extension. For example, cost of a 22-day trip would vary between \$750 and \$850 depending on itinerary, hotel accommodations, etc., George said. This includes air travel from Albuquerque, land travel in Europe, rooms and meals.

A typical trip itinerary would be visits to England, Holland, Belgium, France, Italy and Switzerland with stops in most of the major cities. Tour would probably be held during summer months.

Individuals who are not members of the Club, but who are interested in this trip would need to join the Club now in order to be eligible to go, George reports. Only members of at least six months will be eligible for the tour.

"If sufficient interest is shown, we will call meetings to set up time, itinerary and schedules," George continued.

George may be contacted at ext. 29157 to answer further questions.

Sandians Guests of Honor at Salute to Polaris Developers

W. J. Howard, Director of Systems Development at Livermore Laboratory, and F. J. Maloney, supervisor of Project Engineering Division 8163, were among the guests of honor at a Navy Day dinner saluting the nation's Polaris missile development team.

Special guests at the dinner, held in Washington, D. C., were key officials from each of the Polaris prime contractors, as well as the Secretary of the Navy, Chief of Naval Operations, Commandant of the Marine Corps, Chief of Naval Weapons, and the Chief of the Bureau of Ships.

Principal speaker was Vice Admiral William F. Rayburn, Jr., who recently received the Distinguished Service Medal for his efforts in the Polaris program.

In recognition of the job done by the military-industry team on the Polaris missile, Thomas A. Callaghan, Jr., chairman of the dinner committee, pointed out that the establishment of the fleet ballistic missile system in the short period of three and one-half years "was an outstanding achievement requiring the closest possible cooperation between the Navy Department and industry."

Sandia Corporation's Livermore Laboratory was responsible for the development of the ordnance characteristics of the Polaris nuclear warhead.

Supervisory Appointment

ERNEST L. ARTERBURN to supervisor of Project Shops Division 4253, Mechanical Department.

"Tex" has been Heavy Machine Section supervisor within the division since September 1951.



One of the original "old timers" at Sandia Laboratory, Tex was stationed at Los Alamos Scientific Laboratory during WW II as a machinist with the Army Engineers. He came to Sandia with the original group from Los Alamos in 1946.

Still in the Army, Tex helped set up the Development Shops organization and worked as a machinist. When discharged, he returned to the same job as a civilian.

Prior to the war, Tex was a machinist with the Eureka Tool Company at Drumwright, Okla. He served his apprenticeship with the same company at Ranger, Tex., his home town.

Ranch Youngsters Spurn City Finding Action, Fun at Home

The country feeling of friendliness is being promoted by the Mountain Mustang Association, comprised of about 35 families living south of U.S. 66 in the Manzano Mountains.

Members of the association include Sandians J. T. Plant (4212-2) and his brother A. T. Plant (4233), J. J. Bluett (4422-1) H. E. Keith (2716-3), Richard Lincoln (4511-2) and A. I. Redlinger (2714-4).

The association was organized with the idea of providing group activities of interest to children as well as adults of the area. Members have built a full-size rodeo arena with two bucking shutes and a calf roping shute on five acres of donated land. The arena is used for the annual Easter rodeo, another rodeo in August and monthly horse shows.

Voluntary helpers are currently constructing a meeting house and a platform to be used for basketball, dances and roller skating.

Association members made their first official appearance as a group in the State Fair parade this year, led by their rodeo queen Linda Keith, 13-year-old daughter of Harold Keith.

During the August rodeo Jerry Whitmore, 17, became the

first girl in the group to qualify for membership in the Girl's Rodeo Association. She competed with the cowboys in bare-back bronc riding and stayed on the required six seconds. Jerry is the daughter of Elmo Whitmore (4575) and sister-in-law of Charles Byrne (3462).

Women are welcome to compete in the regular horse shows, however many prefer to contribute to the association by baking and helping at the concession stand.

The many activities certainly help keep the children on the ranches rather than driving 30 miles to Albuquerque for their fun.

F. A. Goss Speaks To Naval Reserve

Scientific engineering required to produce high reliability in heat, gas, shock, motion, and heat producing components was discussed by F. A. Goss at a Naval Reserve meeting last week. He presented a talk, "Explosive Components," to the Navy Reserve Ordnance Company 8-11. Mr. Goss is supervisor of Explosives Development Division 1312.

Football League Standings

Team	Won	Lost	Tie
1300	7	1	
4200	6	1	
4400	4	4	
7300	2	2	2
3400	1	4	2
7200	1	7	

The Calendar

- Nov. 14**
Society for Nondestructive Testing (Charter Meeting and Ladies Night)
Sandia Base Officers Club
Dinner: 7 p.m.
Meeting: 8 p.m.
Speaker: Dr. Gerold H. Tenney, Group Leader GMX-1, LASL
Topic: "Nondestructive Testing — A World Encompassing Profession"
For reservations or more information contact C. M. Littleton (7511), Ext. 46138
- Nov. 15**
Society of Technical Writers and Publishers
La Placita, Old Town
Dinner Meeting: 6:30 p.m.
Speaker: Roland Dickey, Director of UNM Press
Topic: "Technical Publishing of the Southwest"
For further information contact Don Emrick (2322), Ext. 46132
- Nov. 17**
American Society of Metals
Hoyt's Dinner Bell
Social Hour: 6 p.m.
Dinner Meeting: 7 p.m.
Technical Meeting: 8 p.m.
Speaker: Dr. J. E. Reynolds, Motorola
Topic: "Solid State Diffusion, Theory and Practice"
For further information contact Gerritt Hof (1121), Ext. 52364
- Nov. 17**
Institute of Radio Engineers
Sandia Base Officers' Club
Social Hour: 6 p.m.
Buffet: 6:30 to 7:45 p.m.
Technical Meeting: 8:15 p.m.
Speaker: Paul W. Klipsch
Topic: "Stereo Geometry"

- For further information contact Nick Bourgeois (1414), Ext. 54153
 - Nov. 19**
American Society of Mechanical Engineers
Joint meeting with Los Alamos subsection of ASME
The Lodge at Los Alamos
Luncheon: 12 noon
(\$1.75 in advance, \$2 at door)
Program: Inspection trip of LASA Reactor Facility
Special program and tour arranged for ladies which will include a brief non-technical description and tour of the reactor site and city of Los Alamos.
Members and guests should arrange own transportation. Security clearance not required.
For further information contact Newton Anderson (1611), Ext. 39252 or DI 4-5094
 - Nov. 21**
National Society of Professional Engineers
American Legion Hall
Social Hour: 6:30 p.m.
Dinner Meeting: 7:30 p.m.
Speaker: Paul Robinson, District Attorney
Topic: "Professionalism"
For further information contact Walter Scott (7184), Ext. 28253
 - Nov. 23**
Amateur Radio Caravan Club of N. M.
Radiation Lab, Lovelace Clinic
Business Meeting: 7 p.m.
For further information contact W. F. Anderson (2451), Ext. 46270
- This information compiled by the Council of Technical and Scientific Societies.



NEW OFFICERS OF Sandia Toastmaster's Club No. 765 are (standing, l to r) Art Kellom (7147), historian; Bob Hogan (7122), executive vice president; Bill Gardner (3151), educational vice president; Ken Drake (2541), treasurer; Jim Edgington

(1321), secretary. Seated, (l to r): Bob Sylvester (2543), immediate past president and Toastmaster; Speaker of the Year, Lee Stinnett (2563-1), president, and Fred Dumstra (1332), sergeant-at-arms. They were installed at a meeting last week.



DOUBLES CHAMPS of the Sandia Laboratory Horseshoe Tournament are pictured above. Sam DeHaan, left, and Lou Eversgerd (both 4611) defeated Jim Taylor and Tony Shannon (both 4253) for championship honors. The champs took four out of seven.



