

# ARMY RESEARCH AND DEVELOPMENT



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## 10 Authors Win Army Science Conference Awards, Certificates



Before resignation as Secretary of the Army to become President of Indiana University, Flinn J. Larsen, Jr., awarded Dr. Flinn J. Larsen, Assistant Secretary of the Army (R&D) the Decoration for Distinguished Civilian Service. Bystanders: Mrs. Larsen, Valerie Jean and Nancy.

### 'Critical' Phase Reached In Army Reorganization

A nuclear power plant term, applied to a reactor that has just been set in motion to do the job for which it was created, appeared appropos with respect to progress of Army-wide reorganization as this publication went to press—major commands had or were about to go "critical."

Many reorganization implementation problems remained to be worked out. Important reshuffling of personnel involved was imminent. Leaders responsible for effecting the vast transition with an absolute minimum of disruption of normal Army operations had cause to wonder how well they would be able to fill the order.

In the main, however, the situation was well in hand, the far-reaching change was proceeding according to plan, and "The Big Picture" of the new Army was taking shape as if made by a master of mass movement.

Effective July 1, the U.S. Army

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One hundred technical papers presented at the 1962 U.S. Army Science Conference, June 20-22 at the United States Military Academy, earned general acclaim for a high overall standard and as a revealing insight into the broad scope and depth of Army research and development.

Award winners, consequently, could take more than usual pride in their achievements—and none more deservedly than an enlisted man "soldier-scientist" who walked off with individual honors.

In the distinguished company of his peers, many of them veterans of more than 15 years of Government career scientist experience in Army in-house laboratories, Sp/4 Ira C. Felkner won the praises of all.

More than accolades rewarded the effort he devoted to preparing and presenting a paper titled "DNA Isolation by an Improved Procedure for Transformation of Bacillus SP." Thanks to financial support of the Army Science Conference by the Association of the United States Army, in the form of \$1,091 in total awards to military authors, Felkner received the top individual prize of \$500.

As a representative of the U.S. Army Chemical Corps, assigned to the Biological Laboratories at Fort Detrick, Md., Felkner shared the conference spotlight with a team of three coworkers who split a \$500 top prize.

Dr. H. T. Eigelsbach, an esteemed researcher of long standing at the Biological Laboratories, presented

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JULY 1962

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## Theme of the Month: Electrical Power Program

By Donald J. Looft

Chief, Electric Power Branch, USAERDL

During World War II and particularly in Europe, half of the total tonnage that went across the beachheads to support the field armies was petroleum fuel. During the Korean conflict, 72 per cent of the total tonnage furnished that area was fuel and fuel products. If we had to field an army today, we could expect that fuels required would, as in the past, constitute a major proportion of the total supplies. Thus you can see that a truly mobile fighting force is difficult to achieve with this kind of logistic burden.

I would like to discuss an area that in the past consumed a relatively small portion of this gigantic fuel requirement, but is rapidly becoming a major consumer as military technology advances. That is the generation of electrical power. The Corps of Engineers of the U.S. Army has, as one of its missions, the supplying of electrical power for all arms and services of the Army. My purpose is to review the magnitude of the Army requirement for electrical power, the present means for meeting that requirement, the deficiencies of those means, and what we are trying to do about it.

First of all—*What is the Requirement?* At present a typical field army in operational status with all of its supporting elements requires on the order of 2,000,000 kw.-hr. per day. In 1950, during the Korean conflict, this requirement was one-half of the present level. It is expected that by 1970 this requirement will, as a minimum, double. In future years, as the Army requires greater surveillance and target acquisition capability, widespread communications, advanced weapon technology, immunity to environment and restricted visibility and combat mobility, requirements for electrical power can only increase.

*In order to give the total Army requirement picture, one must go beyond just the total power level and consider the conditions under which this must be supplied. Military electrical power units must be designed in certain incremental output ratings. They must be as small and lightweight as possible, yet sufficiently rugged to operate unimpaired under every conceivable adverse environment. They must be simple yet provide precisely controlled output power. They must be efficient, reliable and silent. They are required with direct current, and 50, 60 or 400 cycle alternating current at various output voltages. Finally, these units must utilize logistically available fuels—hydrocarbons.*

The increasing demand for electrical power, supplied in the form I have described, without sacrificing mobility and without creating a completely untenable logistic burden, results in a squeeze play that is currently a very critical problem in this field of endeavor.

Equipment available to meet these requirements is comprised of gasoline and reciprocating engine-driven generator sets, and in special applications, turbine engine-driven generator sets. These have been developed into a family of portable or mobile generator sets ranging in size from 0.15 to 300 kilowatts. They utilize commercial components of various makes and models designed in military configurations. Large stationary diesel engine generating plants are used in some special fixed-site applications.

Nuclear reactors have been and are being developed to replace the diesel units, particularly in remote areas, but, to date, do not constitute a significant portion of the total supply. The main source of power then in the tactical commands is the engine-driven generator. Generator sets have done and are doing a creditable job; however, they are deficient in major respects when one attempts to apply them to offset the squeeze play of increased output with reduced bulk that I mentioned earlier.

If we select the most efficient system (diesel engines), we must accept excessive weight, usually excessive size and consequently a compromise of mobility. If we select minimal weight (turbines), we accept a logistic burden that tends to offset the mobility gains. The present-day trend, particularly in strictly tactical systems, is toward turbines because of the small size and lightweight needed for highly mobile combat forces. On an interim basis, we are accepting the very undesirable fuel logistic burden they impose.

*What Can Be Done and What is Being Done to Improve This Situation?* The Corps of Engineers has extensive research and development programs underway to overcome present deficiencies and extend electrical power technology. These are organized and directed toward short—(5 years hence) and long—(ten years hence) range objectives. Short-range programs are concentrated around turbine-engine generating sets. They involve developments to achieve fuel consumption, life and reliability at least equal to diesel engines, and developments of high-speed, high-frequency generators and static frequency converters to exploit the high rotational speed that turbines offer.

The end product will be a series of approximately six sizes of a universal

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# Major Commands in Reorganization Gain Operational Status

(Continued from page 1)

Combat Developments Command became operational at Fort Belvoir, Va., under the command of Lt Gen John P. Daley. Simultaneously, the U.S. Continental Army Command assumed responsibility for individual and unit training, and the new Office of Personnel Operations took over military personnel management.

The next major action is scheduled Aug. 1, on which date the U.S. Army Materiel Command, under Lt Gen Frank S. Besson, Jr., assumes responsibility for the wholesale materiel functions currently controlled by the Technical Services, the Deputy Chief of Staff for Logistics, and the Chief of Research and Development.

Broad-brush outlines of the significant changes were sketched at a Department of the Army Reorganization Project Office briefing June 22. Additional briefings are planned about the middle of this month to fill in some of the finer details, including information on the Army Materiel Command Activation Plan. The plan is now being distributed to staff agencies and comments are due by July 20.

Similarly, activation plans for the U.S. Continental Army Command, the Combat Developments Command, and the Office of Personnel Operations were being staffed for comments late in June.

Views of staff agencies will be considered and included in presentations to be made to the General Staff Council and the Army Policy Council. Meanwhile, staff agencies have been informed that they can assume the activation plans will be approved "essentially as written."

