



R. C. Fletcher To Join Sandia As V.P. Research

Sandia's Board of Directors has elected R. C. Fletcher of Bell Telephone Laboratories to the office of Vice President, Research, replacing R. C. Prim, who resigned. The appointment is effective Apr. 15.

Mr. Fletcher comes to Sandia from Murray Hill, N.J., where he has been Director of BTL's Electron Device Laboratory since 1962. This laboratory is traditionally responsible for vacuum tube development but in recent years has branched off into solid state devices such as parametric and transistor amplifiers, solid state generators, and optical devices (gaseous laser and optical modulators and detectors).

Mr. Fletcher has BS and PhD degrees in physics from Massachusetts Institute of Technology and, during World War II, he did magnetron research at MIT's Radiation Laboratory.

Joining BTL in 1949, he first worked on traveling wave tubes and crossed-field devices. He later moved into semiconductor research including infrared absorption radiation damage, surface studies, and electron spin and cyclotron resonances. In 1956 Mr. Fletcher took charge of the department engaged in the development of solid state devices other than semiconductors. These devices included isolators, circulators, ferrite sheet memories, microwave masers, and optical masers. In 1958 he was appointed Director of the Solid State Devices Laboratory, which had ultrasonic devices in addition to the above-mentioned devices.

Sandia Employees Help in Annual Cancer Control Month

April is National Cancer Control Month. Sponsored by the American Cancer Society, the annual drive for funds will be conducted throughout the month. Goal for New Mexico is \$125,000. About 10,000 drive workers throughout the state will be contacting neighbors and business associates to further the Society's research, education, and service programs.

According to Society statistics, approximately 1500 new cases of cancer will be diagnosed in New Mexico in 1964. Cancer caused 948 deaths in the state in 1963.

Sandia Laboratory employees, through the Employees' Contribution Plan, gave \$8529 last year to the American Cancer Society. The total should reach \$9155 by the end of this year's contribution period.

AEC's IMOG Meets at Livermore

A group of scientists and engineers from throughout the nation will gather in Livermore next week to attend the Third General Information Meeting of the AEC Interagency Mechanical Operations Group (IMOG).

About 150 representatives of contractors in the atomic weapons complex are expected to attend the three-day program beginning Apr. 15. Co-sponsors of the program will be Sandia's Livermore Laboratory and the Lawrence Radiation Laboratory in Livermore. The sessions will be conducted at the LRL auditorium.

One objective of the meeting is to encourage the free exchange of ideas among the group's members, according to C. R. Barncord (8150), who is chairman of the IMOG Steering Committee. An equally important objective, according to Mr. Barncord, is to acquaint management personnel

with the function and activities of the many subgroups of IMOG.

Highlighting the program will be a welcoming address by Dr. John S. Foster, Director of the Lawrence Radiation Laboratory at Livermore, and a speech by Edward Teller, Professor-At-Large, University of California. Dr. Teller's subject will be "Thoughts on Future Nuclear Weapons and Explosives." Master of Ceremonies at the opening night banquet at Castlewood Country Club will be L. M. Sparks, AEC Office of the Comptroller, Washington, D. C. Guest speaker at the banquet will be John S. Randall, Executive Vice President of the Kearney and Trecker Corporation and official representative of the National Machine Tool Builders Association.

Sandia Corporation speakers and their topics include J. D. Gilson (8152-2), "En-

gineering Uses of APT"; F. H. Mathews (7325), "Test Techniques for Extending the Performance of an 18-In. Actuator Beyond its Original Design Capability"; B. S. Ellis (8118-2), "Interpretation of Dynamic Environments for Sinusoidal and Random Vibration Testing"; D. W. Ballard (2564), "Status of Adaptive Control"; and E. P. Quigley (2564), "A Survey of Information Dissemination Techniques." W. A. Gardner (7300) will serve as chairman of the subgroup presentation on environmental testing.

Participating agencies, in addition to the AEC, Sandia Corporation, and LRL, will include ACF Industries, Albuquerque Division; the Bendix Corporation, Kansas City Division; General Electric Company, Hanford Atomic Products Operation and the Pinellas Peninsula Plant; Los Alamos Scientific Laboratory; Mason and Hanger-Silas Mason Co., Pantex Ordnance Plant and the Burlington (Iowa) AEC Plant; Monsanto Research Corporation, Mound Laboratory; DuPont Company, Savannah River Plant; Dow Chemical Company, Rocky Flats Division; and the Atomic Weapons Research Establishment, Aldermaston, England.

Plan Offered to Detect Diabetes and High Blood Pressure

A program to screen Sandia Corporation personnel for possible diabetic and high blood pressure cases is announced by Dr. S. P. Bliss, Medical Director 3300. Participation will be on a voluntary basis. All that will be required from employees is a urine specimen and a blood pressure check.

All Sandia Corporation employees are urged to participate in the screening program. Early detection of diabetes or high blood pressure, followed by proper medical care, may reduce the seriousness of the condition.

An Employee Bulletin containing an application form will be distributed next week. To participate in the program, employees must forward their applications to Medical Administration Division 3341 at Sandia Laboratory or to Employee Services, Medical and Training Section 8212-2 at Livermore Laboratory by Apr. 30.

Appointments will be scheduled at the employee's nearest Medical Station. About 10 minutes will be required for the check. Only those who return application forms will be scheduled.

Morris R. Goebel Promoted to Captain In Naval Reserve



Morris R. Goebel (2121-2) has been selected for promotion to Captain in the U. S. Naval Reserve. He is currently the commanding officer of Bureau of Naval Weapons Training Unit WEPTU-703.

Captain Goebel joined the Naval Reserve in 1942, and served during World War II as a pilot in Torpedo Squadron 19, operating from the aircraft carrier USS Lexington in the Central Pacific. He holds the Navy Cross, Distinguished Flying Cross, Gold Star in lieu of a second DFC, and a Presidential Unit Citation.

Since discharge from active duty in 1945, he has served in reserve squadrons in Dallas, Denver, and Albuquerque.

What's Up in Space These Days

It will soon be two years since the Bell System's Telstar I soared into the empty reaches of space to usher in a new era in communications.

Communications experiments have continued ever since, increasing every year and prompting President Lyndon Johnson to report recently that the development of a communications satellite system "was moving rapidly from creative hope to actual fact."

The communications satellites launched during the past two years still continue in orbit. Here are profiles on them:

Telstar I: Launched July 10, 1962, the satellite was the Bell System's first active communications satellite. Before becoming inoperative in February 1963, it vividly demonstrated the transmission of multi-channel two-way communication in many forms and provided valuable data on both the performance of ground stations and the reliability of electronic gear in the space environment.

Telstar II: Launched on May 7, 1963, the Bell System's Telstar II continues to perform normally in all respects. Solar power is now down to about 85 per cent efficiency, but it is still showing less radiation damage than was the case for Telstar I. The satellite will achieve maximum visibility again during April and May with the usable period extending to the middle of September. Communications experiments with Telstar II are continuing.

Relay I: Launched on Dec. 13, 1962, the NASA satellite was designed by RCA. At first it experienced power difficulties, but has since performed successful experi-

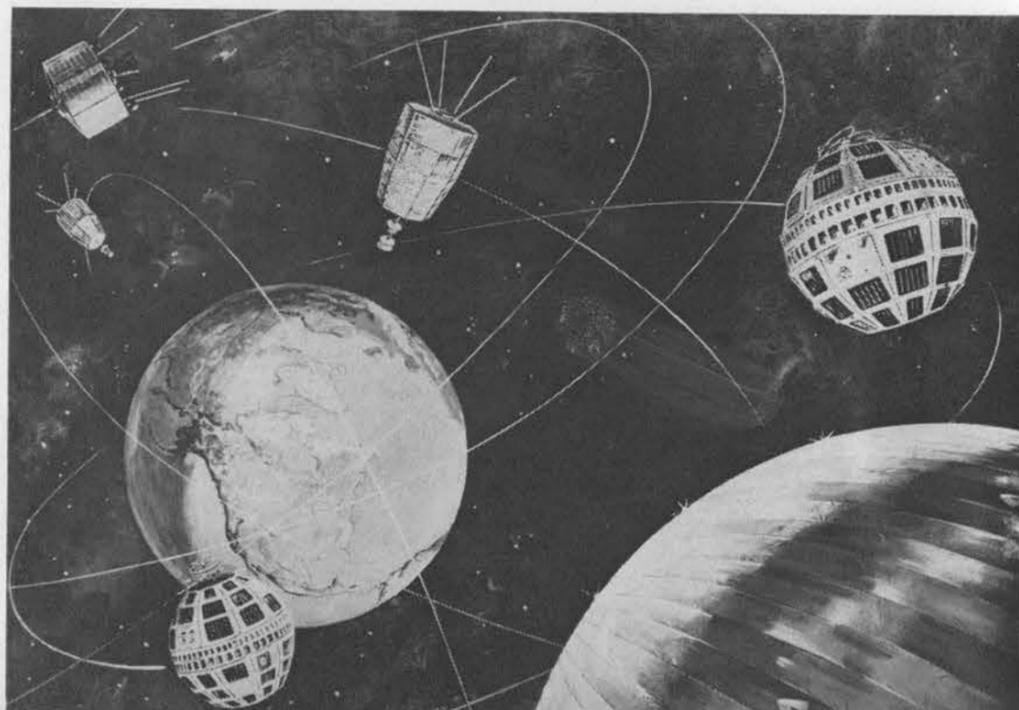
ments and accomplished other phases of its mission.

Relay II: Launched on Jan. 21, 1963, Relay II is performing in excellent fashion according to reports from the National Aeronautics and Space Administration.

Syncom II: NASA's Syncom I, launched in February 1963, was lost to radio contact but Syncom II, launched in July of the same year, successfully climbed to its hanging orbit about 22,000 miles above the earth where it rotates at the same speed as earth. The satellite has successfully relayed telephone calls, teletype and photo facsimiles. It was designed and built by Hughes Aircraft Co.