SINGLES TENNIS CHAMPION of Sandia Laboratory is H. S. "Hup" Wallis (2331) shown above demonstrating the service that was the edge in defeating Charlie Chavez (2643) in final playoffs.

ASME To Meet At Los Alamos, Visit Reactor

The New Mexico Section of the American Society of Mechanical Engineers will meet at Los Alamos with the Los Alamos subsection Saturday, Nov. 19. The luncheon meeting will be held at the Lodge and is to be followed by an inspection trip of the Los Alamos Scientific Laboratory Reactor Facility.

Wives and friends are invited, according to Richard Kidd, Jr., (2537), publicity chairman. A special program and tour has been arranged for the ladies which will include a brief non-technical description and tour of the reactor site and a tour of the City of Los Alamos. Members and guests should make arrangements for their own transportation.

Lunch at the Lodge will begin at 12:00 noon. Tickets purchased at this time will be \$2 but advance tickets sell for \$1.75. Contact Newton Anderson (7321), ext. 39252, for additional information.



FIRE PREVENTION posters are a current project of Cub Pack 291. Den Mother Alexander Jack (3311) gives encouragement to the boys' coloring efforts. The Cub Scouts (l to r) are: Clarence Atwater, Billy Galbreth, Paul Sick, Scott Brown, Kevin Dunn, Tom Sick and Bruce Jack. Youngsters plan activities at weekly meetings.

7 Teams Tie In 8100-8200 Golf Tournament

The annual 8100-8200 organizational golf tournament held Oct. 23 at Pleasant Hill Country Club, San Jose, ended in a tie with seven teams in each organization winning in match play.

Individual scorers in the tournament were Woody Hammons, Minnesota Mutual Insurance counselor playing for the 8200 team, who shot a low gross of 83, John Newberger (8142-1) and William McWhorter (8116-3), who tied for a low net score of 68.

A playoff of the tournament will be scheduled for November or December, Jack Bonetti, Employee Services 8212-2, announced.

Jim Tichenor New President of Sandia Basketball Association

Jim Tichenor (6021) will head the 1960-61 Sandia Laboratory Basketball Association as president. Other officials elected at an organizational meeting recently are Tony Arnold (2421), vice president, and George Banos (3122), Services and Benefits Division representative.

League play will begin on Nov. 30. All games will be played in the Sandia Base gym on Wednesdays and Fridays. Three games will be played each evening beginning at 5:30, 6:45 and 8:00.

Rather than organizational teams this season, only eight teams will compete, according to the announced plans of the Association.

Coronado Club Offers Buffets, Dancing, Party On November Calendar

Thanksgiving buffet-dance will be held at the Coronado Club Thursday, Nov. 24, from 5 to 10 p.m. The buffet lines will be open from 5 to 7, and dancing will be from 6 to 10. Leigh Sprague's orchestra will play.

Tickets are \$2.60 for members, \$3.60 for guests, and \$1.25 for children. Tickets should be picked up at the Club office by Nov. 21.

There will be a House Party for unmarried members of the club Friday, Nov. 25, from 8 p.m. to midnight. There's no admission charge. Recorded music for dancing, free beer and dips will be supplied by the Club. Only Club members may attend.

Since the 3100 organization has cancelled its Christmas dinner-dance on Friday, Nov. 18, social hour and the \$1.75 buffet will be offered as usual. Al Hamilton's band will play from 5:30 to 8:30 p.m.

All Club members are invited to the free graduation ball for dancing class members on Saturday, Nov. 12, from 9 to 1. Recorded music will be provided for dancing.

Cub Den Mother...er, Father.. Has Strong Feelings On Youth Service

"Every father should be a Den Mother" opines Alexander Jack (3311). He has the experience to prove it.

When his son Bruce, 9, wanted to join the Cub Scouts, "Jack" (as he prefers to be called) found the boy would have to be placed in an inactive group because there was no Den Mother. He inquired through the Kit Carson Council and found there was no rule that said the "mother" had to be a woman.

So far Jack has been able to carry out all his duties in fine fashion—the only exception, he sends his wife to the monthly meeting of Den Mothers.

Den 6, Pack 291, has seven members and they meet once a week for one or two hours. Although only organized in late September the boys, who range in age from eight to 10, have already held one cook-out (in the Jack's backyard), made special fire hats for their visit to a fire station, made and handed out posters calling attention to Fire Prevention Week, and helped their parents conduct fire safety surveys in their home.

Jack, himself, began scouting back in 1925 in Dumont, N. J., worked his way up in his troop

to become Scoutmaster. He was a member of the Scout honor guard when Dan Beard, one of the founders of the Boy Scouts, was buried. Before coming to Albuquerque he was a Scoutmaster in Bucksport, Me.

"I feel it is important to work with this age group of boys, even if it means I have to be a Den Mother," Jack said. "We have a responsibility in educating the boys in patriotism and to have a feeling of belonging. The boys can also learn at this time that they have a duty in serving their community."

Sandians at Livermore Tour Radiation Lab During Family Day

Many Sandians visited the Ernest O. Lawrence Radiation Laboratory Family Day Tour held Nov. 5 in Livermore. The tour featured the newly acquired LARC (Livermore Advanced Research Computer) facility, considered to be the fastest and most advanced computer system in operation anywhere.

The Family Day Tour, limited to LRL and Livermore Laboratory employees and their families, began at 10 a.m. and ended at 4:30 p.m.



LUCKY HORSESHOE helped Harold Faulkner (8114-4) win top honors in the Livermore Laboratory horseshoe tournament with a record of 10 wins and one loss. Runner-up was D. B. Sparger (8223).

Welcome Newcomers

Oct. 30-Nov. 6

Albuquerque	
Elsie M. Upchurch	3153
Kathleen L. Johnston	3423
*Frances A. Schroer	3126-6
Wright Van Deusen	3423
*M. Rita Sanchez	3126-1
Gail J. Konen	3122
New Mexico	
Patrick W. Hurley, Tucumcari	2532
Minnesota	
Robert H. Dungan	1124
Ohio	
John E. Barsic, Medina	1314
Wyoming	
Robert V. Panos	2561

Returned from Leave

Florence Archuleta	3461
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* Denotes Rehired

New Hires at Livermore

Winton R. Alm, San Diego	8114-2
Nadeane E. Davenport, Livermore	8212-5
Lillian K. Funk, San Leandro	8232-1
Margaret F. Hill, Pleasanton	8212-3
John Jesse, Jr., San Leandro	8222-2
Lee R. Kolb, San Francisco	8124
Karl J. Livingstone, Fremont	8223-5
Nathan W. Purington, Livermore	8222-1
Fred P. Reinstein, Livermore	8232-3
William E. Scott, Jr., Livermore	8232-4
Herman Wink, Castro Valley	8222-1



LETTERMEN among the technical staff at Livermore Laboratory are (l to r) Tom Lane, V. K. Gabrielson, Jess Burns, Ed Holbrook, Raymond E. Faltings and R.C. Dougherty. Poses represent letters.

Sandia Engineers, Scientists Made Grade in College Sports

A popular image of engineers and scientists, or the "brainy set," is one of non-athletic men, slide rules, reference books and mathematical equations.

However, Sandia's scientists and engineers can disprove this image. Look through their college annuals, and you'll find a lot of familiar faces in such activities as student government, honorary groups and intercollegiate sports.

Their athletic participation, their coaches will tell, gave them a competitive spirit, alert mind, and the ability to make quick, sound decisions.

A list of all persons at Sandia and Livermore Laboratories who won letters for their athletic abilities would be voluminous. Following are a few typical examples.

Vince Arroyo, who graduated from the University of New Mexico in 1947 with a bachelor's degree in electrical engineering, earned three letters in basketball and two in baseball. He has been at Sandia eight months working in Plant Engineering Design Division 4543.

Jess Burns, a varsity football player for two years, was awarded his BS degree in electrical engineering from the University of New Mexico in 1948. He has been with Sandia for 12 years, starting with Sandia Laboratory in surveillance and environmental testing work. He is currently supervisor of Livermore Laboratory's Data Center Section 8123-1.