One of the statements made at the June 22 DARPA briefing is quoted:

"The Office, Chief of Ordnance, the Office of the Quartermaster General, and the Office, Chief Chemical Officer will be disestablished on 1 August, 1962. The Office, Chief of Support Services will be established on this same date. The Chief Signal Officer will be placed under the general staff supervision of the Deputy Chief of Staff, Operations on 1 August, while the CBR (Chemical, Biological, Radiological) Directorate in DCSOPS will be established in mid-July.

"It is currently planned that all of the personnel remaining in the Office, Chief of Ordnance on 31 July will be transferred to the Army Materiel Command. Similarly, all of the per-



New Army Chief of Research and Development Dwight E. Beach receives his third star as lieutenant general from Army Chief of Staff General George H. Decker, with an assist from Mrs. Beach, in promotion ceremony at the Pentagon, Washington, D.C., held July 2. Lt Gen Beach succeeded Lt Gen Arthur G. Trudeau, effective July 1, after serving as Deputy Chief for 14 months.

sonnel remaining in the Office of The Quartermaster General and Office, Chief Chemical Officer after establishment of the Office, Chief of Support Services and the Director of CBR in DCSOPS will be transferred to the Army Materiel Command.

"The personnel in the materiel area of the Chief of Transportation, the Chief of Engineers, and the Chief Signal Officers will also be transferred [to the Army Materiel Command] on 31 July.

"It is recognized that the Army Materiel Command agencies in Washington may be overstrength during the period 1 August-31 December, during the period of reassignment of functions within AMC and its subordinate elements and the adjustment of personnel required in conjunction therewith.

"The Chief of Staff Management Office, the Director of the Army budget, Deputy Chief of Staff for Personnel and the Chief of Staff Civilian Personnel Office, and the Army Materiel Command are developing the necessary procedures required during this transition period. . . ."

Effective July 1, the Army Materiel Command began receiving funds directly from the Comptroller of the Army, terminating funding of the Technical Services through DCS-LOG since funding of the Combat Developments Command and the U.S. Continental Army Command was effective simultaneously.

The magnitude of personnel realignment involved in the reorganization is recognized by management officials as necessarily a "very time-consuming exercise" and is being spread over a sufficient period "to insure that the transition is completed in an orderly fashion." While stressing "minimum personnel turbulence," they concede that "individual hardships may be singled out."

Personnel allocations have been determined for the majority of major command elements. For example, at the Combat Developments Experimentation Center, Fort Ord, Calif., authorized strength is 4,138. One of the largest elements of the Combat Developments Command, CDEC's mission and functions are little affected by the reorganization. Established at Fort Ord in 1956, CDEC is organized in Infantry, Artillery, Armor and Technical Service Units to subject concepts of doctrine and organization to field experimentation.

Another important Combat Developments Command element is the Combat Arms Group with headquarters at Fort Leavenworth, Kans., which with subordinate agencies consists of 1,080 personnel.

Other second-level elements of the Combat Developments Command are the Army Institute of Advanced Studies at the Army War College, Carlisle Barracks, Pa., with a staff of 43 employees; the Office of Special

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# Team Surveying Panama El Real Area for Mobility Research

Environmental conditions in the El Real area of Panama, about 140 air miles southeast of the Panama Canal, are being studied by a team of top scientists to determine suitability for Army mobility research.

The 3-month reconnaissance survey is to be completed by September and is under the direction of the U.S. Army Transportation Research Command. Joseph Cloyd of USATRECOM is the project officer.

Transportation Corps interest is aimed at expanding mobility capabilities of the U.S. Army in rugged tropical terrain. Other Army agencies have broad interdisciplinary interests, including physiography, hydrology, climatology, botany, medical problems, and various environmental factors.

The El Real area includes swampy and well-drained lowlands of the Tuira River, virgin evergreen rain forests, and the steep forested foothills of the Serrania del Darien.

Rainfall in the foothills averages more than 100 inches a year, with 20 or more inches in November, and no month is dry. Movement is impeded by numerous streams which have cut steep valleys.

High temperatures and humidity, tropical diseases and isolation multiply the problems of the survey team in making a field check of large-scale aerial photographs, cone penetrometer measurements and soil sample analyses, meteorological and ecological observations.

Arrangements for the research ac-

tivities were made with the assistance of the Service Inter-American Cooperative Agencies Program (SICAP), which is providing technical aid. This agency cooperates with the Agency for International Development (AID) of the U.S. Government and the Panamanian Government on agricultural development activities.

In charge of the research team is Dr. Leslie R. Holdridge, nationally known forester and ecologist. Other members are Dr. James A. Duke, botanist from the Missouri Botanical

Gardens; Dr. William A. Finch, Jr., physiographer and hydrologist, University of California, Department of Geography; Dr. William V. Grimes, technical writer and base camp administrator on the project; and William C. Grenke, soils engineer with Wilson, Nuttall, Raimond Engineers, Inc., which is the contract agency responsible for the undertaking.

Reports on findings are to be prepared by the contractor for submission in September to the Army and the Panamanian Government, which is cooperating in the project.

## Army Activates Limited War Lab at APG

Strictly on schedule, the U.S. Army Limited War Laboratory was activated June 15 at the Ordnance Corps Aberdeen Proving Ground, Md., to deal with counter-insurgency and guerrilla warfare activities.

As of that date, the operational staff consisted of three men. Installed as Commanding Officer is Col Sterling C. Holmes, an Ordnance officer with extensive combat Infantry experience reassigned from Redstone Arsenal, Ala.

First of four division chiefs to be assigned is Col Joseph T. Brown, who headed the Laboratory planning committee. Prior to that he was assigned to the Physical Sciences Division, U.S. Army Research Office, Office of the Chief of Research and Development. He heads the Analysis and Evaluation Division.

Other divisions to be established on an operational basis early this month are: Development Engineering Division, Support Services Division, and a Research Division. Fully staffed, the Laboratory will have six officers and 70 civilians, 44 of them scientists and engineers. Activities will range over a broad interdisciplinary base.

On the job, and very busily engaged with the problems of assembling this highly specialized staff, is a distinguished scientist who carries the title of Technical Director. Although he has the approval of all Army officials concerned, his identity is being withheld from public announcement until the appointment is confirmed by the Federal Civil Service Commission.

## Army Distributes Brochure Covering Special Warfare

"Special Warfare, United States Army," an illustrated 142-page brochure, is being distributed Army-wide as part of the developing program to train to some degree the entire Army in counter-insurgency techniques.

The brochure carries an explanatory letter from President Kennedy in which he states that "pure military skill is not enough" for the Army to supply. The Chief Executive emphasizes a need for "improvement and enlargement of our own development of techniques and tactics, communications and logistics" to meet multiple threats of guerrilla war.

Among the authors are Secretary of Defense Robert S. McNamara, Army Chief of Staff General George H. Decker and various experts in guerrilla war tactics.



Artist's concept of the Shillelagh weapons system. A light, surface-to-surface missile system, shown here in a tank-mounted application but versatile for other combat purposes, the Shillelagh is being developed under supervision of the Army Ordnance Missile Command, Redstone Arsenal, Ala.