Echo II: Launched in January 1963, NASA's Echo II is a continuation of the program begun more than three years ago with Echo I to collect data on the feasibility of a passive communication system. The 135-ft. balloon satellite is in a polar orbit about 700 miles above the earth and it can be seen without the aid of a telescope. Its highly reflective mylar skin bounces signals sent up to it from ground stations.

COMMUNICATIONS SATELLITES now orbiting the earth perform for the human eye. This illustration shows, in the lower right-hand corner, Echo II — the giant mylar-skinned balloon. Above it is Telstar II, and in the lower left-hand corner is Syncom II. The other two satellites are Relay I and II.



(Editorial Comment)

A Nation of Capitalists

Who are these people called "capitalists?" Chances are good you are a capitalist in the truest sense of the word.

In America there are millions of them and it's these millions who help keep healthy the country's economy. You have a savings account? You are a capitalist. Likewise, if you have life insurance, own stocks or bonds, government securities, or property, you are a capitalist.

You have become a capitalist because you own something and have put your money to work. When you invested your money you bought an interest in the nation's economy.

This country seeks increased employment — ideally, full employment. Every new job calls for at least \$18,000 capital investment, according to the U. S. Chamber of Commerce. If employment is to go up by a million new jobs, \$18 billion in new capital is needed.

Where is this money to come from?

Past experience shows much of it will come from capitalists making less than \$10,000 a year. It will also come from savings in form of retained earnings of corporations — corporate profits set aside for expansion.

Whenever you place your savings in a savings bank, in a loan association, in a credit union, or take out life insurance, or buy bonds or stocks in a corporation, you are putting your money to work. Business and industry combine it with their savings. The result will be a better economy, more jobs, and your money will increase.

Those "capitalists" who save and invest know what they do is better than putting their money in a sugar bowl.

Sandia Speakers

Following is a list of speakers, titles, and places of presentation for recent talks by members of Sandia Corporation.

T. P. Conlon (2561-3), "Process Start and Control Procedures," San Antonio Section of the American Society for Quality Control and American Institute of Industrial Engineers, Mar. 17, San Antonio, Tex.

B. T. Kenna (1122-2), "Activation Analysis in Theory and in Practice," Science Section of District IX, Texas State Teachers Association Annual Convention, Mar. 13, Amarillo, Tex.

J. W. Reed (5414), "Air Blast from Cratering Explosions," Engineering with Nuclear Explosives Symposium (Third Plowshare Symposium), University of California, Apr. 21-23, Davis, Calif.

Dorris Hankins (5412), "Seismic Amplitudes at an Intermediate Range from Ex-

plosions," Engineering with Nuclear Explosives Symposium (Third Plowshare Symposium), University of California, Apr. 21-23, Davis, Calif.

J. P. Brannen (5422), "On Symmetry in Summability Theory," American Mathematical Society, Apr. 20-23, New York City.

G. H. Haertling (5135), "Hot Pressed Lead Zirconate-Lead Titanate Ceramics," annual meeting of the American Ceramic Society, Apr. 19-23, Chicago.

W. F. Windle (1322), "Microwatt Radioisotope Energy Converters," International Conference on Aerospace Electro-Technology, Apr. 19-25, Phoenix, Ariz.

W. E. Taylor (2411-3), "Obtaining a Digital Image of a Radioactive Source by Radioautograph and Computer Analysis," Fifth Spring Meeting of the New Mexico Academy of Science, Apr. 11, Socorro.

D. K. Robbins (7624), "Development and Organization of Computers," Fifth Spring Meeting of the New Mexico Academy of Science, Apr. 11, Socorro.

G. J. Simmons (1531), "A Variation of Cimminos Method Applied to Serial Linear Systems," Southwestern Regional Meeting, American Mathematical Association, Apr. 10-11, Las Cruces, N. M.

Welcome Newcomers

Feb. 24-Apr. 3

Albuquerque	
Eloy D. Cota	3413
Bonnie C. Doggett	3431
Samia Doro	3411
Carol A. Flower	3427
Leo B. Griego	4574
James E. Leeman	1314
Beverly J. Lehmann	3126
Marian J. Lipinski	4212
Corlyss C. Morgan	3126
Maxine Ludi	3126
Ermenio C. Mata	4574
H. Eleanor Owens	3126
Margaret A. Rico	4432
Eddie L. Rodriguez	3413
Martha Spencer	3126
Eva M. Thompson	4623
*JoAnn M. Titman	3126
Linda Ward	3126
Abbie E. Williams	3153
Nettie L. Windsor	4432
Lonnie L. Wright	4574
Arkansas	
Phillip L. Wehrman, Overland Park	2343
California	
Ronald J. Amaral, San Leandro	7252
Jimmy D. Mote, Richmond	5133
*Allyn R. Phillips, El Granada	5312
Illinois	
James S. Johnson, Chicago	7246
Iowa	
Ronald O. Hultgren, Davenport	7412
Kansas	
Donald A. Jelinek, Burlington	1442
Gerald C. Stoker, Merriam	7322
Missouri	
Wayne L. Chrisman, Kansas City	5132
Nebraska	
*Dan R. Blazek, Lincoln	2442
Roger J. Mattson, Lincoln	5332
Robert M. Stearley, Lincoln	1522
New York	
Edwin K. Beauchamp, Horseheads	1124
Ohio	
Gerald G. Wilson, Columbus	7424
Texas	
Melville E. Mefford, Lubbock	4112
Utah	
R. Neil Horton, Salt Lake City	7411
Returned from Leave	
Mary O. Juzang	1443
Geraldine J. Layne	3126
* Denotes retired	

**Service Awards
15 Year Pins**



E. E. Alford
8225
Apr. 11, 1949

N. W. Ollman
4432
Apr. 11, 1949



A. E. Bentz
7413
Apr. 12, 1949

H. H. Dancy, Jr.
2341
Apr. 18, 1949



R. B. Little
2625
Apr. 18, 1949

M. B. Miller
4514
Apr. 21, 1949



WELCOME AND FAREWELL ceremonies were observed in the office of AEC/ALO Sandia Area Manager recently. W. Lee Hancock, left, former Area Manager, has assumed a new assignment as ALO Assistant Manager. L. W. Otski (right) has taken the position vacated by Mr. Hancock. Center is Mrs. K. S. Ogden, secretary to SAO Manager.

**Reassignments
Announced by
ALO Manager**

Reassignment of two key executives in the Atomic Energy Commission's Albuquerque Operations and the associated activation of a new management analysis office has been announced by K. F. Hertford, Manager.

W. Lee Hancock, Manager of the Commission's Sandia Area Office, is now an Assistant Manager reporting directly to Mr. Hertford. With the assistance of a small staff, Mr. Hancock will have a continuing assignment of inquiring into principal functions of Albuquerque Operations and recommending to Mr. Hertford changes that may promote efficiency and economy.

Included in the studies will be a re-assessment of Albuquerque Operations' philosophy, functions, policies, and procedures with respect to administration of nine prime operating contracts through 11 AEC field offices in eight states, and the inter-relationships of Headquarters and Field operations. A near-term objective will be to recommend changes which might permit continuing programmatic performance with a reduced Federal structure, including reduced personnel. A longer-term objective will be to try to forecast the complexion of the various ALO-administered programs as of 1967 and thereafter.

L. W. Otski, a Deputy to the Assistant Manager for Administration at ALO Headquarters here, has been transferred to the managership of the Sandia Area Office. This office administers the contract under which Sandia Corporation operates Sandia Laboratory for the Commission. Mr. Otski's former position will not be filled.

Mr. Hancock graduated from Creighton University Law School in 1937. He was an FBI special agent, became an assistant to the General Manager of Trans-World Airlines in 1946, and operated a business in Denver from 1949 until he joined the AEC in 1952 as an Assistant Director of Security in the Washington headquarters. He was Chief of the Regulations Unit, Civilian Application Division, immediately prior to becoming Director of Security, Albuquerque Operations, in March 1956. In October 1959 he was promoted to Assistant Manager for Storage Operations and Security, and in February 1962 he was appointed Manager, Sandia Area Office. Mr. Hancock was Campaign Chairman of the Albuquerque United Fund in 1963.

Mr. Otski was Assistant to the Editor-Publisher of the Roundup, Mont., Record-Tribune 1930-33. Since 1933 he has been in government service, having worked with Civil Works Administration, Works Project Administration, and the Federal Works Agency before joining the AEC at Los Alamos in July 1948 as a budget analyst. In 1949 he became Assistant Director of the Budget Division and four years later was named Director in the Albuquerque budget office. In July 1962 he was appointed Deputy Assistant Manager for Administration.



Bernetta Marx (8212-3)

Take a Memo, Please

Inspect all electrical appliances frequently, and remove defective equipment from use until properly repaired or replaced.

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LAB NEWS

APRIL 10, 1964

SANDIA CORPORATION

LAB NEWS



ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

Editor: Robert S. Gillespie
Sandia Corporation, Albuquerque, New Mexico

Editorial Offices
Sandia Laboratory
Albuquerque, New Mexico
Employee Publications
Bldg. 610
Tel: 264-1053

Livermore Laboratory
Livermore, California
Public Information
Bldg. 912
Tel: Hilltop 7-5100, Ext. 2395

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Past Presidents Sandia Corporation

GEORGE A. LANDRY, President November 1949-March 1952
He joined Western Electric in 1911 after graduating from the University of Vermont, and later held important positions in manufacturing operations. During World War II, he served briefly with the War Production Board, and in 1945 became operating manager of WE's nationwide installation forces. In 1952 he was elected a vice president of Western Electric. He died in 1957.

DONALD A. QUARLES, President March 1952-September 1953
A graduate of Yale, Mr. Quarles began his Bell System career in 1919 in the Engineering Department. During World War II he administered a major portion of the Labs' development of military electronic systems, including radar, and was elected a vice president in 1947. Mr. Quarles was appointed Secretary of the Air Force in 1955, and Deputy Secretary of Defense in 1957. He died May 8, 1959.