R. C. Dougherty, who won his

varsity letter in riflery, earned his bachelor's degree in mechanical engineering from the University of Idaho in 1953 and his master's in 1958. He has been in preliminary design work in division 8141 for the two years he has been at Sandia.

Raymond E. Faltings, who won four letters in football and three letters in baseball while at Montclair State College in New Jersey, received his bachelor's degree in economics there in 1939 and his master's in personnel administration at the same school in 1948. He has been at Livermore Laboratory a little more than a year, working in the Product Evaluation Division 8116.

Ken Flynn has worked more than three years at Sandia in Warhead Electrical Systems Division 1264. He received three letters in basketball from North Dakota Agricultural College where he graduated in 1957 with a bachelor's degree in electrical engineering.

V. K. Gabrielson, a varsity baseball player for four years at Bethany College, Kan., earned his bachelor's degree in mathematics in 1954 and went on to get his Master's degree in mathematics in 1959 from Kansas State. He has worked for Sandia for the past nine months in the Preliminary Analysis Division 8141.

Ed Holbrook, supervisor of Data Reduction Section 8123-3 at Livermore Laboratory, received his letter in football at York College, Nebr., where he earned his bach-

elor's degree in mathematics in 1941. In 1952 he received his masters degree in mathematics at the University of South Dakota. He has been with Sandia Corporation since 1955.

Tom Lane, who won his track letter at Vanderbilt University where he received his bachelor's degree in mechanical engineering in 1951, earned his master's degree in 1956 at Georgia Institute of Technology. A Sandia employee since 1956, Tom is currently supervisor of Section 8116-1 at Livermore Laboratory.

Max Newsom won letters in gymnastics and weight lifting at Texas A&M College. He received both his bachelor and master's degrees in electrical engineering from that school in 1955 and 1956. A member of Project Division 1247, Max has been at Sandia four years.

Lee Schulz, supervisor of Pressure-Sensing and Power Conversion Devices Division 1331, graduated from the University of Colorado in 1943 with a bachelor's degree in mechanical engineering. Lee, who has been at Sandia almost 13 years, received letters in both gymnastics and track.

Bill Zimmer, who received a PhD degree in mathematics from Purdue in 1959 and a bachelor's degree in mathematics from St. Joseph's College (Indiana) in 1954, earned football and tennis letters from the latter college. He has been at Sandia about one year in Statistics and Components Evaluation Division 1442.

Former Sandian C. E. Wedwick Dies in Illinois

Word has been received in Albuquerque of the recent death of C. E. Wedwick,



a former Sandia department manager in the organizing organization from November 1949 until July 1955. He had been with Western Electric's Montgomery Shops in Aurora, Ill., since leaving Sandia.

Mr. Wedwick died of a heart attack on Oct. 26. Funeral services were held Oct. 29 at Naperville, Ill., where his family lives.

Three Sandians Attend Dust Control, White Room Conference

Three Sandians attended a symposium on Dust Control and White Rooms at Arizona State University recently, to present a paper entitled, "Dust Monitoring in the Super-Clean Room by the Dry-Slide Settling Technique."

They are I. M. Kodel (2541), R. C. Marsh (2564) and H. H. Baxter (4543). Authors of the paper were Mr. Kodel, Mr. Marsh and W. J. Whitfield (2564).

The symposium was sponsored by the Phoenix Chapter of the American Institute of Plant Engineers.

In addition, Mr. Whitfield attended an American Society for Testing Materials meeting in Skytop, Pa., on Nov. 3 and 4 as a member of a committee on the control of contamination in materials for electron and semiconductor devices. At that time he discussed the dry-slide settling technique covered in the paper mentioned above.

Ben Aikin Heads Livermore Ass'n For Gifted Children

Ben Aikin (8232-5) was recently elected chairman of the Livermore Association for Gifted Children, a group whose purpose is to interest the community in the needs of the exceptional child. Ben has been active in the organization for over a year.

A roundtable discussion, which included Eugene Aas (8144) as a panelist, preceded the election meeting. Topics of discussion were, "what is the child's greatest need," and "how can his parents, school and community help the gifted child now."

Ohio State University Publishes Article by Sherwood Peres

A technical article by Sherwood H. Peres (3133), prepared two years ago as part of his work towards a doctor's degree, has recently been published in booklet form by the Ohio State University printing office.

Entitled "Interrelationships of Dimensions of Community Systems - A Factor Analysis of 82 Variables," the article was co-authored by Christen T. Jonassen, now a professor at Ohio State.

The article uses mathematical techniques to determine the seven basic factors for measuring trends of social or economic significance. Mr. Peres received his PhD degree in industrial psychology and has been with Sandia Corporation a year.

Back from Reserve Duty

Richard Richards (8141-1) returned to Livermore Laboratory after spending two weeks active duty at Kirtland Air Force Base in Albuquerque. Major Richards was assigned to the Weapons Ordnance Branch of the Air Force Special Weapons Center (AFSWC).

Christmas Basket Program Starting In Livermore Area

The Christmas spirit is already evident on the Livermore scene with the local area of the Council of Social Planning, headed by Marv Glaze (8213), beginning its annual Christmas Basket Program to provide toys, food, and clothing to needy families.

In charge of the basket committee is Ray Huston (8212-2). Under his direction, the committee will place toy barrels at the city and county fire houses and other locations in which donors may leave surplus or repairable toys. Broken toys are taken to the Santa Rita Rehabilitation Center where inmates work throughout the year repairing them for the following Christmas.

Last year the committee arranged for donations of food, clothing, and toys to 66 needy families, including 221 children.

Lawrence E. Sedore Retires Nov. 30

Lawrence E. Sedore, a Corporation employee for eight and one half years, will retire Nov. 30.

He is an assembler in Specialties Division A 4221.

Before coming to Sandia, he worked for the Viking Manufacturing Co. in

Jackson, Mich. When a new plant was set up in Manhattan, Kan., Mr. Sedore was in charge of all maintenance work at the new location.

Mr. Sedore plans to do a little gardening and trout fishing, and also wants to take a trip back to Michigan.

He and his wife live at 236 Cardenas NE. They have three children and nine grandchildren.

Security Lecture Tells Of Communist Threat To American Youth

Sandia Laboratory employees are currently attending a security meeting with the theme, "Communism Infiltration of U. S. Youth."

Ed Long, Security Education Section 3231-2, presents a 30-minute lecture, followed by a British film, "Document 449."

The lecture is one of a series dealing with the threat of communism periodically presented to all employees by the Security Education Section.

Drawing a parallel between the youth riots in Japan that prevented President Eisenhower's visit and the highly organized youth riots in San Francisco recently, Mr. Long shows that the Communists consider youth a prime factor in worldwide agitation for propaganda purposes.

"We must remain aware of the dangers," he said, "and develop strong programs for resisting the threat."

Junior Rifle Shoot Honors Earned By Sandia Youngsters

Youngsters of Sandia Laboratory employees made a good showing in the New Mexico Junior Outdoor Smallbore Match held recently on Sandia Base.