# Personnel Research Office Opens Officer Evaluation Center

Operations at a new Army unit believed unique in military history, the U.S. Army Officer Evaluation Center, will start in July at Fort McClellan, Ala., as the climax of a 6-year research and development effort.

Responsible for establishment of the new Center is the U.S. Army Personnel Research Office, Office of the Chief of Research and Development. Objectives of the Center are of worldwide interest to military and human factors research agencies, in the opinion of USAPRO officials.

The Center (OEC) will simulate a Military Assistance Advisory Group (MAAG) Headquarters. Under the plan of operation, junior officers will perform a variety of realistic tasks as if they were actually on duty in the capital city of a friendly foreign country.

Commanding the Center is Col John H. Dixon, an Infantry officer. His staff, most of whom reported for duty during June, consists of 14 officers and 38 enlisted personnel.

Performance of the junior officers will be evaluated in a wide variety of military duties or situations associated with service in a Military As-

sistance Advisory Group. Thirteen specific test situations have been developed and checked out in exhaustive studies to establish their suitability for evaluation purposes.

Actual response to the test situations will be compared with experimental test scores achieved by the same junior officers a year or more ago, at the time they entered military service. Comparison will reveal effectiveness of the experimental tests in indicating capabilities of the officers for various kinds of duties.

Only six junior officers will work the MAAG Headquarters exercise at any one time. Still the test program calls for evaluation of more than 900 officers during a 2-year period.

Tests are concentrated in three days and nights, a progressive "softening-up process" calculated to tax the endurance, continual alertness, ready responsiveness and effectiveness in coping with problems.

The principal military sponsor of the Center and the research behind it is the Deputy Chief of Staff for Personnel, Department of the Army. The research also has the active support of the Human Factors Subpanel

of the Army Scientific Advisory Panel.

Direct operational responsibility rests with the U.S. Army Personnel Research Office. Under various other names during the past 20 years, USAPRO has originated many highly successful selection and classification instruments, including the Army Classification Battery and the Officer Candidate School Selection Battery.

USAPRO's Chief Scientist, Dr. Herbert E. Brogden, said the test program at the Center arises from a clearly perceived need for officer specialization attributable to increasing complexities of man-machine systems.

More comprehensive knowledge of the characteristics that cause an officer to be effective in specific fields, Dr. Brogden said, will serve the Army in greater effectiveness of each officer, and will help to stimulate interest in an Army officer career by putting each man in the job for which he appears best qualified.

For the next two years, Fort McClellan will serve as a research laboratory from which new knowledge of human factors having long-range Army significance may emerge.

## Dr. Gordon Joins APRO Staff as Laboratory Chief

Dr. Leonard V. Gordon recently joined the professional staff of U.S. Army Personnel Research Office as a key scientist, it was announced by Dr. Julius E. Uhlaner, Director.

Dr. Gordon is Chief of the Behavioral Evaluation Research Laboratory, one of four laboratories researching the areas of military selection, behavioral evaluation, combat systems and support systems. He is responsible for the supervision and execution of such Tasks as Officer Prediction, NCO Leaders, Combat Selection and Special Forces problems.

Dr. Gordon obtained his B.A. degree from the University of California at Los Angeles in 1940, and his M.A. and Ph. D. degrees from Ohio State University in 1947 and 1950, respectively. He taught industrial, experimental and general psychology at the University of New Mexico and Boston University. Early in his career he served at the Bureau of Educational Research at Ohio State University, and as Associate Director, Office of Statistical and Research Services at Boston University.

In 1952, Dr. Gordon was appointed Director of Personnel Measurement Research Department of the U.S. Naval Personnel Research Activity in San Diego, Calif., and served until

his appointment with USAPRO. He made major contributions in military psychology and psychometrics, and is the author of numerous tests, classification batteries, and papers.

Dr. Gordon has served as an Evaluation Panel Member of the United States Civil Service Commission. He is a Fellow of the American Psychological Association and a member of the International Association of Applied Psychology and the Psychometric Society.



Dr. Leonard V. Gordon

## Mastin Selected as Chief Of ARO Contracts Branch

Guy E. Mastin has been promoted to Chief of the Research Contracts and Grants Branch, Research Support Division, U.S. Army Research Office, Office of the Chief of Research and Development.

Qualified for his new duties as an attorney by profession, Mr. Mastin was oriented while working with Hilbert E. Friend since April 1961 as a research contract specialist. Mr. Friend resigned as branch chief to accept a higher-grade position with the National Science Foundation.

Following graduation magna cum laude with an LL.B. degree from Walter F. George School of Law, Mercer University, Macon, Ga., in 1954, Mr. Mastin was employed for seven years by the Quartermaster Corps, Office of the General Council. He was Counsel to OQMG R&D Division for four years.

While with the Quartermaster Corps, Mr. Mastin served as counsel to the contracting officer who awarded and administered Army-wide research contracts prior to transfer of this function to the U.S. Army Research Office. Consequently, he has been closely associated with USARO since its establishment in 1958.



# ASTIA Proceeding With Initiation of 19-Point Program

Forthright admission that the Armed Services Technical Information Agency is undermanned to do its job right and a strongly supported 19-point program for remedial action have gained good results.

Most significant is approval of an immediate augmentation of the operational staff by 102 critically needed personnel, about 78 of whom are expected to be at work this month.

The 19-point program (see page 4, March 1962 issue), prepared under the guidance of Col James O. Vann, ASTIA commander, calls for an additional 800 employees in FY 1964.

The Deputy Director of Research and Engineering has reviewed the 19-point program developed by ASTIA. As a result, ASTIA has been directed "to develop a complete 5-year plan incorporating the 19-point program, together with other proposals, and with the 5-year plan to be updated each year in terms of the work to be done and the resources."

"Implementation of this expansion program," said Col Vann, an Air Force officer trained as an engineer and scientist, "will enable ASTIA to conserve irreplaceable time of engi-

neers and scientists working on the weapon systems and other high priority projects of national defense."

The increased manpower spaces, when authorized by the Department of Defense, will eventually expand ASTIA fourfold. Augmentation of the staff will be distributed at ASTIA Headquarters, presently located at Arlington Hall, Va., but scheduled to relocate with the expansion at Cameron Station, Va., and field offices in New York City, San Francisco and Los Angeles, Calif., and Dayton, Ohio.

Recruitment emphasis will be placed on securing personnel with scientific and engineering qualifications, to work directly with scientists and engineers served by ASTIA.

Among 20 to 25 key personnel particularly needed at this time are metallurgists, physicists (including solid-state), aerospace and electronic engineers, mechanical and electrical engineers, crystallographers, mathematicians and physiologists, with experience in information sciences.

Implementation plans for the 19-point program are complete, prepared by a Task Force using the Pro-

gram Evaluation Review Technique (PERT). PERT is the management concept developed by the Navy to complete the Polaris submarine program two years ahead of schedule.

As drawn by the Task Force, the program is reduced to 14 PERT charts, with more than 200 events and 300 activities scheduled. Each of ASTIA's six deputies and directors will control their specific projects on Gantt charts coordinated with the consolidated PERT chart for the entire operation.

With the start of implementation of the program, the Task Force members will return to their units. Results of the initial print-out of the PERT schedule have been programmed through an electronic computer at Wright-Patterson Air Force Base and are being analyzed.