JAMES W. McRAE, President September 1953-October 1953
Mr. McRae joined the Bell Telephone Laboratories in 1937 after receiving his doctorate from California Institute of Technology. From 1942-46 he served with the Signal Corps Engineering Laboratories. He held three director positions with BTL before being appointed vice president in charge of systems development in 1951. He left to be a vice president of A.T.&T. He died Feb. 2, 1960.

J. P. MOLNAR, President October 1958-September 1960
Mr. Molnar received his PhD degree from MIT and worked for the National Defense Research Committee and Gulf R&D Co. before joining Bell Telephone Laboratories in 1945. He conducted research on microwave and electron tubes and was director of military development before becoming vice president in 1957. He now is an Executive Vice President at BTL and is a member of Sandia's Board of Directors.

The Story of Sandia

By F. C. Alexander

"Z" Division of Los Alamos Scientific Laboratory ceased operation at the close of Oct. 31, 1949. On Nov. 1 Sandia Corporation assumed direction of Sandia Laboratory. The capitalization of the new Corporation was \$1000. This money was paid by the Western Electric Company for 100 shares of the no-par-value stock (the entire issue) of Sandia Corporation. The Corporation invested this money in Series F United States Savings Bonds.

Installment IV Staff Evolution

Many problems faced the new management on Nov. 1, 1949. Some of these were concerned with continuance of operation, while others involved the assumption of additional jobs not previously handled by the Laboratory.

The AEC had stated that one of the principal tasks of Sandia Corporation in the operation of Sandia Laboratory was to provide a smooth transition between the development and the manufacture of atomic weapons. Thus, the Corporation was concerned with research and development on ordnance phases of nuclear weapons design.

Organization

Early attention was paid to organization, with four administrative groups being established: Development, Production, Personnel, and Accounting.

Mr. Larsen, although retained as consultant to the President until Nov. 1, 1950, was appointed Director of Civilian Mobilization and moved to Washington on Mar. 1. Various key people were brought in from Western Electric Company and the Bell Telephone Laboratories to round out the management. The initial organization of what was later to become the Small Staff was as follows:

- President—George A. Landry
- Director of Development—Robert A. Poole
- Vice President and Operating Manager—Fred Schmidt
- Treasurer, Personnel and Public Relations—Frederick B. Smith
- Secretary and Comptroller—James A. Dempsey

By 1964, the Small Staff, after having passed through several organizational

changes in the intervening years, had evolved into the following:

- President—S. P. Schwartz
- Vice President, Research—R. C. Fletcher
- Vice President, Personnel—Ray B. Powell
- Vice President, Administration—Charles W. Campbell
- General Attorney, Secretary and Treasurer—Frank C. Cheston, Jr.
- Vice President, Weapon Programs—Robert W. Henderson
- Vice President, Development—Eaton H. Draper
- Vice President, Engineering for Manufacture—Richard A. Bice
- Vice President, Development—Glenn A. Fowler
- Vice President, Livermore Laboratory—Bernard S. Biggs

During 1950 and 1951, because of national need for nuclear weapons, emphasis was on production. However, in early 1952, a major shift in emphasis from weapons production to ordnance design took place. Donald A. Quarles, Vice President of the Bell Telephone Laboratories, became President, the Director of Development became a Vice President, and the post of Vice President of Research was created. Sandia divided the Design Organization into two parts, one concerned with weapons released from aircraft and the other with guided missiles.

A Vice President and General Manager post was established May 12, 1952, to supervise all non-Research and Development functions, a Pre-Production organization was formed to assist the engineer in translating engineering designs into product and, as more weapons programs moved into the manufacturing phases,



R. E. Poole



Fred Schmidt



F. B. Smith



J. A. Dempsey

PRESIDENT GEORGE A. LANDRY called the first staff meeting of Sandia Corporation soon after its establishment Nov. 1, 1949. In attendance, in addition to Mr. Landry, were: Robert E. Poole, Director of Development; Fred Schmidt, Vice President and Operating Manager; Frederick B. Smith, Treasurer, Personnel, and Public Relations; James A. Dempsey, Secretary and Comptroller. This group later became known as the Small Staff.

Manufacturing Planning and Inspection assumed a larger role in late 1952.

Buildings

In mid-1955, the increasing amount of work connected with weapon storage resulted in the expansion of an organization to handle this activity and, on Jan. 1, 1956, a Vice Presidency of Research and Development Technical Services was created. This encompassed the organizations of Military Liaison Services, Surveillance and Operations, and Drafting and Specifications, as well as Research and Development Staff Services.

A major development in the history of Sandia originated in late 1955 and early 1956, when a few development engineers moved to Livermore, Calif., to facilitate the weaponizing of nuclear systems conceived by the scientists of the University of California Radiation Laboratory at that location. This latter laboratory was later called the Lawrence Radiation Laboratory (after Prof. Ernest O. Lawrence of the University of California). A Director of Systems Development for the Sandia Livermore Laboratory was appointed in late 1956. By mid-1957, the increasing activity resulted in the naming of a Corporation vice president at that location.

In March 1958, a growing interest in automated weapons testing systems, resulted in a new organization, Reliability Development. In the fall of the same year, the Programming organization became a general organization, reflecting the increasing importance of this work.

Another organizational step was taken on Jan. 1, 1959, when a Vice President and an Assistant Vice President of Administration were named, thus centralizing most of the administrative functions of the Corporation. This subsequently evolved, in the fall of 1959, into two vice presidencies, those of Administration and Personnel.

On Sept. 1, 1960, the Vice President and General Manager post was abolished. At this time a Vice President in charge of weapon programs was appointed, reflecting the growing corporate emphasis on development and design work. A year later, an Advanced Systems Studies organization was formed to provide a long-range analysis of new weapon trends.

When the Manhattan Engineer District

assumed control of the Albuquerque Army Air Field in mid-1945, an area was selected as the location for classified activities and was fenced in the shape of two rectangles connected by a narrow corridor. The odd shape of this Tech Area resulted from the necessity for keeping the Base Motor Pool (located in a temporary building on the later site of Building 836) outside the fence.

Within the above area there were several usable structures of wood frame construction that dated from Air Depot Training Station days. Other buildings were added to provide space for the functions being transferred from Los Alamos. The first permanent structure (Building 834) was an 8000-sq.-ft. warehouse. Buildings in the Tech Area in 1946-47 had about 100,000 sq. ft. of space.

After establishment of the Atomic Energy Commission in 1947, a Santa Fe architect-engineer was engaged to design a complex of 14 permanent buildings in Tech Area I. Construction to provide gross floor space of 610,000 sq. ft. was begun in the spring of 1948.

Soon thereafter (1948), the AEC selected an Albuquerque architect to modify some existing buildings and to supervise construction of temporary ones.

In early 1949, demands for space made it necessary to acquire a group of structures adjacent to Kirtland Field, originally built for the Sandia School for Girls, and to modify them for the Research organization. These buildings, known as Sandia West Lab, were vacated and released as space became available in the Tech Area.

Building 800 was completed in 1949 as the first of the long-range program. Building 840, Model Shops, was erected in three phases, starting in 1949 and being finished in 1951. Purchasing and General Stores occupied Building 860 from time of

(Continued on Page Five)

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LAB NEWS

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Lab Mail Service Often Plays Detective

"They're all good boys," Nick Tarnawsky says of the young men assigned to his Mail Services Section 3413-3. "Fast and accurate" is the best way to describe their work.

A good time to watch the mail room crew in action is first thing in the morning or shortly after 1 p.m. Messengers stream out of Bldg. 838 carrying wire baskets filled with correspondence and topped with the familiar red and white striped covers (to protect classified material in transit). Some of the messengers use push carts (like those in supermarkets); others place their loaded baskets on bicycles; a few ride motor scooters; others drive pickup or van-type trucks. Inside the building, the empty bins, each care-

fully labeled with an organization number, show the mail is being delivered.

It's less than an hour before the messengers are back—again loaded down with papers, large envelopes, and small parcels gathered from the many offices on their individual routes. Sorting starts immediately and before long the messengers are on their way again.

Four deliveries a day are made to offices in Area I, and two daily to outlying areas.

Meanwhile, in another room, clerks are packaging mail for delivery to the Post Office. Multiple registered pieces, bound for the same destination, are consolidated in a single envelope or box to save postal charges and for better handling of classified material. Overnight service is avail-

able for mailings to Livermore Laboratory and Bendix-Kansas City.

According to Nick, the one thing which can speed up delivery of mail a matter of hours is the use of organization number with the individual's name. This applies to external as well as internal mail. When the organization number is not included, the search for the individual begins in the Corporation telephone book. It continues through a monthly tabulated list of employees on roll, and may require a telephone call to Personnel (if the addressee is a prospective employee or a regular employee on leave of absence). Maybe the Badge Office will be contacted if the addressee is a consultant. "We've even used *Who's Who in Science* to locate former employees," Nick said.

He has a file of envelopes which illustrate some of the problems encountered in locating correct addresses. One envelope from Australia was clearly addressed to "James O. Idean." Only there was no such person. James O. Wear (5153) seemed like a good possibility due to his type of work and the similarity of first name and initial. The correspondence was intended for him.

Another envelope was merely addressed "Maker-Staff Member, Sandia Corporation." Right letters, but wrong name. The correspondence was intended for M. Aker (2441).

"Several years ago," Nick said, "we received a letter addressed to 'Mr. J. Johnson.' It was a good try; only we had eight different 'J. Johnson's' on roll at that time. That's why the organization number is so important."

The mail boys can cope with reorganizations and transfers, but there is always the problem of whether the mail should follow the individual or whether it is really of primary importance to the organization. They deliver it to the individual and he decides.