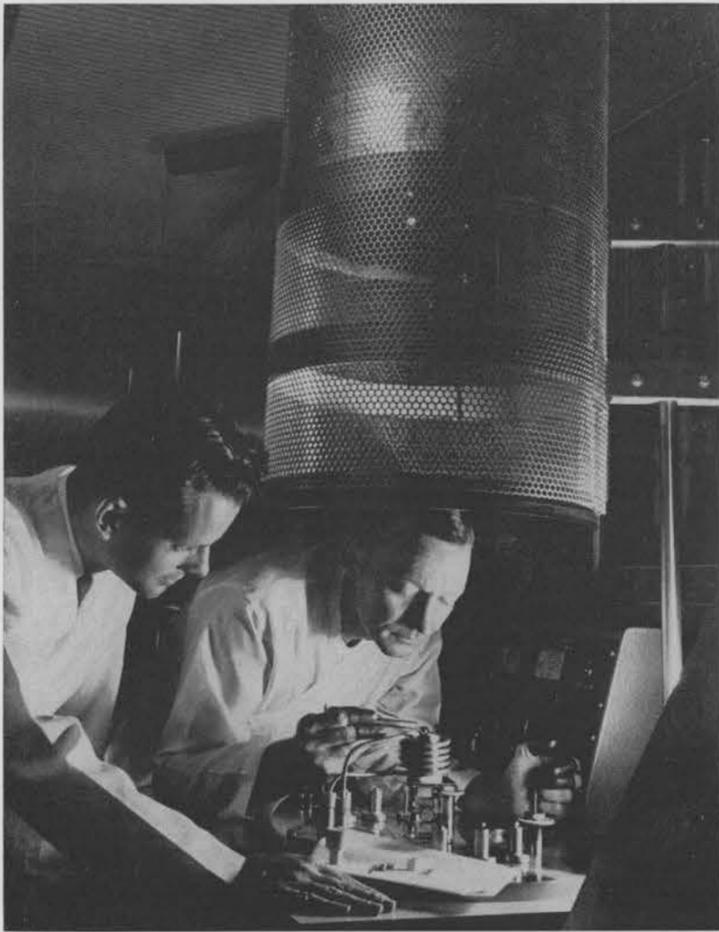
Jack and Patricia Dain, children of Frank Dain (4211), won 10 individual medals between them. In the individual matches John Blair, son of W. H. Blair (2723), earned eight medals. Then the three teamed up with another boy to win the State Four-man Team Championship.

Children of Lawrence Lopez (2721), Beverly and Reid, came in for a good share of the awards in "C" and "D" classes. Tom Treadwell, son of Lamar Treadwell (2532), won three medals in the "D" Class.



DEMONSTRATING their prowess in sports are oratory. (l to r): Bill Zimmer, Vince Arroyo, Lee Schultz (seated), Ken Flynn and Max Newsom.

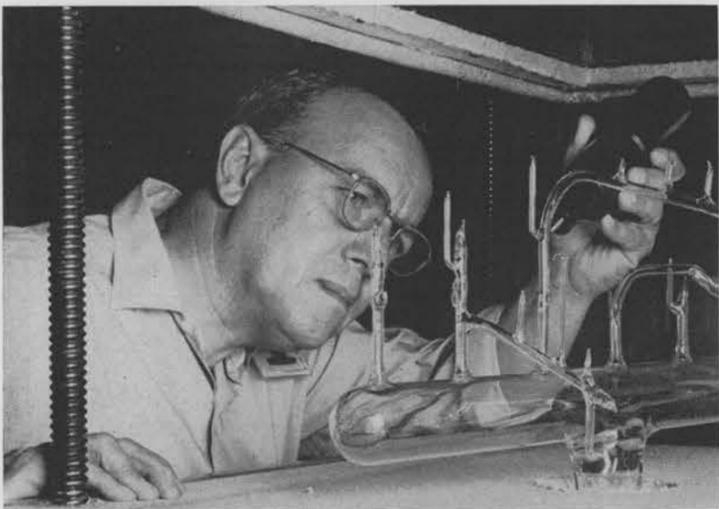
Supporting New Concepts In Electronic Fabrication



INSIDE CLEAN ROOM Vernon Smith (4233-4) prepares a tube for induction brazing in a vacuum bell jar as engineer T. J. Williams (1431) watches operation. Final testing is also done in this room.



MICROSCOPES, welding and testing equipment are available at work benches inside Physical Electronics Laboratory clean room for final work on vacuum devices. Vernon Smith examines ceramic core.



HIGH FREQUENCY SPARK is used by Dean Wise (on loan to 4233-4 from 4232-1) to determine amount of gas remaining in glass manifold of this vacuum system. Bake oven lowers over unit.

New Physical Electronics Lab Is Housed in Room 'Cleaner Than Clean'

A new facility at Sandia, the Physical Electronics Laboratory, will make it possible for Sandia research and development organizations to undertake advanced concepts in and fabrication of vacuum electronic devices.

"This is a new capability for Sandia Laboratory," according to D. A. Watt, supervisor of Electrical Division 4233. "The aim of the lab is to support Sandia's research and development organizations in their current requirements for unique vacuum electronic devices. We can now do here part of the research work previously carried out by other laboratories. As a result we provide better process control plus more convenience."

The lab, located in Bldg. 834, is presently staffed by four technicians, two of them staff aides.

All of the equipment was built to Sandia specifications.

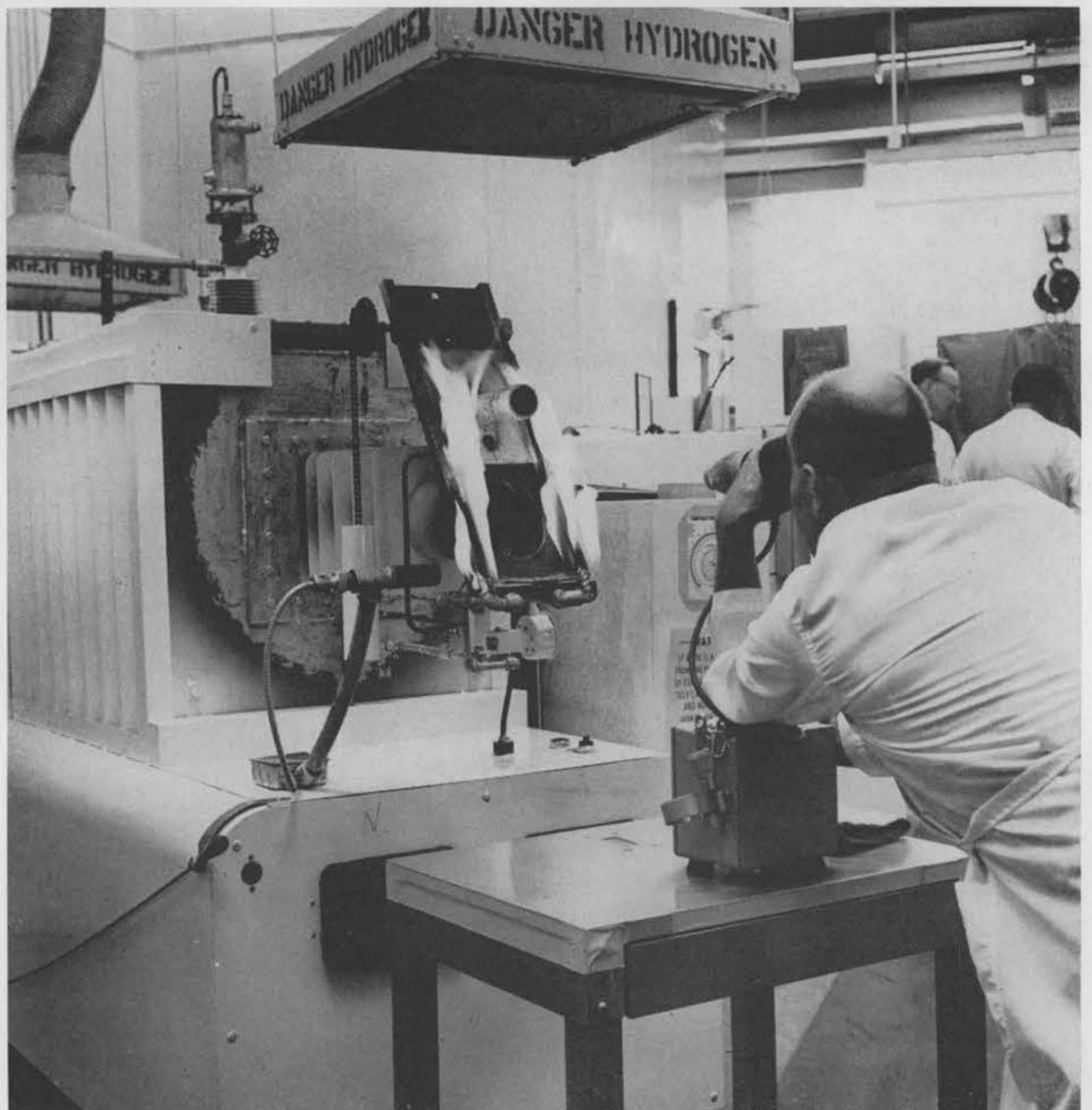
Final stages of work and testing of vacuum electronic devices are carried out in a specially-constructed stainless steel and glass "clean room." Absolute cleanliness is used to guarantee the high quality of the vacuum devices. In this room the temperature is maintained within plus or minus two degrees of 70 degrees Fahrenheit and humidity is always below 50 per cent. The interior is

cleaner than a hospital surgical room with a filter eliminating all dust particles down to one-tenth of a micron (or one ten-millionth of a meter) in size.