Incidental to implementation of the program is the establishment of a Technical Information Research Office. Intended to work directly with the ASTIA commander, it will be staffed by specialists in scientific and technical information skills.

Another important advance scheduled during the near future is the establishment of a Technical Operations Division of ASTIA at Redstone Arsenal, Huntsville, Ala. This center will serve Army activities at Redstone, and Marshall Flight Center of the National Aeronautics and Space Administration, and the Navy and Air Force installations in the area.

Further progress in serving ASTIA customers as part of the 19-point program is the addition of a Multiple Word Index to the Technical Abstract Bulletin (TAB), and preparations for the issuance this month of a classified edition of TAB.

The latter innovation will enable ASTIA to provide more information regarding Secret and Confidential reports. It will be furnished to all military organizations established for ASTIA service and all civilian organizations cleared for Secret with an "across-the-board" need-to-know under a given contract.

Still another improvement in service effected this month is the supplying of microfilm reports to 12 Regional Technical Report Centers. These have been established by the Office of Technical Services (OTS) of the Department of Commerce for the National Science Foundation.

On behalf of the Department of Defense, ASTIA is supplying to the

## ASTIA to Publish Revised Descriptor Thesaurus

Preparation of a "Thesaurus of ASTIA Descriptors," regarded as a long step forward in ASTIA's continuing effort to create a common information retrieval vocabulary for the Nation's scientists and engineers, is now in its second draft edition.

About 8,000 copies of the thesaurus will be distributed to some 3,600 ASTIA users. Publication is scheduled November 1962.

When analysis-synthesis groups recently held the sixth of a series of monthly meetings at ASTIA Headquarters to consider questions of terminology for the thesaurus, ASTIA Commander Col James O. Vann expressed his appreciation for their work and the cooperation of other agencies and industry.

More than 300 volunteers from 60 organizations have helped to revise the initial 7,000 descriptors ASTIA created as a basis for its automated processing system. ASTIA's collection totals nearly 700,000 classified and unclassified reports, and is the largest of its kind in the Free World. Approximately 900,000 documents were distributed to users in 1961.

Revision of the ASTIA thesaurus was started last fall, with award of a contract to the Engineers Joint Council of New York City for coordinating the day-to-day work. Paul Klingbiel, Director of Lexicography for ASTIA, is the project officer.

Eugene Wall of Documentation, Inc., heads the working panel. Assistance has been given by many of the country's foremost documentalists, including Dr. Julian F. Smith, Lenoir Rhyne College; Karl F. Heumann, National Academy of Sciences; G. E. Randall, IBM Research Center; and Albrecht Neumann, Ratheon Co.

Group chairmen have included: Bart E. Holm, N. I. duPont de Nemours & Co.; Mrs. Rowena Swanson, United States Air Force; Mendall Thompson, Library of Congress; Fenton L. Kennedy, Johns Hopkins University; Hugh Sauter, National Aeronautics and Space Administration; Ethel Marden, National Bureau of Standards; Julius Frome, U.S. Patent Office. Dr. Charles L. Bernier, ASTIA Director and J. Heston Heald, ASTIA Technical Adviser, worked closely with all the groups.



Centers copies of all unclassified, unlimited release microfilm reports. OTS, National Aeronautics and Space Administration, and Atomic Energy Commission reports also will be provided at the Centers, where information will be available to the public.

"ASTIA service when the 19-point program is fully operational will be

developed around an 'information package' concept," said Dr. Charles L. Bernier, Director of ASTIA. The package will include a vast expansion of ASTIA's accession and storage program. It will maintain continuous coordination with all Department of Defense supported technical information centers to provide an interchange of information for the prepa-

ration of bibliographies and monographs."

As envisioned by Dr. Bernier, the information package will enable Department of Defense agencies, their contractors, subcontractors, potential contractors, and grantees to receive from ASTIA rapid, complete, up-to-date information or the precise sources of information.

## Dr. Bernier, Heston Heald Promoted as Col Vann's Chief Aides at ASTIA

Even the most gifted writer might have difficulty preparing a more impressive testimonial to a man's ability to get things done than the bare record of profound changes effected at the Armed Services Technical Information Agency since Col James O. Vann took command in June 1961.

In the military it is normal for organizational changes to follow more or less closely upon the assignment of a new CO. In the case of Col Vann, to make at least a mild understatement, changes have been "broad."

Casual observers, at first glance, might not see a persistent persuader nor a dynamic leader type in Col Vann. But few better illustrations might be cited to prove that first impressions often are misleading. His calm composure and rather quiet speech belie a driving spirit.

A graduate of Bowling Green University, Ohio, where he majored in mathematics, he holds M.S. degrees in physics from Alabama Polytechnical Institute and electrical engineering from the University of Michigan. He also is a graduate of the University of California oceanography course and the Air Force beach reconnaissance course.

Among Col Vann's major assignments since he was graduated from the Air Force Officer Candidate School in 1942 have been: Physicist, Terrestrial Science Laboratories, Cambridge Research Laboratories in Massachusetts; Chief, Effects Division, Air Force Special Weapons Center in New Mexico; Director of Physical Sciences, Air Research and Development Command; Chief, CATE Information Retrieval Program, ARDC.

Experience of Col Vann includes participation in the nuclear tests at Eniwetok and the Nevada Test Site, and research and development in fields of meteorology, oceanography, mathematics, nuclear physics and electronics.

Author of several technical papers and books, he has two registered patents to his credit, and holds the Legion of Merit for his work in establishment of the basic research program at the ARDC.



Col J. O. Vann (USAF) Dr. Charles L. Bernier J. Heston Heald

J. HESTON HEALD, former Deputy for Science and Technology of ASTIA, was promoted to Technical Adviser to the Commander June 7, taking over a job vacated by promotion of Dr. Charles L. Bernier to Director of ASTIA.

Experience and training of Mr. Heald for his new duties date back nearly to the end of World War II, making him one of the pioneers in the modern science of information retrieval.

When the Office of Naval Research was organized in August 1946, he helped to establish the Navy Research Section of the Library of Congress under contract with the Office of Naval Research. This section and the Central Air Documents Office in Ohio became the operational element of ASTIA in 1952. Now a Navy Commander in the Reserves, he went on active duty with ONR as the Navy-ASTIA liaison officer.

In 1958, he joined ASTIA as Chief of the Document Processing Division. Active in technical information areas for many years, he currently is president of the Washington Chapter of the Special Libraries Association, and is a member of the Board of Directors, National Federation of Science Abstracting and Indexing Service.

During World War II, he was head of the Physics Department, Naval Academy Preparatory School and currently is an instructor in the Naval Reserve Officers School. He has a B.S. degree from the University of Oklahoma and taught sci-

ence and physics in the public schools of Oklahoma. He is listed in *American Men of Science*, *Leaders in American Science*, and *Who's Who of the South and Southwest*.

DR. CHARLES L. BERNIER, Technical Adviser to the Commander of ASTIA since November 1961, recently was promoted to Director. Regarded as an authority on documentation and abstracting of chemistry, he served on the staff of *Chemical Abstracts* from 1935 until he joined ASTIA.