The mail room regularly receives organization changes of supervisors and technical staff members. This information is incorporated on Addressograph plates used for addressing Management News Briefs, Tech Notes, Office Procedures Manual, etc. During the year, about 800,000 pieces of



MAKING CHANGES in Addressograph plates, and running off labels for special distributions occupy part of Buddy Sanchez's day in the Sandia Mail Room.



INCOMING MAIL is first sorted into large bins for each messenger route. Messengers then divide their route mail by organization number for more accurate delivery. Numbers on wall above bins provide a quick reference for organization location. Supervisor Nick Tarnawsky is second from left.

CLASSIFIED DOCUMENTS make up a large percentage of the mail delivered by Randall Kilmartin to Bldgs. 805 and 806. Here Yvonne S. Riley (3126/1113) is handed an unclassified piece of correspondence; classified material requires a signed receipt.



BICYCLES, MOTOR SCOOTERS, and trucks are all modes of transportation used by Sandia's mail boys in making deliveries throughout the laboratory. Striped covers protect classified material in transit. The messengers (clockwise from bottom left) are: Joe Salazar, Eddie Rodriguez, Tom Spindle, Tom Cordova, and James L. Duran.



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The Story of Sandia

its completion in 1949 until the completion of a warehouse, Building 894, in 1950. Building 892 was built in 1950. Building 802 was completed in October 1951. A Motor Pool facility and a storage area (for bottled gases and flammable materials) were constructed during 1949-1951.

The AEC civilian housing area for Sandia Laboratory, consisting of 401 family units and 97 dormitory rooms, opened in 1950. As private dwellings became available in Albuquerque, Sandia employees gradually moved off the Base, and, on Aug. 1, 1960, the AEC housing area was turned over to the Military.

A separate area (Tech Area II) about a half mile south of the main Tech Area, was built in 1949 for the handling of explosives.

The necessity for full-scale environmental testing of weapons brought about the construction of a group of test facilities in a new technical area (Area III) some seven miles south of Tech Area I. Planning for this area began in 1952 and the first group of facilities, consisting of a centrifuge, a rocket-sled track 1000 ft. long, a vibration facility, and an instrument control center, was completed and put into operation in 1953.

The construction of additional buildings and facilities then continued at an average rate of about 50,000 sq. ft. per year. The major buildings added to Tech Area I included:

1954-880 (Phases I and II)—Field Test, Accounting, Quality Assurance

1954-887—Plant Engineering and Maintenance

1957-836—Development Engineering

1957-893—Development Warehouse

1958-809—Engineering Mockup

1959-805—Materials and Process Development

1962-806—Research

Major facilities constructed in and near Area III included:

1957—Track extension to 3000 ft.
1961—Environmental facilities, including Climatic Facility, Complex Wave Vibration Facility, Acoustic Facility, and Radiant Heat Facility

1962—A reactor area, including the Sandia Engineering Reactor and the Sandia Pulsed Reactor

1963—Under construction was an Explosive Devices Facility consisting of five sites, each a half-mile apart, a Dynamic Shock Facility or water-jet catapult to produce high-energy controlled acceleration and deceleration, and a Gamma Irradiation Facility to augment the radiation-effects program. A new hydraulic centrifuge was being designed, together with a central control building to provide space for offices and laboratories.

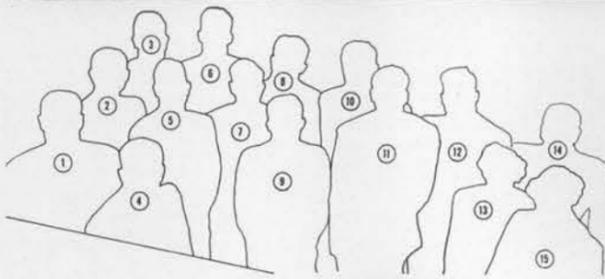
A new laboratory, known as the Livermore Laboratory, was established in 1956 at Livermore, Calif., to perform weaponry work for the devices, designed by the University of California Radiation Laboratory. A permanent facility was built, including an Administration Building, an Engineering Building, a Shop and Mockup Building, an Environmental Test Building, a Warehouse, and a Steam Plant. Construction was begun on a 75-acre tract south of the Radiation Laboratory in 1957 and completed in 1959. Support facilities were subsequently added to extend the capability of the laboratory.

Extensive field-testing facilities were provided at Salton Sea, Calif., with construction starting in 1947 and the base being used largely for water drops. By 1958, it was becoming evident that an extensive land target would be needed, because of increasing demands for a concrete target and instrumentation for high-speed, low-level tests. An abandoned concrete runway at Dalhart, Tex., temporarily provided this hard target, and permanent facilities were subsequently built at the Tonopah Test Range, near Tonopah, Nev. The Salton Sea Range was inactivated July 1961.

Benefits Program

Upon the formation of the Corporation, a review was made of Sandia benefit policies. Fairly well-defined vacation, retirement, and sickness plans had been in effect.

Retirement plans were studied. Under the University of California, employees of the Laboratory had been, indirectly, employees of the State of California, and consequently had participated in the Cal-



A MAJOR PORTION of the Livermore Laboratory staff in March 1956, is pictured here. "Livermore Branch," as it was then known, was at that time headed by Department Manager W. J. Howard. All of those persons pictured here transferred from Sandia Laboratory in Albuquerque. 1. C. E. Barnard, 2. Charles A. Gump, 3. Clifford O. Erickson, 4. Benjamin F. Fisher, Jr., 5. Robert L. Siglock, 6. Stanford C. Cain, 7. Vernon M. Field, 8. Charles Winter, 9. Wayne A. Grimshaw, 10. Frank J. Thomas, 11. Orval W. Wallen, 12. James McMinis, 13. Mary A. VanBroeklin, 14. William B. Marsh, 15. Nora Belle Byrd.

ifornia State Retirement System. Under the new management, this could not be continued. In May 1950, a group annuity policy was established.

Business Operations

One of the early Corporation needs was an accounting organization. Under the University of California, this function had been performed by the University's offices in Los Alamos or Los Angeles. It was necessary to process payments to suppliers, establish books of account, set up a budgeting system to provide forecasts and control of expenditures, take a physical inventory of material and facilities, and provide external and internal auditing groups. There were few Sandia people with appropriate qualifications or experience, so the Corporation hired and trained the necessary supervisors and employees to perform the work. An inventory team and a cost and accounting team were borrowed from the parent company to help get the job under way.

Another immediate problem was the matter of purchasing, and early action was taken to establish a Corporation purchasing group with buyers, expeditors, and traffic analysts.

It was also necessary to establish a payroll organization, since, under the University, the hourly payroll had been prepared in Los Alamos and the monthly payroll in Los Angeles.

The establishment of credit for the new Corporation created a minor crisis. The AEC had ruled that Sandia could not prepare a balance sheet for the use of the outside world and, without a balance sheet, Dun & Bradstreet would not issue a credit rating. Suppliers with whom Sandia desired to place orders, which in some instances amounted to a healthy proportion of their entire output, naturally turned to Dun & Bradstreet to see just what type of financial background this new company called Sandia could muster. Not finding Sandia listed, they began to have doubts. Finally, a meeting of the Dun & Bradstreet Board was convened, and this Board agreed to issue a statement giving Sandia a top rating.

Sandia Laboratory had few formal written procedures covering the conduct of business and lacked an organization through which company policies could be published. A number of individuals, transferred from Western Electric Company, set up a Business Methods organization which published management procedures, entitled "Sandia Corporation Instructions."

Sandia had no legal staff, and an attorney from Western Electric was borrowed to assist in setting up the operation. The office of General Attorney was established in March 1950. Legal action was initiated to remove the AEC housing areas of Sandia Base from exclusive federal jurisdiction and restore to the people who occupied these houses voting rights and access to the State courts. The recommenda-

tion was endorsed by the AEC and forwarded to Washington, and a suitable amendment to the Atomic Energy Act was subsequently passed. Successful legal steps were taken to retrieve employee retirement funds deposited with the State of California, and this money was added to the retirement plan for the applicable employees.

The Corporation assumed many "house-keeping" functions previously handled by the AEC, including operation of the community facilities and the civilian housing project on Sandia Base. The need for cafeteria facilities as well as an employee's club was recognized, and in 1950 the AEC built the Coronado Club for this purpose.

The Corporation took over the landlord functions at Salton Sea and assumed certain security functions at Sandia Base and West Lab. A Plant Security Department was formed, uniforms and equipment selected, and a training program started. In early 1950, Corporation guards manned the security posts at the West Lab, and this action was followed in October and November by the successive assumption of guarding functions in Area I and II.

AEC to Build Radiography Lab For Sandia Corporation

The G. W. Stuckman construction firm of Albuquerque is the apparent low bidder to construct Sandia Laboratory's new radiography facility, the AEC has announced. The 4800-sq.-ft. facility will be a one-story reinforced concrete and masonry addition to Bldg. 860. The firm's bid was \$191,000, lowest of six received by the AEC.

The new facility will be used by Climatic, Leak Measurement, and Nondestructive Test Section 7322-2. It will house x-ray generating equipment and radioactive isotope sources for use in radiographically examining components, systems, sub-systems, and plastic materials.

It will also be used in combination with vibration tables to nondestructively examine items undergoing environmental tests.

The construction project includes demolition of existing docks and a ramp, installation of an air conditioning system and outside utilities, relocating a storm sewer, and miscellaneous site improvements.

Ken Harper (4543-3) is the Plant Engineering Department project engineer. Completion of the project is expected within 210 days after the contractor is notified to proceed by the AEC.

The Winds Do Blow...

At this time of year, strong winds are not uncommon in Albuquerque.

Safety Engineering Department 3210 urges all Sandia Laboratory employees to make sure that all equipment in outside areas is secured. Any unsafe condition should be reported. Call ext. 264-7339.

Supervisory Appointments



BERYL F. HEFLEY to supervisor of Library Collection and Reference Section 8232-2, Livermore Laboratory.