Before entering the clean room, employees enter an ante room to don special lint-free nylon smocks, shoe covers and hoods. They then stand in an air shower to be blasted by compressed air for 15 seconds.

Within the room there are vacuum bell jars for vacuum brazing and vacuum evaporation (metals are deposited on certain surfaces by first vaporizing the metal). There is a control panel to regulate a radio frequency induction heating capability which can be fed into a vacuum bell jar. Spot welders and heli-arc welding equipment are built into enclosed work benches which utilize absolute air filters.

Outside, in an adjoining work area, is a machine in which a vacuum ranging down to 10 to the minus eighth power millimeters of mercury can be obtained. A bake-out oven is lowered over a high temperature glass manifold on which a tube or other device is mounted. Maximum temperatures of 1000 degrees F. bake out the undesired gases and contaminants which are mechanically pumped out of the mounting. When the desired vacuum is



OPTICAL PYROMETER is used by William Edwards (4233-4) to double check temperature gauging of wet hydrogen furnace. Flame burns off any hydrogen present thereby forming a safety shield.

reached, the glass is heated with a torch and pinched off to form a seal.

After a part has been fabricated, it is usually ready for brazing in one of the hydrogen furnaces. One uses "dry" hydrogen with a dew point of down to minus 75 degrees F. This means it would be necessary to lower the temperature to -75 degrees in order to draw out any moisture. In brazing stainless steel, there would be no oxidation in using this fur-

nace. The second furnace uses "wet" hydrogen—the hydrogen is bubbled through water—and is utilized in making ceramic to metal seals and ceramic metalizing. Both furnaces range in temperatures up to 3200 degrees F.

Although one of the most explosive gases known, hydrogen is used because of its protective atmosphere which helps keep the item clean. Hydrogen is consumed at the rate of 75 bottles a week (each contains 225 cu. ft.). This

gas and others such as nitrogen, argon, helium and carbon dioxide, are stored outside of Bldg. 834 in a special gas house.

After the heat treatment the article can be passed directly through protected openings into the "clean" room for remaining operations and testing.

Steps undertaken to achieve a clean working device include chemical cleaning, ultrasonic vapor degreasing, and rinsing in deionized water (the equivalent to water distilled 28 times).

10 Years



Walter W. Tillman
4251
Nov. 1, 1950



Ishmael Sanchez
4221
Nov. 3, 1950



J. N. Ballentine, Jr.
2724
Nov. 9, 1950



Willis R. Erwin
4582
Nov. 9, 1950



Robert S. Gillespie
3431
Nov. 10, 1950



Edwin I. Bruce
7117
Nov. 13, 1950



Jim W. Galbreath
3151
Nov. 13, 1950



Patrick G. Sanchez
3242
Nov. 13, 1950



Alberta J. Corkran
7220
Nov. 14, 1950



Lloyd C. Goodrich
8122
Nov. 14, 1950



Andrew W. Kuntz
4574
Nov. 14, 1950



Paul R. Morgan
2622
Nov. 14, 1950



John E. Church
4252
Nov. 15, 1950



Mary C. LaFrenz
3466
Nov. 15, 1950



N. V. Tarnawsky
3464
Nov. 15, 1950



Lewis W. Hake, Jr.
1231
Nov. 16, 1950



J. Gordon King
2532
Nov. 19, 1950



Charles W. Appel
2641
Nov. 20, 1950



Reuel B. Dewitt
7241
Nov. 20, 1950



Elmer M. Irving
2622
Nov. 20, 1950



Clyde C. Boatright
4211
Nov. 21, 1950



Gertrude W. Butler
7211
Nov. 21, 1950



Earl T. Robbins
4581
Nov. 21, 1950



Donald Barack
4251
Nov. 22, 1950



Margaret M. Conney
7241
Nov. 24, 1950



James R. Hollon
4513
Nov. 24, 1950



Pete N. Saavedra
4513
Nov. 24, 1950



Dewey J. Stout
7212
Nov. 24, 1950



Erwin J. Smith
4211
Nov. 24, 1950

Sandia Golf League Champions Named

Championship team of the 1960 Sandia Golf league was determined recently when winners in each of the six flights competed for the title in 18-hole match play.

Coming out on top were Dick Kidd (2533), John Puhara (4413), Dan Freshman (4173), and Ken Lloyd (4413), "A" Flight, Weekend League. Nosed out by half a point were Gil Lovato and Vern Smith (both 4233), winners in "A" Flight, Evening League.

Other finalists were: "B" Flight, Evening League — Ralph Campbell (3241), Jim Kimbrough, Cliff Hiner and Gwinn McCarty (all 3242); "C" Flight, Evening League — Dennis Chavez, Charlie Chavez and Lloyd Strosnider (all 2642); "D" Flight, Evening League—Lew Larson, Werner Kuhn, Bob Fellerhoff and Bob Hedges (all 2716); "B" Flight, Weekend League—Lou Aragon (4171), Joe Gaynor (2631), Gene Springer (3451) and J. D. Jones (4171).

YWCA to Offer Investment Class

A six lesson course in the practical aspects of investing in securities will be offered at the YWCA if enough interest in the series is shown.

Intended primarily for beginners, the lessons will be non-technical. Risks and possible gains involved in stocks, bonds and mutual investment funds will be discussed fully, with a half hour question period at the end of each session.

Discussions will be conducted by members of the investment firm of Phillip, Hindley & Lagrave, Inc., who will donate their time as a service to the YWCA.

The course is offered at no charge to current members of the YWCA. Cost for non-members will be \$5.00, and the course is open to men as well as women.

Class will start on Tuesday, Nov. 15, at 7:30 p.m. For further information contact Julie Williams at CH 7-8841.

1400 Organization Plans 'Component Capers' at Coronado Club Nov. 19

Members of 1400 organization will hold a "Component Capers" dance at the Coronado Club Saturday, Nov. 19, beginning at 8:30 p.m. Music for the dance will be provided by Jack Shearing and his orchestra.

Entertainment will be by the "Desert Tones," a female barber-shop quartet. Chips and dips will be furnished and a drawing for door prizes will be held. Tickets are \$2.50 per couple, \$1.25 stag, and are available in the 1400 office or from 1400 division ticket salesmen. All Corporation employees and guests are invited.

Five Years

Nov. 12-25

Dorothy M. Braasch 3126, Joseph J. Bradshaw 7312, Dona M. Kiekhaefer 7314, Ann W. Shiver 5426, H. E. Vaiden 1432, Richard P. Demmel 4173, Louis W. Jamme 4411, Robert A. Randall 1332, L. F. Estabrook 1331, Werner W. Kuhn 2716.

Mountain Club to Take Three Days In Arches Monument

Arches National Monument is the goal this three-day holiday for members of the New Mexico Mountain Club and their guests.