From 1941-1958, Dr. Bernier was Associate Editor of *Chemical Abstracts*. Promoted to Editor, he developed a number of systems which simplified operations and led to his selection for the ASTIA staff.

Dr. Bernier received his B.S. degree from Montana State College (1930), and M.S. degree (1932) and Ph. D. (1935) from Ohio State University. He is a member of the American Chemical Society, the American Institute of Chemists, American Documentation Institute, Society of Indexers, and Association for the Advancement of Science.

As acting secretary for the Commission on Codification, Ciphering and Punched Card Techniques of the International Union of Pure and Applied Chemistry, he worked with the Commission in Denmark, France, England and Germany.

Among organizations which have honored Dr. Bernier are Alpha Chi Omega, Phi Lambda Upsilon, Phi Kappa Phi, Sigma Xi, and American Institute of Chemists.



## Crew Carves Chapel Out of Ice Tunnel At Greenland Base

One of the most unusual military chapels in the world recently was put into use for the first time inside a glacier at the edge of Camp Tuto, Greenland.

The U.S. Army Polar Research and Development Center uses Camp Tuto as a summer operations base, and the service was conducted in a chapel built in the Ice Tunnel. Volunteer parishoners of the Camp Chapel worked a week under the direction of Chaplain (Capt) Joseph V. Coshan to build the place of worship.

The Ice Tunnel is used for various Army research and development projects by the U.S. Army Cold Regions Research and Engineering Laboratory and the U.S. Army Engineering Research and Development Laboratories. Various projects involving measurements of snow and ice density and closure rate have been carried on since the tunnel's construction in 1960.

Every piece of permanent equipment in the 12-foot-high, 10-foot-wide Gothic vault chapel was formed entirely from ice. The altar, which weighs nearly 700 pounds, was molded into a single block of ice formed by combining water with the chips hewn from the apse. This proc-

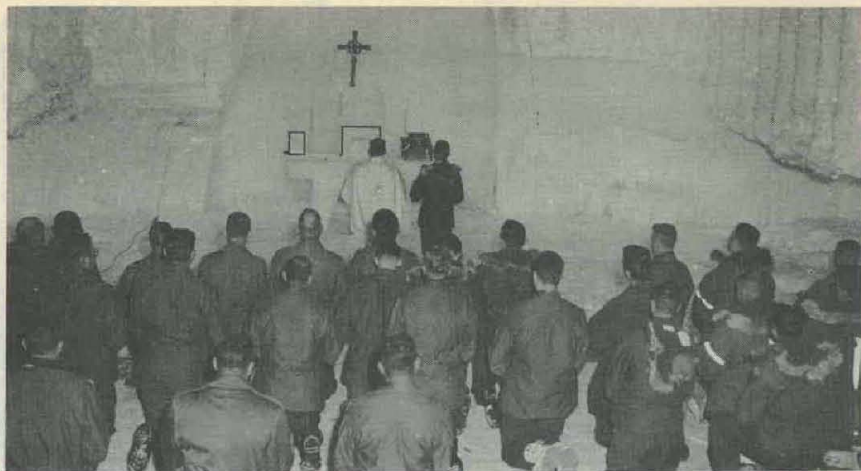
### 523d Engineer Unit Making Survey on Greenland Icecap

A 2-month tellurometric survey is underway in the vicinity of Camp Century, the U.S. Army Polar Research and Development Center's under-snow atomic-powered research facility 138 miles out on the Greenland Icecap.

Starting recently from Camp Tuto, Greenland, an 11-man geodetic survey team from the 523rd Engineer Detachment, 30th Topographic Battalion, Fort Belvoir, Va., has established two survey control points. They will be used to determine the amount of glacial ice flow in the area of Camp Century.

On the icecap trail, the team is placing a series of 10-foot aluminum pipe sections into the surface of the ice. The pipes will be checked in a few years to determine ice flow movement.

The team includes two civilian members, Steven Mock, project leader, and Prof. Hernan Pallardo, an observer from the Antarctic Institute of Argentina.



MASS IS SAID for the first time in the Ice Tunnel Chapel at the U.S. Army Polar Research and Development Center, Camp Tuto, on the Greenland Icecap.

ess formed the solid, modernistic, flaky sculpture.

Candlesticks used for the service were pure crystalline ice, blasted from Lake Tuto (the source of the camp's water supply). After being hand-rubbed, they were as clear as fine glass.

The chamber in which the chapel is located was particularly well lighted. A thick coating of hoarfrost causes

the room's walls and ceiling to appear to be opaque. Beautiful hues of blue and green are given off by translucent lights shining through the frost and ice, illuminating the whole room.

Always a point of high interest for visitors since its construction, the tunnel's attraction will undoubtedly increase since the chapel will be retained as a permanent feature.

## Signal Corps Unveils Advances in Communications

Impressively revealing of major scientific advances accomplished by the Signal Corps in recent years is a modernized Department of the Army Communications Center unveiled recently in a restricted area of the Pentagon, Washington, D.C.

Maj Gen Earle F. Cook, Acting Chief Signal Officer, presided at dedicatory ceremonies June 25. He told invited guests that the new facility is designed to handle all types of communications traffic with a high degree of security, a minimum of error, and greatly increased speed.

The center is linked to the recent automation of relay stations in the U.S. Army's world-circling STARCOM communications network. (See January 1961 issue of this publication for description of STARCOM.)

Guests escorted on a tour of the center were given a demonstration of teletypewriter and voice communications employing closed circuit TV, message display, and telephone calls booked through the Army's Overseas Switchboard.

Present for the dedication was Col Walter A. Kneise, Commanding Officer, U.S. Army Strategic Communications Command, who introduced General Cook. Maj Gen F. A. Tobey,

Chief of Army Chaplains, gave the invocation.

Guests included: Maj Gen Vernon P. Mock, Secretary of the General Staff, U.S. Army; Rear Adm W. D. Irwin, Director of the Defense Communications Agency; Rear Adm (Ret.) M. E. Curtis, Directorate for Communications Policy, Department of Defense; Brig Gen G. P. Sampson, Assistant Director for Operations and Engineering, Defense Communications Agency; Brig Gen O. G. Charles, Deputy Chief of the U.S. Army Security Station; and Henry H. Ford, Deputy Assistant Secretary of State for Operations.

### PRDC Commander to Present Paper on Polar Logistics

Col Gerald W. Homann, Commander, U.S. Army Polar Research and Development Center, will present a paper entitled "Logistics of Icecap Surface Transportation" at the International Symposium on Logistics in Antarctica.

Sponsored by the Scientific Committee on Antarctic Research, International Council of Scientific Union, the Symposium will be held in Boulder, Colo., Aug. 13-17, in cooperation with the National Research Council, National Academy Sciences.



## Army's New 'Flexible Wing' May Let Special Troops Glide to Soft Landings for Remote Area Warfare

Special Forces troops may glide to soft, controlled landings rather than parachute into battle areas if tests of a collapsible "flexible wing" support confidence of designers.

The U.S. Army Transportation Research Command, Fort Eustis, Va., has awarded a contract to the Ryan Aeronautical Co., San Diego, Calif., for construction and testing of six of the experimental devices. Tests are scheduled late this summer.