Beryl joined Sandia at Livermore in January 1962 as a staff member librarian engaged in reference work.

Before coming to Sandia, he was employed for 12 years by the Kansas City (Mo.) Public Library, where he was in charge of technical processing, cataloging, and ordering. While in this position, he served on a fund-raising committee for the construction of a new \$7 million public library.

Beryl received his BA degree in geology and geography from the University of Kansas City in 1950, and was awarded his MS degree in library science from Western Reserve University, Cleveland, in 1951. He later completed an evening course in personnel management at the University of Kansas City.

During World War II, he served three years in the Air Force as an aircraft mechanic. He was stationed in England for 18 months.

He is a member of the American Documentation Institute.



HAROLD L. RARRICK to supervisor of Health Physics Division 3312.

Harold joined Sandia 14 and a half years ago and has worked in nuclear surveillance at storage sites and quality assurance as well as in the Environmental Health Department. He was promoted to section supervisor in September 1958.

As radiation safety advisor for Sandia, he has participated in numerous full-scale tests conducted at Nevada Test Site and in the Pacific since 1957.

Harold has a BS degree in math and physics from George Pepperdine College, Los Angeles, and has taken graduate studies at South Dakota School of Mines and the University of New Mexico.

He is a member of the Health Physics Society.



G. J. SIMMONS to supervisor of Safety and Systems Support Division 1531, Systems Engineering Department.

Gus came to work at Sandia in March 1954 and has been successively assigned to Systems Analysis, Test Data Department, Nuclear Test Department, and most recently to the staff of the Advanced Systems Studies Organization 9100.

From May 1960-August 1961 he was a senior group engineer for McDonald Aircraft, St. Louis, helping to set up detection studies on an anti-ICBM program.

He has a BS degree in mathematics from Highlands University, Okla. in physics from the University of Oklahoma, and has done considerable course work toward a doctorate in math from the University of New Mexico.

Gus served in the Air Force from 1948-53.

He is a member of Sigma Xi honorary society, the American Physical Society, American Mathematical Association, and the Institute of Electrical and Electronics Engineers.



Today's Painter Is Bit of Artist, Technician, Chemist

The painter's craft has a long and glorious history. Perhaps its finest hour was the Renaissance, when artisans carried the traditions of the craft to their apex.

Today's painter carries on many of these traditions, but whether he plies his craft on an abstraction, a showcard, or the side of a barn, he also must be a technician and a chemist of sorts. And the technical part of the craft is increasing in importance.

The men of Painting Section 4513-3 will attest to that. They're seasoned veterans with many years of experience with brush and pigments, but they're also familiar with the latest techniques, materials, and equipment. Some of the jobs they do and the equipment they use would probably make the average painting contractor blanch.

Ron George is the supervisor of Section 4513-3. He's been a painter for the past 33 years, and he's been at Sandia for 14 of them. His career is typical of those of the men who work with him. Like the other men in his section, he's a master craftsman with a solid foundation in the techniques of his trade.

"I took my apprenticeship of four years under an old German painter and I didn't touch a brush for the first two years," he said. "Those first two years were spent studying the trade and learning such things as color keying, pigments, vehicles, paint chemistry, the dozens of differences between brushes, preparation of surfaces, and other techniques."

Ron learned to use a brush so thoroughly that today he finds it difficult to use anything else to spread paint. "I use a roller the wrong way," he continued, "wiping the paint on with short backward-forward strokes. The result is a sight."

The entire section has an average of 18 years' experience per man in the painting trade.

The painters of Section 4513-3 use all of the materials used by the average painter, plus several materials and techniques he probably never heard of. Pigmented and clear coatings such as epoxy varnishes and paints, polyurethanes, polyvinyl chlorides, teflons, and hypalons are used in many Sandia painting jobs.

These finishes along with more conventional paints and varnishes are brushed, rolled, or sprayed on the Sandia scene in amounts of some 20,000 gallons yearly—enough to fill two railroad tank-cars.

Sign painting is part of the job being

THOUSANDS OF GALLONS of interior finishes are applied to the walls, ceilings, and floors of the buildings at Sandia each year. Harold Crissey (4513-3) applies a fresh coat to an interior wall in Bldg. 836.



SUPERVISOR of Painting Section 4513-3, Ron George, is shown here with some of the paint to be used by his section in its activities around Sandia Laboratory. Some twenty times the amount shown here is used by the section each year at Sandia.

done by the section. Ron estimates that the men have produced some 60,000 signs in the past 15 years. They are hand lettered in lots under 20; in larger lots, they are prepared by a silk-screen process.

The men are thoroughly indoctrinated in safety and safe working practices. "We hold a safety meeting each week," Ron pointed out. He checks each painting job daily to see that safety practices are being followed. The safest, strongest, and most reliable equipment is used, and it's carefully maintained.

What about painting tips for the home craftsman? "Preparatory work is the basis for all good painting," Ron concluded. "This involves careful preparation of the surface to be painted: careful and thorough removal of old finishes (unless you're working with new material); thorough filling and smoothing of cracks and holes; thorough sanding or finishing with abrasive materials or cleaners; and smooth, sparing application of the finish, whether it's paint, varnish, enamel, shellac, or some other finish."



SIGNS have been Ken Stiver's business since he started painting in 1930. During the days of the vaudeville circuits, he painted showcards; later painted advertising on streetcar signs. He's been in Sandia's Painting Section 4513-3 for over fifteen years.

SPRAY PAINTING is an important part of the painter's craft, demanding techniques quite different from conventional painting. Clarence Puthoff (4513-3) stencils lettering.



Take Note . . .

The U.S. Atomic Energy Commission placed its Carlsbad office and facilities at the Project Gnome site southeast of Carlsbad on a minimal standby basis effective Apr. 1. The office space, at 1030 North Canal Street, will be retained under lease but will not be manned.

Equipment at the Gnome site will be shipped elsewhere to the extent that there is a requirement for it; other equipment will be stored in place.

The minimal standby situation will continue until a decision is made regarding Project Coach or any other nuclear experiment at the Gnome site.

Technical difficulties related to the development of a nuclear device to produce neutron-rich isotopes of known transplutonium elements, and, possibly, elements heavier than those yet known led to the postponement of Project Coach.

A 1500 aggregate three gun pistol match will be held Saturday, Apr. 18, at the Sandia Base outdoor pistol range. Firing will begin at 8 a.m. with registrations accepted up to this time.

The match is sponsored by the Sandia Gun Club. Further information may be obtained from John Hagedorn (1522).



M. D. Bennett, supervisor of Aero-physics Section 7421-1, will lecture on "Subspace Trajectories" Apr. 23 at the University of New Mexico.

In his talk, part of a lecture series on solids, he will discuss the equations of motion for the six degrees of freedom. This pertains to a spherical rotating earth.

Persons not enrolled in the course may attend the individual lectures, presented at 4 p.m. in Room 2, ME Bldg.

Nuclear Cratering Program Discussed At Meeting Here

About 35 representatives of agencies involved in nuclear cratering programs met at Sandia Laboratory this week.

Cratering experiments, problems of scaling conventional high explosive blasts to nuclear explosives, debris throwout problems, material properties, and prediction methods for calculating ground shock and cratering were some of the subjects discussed.

The meeting was held at Sandia Laboratory and primarily involved persons engaged in work for the Defense Atomic Support Agency's Cratering and Ground Shock Program and the AEC's Plowshare Program. Sandians participating included M. L. Merritt, L. J. Vortman, A. J. Chabai, R. C. Bass (all 5412), and T. J. Flanagan (7245).

Representatives from Lawrence Radiation Laboratory; the Air Force Weapons Laboratory, Kirtland Air Force Base; Division of Peaceful Nuclear Explosives, AEC; Headquarters, DASA; Los Alamos Scientific Laboratory; Nuclear Cratering Group, Corps of Engineers; RAND Corporation; Stanford Research Institute; and other agencies participated.

Sandia Laboratory Puts Finger on All Chemical Hoods

Just like a police line-up.

All dangerous hoods at Sandia Laboratory are being identified. They are being searched out, thoroughly investigated, and given a number.

The "crackdown" is part of a joint program of Safety Engineering and Environmental Health Departments to associate all chemical exhaust hoods with the appropriate roof outlets. The outlets will be labeled indicating the location of the hood.

Purpose of the program is to aid workmen on the roofs of buildings in locating the lab area where the exhaust hoods are operating. Several hoods sometimes are attached to the same roof outlet.

Maintenance personnel have been asked to contact Section 3211-1 before starting work near any numbered roof outlet. Representatives of the two departments will inspect the area and help assure the installation is safe.

A. L. Winkeljohn (7413) was installed last Saturday as internal vice president of the Albuquerque Junior Chamber of Commerce. He will serve for one year.

The organization has some 250 members and is dedicated to community service and development.

Mr. Winkeljohn has been a member three and a half years. He was appointed to the Jaycees' board in the fall of 1962, and the following spring was elected a board member.

Erwin Stuart (4511-2) was awarded Seventh Place in the annual Amateur Radio Operators' Contest sponsored by Western Electric Co., and conducted in January of this year. The contest is conducted for all employees of WE and WE affiliates.

The Coronado Club will present a Mexican Buffet on Apr. 18, from 6:30 to 8:30 p.m. Dancing will be from 9 p.m. to 1 a.m. Prices are \$2.60 for members; \$3.60 for guests.

The New Mexico Grand Lodge of Masons recently elected George O. Thorne (3245-1) as grand master. The fraternal group includes some 15,000 Masons in 65 lodges throughout the state.

Mr. Thorne has been a Mason for more than 20 years. He served in all of the offices of Temple Lodge No. 6 in Albuquerque before becoming active in the Grand Lodge.