Armin Behr (AEC-ALO) will lead this outing in southeastern Utah. The area contains numerous arches and other spectacular formations of sandstone, resulting from erosion.

R. M. Jefferson Tells Students of Sandia's New Reactor Facility

SERF, Sandia's Engineering Reactor Facility, was the subject of a talk by R. M. Jefferson (5431-1) last week given to members of the Science Club of A. Montoya School in Tijeras. Unclassified aspects of the design, construction and use of SERF were presented to the ninth grade students.

SHOPPING CENTER

CLASSIFIED ADVERTISING

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

RULES

1. Limit: 20 words
2. One ad per issue per person
3. Must be submitted in writing
4. Use home telephone numbers
5. For Sandia Corporation and AEC employees only
6. No commercial ads, please
7. Include name and organization.

FOR SALE

- 24" TV, Motorola, mahogany cabinet picture tube okay but set needs repair, \$40. Teisher, AX 9-6987.
- '53 STUDEBAKER coupe, V-8, floorshift with overdrive, \$300 or best offer. Fairbanks, AM 8-1510.
- '53 PONTIAC 2-dr., 58,000 miles, standard transmission, straight 8, \$200. Guist, AX 9-9060 after 5 p.m.
- '58 FORD Fairlane 500, power brakes and steering, 4-dr., \$1200. Pritchard, AM 8-6430.
- '55 OLDSMOBILE convertible, completely customized, 3/4 race engine, new top, tires and brakes. Taylor, AM 8-9040.
- 3 BDR house, 1 1/2 baths, h/w floors, sprinklers, walled back yard, near schools, \$950 down, can assume owner's 4 per cent loan. Gay, 1945 Georgia NE.
- '55 BEL AIR convertible coupe, V-8, ww, R&H, \$825. Shreve, DI 4-7146.
- ELECTRIC RANGE, Norge, \$150. Kostka, 6723 Bell SE.
- LIVING ROOM SUITE, 2-piece. Ryan, AX 9-3318 after 5:30 p.m.
- 303 BRITISH Enfield Sporterized w-sling, \$25. Ouellette, AX 9-9266.
- AQUARIUM, 10 gal. w/wrought iron stand, heater, filter, two aerators, thermometer, lights, air pump, and fish, \$20. Driscoll, AM 8-8726.
- RCA 17" console TV, mahogany cabinet, \$30. Rayner, AM 8-1705.
- WINTER JACKETS, heavy, 2, boys sizes 8-10, \$2 each; beacon bathrobe, 75 cents. Hicks, 321 Manzano St. NE, AM 8-8640.
- PHILCO REFRIGERATOR w/freezing compartment, \$65; gas range, 36", 4 burners, \$40; Underwood typewriter, \$10; all for \$99. Moon, 2516 Gen. Arnold NE, AX 9-1181.
- EXPANDO TRAILER, 3 bedroom, 15' wide, 37' long, w/w carpeting, fully furnished, \$1500 down, \$109 per month. Koppel, DI 4-2706.
- '57 FORD country sedan station wagon, extras, \$1345; dinette table, beige formica top, 4 white plastic chairs, \$15. Selph, AX 9-6833 or AX 9-5607.

CHINA CUPBOARD, solid maple, early American, with hutch, half price, \$100. Stamm, DI 4-7431.

'58 EDSEL convertible, power brakes and steering, auto. trans., R&H, \$1095. Owner must sell due to other obligations. Hopper, CH 7-3971.

ALUMINUM BOAT, 1959 four-passenger Viking w/all accessories including skipper's chair, loading bar, car-top carrier, \$145. Pappas, AM 8-0781.

'53 FORD PICKUP, 1/2 ton, V-8 w/over-drive. Elliott, DI 4-4081.

LIVING ROOM SET, 3-piece, upholstered, \$95; 45 rpm record changer and amplifier. Gray, AL 6-1560.

GAS HEATER, Southwind, 6 volt, ideal for jeep or economy cars, complete kit, \$34.50. Shea, AL 5-8092.

HEATH TR-1E 4-track recorder w/stereo turntable preamp, and dual 10W ultra-linear amplifiers, in cabinet w/monitor speaker, \$225. McKay, AL 5-9779.

DESIGNER'S ORIGINAL 3-piece suit, fleece 'n flannel, \$60; 10-piece sailing blues ladies sports outfit, \$16; Charbroiler, vertical, \$10. Tendall, Ext. 23195.

2 BRM HOME, 9 blocks from base, walk to schools, shopping, many extras, low payments, will negotiate. Van Deusen, AX 9-4328.

'55 MG-TF roadster, wire wheels, new brakes and master cylinder, new battery. James, 1616 Coal St, Apt. A.

TWO TWIN BEDSTEADS, \$5 each; two twin boxsprings, \$10 each. Dingman, DI 4-1052, 4217 Comanche NE.

ARMY DRESS uniform w/7/4 hat, 41 regular, 33 waist. Applegate, AM 5-0980.

'56 BUICK, Roadmaster, 4-door, PS, PB, Dynaflow, R&H \$775. Disch AX 9-1201.

TRAILER, 21', sleeps 5; gas-electric, complete kitchen, bath, 10-ply nylon tires, hydraulic brakes, extras. Long, AL 6-0262 after 5.

VIKING VALIANT transmitter, \$275, will trade. Hansen, 820 San Pedro SE, AM 8-0769.

RME 152A converter 10-6-2, meters, \$25. Nogle, AX 9-3863, 11721 Clifford NE.

HOTPOINT DELUXE automatic washer, 1958 model, make offer. Sorley, 1917 Moon NE, AX 9-0172.

BOY'S BICYCLE, 24" w/thorn resistant tires and tubes; boy's 26" bicycle, w/brand new tires and tubes, both completely reconditioned. Christy, 2932 Hermosa Dr. NE.

TRAMPOLINE, medium size, used very little; rear bumper for 1959 Dodge pickup. Stuart, AX 9-9190.

3 BRM HOME, 2 baths, den, w/b fireplace, double garage, screened patio, 4 1/2% loan w/low monthly payments will accept R.E.C. Vogt, AX 9-2551 after 5:30.

'57 CADILLAC Coupe DeVille, PS, PB, air, double eagle tires, very few miles, \$2595. Ison, AL 5-2426.

NEXT DEADLINE FOR SHOPPING CENTER ADS Thursday Noon, Nov. 17

- '57 ALJO 15 ft. camping trailer, can be seen at 11100 Woodland Ave. NE. Watt, AX 8-1307.
- 35 mm CAMERA, Contax IIIA w/FL5 Sannar; 21mm Biogon, Universal finder; close up device; Univ. case, other items, \$400 or sell accessories separate. Souther, AX 9-2964.
- AMERICAN FLYER freight and passenger train, originally cost \$250, will sell for \$50. Kohut, AX 9-9092.
- THOMAS ORGAN, single manule, priced to sell. Johnson, AX 9-6912.
- '60 CORVAIR deluxe, 4-door, R&H, white walls, fold down back seat, loaded with extras, 26 mpg highway, \$1785, no trades. Shaver, CH 2-2583.
- '59 ALLSTATE Motorcycle, 125cc, red, recently overhauled; Pan-American light wood clarinet. Costello, 1828 Blume NE, AX 9-0563.
- SKI PANTS, White Stag, ladies' black, 12 regular, worn one season, \$18. Zimmerman, AX 9-1417.
- WASHING MACHINE, Hotpoint automatic, \$50. Miller, 2904 Dakota NE, AM 8-1939.
- HOUSE TRAILER, 1957 American, 2 bedroom, completely furnished, 42', \$3000, terms. Chevalier, AX 9-2716.
- GARAGE DOOR, Steel, 8'x10 1/2', w/lock, \$40. Torres, CH 7-3134.
- '58 CHEVROLET Bel Air, 4-door hardtop, V-8, PG, R&H, WSW tires, 26,000 miles, green body white top \$1335. Larsen, AX 9-3496.
- MAPLE CRIB complete w/204 coil mattress. Forsythe, AX 9-2785.
- 3 BRM, 15 ft. wide, 37 ft. long Expando Home, make me an offer. Koppel, DI 4-2706.
- MATCHING BOX springs and innerspring mattress, double bed size, \$30. Flanagan, AX 9-0049.
- FULL SIZE CRIB and mattress, \$15; maternity clothes, size 14-16, for trading stamps or cash. Erickson, AX 9-6824.
- 3 BRM HOME, 1 1/2 bath, attached garage, carpeted. Snow, near schools, priced at \$13,000. Brinkley, AX 9-3646, 2612 Carol NE.
- BROWN SOFABED, matching chair, beige occasional chair, all newly upholstered, new Westend Coffemaker, Schultz, AX 8-2731, after 4 p.m. or weekends.
- '53 BUICK, 4-door, one owner; '50 Plymouth, 4-door; ski equipment for 10-year-old; violin, full size. Gilpin, AX 9-1100.
- 2-WHEEL utility trailer, \$35. Allen, 2721 Hermosa Dr. NE, AL 5-3888.