The wing forms a V-shaped, kite-like structure beneath which the "flexitrooper" is suspended in a harness, the control lines of which permit him to regulate the rate of descent and land accurately at a predetermined point.

Possibilities of a paraglider con-

### Reservists May Take Part In Navy R&D Seminars

U.S. Army Reserve R&D Unit officers may attend, on a quota basis, a series of scientific seminars arranged by the U.S. Navy.

Under the sponsorship of the Chief of Naval Research, the seminars are designed to meet ANACDUTRA requirements for Reserve personnel. The purpose is to provide them with current information on the R&D programs of the Armed Services, and to stimulate interest in their fields.

Priority in assignment of quotas will be given to members of the USAR R&D Units (reinforcement training) and mobilization designees to R&D agencies. Active Army officers may be considered for attendance on an individual basis. USCONARC Circular No. 140-10, Apr. 23, 1963, outlines the plan.

Notification as to the number of spaces desired should be made to Hq USCONARC at least 50 days prior to each seminar.

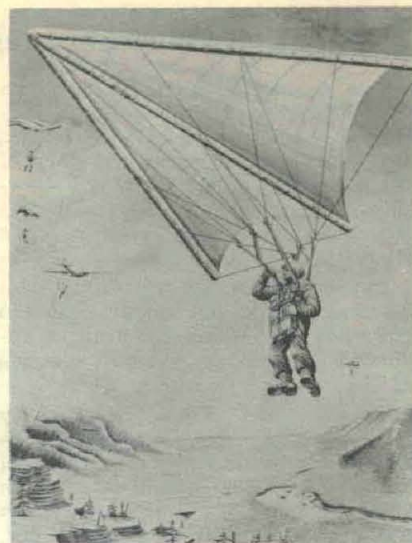
Course titles, locations and convening dates are: in 1962—Nuclear Sciences Seminar, Idaho Falls, Idaho, July 23; Biological Defense Seminar, Fort Detrick, Frederick, Md., Oct. 1; Electronics Computers Seminar, Newburgh, N.Y., Oct. 15; West Coast Seminar, Pasadena, Calif., Oct. 22; Nuclear Sciences Seminar, Oak Ridge, Tenn., Nov. 26; in 1963—Submarine and Diving Medicine Seminar, New London, Conn., Mar. 18; Office of Naval Research Seminar, ONR, Washington, D.C., June 10; Training Device Seminar, Port Washington, N.Y., June 17.

cept were pointed out in an article carried in the June 1961 issue of this publication. Actually, the flexi-wing is a direct outgrowth of this concept, originally developed by Francis M. Rogallo, now with the National Aeronautics and Space Administration.

Collapsible airtight tubes form the heel and leading edge members of the flexi-wing vehicle, and the wing is covered by a flexible membrane. A gas cartridge inflates the tubes to deploy the wing which, when fully opened, has a heel length of 22 feet and about 300 square feet of wing area.

In the tests to be conducted at the Army's Yuma (Ariz.) Test Station, instrumented full-scale dummies will be utilized to record drop and ground impact forces. Descent and landings of the test vehicles will be controlled by radio command from the ground.

Such a system could prove invaluable to Special Forces by greatly improving the accuracy of drops into small areas as well as cutting down on accidents and injuries. Aircraft will be able to remain well away from the actual drop zone, since a soldier could jump from 5,000 feet and be able to choose a landing



Artist's sketch of "flexible wing" being developed under Army contract.

site as far as four miles away, according to designers.

A powered flexible wing vehicle has recently been tested for the Army. Also under study is the possible use of the flexible wing as a logistics glider that could be towed behind Army aircraft to augment their payload carrying capacity, or airdropped for pinpoint delivery of supplies to combat units.

## Aeromedical Research Unit Established

An Aeromedical Research Unit established early this month at Fort Rucker, Ala., is designed to meet the need for specialized knowledge linked to the expansion of Army aviation.

The function of the unit, stated briefly, is to provide central consultative service to flight surgeons, in support of all Army aviation.

As directed by The Surgeon General through the Medical R&D Command, extensive studies of immediate and long-range requirements preceded the activation of the new unit. Currently, the Army air fleet consists of about 6,000 aircraft, and further expansion is under consideration.

Under the concept of operation, research will be oriented primarily to Army aviation objectives with respect to psychological and physiological fitness of air crew members, their training and equipment.

Activities of the unit are to be coordinated closely with the Civil Aeromedical Research Institute (CARI), now under construction at Oklahoma City, Okla., with the Federal Avia-

tion Agency, U.S. Air Force, U.S. Navy and other governmental agencies to minimize overlapping effort.

Representatives of the Army Chief of Research and Development and The Surgeon General have visited CARI, at the invitation of the FAA administrator, and discussed the possibility of sharing facilities and integrating research to mutual advantage.

Among other agencies with which the ARU will maintain close liaison are the U.S. Army Board for Aviation Accident Research, the U.S. Army Aviation Board, Transportation Aviation Test and Support Agency, Signal Aviation Test and Support Agency, U.S. Army Aviation Human Research Unit, and the U.S. Army Medical Research Laboratory.

The ARU, located in the Fort Rucker hospital complex, will consist of Medical Science, Clinical, and Research Support Branches. Both the commander and his deputy will be Army Medical Service officers, and the staff will include an aviation psychologist with a pilot rating.



## 2 Scientists Win Secretary of Army Fellowships for Studies in Europe

Two civilian scientists employed at the U.S. Army Chemical Corps Biological Laboratories, Fort Detrick, Md., have been awarded Secretary of the Army Research and Study Fellowships. Dr. Sidney J. Silverman and Kenneth L. Calder will begin a year's study this fall in Europe.

In September, Dr. Silverman will leave for Italy and research at the University of Milan, Institute of Industrial Medicine, on the pathogenesis of listeriosis.

Deputy Chief of the Bacteriology III Branch, Medical Bacteriology Division, Dr. Silverman is a medical bacteriologist who has done research on the immunology and pathogenesis of brucella and plague infections. Currently, he is studying bacterial infections, particularly staphylococcus and listeriosis toxins.

Dr. Silverman received his B.S. and M.S. degrees from Cornell University and was awarded his Ph. D. from the University of California at Berkeley. From 1938 to 1942, he was with the New York State Department of Health, Division of Laboratories and Research, and was in the Army Medical Corps during World War II. He joined the Detrick staff in 1949.

Mr. Calder, a mathematician in the Program Coordination Office, develops mathematical models in aerosol phys-



Dr. Sidney J. Silverman

ics and meteorology for analyses of biological weapons systems effects.

In August he will leave for England for research studies at the University of London, Department of Meteorology and Mathematics, Imperial College of Science and Technology. The specific objective of his study is improvement of basic understanding of the mechanics of turbulent and convective forces which are controlled by vertical gradients of density and with emphasis on potential meteorological application.

Mr. Calder received his Honors B.S. degrees in Physics (1934) and Mathematics (1936) from the Im-



Mr. Kenneth L. Calder

perial College of Science, University of London. As a meteorological officer in the British Air Ministry, he was assistant controller of the Chemical warfare experimental activities in India during World War II, and also served as head of the meteorological section, Chemical Defense Experimental Establishment at Porton, England.