AEC, Universities Plan Conference On Radiation Effects

A Technical Conference on Radiation Effects on Materials and Radiation Biology sponsored by the AEC and the Associated Rocky Mountain Universities (ARMU) will be held in Albuquerque, Apr. 22-25. Conference sessions will take place in the New Mexico Union Building of the University of New Mexico. The conference is made possible by a grant by the AEC; its purpose is to enable laboratory and University staff members to become acquainted with each others' projects, interests, and facilities.

Some 37 technical papers will be presented at the conference by speakers from Sandia Laboratory, Los Alamos Scientific Laboratory, the Lovelace Foundation, and the ARMU member universities. The conference will also include tours of Sandia's radiation facilities on Apr. 22, the LASL Radiation Biology Laboratory and critical assemblies on Apr. 23, and the Lovelace Foundation's Fission-Product Inhalation Facility on Apr. 25.

J. W. Easley, Director of Radiation Physics 5300, will discuss "Research Reactor Utilization in Radiation Damage Studies" at the first conference session on Apr. 22. He will also chair Conference Session IIB on Apr. 22, during which papers will be presented by the following Sandia personnel: B. T. Kenna (1122-2), "Activation Analysis with 14 Mev Neutrons"; F. M. Smits (5310), "Dependence of Neutron Displacement Damage in Silicon on Neutron Energy and Neutron Flux"; Ruth E. Whan (5311), "Optical Studies of Oxygen-defect Complexes in Germanium"; A. W. Snyder (5320), "Photoconductivity in Insulators"; and K. H. Jones (5322), "Inter- and Intra-molecular Energy Transfer in Gamma-ray-irradiated Alkylbenzenes and Related Hydrocarbons."

On Friday, Apr. 24, R. S. Claassen, Director of Physical Research 5100, will participate in a panel discussion of "University-AEC Lab Cooperation."

D. J. Jenkins, manager of Personnel Research, Training and Education Department 3130, is a member of the planning committee for the conference, along with Glenn A. Whan of UNM, W. H. Crew of LASL, and S. A. Upson of AEC/ALO. Sandia tour arrangements are being made by D. E. Irvin, G. C. Wayland, and Mrs. S. M. Rappleyea of Community Relations Division 3143. Mrs. Jean Gillette of Technical and Trades Training Division 3132 is coordinating arrangements for conference luncheons and registration.

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LAB NEWS

APRIL 10, 1964

AEC to Modify Sandia Lab Steam Distribution System

The AEC has received six bids for modification work on a steam distribution system at Sandia Laboratory.

Marco Construction Company's bid of \$42,650 was the lowest received for the project. The work will be done in the north-east corner of Tech Area I. It will involve 360 linear ft. of underground eight-in. steam and four-in. condensate and distribution piping with an insulating concrete jacket. Work is to be completed within 90 days after the contractor is notified to proceed by the AEC.

Plant Engineering Department project engineer is H. B. Burress (4543-2).

Death

John Blough, Jr., a Sandia employee for over 10 years, died suddenly Apr. 3. He was 59.

Mr. Blough was an expeditor in Research and Development Support Section 2642-3. Survivors include his widow, a son—John Edward Blough, a sister in Indiana, and a brother in Florida.

Weapon Data Indexing Group To Meet Here

Between 25 and 30 representatives of agencies using and producing information about atomic weapons are expected to attend the Cooperative Weapon Data Indexing Committee meeting at Sandia Laboratory Apr. 13-15.

They will include representatives from the Atomic Energy Commission, Department of Defense, and U.S.-U.K. Joint Atomic Information Exchange Group. Calla Ann Crepin (3421) and Elizabeth Bodie (8232-1) are Sandia Corporation's official representatives at the twice-yearly meetings.

In addition to the technical sessions, there will be a talk by Col. Franklin A. Long, assistant director of science and technology for the Arms Control and Disarmament Agency.

The meetings will be held in Rm. 229 of Bldg. 802.

Bridge Tourney Winners

Forty Sandians recently competed in a National Industrial Recreation Association duplicate bridge tournament.

Local winners included H. H. Hann (2631) and his wife Martha who tied with R. E. West (1423) and J. K. Nakayama (1513) for the north-south table position top honors. East-west position winners were G. A. Arnot (1422) and his wife Mary Lou.

Sandia Technical Library Observes Special Week

"Reading is the key . . ." the theme of this year's observance of National Library Week, will be emphasized at Sandia Laboratory by displays and informal tours through the technical library in Bldg. 804 from Apr. 13-17.

Ida Mae Gutierrez (3421), chairman of the Library Week committee, explained, "We will have library guides on hand from 2 to 3 each afternoon to show visitors the facilities available, and to further acquaint them with the services provided by the technical library."

Two Softball Leagues Start Play May 11

Softball season at Sandia Laboratory starts May 11. Recreation Council representatives and team representatives will meet Apr. 7 to organize the leagues.

Both regular softball and slow pitch leagues will be organized.

Tried for the first time last year, the Sandia Slow Pitch league proved successful. A slower game than "fast pitch," slow pitch uses an extra man in the outfield and the pitcher must "lob" the ball to arc over the plate.

Games will be played after hours on Sandia Base diamonds.

Anyone interested in participating in either league should contact their Recreation Council representative or call Benefits and Services Division 3122, ext. 264-7775.

AIE to Install Sandia Engineers As New Officers

New officers of the New Mexico Area Chapter of the American Institute of Industrial Engineers will be installed at a dinner meeting Monday, Apr. 20. J. D. Ramsey (4441) is president, J. C. Borg (2563) is vice president, and J. E. Anderson (2111) is secretary. Treasurer is W. F. Stinnett (2563) and E. L. Devor (2563) is director.

The meeting will begin at 6:45 p.m. at the Sandia Base Officers Club.

Speaker for the occasion will be Joseph J. Brubaker, Chief Industrial Engineer, Kennecott Copper, Chino Mines Division, Hurley, N. Mex. He will discuss "Industrial Engineering in Copper Mining."

For reservations call Mr. Stinnett, ext. 264-3847.

H. V. Catt to Conduct Seminar for Accountants

Harold V. Catt (6021) will conduct a seminar on "Professional Accountants' Fees," May 2 at the Hilton Hotel. The meeting is sponsored by the Professional Development Committee of the New Mexico Society of Certified Public Accountants in cooperation with the American Institute of CPAs. Mr. Catt conducted the initial seminar on this topic for the local Society a few years ago.

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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
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

FOR SALE

36" O'KEEFE & MERRITT gas range, \$40. Romero, 242-7569.

TWO STUDIO COUCHES w/new material for recovering, make nice beds; 2 televisions, console and console, need repairs. Conklin, 255-6455.

36" GAS RANGE, \$20; automatic water softener, \$250; chrome breakfast set, 4 chairs and leaf for table, \$15. Revels, 344-3033.

30" ELECTRIC STOVE; 12.6 cu. ft. refrigerator-freezer, \$100 ea. Foster, 265-0290 between 5 and 7 p.m.

PORTABLE TV, 1960 Philco 17" thin line series, \$40. Long, 264-1109.

WRECKING 1949 Pontiac, parts for sale. Chavez, AL 5-5461 or AX 8-5091.

WESTINGHOUSE RANGE, \$50. Klopolsky, 299-4110.

2 SHORT FORMALS, size 10 tall, 1 white-pink stripe organza w/stole, \$9; 1 white brocade w/removable pink satin cummerbund, bow, sash, \$12. Hughs, 299-7827.

AT FHA APPRAISAL, 2-bdr., 1 1/4 bath, \$1000 new carpeting, all rough-ins, disposal, utility room, landscaped, requires \$450 down. Fornero, 255-9879.

REVERE MOD. C80, 8 mm movie camera f2.5 lens, w/case, f3.5 telephoto and f2.5 wide angle lens, \$25. Neidel, 299-4369.

AUTO AIR CONDITIONER, \$125 or will trade for chain saw in good condition. Neil, 298-1645.

6" REFLECTOR telescope, \$60. Gardner, 299-8455.

PORTABLE EVAPORATIVE COOLER, 2500 CF/M, 63 model, used one summer. Lowry, 298-0178.

HOLLYWOOD BED, complete, single, w/ brass headboard, \$40. Bowland, CH 3-5238.

GROVES PRESTIGE BOW AND ARCHERY equipment, \$100; Airline 23" TV, \$75. Thompson, 255-2244.

POLAROID CAMERA w/light meter, flash attachment. Green, 299-3354.

250W AM-CW TRANSMITTER, pair 274N transmitters w/power supply, spare tubes, or trade for Ham-M type rotator. Bierly, 298-3609.

SELL OR TRADE: set of chairs for TR-3. Williams, AX 8-2671.

'57 FORD station wagon, 4-dr., one owner, PS, automatic transmission, R&H, tinted glass, see at 6417 Lomas NE. Fisher, 268-3496.

ROLL heavy poultry fencing, 165' x 5' high, Ward's price, \$19, take it for \$15. Stamm, DI 4-7431.

9x11 TENT; 2-burner stove; butane lantern; metal ice box, 3 sleeping bags, car carrier, \$40. Sellers, 242-8378.

MISCELLANEOUS baby furnishings and equipment, bed, dressing table, nursery picture, automobile safety harness, electronic baby sitter, etc. Gammon, 268-1032.

'58 OLDS 88, R&H, PS, PB, AT, \$695 or best offer. Martinez, 256-1062 after 5 p.m.

3-BDR, 1 1/4 bath, country kitchen, fireplace, drapes, w/w carpet, a/c, assume GI loan, no qualifying. Fisher, AX 8-2546.

USED HOTPOINT automatic washer, operating, \$35; adjustable Chev. pickup rear bumper, extendable 24" for camper, \$40, cost \$65. Wilson, 299-8864.

TRANSMITTER, 813 final, \$50 or w/2 spare tubes, \$60. McFarland, 299-8559.

TIRES 17.5-800, 8 ply, w/rim for Chevrolet or trade for 600-16. Jacobs, 877-2701, call 9 a.m. to 3 p.m. or weekend.

1-WHEEL SEAR'S TRAILER, covered, will trade for tape recorder or sell. Hostetter, 256-3803.