COMPLETE ALTERNATOR setup for late model Ford, just the thing for mobile ham rig, only \$30. Gatlin, AM 8-8151.

LAMPS, one table and one pole lamp, your choice for \$10. Sobisch, DI 4-6185.

PORTABLE TYPEWRITER, Smith Corona, \$40. Erne, AX 9-0565.

'60 DODGE Dart, take older model car for equity. Eslinger, AM 8-1209.

OAK DESK, large, completely refinished, need power saw, will trade. Singleton, AX 9-1613 evenings.

17" T.V., Stromberg-Carlson, table model. \$30. Wyant, AX 8-0371.

FIREPLACE SCREEN w/brush, shovel and poker; interior slab door w/hardware. Martin, AL 6-6785, 4631 Hannett NE.

AUTOMATIC WASHER, Custom Imperial Frigidaire, \$75. Stiver, AX 9-6469.

17" TV, Motorola portable, \$65; 19" Westinghouse console mahogany, \$60; windshield for '53 Chevrolet. Wiesch, AL 6-7236.

WANTED

CHILD CARE in my home, week days, ages 2 to 5. Harris, 9512 Cordova NE, AX 8-1610.

TO BUY old gold, coins and collections. Groll, AL 5-9638.

QUALIFIED PERSONS to teach day or evening classes in china painting, oil painting, mosaics and sketching. Richardson, DI 4-3082 after 6.

HOME FOR KITTEN. Free, one small black female kitten left over from Halloween. Tatum, TR 7-0997.

LADY TO SHARE NE home w/working lady; used tape recorder in good shape, reasonable. Wilson, AL 6-2630.

USED 24" boy's bike, 2-wheel in good condition, offer \$15. Mackay, AM 8-5517.

ELDERLY LADY would like to care for young baby in her home 5 days a week, vicinity of Highland and Girard SE, references. Daily, AM 5-0595.

TO TRADE 16mm sound projector, for 16 mm silent projector. Pritchard, AM 8-6430.

RIDER FOR Car Pool. SE Hiland Area, must have nerves of steel. McMahan, CH 3-3129.

CLARINET. Nogle, AX 9-3863.

TO JOIN Car Pool from vicinity of 809 Palisades Dr. NW to Bldg. 880. Heinlein, Ext. 4-0249.

INTELLIGENT-THINKING people to attend 1400 Component Capers at Coronado Club Saturday, Nov. 19, 8:30 to 12:30. Weir, AX 9-1160, 2117 Martha NE.

TO TRADE for late model or new pickup truck, 4-wheel drive preferred, 2 1/2 to 5 acres Manzano Mountain land (13 mi. South of Rt. 66 on State 222). Moon, AX 9-1181.

RIDE FROM 300 block, 59th St. NW to Sandia Corp. Lasley, Bldg. 828, Ext. 55263.

RIDE FROM 4110 Comanche NE to Bldg. 892. Beck, ext. 49266.

FOR RENT

TWO APARTMENTS, furnished, one bedroom, \$65; two bedroom, \$70, close to Sandia Base. Bell, AL 6-3078.

THREE BEDROOM brick w/attached garage, located in Princess Jeanne Park, May, AX 9-6782 after 5 p.m.

3 BRM HOUSE, colorock, landscaped, covered patio, stove, curtains, located in Princess Jeanne Park. Ross AL 5-7561.

LOST AND FOUND

LOST—Black lunch pail, brown rim safety glasses, sterling and black cufflink, approx. seven keys on chain. Lost and Found, Ext. 26149.

FOUND—Ford keys in leather case, extension rule w/name Brown. Lost and Found, Ext. 26149.

FOR SALE AT LIVERMORE

AMERICAN FLYER model 442 steam engine, six passenger and freight cars, mounted track on folding 5'x8' plywood, \$18. Field, HI 7-0103.

9'x12' RUG, padding, rose pattern, located in Hayward, \$15. Hunter, JE 8-9871 after 5:30 p.m.

FIRESTONE FREEZER, large upright, \$200. Aven, HI 7-3834.

'57 CHEVROLET, 2-dr., Bel-Aire sedan, R&H, WW tires. Bryant, Ext. 2393.

3 BDR HOUSE, 2 baths, 2-car garage, landscaped, covered patio, fireplace, hardwood floors, lined drapes, \$2,500 down. Eberz, HI 7-1458.

SIMMONS Hollywood twin beds, without headboards, \$35. Stewart, HI 7-3697.

DALMATIAN puppies, 6-weeks old, championship sired, \$50 and up. Vincent, HI 7-3735.

'57 MGA ROADSTER, red, wire wheels, tonneau cover, 29,000 miles. Bell, HI 7-1175.

'57 PONTIAC convertible hydramatic, power steering, R&H, 36,000 miles, take older car as part payment. Ferrario, HI 7-0661.

'59 TRIUMPH TROPHY TR-6 motorcycle, 6500 miles, must sell. Scott, HI 7-4757.

ELGIN outboard motor, 7 1/2 HP, 4-gal. gas tank, less than 20 hours on motor, \$100. Renaud, HI 7-5575.

KROHLER 3-piece sectional, nylon frieze, \$75; Wilton 12'x13' gray wool rug and pad, \$50; umbrella tent, 9'x11'6", \$35. Wells, HI 7-3446.

WESTINGHOUSE laundromat, 1951 model, operating condition, \$25. Ford, HI 7-4187.

FIREPLACE WOOD, live oak. Newton, HI 7-4303.



AL IACOLETTI (7242)—“Without the 704 and other ‘electronic brains’ like it, technology as we know it today would be tremendously handicapped. It would take hundreds of mathematicians using desk calculators months to perform the calculations required for a scientific problem which the computer solves in a matter of minutes. Yet behind this remarkable performance is often a month or more of intense work by a mathematician who has written the program directing computer action.”

Machines don't think

Man's Responsible for Work Done By 'Electronic Brains'

“There are many types of intelligence,” Al Iacoletti of Mathematical Services Division 7242 says, “and the IBM 704 computer cannot be called ‘intelligent’ unless you qualify what you are saying. However, the machine can perform masses of mathematical computations with a speed that is amazing.”

Without the 704 and other “electronic brains” like it, technology as we know it today would be tremendously handicapped. It would take hundreds of mathematicians using desk calculators months to perform the calculations required for a scientific problem which the computer solves in a matter of minutes.

“Behind this remarkable performance,” Al says, “is often a month or more of intense work by a mathematician who has written the program which directs the computer's action.”

In Room 40 of Bldg. 880 where the 19 programmers work for Sandia's 704 and analog computers, Section Supervisor Jack Tischhauser keeps a log book of the problems programmed for the computers.