Employed at Fort Detrick in 1949 as Chief, Meteorological Division, he is presently the Chairman of the Chemical Corps Meteorology Committee, and holds membership in five scientific societies in the United States and Great Britain. In 1958, he received the Army Meritorious Civilian Service Award for his analysis of biological weapons systems applying to effects on target.

## Manual to Report on Cold Weather Decontamination

Results of more than two years study and testing to obtain data on cold weather radiological decontamination will soon be added to Army Manual TM 3-225, "Radiological Reclamation of Fixed Military Installations."

The Chemical Corps Nuclear Defense Laboratory (NDL), Army Chemical Center, Md., conducted the studies under a project jointly sponsored by the Army Chemical Corps and the U.S. Navy Bureau of Yards and Docks.

The project culminated in a series of field tests and exercises conducted at Camp McCoy, Wis., during the 1961-1962 winter season. Tests were directed by NDL personnel and assisted by contractor personnel from General Dynamics, Fort Worth, Tex.

A radioactive fallout simulant was prepared to duplicate the physical properties of fallout that would result from a 1-megaton surface fission detonation at the H-plus-one hour intensity contour of 2,000 R/hr.

Trials were conducted on 2,000 square foot areas of outdoor winter surfaces such as loose and packed

snow, pavement, frozen ground and building roofs at temperatures ranging from -10° F. to 32° F.

Decontamination techniques evaluated included blade and rotary snowplowing, water housing, manual and power sweeping, and blade scraping. Data was obtained on operator doses during the courses of experiments and experimental work was done in the areas of fallout migration and shielding of snow and ice cover over fallout.

Climax of the test series was an integrated recovery effort, by military personnel, of all surfaces in a 4-acre living quarters complex. To obtain realistic manpower requirements for decontamination of built-up areas composed of many surfaces, all surfaces were contaminated with the same simulant, then decontaminated using lessons learned in previous testing.

The exercise was successfully conducted by troops from the Fifth Engineer Battalion, Fort Leonard Wood, Mo., and from Mobile Construction Battalion Four, U.S. Navy, Davisville, R.I.

## CmIC Honors 9 Employees For Outstanding Records

The U.S. Army Chemical Corps Biological Laboratories, Fort Detrick, Md., recently honored nine employees for outstanding performance of duty.

Awards were: Bill G. Mahlandt, Sustained Superior Performance Award (SSPA), and \$200 for work in the Process Development Division; Doris N. Main, SSPA, Outstanding Performance Rating (OPR), and \$150 for work in the Safety Division; Sheridan A. Hildebrand, SSPA, and \$100 for work in the Industrial Operations Division; Phebe W. Summers, SSPA, and \$200 for work in the U.S. Army Medical Unit.

Sylvester A. Gwynn, SSPA, and \$100 for work in the Maintenance Division; Richard E. Shaff, SSPA, OPR, and \$200 for work in the Technical Engineering Division; Charles R. Poffinberger, Suggestion Award Certificate, and \$240 for work in the Maintenance Division; Thomas H. Barksdale, SSPA, OPR, and \$200 for work in the Crops Division; William L. Jacobs, SSPA, OPR, and \$300 for work in Program Coordination.



# Deputy ASA (R & D) Cites Potential of Food Radiation Research

Army acceptance from the Atomic Energy Commission of the new \$1.8 million Quartermaster Food Radiation Research Facility at Natick, Mass., on June 28, was an occasion to cite the Army's 10-year pioneering effort in this field as portentously significant.

Deputy Assistant Secretary of the Army (R&D) W. S. Hinman, Jr., the principal speaker, listed a number of Army research and development results which have had a profound effect upon the world's civilian population, to support his statement that food radiation research may take a comparably important place in history.

"We in the Army, both military and civilians," he said, "tend to overlook or forget the many contributions intended originally for military purposes which have spilled over into the community at large to benefit the greatest number. . . ."

## Brig Gen Lyon Retiring After 30 Years Service

Brig Gen Archibald W. Lyon, Special Assistant to the Chief of Transportation, will retire July 31 after 30 years of active service.

Graduated from the United States Military Academy in 1932, he also holds B.S. and M.S. degrees in civil engineering from the Carnegie Institute of Technology.

Major assignments in recent years include: Transportation Officer, U.S. Army, Europe; Commandant, U.S. Army Transportation School, Fort Eustis, Va.; CO, U.S. Army Transportation Terminal Command, Japan, and Regional Camp, Yokohama; and CO, Transportation R&D Command, Fort Eustis, Va.

Among the vehicles developed under General Lyon's command is the BARC, Army's largest amphibian.



Brig Gen Archibald W. Lyon

In outlining the Army's policy with respect to the food radiation research program, Mr. Hinman said nonmilitary departments "are beginning to be in a position for carrying leadership responsibilities for the national Atoms-for-Peace Program in food processing by ionizing energy."

Accordingly, it was explained, the Army will effect a smooth transition toward focusing on military requirements, including procurement from the civilian economy of the "first generation of a relative few food items of important military significance."

In efforts to reduce the developmental lead time, the Army is committed to "work closely with industry during the research stage with the objective of facilitating the earliest transition to process engineering and production."

The Army's food radiation research, Mr. Hinman said, will continue to "serve as the backbone of the Nation's effort. . . . Generous collaboration will be extended to other organizations in the joint advancement of the President's Atoms-for-Peace Program. . . . Furthermore, information will be disseminated as widely as feasible in order to increase

technical know-how in this country."

The new research laboratory at Natick is geared directly to the needs of a 6-year, \$5 million Army program accelerating research on specific foods, based on total sterilization for long-term preservation.

The Army program is closely coordinated with a civilian research program being developed by the Atomic Energy Commission and with the Interdepartmental Committee on Radiation Preservation of Food. The AEC program is concerned with low-dose radiation processing of perishable food items to extend their shelf life.

Termed "the Free World's largest military facility for the preservation of food by ionizing energy," the new research facility at the Quartermaster Research and Engineering Center was designed and constructed by the Atomic Energy Commission under agreement with the Army.

Sharing the speaking spotlight at the dedicatory ceremony were E. Eugene Fowler, Deputy Director, Division of Isotopes Development, Atomic Energy Commission; Maj Gen Webster Anderson, The Quartermaster General, and Dr. Ralph G. H. Siu, Technical Director, U.S. Army Quartermaster Corps.

## OCRD Director of Special Weapons Retires June 30

Brig Gen David C. Lewis, Director of Special Weapons, Office of the Chief of Research and Development, retired June 30 after more than 27 years of service highlighted by an important role in Army missile development.

Assigned to NATO as Deputy Chief of Staff for Military Operations at Headquarters, Allied Land Forces Southeast in Ismir, Turkey, from 1954 to 1956, upon his return he became Chief of the Surface-to-Surface Missiles Division, OCRD.

In this assignment, among other missiles then being developed to equip the Pentomic Army, he was responsible for General Staff supervision for the 1,500-mile Jupiter Intermediate Range Ballistic Missile development. He also was Secretary of the Joint Army-Navy Ballistic Missile Committee and the Army Ballistic Missiles Committee.

In November 1957, he took command of the 3rd Infantry Division Artillery, first at Fort Benning, Ga., and later in Europe in the NATO shield. He commanded the first serial of the Division "Gyroscope" movement to Europe.