10-RMS RANCH, 3200 sq. ft., 3 1/4 baths, built-ins, all conveniences, basement, garage, double lot, SE, \$33,500. Kolodner, 268-0564.

CLARINET, 18 mos. old, used 1 hr., \$75, no trades; baby crib to 6 yrs., \$15; Cosco high chair, \$10; baby walker, \$2. Lewis, 299-0588.

NATIONAL NC-303 receiver, originally \$450, will take best offer over \$190. Bauer, AL 5-7774.

TWIN BED, metal frame, box springs, Sealy mattress. Evans, 268-8001 after 5 p.m.

HOTPOINT ELECTRIC RANGE, 2 ovens, deepwell cooker, make offer. Ream, 299-2076 after 4:30 p.m.

PIANO, Foster upright, \$110; Cosco baby bouncer, \$5; black leather motorcycle jacket, size medium, \$10. Seeley, 298-0607.

'52 GADABOUT CHEVROLET, 4-dr., overhauled engine, diminutive gasoline consumption, heater, standard transmission, forest green, all for \$99. Weinreich, DI 4-9167.

CABIN, Jemez Mountains, 18x20' frame on 3/4 acre, new, furnished, fireplace, insulated, electric power, \$3500. Durkee, 255-2253.

HOLIDAY PARK, fireplace, w/w carpeting, quarry tile, drapes, double garage, wrought iron and black fence, \$3000 down, assume VA. Erwin, 299-2418.

BIKE, 16" sidewalk, boy's, blue/white w/coaster brake and training wheels, \$6. Russell, AX 9-0159.

WINDOW STEEL CASEMENT, w/frame-sill, 40"hx55" w, \$10; Shop Smith, early model, accessories, needs minor repair, \$50; Power supply DC regulator, 110V, 3-phase input, 40v-50A output, \$50. Stewart, AX 8-0439.

TENT, Sear's Ted Williams, 9x18, complete w/tent and pole cases, \$80. Nix, 2813 Virginia NE, 298-4282.

VIKING RANGER TRANS., trap vertical ant., \$125. Cummings, 298-6042.

2-BDR. HOME; large corner lot, walled back yard, hedge in front, patio, near schools, bases. Robinson, AL 6-7326.

SELL OR TRADE: Heathkit Apache transmitter BC-348-Q receiver and misc. surplus radio gear. Dobias, 4615 Inspiration Dr. SE, 256-7476.

MAHOGANY DINING ROOM SET and 6 chairs; Hide-a-bed turquoise couch, 1 corner table; two lamps. Clory, AM 8-4196.

LARGE BABY CRIB w/mattress, \$7; pink silk organza cocktail dress, size 11, \$10; will include pink cocktail coat. Bechtel, 268-7409.

'56 CHEVROLET Six, 4-dr., stand. trans., heater, low mileage. Wall, 344-4408 after 5 p.m.

3-PC walnut bedroom suite with mattress and box springs, \$75. Wilson, 298-0049.

NEXT DEADLINE FOR SHOPPING CENTER ADS Friday Noon, April 17

WOODEN SCREEN door, 3' x 6'8" \$6. Hanks, 256-2917.

SMALL, GENTLE 12-year-old mare, stiff but suitable for beginning youngsters, \$35; milk cow, trade for calves. Ross, 867-2413.

'60 CUSHMAN Eagle scooter, extras, turquoise color, make offer. Schafer, 299-4634.

16" AC vents, \$3; screen door, \$3; grille, \$2; vent, \$2; lawnmower, \$4; scissor jack, \$3; tent, \$4; table, \$12; chest, \$5. Schorr, 255-7234.

ANTIQUA CLOCK, time and chime, over 100 years old, \$45; linear amplifier and power supply, \$75; chest of drawers, \$10. Welker, 299-1179.

'61 MATCHLESS APACHE, 650 cc., blue book value. Grotberg, 299-1704.

DESK, plywood, natural finish, 59"x24" top, double pedestal, \$20; bedroom chair, maple, wingback, Early American, \$10; Moore, 299-3758.

INCOME PROPERTY, 2-bdr. house w/duplex in rear, duplex furnished, house partly furnished, \$2500 down, no qualifying. Farner, 299-6007.

COMPLETE 8MM Keystone zoom camera, projector outfit w/accessories, brand new w/guarantee cards, cost \$345, sell for \$225. Atkinson, 299-3250.

'51 PONTIAC, will run, \$50 or make offer. Berry, 299-4765.

14' HERTERS fishing boat, strongest built, 750# trailer w/spare wheel and tire, 17 1/2 hp Elgin motor. Huchman, 298-1028 evenings or weekend.

'58 TR-3, white, \$600. Randle, Placitas.

PORTABLE TYPEWRITER, \$15; 3-band radio in walnut console, \$8; screen door, \$5; large saddle leather case, 10"x18"x26", \$12.95. Browning, AX 9-6384.

ASSORTED NEW USED BRICKS (costs more), approximately 440 bricks for \$16. Wilson, BU 2-3225.

GE REFRIGERATOR, \$35. Ezell, 268-4686.

24" SEAR'S rotary self-propelled mower, \$35; 20" girl's bike w/training wheels, \$15; car cooler, window type evaporative, \$5. Lowe, 299-7725.

MATERIAL for a unit of three 5'x10' dog runs, \$75; tricycle, \$5; girl's 20" ballroom tire bicycle, \$7.50. Peterson, 299-4714.

GE REFRIGERATIVE room air conditioner, complete w/portable stand, can be installed permanently, \$125. Roark, 265-0177.

VIKING STEREO tape deck; speaker, 8" in enclosure, \$10; Fedders refrigerated air conditioner, \$125; clock radio, \$15. McIntire, 298-6145.

CUSTOM-BUILT HOME on Morningside NE, 2-bdr., paneled den, hot water heating, carpeting, drapes, landscaped, \$22,500. Wing, 256-9575.

MOSSMAN 3-bdr. w/extra rm., cathedral ceilings, fireplace, a/c, landscaped, many extras, \$17,100, no qualifying, low down. Buchly, 265-0694.

CUSTOM TOW-BAR for Triumph TR-3, soft top and door panels for TR-3; concrete forms, 80 linear ft. of 2x4's. Stevens, 298-2894.

PUPPIES, small mixed breed, black, free, need good home. Bentz, 299-2961.

3-BDR HOME, NE Heights, near shopping, furniture available. Workhoven, 282-3246.

ROBERSON, \$400 paneled FHA appraisal, 3-bdr., 16x20 paneled den, DR, pitched roof, carpet, fireplace, sprinklers, 1678 sq. ft., \$17,900. Bennett, 299-1144.

'48 CHEVROLET, \$60. Hereford, AX 8-1052.

DESK, refinished, 34"x60", 6-drawer, \$30. Mitchell, 298-0257.

'56 FORD conv., green, OD, 225 eng., make reasonable offer. Cejka, 299-2441.

SOFA, new never used, bought on sale for \$189, Kroler 80", pumpkin color, \$125. Rouckus, AL 5-2649.

'54 HARLEY DAVIDSON 74, engine and transmission, rebuilt this year, saddlebags, lights, buddy seat, carrier, \$360. Robnett, AX 9-9192.

'55 GMC 1/2-ton, PU, 6-cyl., 3-speed, rebuilt engine, starter, and clutch, \$495. Oliver, 299-8853.

STEEL PATIO SET, tables and 4 chairs, \$15. Nelson, 2823 Claremont Pl. NE, AL 5-2364.

3-BDR., 2 bath, carpet throughout, electric kitchen, garage, sprinklers, near schools NE, \$15,300. Lucas, AX 8-0342 evenings, weekends.

BUNK BEDS w/mattresses, \$20. Wacek, 268-8579.

SELL OR RENT: 3-bdr., and den, 1 1/4 bath, a/c, drapes, attached garage, walled yard, \$120 mo., water paid, 1612 Wisconsin NE, McCabe, AL 5-6872.

SUNBEAM hand mixer, \$5; GE 12" fan, \$8; Argus C-3 camera, complete filters, aux. lenses, polarizer, attachments, \$25. Dehon, 698-2219.

WANTED

JOIN CAR POOL from Echo Ridge to bldg. 802. Flower, 298-4653.

HOME for puppies, 2 males, mother Colie, father Boxer. West, 282-3460.

YOUNG WOMAN to share apartment close to Base. Reyes, 298-5188 after 5:30 p.m.

120 BASS ACCORDION, hopefully inexpensive. Beach, 299-2990.

USED TV, I can use your old and/or dead TV if it's still in one piece. Healey, 298-1755 after 5 p.m.

LUGGAGE RACK for TR-3. Williams, AX 8-2671.

USED PING PONG TABLE. Garcia, 243-5064.

PAY CASH FOR Mercedes Benz 190 SL or Ford Thunderbird 1955 or 1956 model. Smitha, 8607 Menaul NE, 299-1096.

WOULD LIKE to rent or lease 2-bdr., unfurnished home in NE or SE area, starting in May or June. Gottlieb, 345-1009 after 6 p.m. or weekends.

TO JOIN CAR POOL or ride from Princess Jeanne (Lomas and Claudine) to bldg. 880. Wilson, 298-0049.

FLASH ATTACHMENT for Bolex model C camera. Stuart, 299-9190.

RIDERS from Bellhaven area to gate 7, 880 area. Farner, 299-6007.

FOR RENT

FURNISHED APARTMENT, 1-bdr., large living room, bath, kitchen, water paid, University area, \$50. McReynolds, 255-5535.

3-BDR., carpeted, built-in range w/oven, disposal, garage, water paid, \$115. 633 Claudine NE. Saviteer, 298-1430.

2-BDR. HOUSE, partly furnished, near bus and base, \$90, utilities paid. Farner, 299-6007.

CLEAN 2-bdr. furnished apartment, 321 Penna. NE. Miller, 298-2659.