Program Examples

A random selection of some of the problem reads as follows:

A program to determine neutron flux and neutron multiplication factor in a variety of reactor ma-

terials . . . Describe trajectories of various vehicles with and without parachutes . . . One of several programs in meteorology to determine winds and ambient conditions from radiosonde measurements.

Determine characteristics of radar communication antennas submerged in water . . . Determine transient head transfer coefficients from temperature-time history for wall of a duct with high temperature air flow. (Temperature-time histories are obtained from the pilot model hypersonic wind tunnel.) . . .

Numerically solve differential equations of a new arming device . . . Compute frequency and delta frequency of deflections from seismic record.

From these few examples the scope of work done in the programming group is shown.

In Many Projects

“We are involved in almost every scientific or development project at Sandia,” Al says.

Work at the 704 originates in any of Sandia's scientific or engineering organizations. The originator works with the programmer until the problem is completely defined. Then a programmer takes over.

An example of the flexibility of the 704 is a recent problem solved in the design of a com-

ponent of a photoelectric scanner device. John Spacer and the Mechanical Design Division 7224 needed to produce a small disc with “dots” of photoelectric material precisely spaced in a spiral pattern on the disc.

Al defined the problem this way: “A particular Archimedes spiral is represented by a given equation. Any point on the spiral is completely specified by the length of the line joining the center of the spiral to the point.

“The line, in turn, is specified by a unique angle measured at the center from the vertical to the line itself. It is desired to find both the horizontal and vertical distances from the center to each spiral point of a generated sequence.

“The first point of the sequence is on the vertical through the center and is chosen by the requestor to lie on one of the spiral loops. Each point of the sequence is separated from the next by a fixed arc length along the spiral, and the sequence of points is directed toward the center.”

First Dot Specified

The requestor specified where the first dot would appear on the outer edge of the spiral and the exact distance along the arc between the dots.

It was first necessary for Al to determine the mathematical method for solving the problem; then he had to convert this to a computer program. A program is basically a set of instructions which trigger the computer to perform a sequence of mathematical computations.

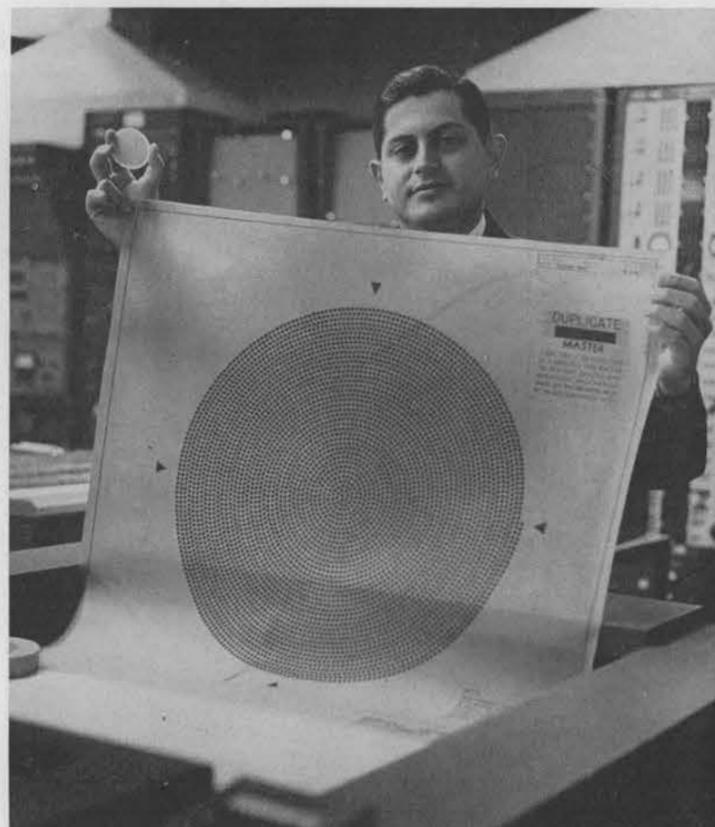
To write a program, the programmer must have an intimate knowledge of the workings of the computer, a sound grasp of the scientific field in which the problem was formulated and a vast command of many forms of mathematics. In addition to this, he must be able to “communicate” with the computer in “machine language,” an art in itself.

“The mathematical aspects of the problem are first worked out. In the case of the scanner disc, Al said: “The desired vertical and horizontal distances of a spiral point can be obtained if the center angle is known. The difficulty lies in evaluating this angle.”

Iterative Process

He went on to explain that since the angle could not be expressed explicitly in terms of the relationships involved, an iterative (repeating) process was constructed to compute the angle from the arc length to the center of the spiral.

This type of solution uses a good first approximation of the sought quantity to compute a correction term which when added to



FROM THE PROGRAM, written by Al Iacoletti, the 704 computer produced the large plot Al is holding above. This in turn became the small disc held in his right hand. The disc is a key component for a photoelectric scanner device under development by Org. 7224.

the first approximation yields an even better second approximation. This in turn yields a third and closer approximation, etc. Successively better approximations are obtained until the solution is achieved to the desired degree of accuracy. In this particular approach the angle thus evaluated for a point on the spiral is used as the first approximation for the next point.

After the mathematics and the associated solution logic have been determined, the programmer writes a “flow chart.” This is a detailed diagram of the logic, instructions, and mathematics as the computer will perform it. This in turn is transcribed into “symbolic” language on punched cards.

Symbolic Languages

The resulting “deck” of cards constitutes the program in one of several symbolic languages. Since the computer utilizes only “binary language,” a system of only 1 or 0, positive or negative, to describe every value, the symbolic language is an intermediate step to enable the programmer to easily perform his work. For instance, in one of the symbolic languages “CLA” means “clear and add.” In binary language the same operation code would read 000101000000.

A prewritten auxiliary program in the 704, an assembler, automatically performs the function of converting the symbolic cards into a binary deck. These cards, in turn, are loaded into the computer for a check of the program.

Manually, the programmer has solved a few key computations of the problem. By checking these against the results of the computer, an accurate check is performed on the mathematics and the logic involved. Knowledge of the physical situation which the program is describing also provides a criteria for the evaluation of the computer results.

Built-In Checks

The 704 also has built-in checks.

An impossible instruction or a missing step will be detected by the computer. The machine stops functioning and an error light flashes on the control panel.

The programmer must then follow the results of the program as performed by the computer until the error is located and corrected.

In the case of the scanner disc, all went well. The computer provided the necessary coordinates for location of the dots on the spiral. This information was fed into an auxiliary piece of computer equipment, a plotter, and a graph resulted.

Some touching up by hand (to enlarge the size of the dots) was performed and in turn the graph was photographically reduced.

The resulting negative became the pattern for a disc, produced by printed circuit techniques, with tiny metallic dots on a thin circle of plastic. Diameter of the disc was about two inches and contained a precision pattern of dots that transcribed a perfect spiral.

“The computer is ideally adapted to solve this type problem,” Al said, “since the iterative process is particularly repetitive and laborious, with a multiplicity of points to be evaluated.”

“Actually,” Al continued, “the computer can solve any problem in which mathematical expressions can be found. Hundreds and thousands of individual data can be processed, reduced, or mathematically manipulated in any number of ways.

“Results can prove the feasibility of systems, predict performance of specific devices or point to new approaches in science and engineering.”

Only factors limiting electronic computers are man's imagination and developing the mathematical methods to express them.

The computer is merely a tool, but an indispensable one to modern technology.



“THE COMPUTER can solve any problem for which mathematical expressions can be found. Hundreds and thousands of individual data can be processed, reduced, or mathematically manipulated.”

Sandia's Safety Record

<p>Sandia Laboratory HAS WORKED 700,000 MAN HOURS OR 20 DAYS WITHOUT A DISABLING INJURY</p>	<p>Livermore Laboratory HAS WORKED 3,980,000 MAN HOURS OR 1726 DAYS WITHOUT A DISABLING INJURY</p>
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