HOUSE, furnished, 2-bdr., \$75/mo, SW Valley, newly decorated, soft water furnished. Gower, 877-1223.

LOST AND FOUND

LOST—Turquoise drop earring, house and car keys on ring w/safety tag, car and house keys on ring w/chain, gold clip earring w/gold chain loops, clip-on type sunglasses, blue #9 knitting needle, blue plastic SC folder, ladies' red billfold w/ID. LOST AND FOUND, ext. 264-2757.

FOUND—Oldsmobile car keys, religious medal, ladies' grey wool gloves w/ leather palms. LOST AND FOUND, ext. 264-2757.

Michael Faraday--- The Man Who Opened Era of Modern Physics

The formation and proof of the theories of the atom and the molecule were a part of building the foundation of modern atomic physics; however, research and advancement in other areas were needed as part of the foundation. Concurrently with the development of atomic-molecular theories, similar advancement was taking place in the area of electricity. In this issue, we shall examine the work of Michael Faraday, who, in the truest sense, brought research on electric and magnetic phenomena to new heights, and who also can be said to have opened the era we call "modern physics." In addition to the works of Faraday, we shall speculate briefly about some theories of the Scottish mathematician J. Clerk Maxwell, and of Isaac Newton, in an attempt to show the relationships between Faraday's theories about electromagnetism and such other phenomena as the nature of light.

Michael Faraday was a poor boy who charmed fortune. The son of an English blacksmith, Faraday was born, in 1791, into a world of poverty and hard work. As a boy, he was apprenticed to a bookbinder, but he celebrated his 20th birthday by attending the lectures of Sir Humphrey Davy at the Royal Institution.

Inspired by what he heard, Faraday sought employment in Davy's laboratory. In a bold and simple step, he wrote Davy a letter asking for a job, and he backed it up with a carefully and beautifully copied notebook containing the notes he had taken in Davy's lectures. He got the job—as an assistant and bottle washer.

He remained at the Royal Institution for the next 45 years, first as Davy's assistant, then as his collaborator, and finally as his successor. By the age of 30, he was superintendent of the Davy laboratory; at 35, he was elected to the Royal Academy. During his years at the laboratory, he conducted many experiments vital to an understanding of the phenomena associated with electricity. And he theorized brilliantly about the nature of electromagnetism (magnetism developed by a current of electricity).

Typical of Faraday's experiments is his work on induced electrical currents. He described this experiment to the members of the Royal Society in November 1831:

"Two hundred and three feet of copper wire in one length were wound round a large block of wood; other two hundred and three feet of similar wire were interposed as a spiral between the turns of the first coil and metallic contact everywhere prevented by twine. One of these helices was connected with a galvanometer, and the other with a battery . . . When the contact was made, there was a sudden and very slight effect at the galvanometer, and there was also a similar slight effect when the contact . . . was broken. But whilst the voltaic current was continuing to pass through the one helix, no galvanometrical appearance nor any effect like induction upon the other helix could be perceived . . ."

Faraday repeated the experiment using a battery with lower power, with no change of effect. However, he noticed in both instances that the slight deflection of the needle of a galvanometer, which occurred when connection was made, was in the same direction, and that the deflection produced when contact was broken was in the opposite direction.

The results of these experiments led Faraday to conclude "that the battery current through one wire did, in reality, induce a similar current through the other wire, but that it continued for an instant only." Faraday confirmed his belief about induced current by other experiments.

His discovery of electromagnetically induced currents was the foundation for the development of modern industry; almost all electrical machines depend on the principles of induced current.

Impressive as Faraday's experiments were, they were matched by his theories. Before his time, electric, magnetic, and gravitational forces were believed to act across empty space. But to Faraday's mind, such action without a perceivable actor made no sense. Thus, in an attempt to visualize forces acting between electric charges and magnets, he had to imagine the space between them as being filled by "something" which can pull or push.

He spoke about force lines similar to rubber tubes which stretch between two opposite electric charges or magnetic poles and pull them together. In the case of charges or poles of the same sign (positive or negative), these force lines run in different directions and pull them apart.



The direction of the force lines can be deplate under which a magnet has been tested by sprinkling iron filings on a glass placed. The filings will orient themselves in the direction of the force lines (magnetic lines of attraction) around the magnet.

Faraday introduced the idea of "field forces" or "fields" into physics, and the forces between material objects separated by empty space could now be considered as the results of certain close-quarter interactions between the fields surrounding them.

Some thirty years later, the Scottish mathematician J. Clerk Maxwell (who also, we may recall, theorized about the viscosity of gases) translated Faraday's ideas into mathematical form and developed them into a theory of electromagnetic waves. This theory, in part, described the interaction between electric and magnetic waves, and showed the way to calculate the propagation velocity of electromagnetic waves (the velocity with which the waves move forward in space).

In describing the interaction between electric and magnetic waves, Maxwell made use of units to measure each type of force: the **electrostatic unit (esu)** for the measurement of an electric charge defined in terms of electric attraction and repulsion; and the **electromagnetic unit (emu)** for the measurement of an electric charge defined in terms of its action on a magnetic pole. One electromagnetic unit was assigned the value of 3×10^{10} electrostatic units.

Maxwell used electrostatic units for electric fields, and electromagnetic units for magnetic fields while writing his equations, and the factor 3×10^{10} found its way into formulas containing an electric field on one side and a magnetic field on the other. Ultimately, the application of these equations for describing the propagation of electromagnetic waves led him to conclude that propagation velocity must be numerically equal to the ratio of the two units (esu and emu), that is, 3×10^{10} centimeters per second.

Surprisingly for Maxwell, this value, 3×10^{10} centimeters per second, coincided exactly with the velocity of light in a vacuum, a measurement made before Maxwell's time. The coincidence indicated that light waves are actually electromagnetic waves of very short length, a conclusion which led to development of the electromagnetic theory of light. Today, the scientist visualizes the interaction of light and matter—including emission, propagation, and absorption of light—as the result of forces acting between propagating short electromagnetic waves and electrons.

In 1704, much earlier than Maxwell's time, Sir Isaac Newton, in a work titled, **Opticks, or a Treatise on the Reflections, Refractions, Inflections, and Colours of Light**, queried, "Are not the Rays of Light very small Bodies emitted from shining



NEW OFFICERS were recently elected by Sandia Toastmasters Club 765. Left to right, Dean Thornbrough (7246-1) is the president-elect; Wayne Sebrell (1542-2) is the outgoing president; Bob Summers (2441-2), historian; and Hal Goddard (1443-2), educational vice president of the Club.

Libraries Association Meets in Santa Fe

"Information and the User" is the theme of a discussion program to be held by the Rio Grande Chapter, Special Libraries Association, on Apr. 24 at 3 p.m. at La Fonda Hotel in Santa Fe.

Charles W. Sargent, Lovelace Foundation librarian, will moderate a panel of special library users which includes E. H. Copeland, supervisor of System Test Division 7331, Eugene K. Gardner of Programming Section 7623-1, and three technical men from the Los Alamos Scientific Laboratory. The discussions will include problems encountered by library users, and how the special libraries can best be a source for scientific and technical information.

Announcements of the meeting have been sent to chairmen of local technical societies; however, anyone interested in the topic is invited to attend. Further information may be obtained from Ida Mae Gutierrez (3421), a member of the chapter's executive board.

March 18 Injury Accepted as Lost- Time Accident

Sandia Laboratory's safety record was adjusted back to zero last week. An accident which had been under consideration since Mar. 18 has now been accepted as part of the lost-time record.

On that date, an employee injured her hand while opening a door.

At the time the record was adjusted, Sandia Laboratory employees had worked 1,085,000 hours or 31 days without a disabling injury.

Substances? For such Bodies will pass through uniform Mediums in right Lines without bending into the Shadow, which is the nature of the Rays of Light."

Newton's corpuscular theory of light was accepted for many years; it was generally held to be more valid than earlier theory—that of the wave characteristic of light—which was popular in the 17th Century, and which was rejected by Newton.

The wave theory was revised, however, by two other physicists, Thomas Young and Augustin Jean Fresnel, who put it into its modern form. Albert Einstein pointed out in 1929 that the Young-Fresnel revival of the wave form theory of light made the first breach in Newtonian physics, although the fact was not understood at the time.

The wave theory opened the first chapter in what is known today as field physics. The work of Faraday and Maxwell, connecting light with electromagnetism, opened the second chapter. The third was written by Einstein, who explained gravitation in geometric terms. A still wider synthesis attempted by Sir Arthur Eddington, an English astronomer, would connect gravitation with light and electromagnetism. So far, however, the synthesis has not been made.

Safety Inspections Start Fast Chain Of Events at Sandia

A new procedure for faster, more efficient safety service went into effect at Sandia Laboratory last week.

On any emergency call to investigate unsafe working conditions, Safety Department 3210 personnel will be taken to the scene by Security Shift Sergeants in radio-equipped vehicles. Since Patrol Division 3242 provides the Sandia Laboratory key service, Safety men will have access to all areas of the Laboratory.

Need for the new system was demonstrated recently when the Safety organization was called to investigate possible gas leakage in Theater Bldg. 815. The investigator found no gas hazard present in the auditorium but discovered a small leak in the diaphragm valve in the gas line outside the building. However, in the investigation the safety man could not gain access to locked equipment areas. The new system will provide rapid access to all areas of the Laboratory.

In announcing the new system, L. M. Jercinovic, manager of Safety Engineering Department 3210, emphasized the responsibility of all employees to report any indication of unsafe conditions at any time. The number to call is 264-7339.

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APRIL 10, 1964

Sandia's Safety Record

**Sandia
Laboratory
HAS WORKED
700,000 MAN HOURS
OR 20 DAYS
WITHOUT A
DISABLING INJURY**

**Livermore
Laboratory
HAS WORKED
414,800 MAN HOURS
OR 77 DAYS
WITHOUT A
DISABLING INJURY**