Before embarking on a military career when he was commissioned a second lieutenant in Field Artillery in 1935, he taught in the public schools of his native State of Pennsylvania.

In 1952, General Lewis was given command of a corps artillery group. Assignments followed as Assistant Corps Artillery Commander, X Corps, Deputy and Chief of Staff of I Corps.



Brig Gen David C. Lewis



## USAEPG Engineers Use 4 Giant Ground Targets

Engineers at the U.S. Army Electronic Proving Ground, Fort Huachuca, Ariz., are using four giant ground targets to test the performance of such combat surveillance equipment as radar, infrared, television and aerial photography.

The targets are the Spatial Resolution Facility, the Radar Spoke, the Moving Target Indicator Track, and the Large Scale Geometric Fidelity Facility. The latter is located at Willcox Dry Lake, Ariz.

The Spatial Resolution Facility is used to determine the resolving power of airborne television, infrared and panchromatic cameras. It consists of a flat concrete surface in the form of three wedges, each 678 feet long, on which have been painted various sets of horizontal and vertical bars resembling those used in an optometrist's office to detect astigmatism in the human eye.

The bars range in size from 10 x 50

feet to ½ inch x 2½ inches and provide a standard way to measure the amount of detail any particular camera system is capable of detecting at a given altitude.

The three other targets were constructed to test ground and airborne radar sets. The Radar Spoke consists of 143 pedestals for mounting radar reflectors. Designed like a Greek cross, it covers about four square miles. With it, engineers are able to check the resolution and accuracy of radar sets.

The Moving Target Indicator Track consists of a concrete-lined trench 200 feet long, containing a conveyor belt with attached radar reflectors. The speed of the belt can be varied from 1 to 15 miles per hour, permitting engineers to determine the minimum speed a given size target must be moving before it can be detected by radar.

The Large-Scale Geometric Fidelity Facility consists of grid system covering some 24 square miles on which groups of radar wave reflectors have been spaced approximately 1 mile apart. The grid system is similar to that used on military maps and enables engineers to check the accuracy of radar mapping systems.

## Fort Sill Gets Army's First Pershing Missile Battalion

Activation of the U.S. Army's first Pershing missile battalion was effected this past month at Fort Sill, Okla. Designated the 2nd Missile Battalion (Pershing), 44th Artillery, the unit has an authorized strength of 615 officers and enlisted personnel.

A Pershing battalion has a headquarters and headquarters battery, a service battery and four firing batteries. Each firing battery has one launcher and other equipment necessary to deliver a nuclear warhead at ranges in excess of 200 miles.

Selected personnel of the new battalion have been receiving training with the new equipment at the Martin Co. plant in Orlando, Fla., and at Fort Sill, Okla.

All equipment to transport, prepare to fire and fire the Pershing can be carried on four lightweight fully tracked vehicles. The system is also transportable by helicopter or assault type aircraft.

The Martin Co. is the prime contractor for the Pershing, an inertially guided solid-propellant missile system to replace the Redstone.

## USAEPG Reports Success Of Electronic Switching For Dial Telephone Calls

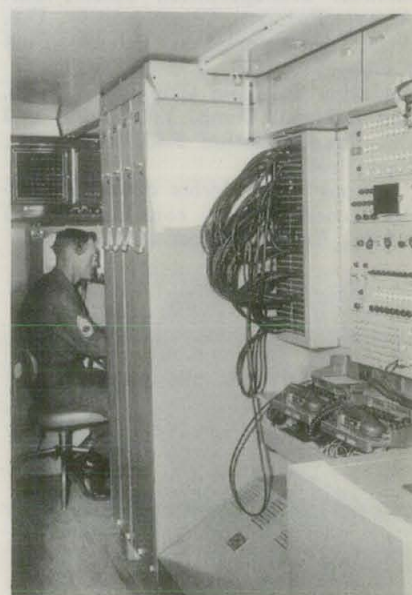
An electronic automatic switching system for dial telephone service has passed two years of extensive testing at the U.S. Army Electronic Proving Ground, Fort Huachuca, Ariz. It was found reliable under conditions which could make the existing dial system impractical.

Instead of an electrochemical process of switching calls from one telephone subscriber to another, with numerous switches which require a dust-proof room for operation, electronic circuitry has only a few moving parts to break down.

To make a call a subscriber uses what appears to be a combination portable typewriter and a telephone handset. By depressing the right keys, he activates the circuitry to ring the number. The switchboard is portable and can be moved on trucks without damage.

For an army in the field, proponents claim automatic electronic switching offers several advantages, including a saving in operators now required to sit at manual switchboards and swifter telephone service from front lines to rear echelons.

Engineers who conducted the tests believe the new system has excellent possibilities in field communications. Improvements in design and additional tests, however, will be necessary before any final decision to adopt it can be made.



Interior view of AN/TTC-12, communication and electronics test area, USAEPG, Fort Huachuca, Ariz.

## Atomic Research Produces Better Luminescent Paint

A luminescent paint developed through peaceful atomic research is now being used instead of a radium compound on the Army's lensatic compass.

Utilizing tritium, an isotope of hydrogen, the paint has a much longer useful luminous life at about the same cost as the radium compound, now used on watches, clocks and other instruments.

The paint was developed by the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., under a contract with Luminous Products Corp., Boston, Mass. The Army's lensatic compass is the first item on which it is tried.



A lensatic compass, the Army's first item having luminous numerals painted with a tritium compound, is being used by Pvt Gerald Teter.



## Awarding of Hoff Medal Climaxes Course

Awarding of the Hoff Medal to Maj Marcel E. Conrad, Jr., climaxed the graduating exercises June 15 for six Medical Corps officers attending the ninth class in Military Medicine and Allied Sciences at the Walter Reed Army Institute of Research (WR-AIR), Washington, D.C.

Maj Conrad was selected as the outstanding graduate and was presented the award by Col Edwin J. Pulaski, Director of the Research Institute's Division of Basic Surgical Research.

The Hoff Medal was established in 1897 and originally awarded to the outstanding graduate of the Army Medical School. This award was established by Col John Van Rens-

selaer Hoff in memory of his father, Col Alexander H. Hoff.

In his commencement address, Col Colin F. Vorder Bruegge discussed the rapid growth of research and development in recent years and pointed up the continued need for military medical research and development.

Col Bruegge, Deputy Chief of the U.S. Army Medical Research and Development Command, challenged the graduates to plan how to solve the problems which their supervisors must solve every day.

Diplomas were presented by the course director, Lt Col Paul E. Teschan, to Lt Col Lewis A. Van Osdel and Majors Conrad, Jose M. Louro, Dorsey T. Mahin, Jack W. Pearson, and Robert G. Scherz.



Maj Marcel E. Conrad, Jr., (left) receives Hoff Medal from Col Pulaski, Director of Basic Surgical Research.

## Watervliet Arsenal Society of Engineers Elects Women for First Time

The Watervliet Arsenal Society of Engineers has elected women members to office for the first time in its history.

Mrs. Ruth C. Sillery is the new corresponding secretary and Mrs. Eleanor M. Hickok is recording secretary. They are engaged in the design of cannon and other Ordnance material in the original design section of the Arsenal's Research and Engineering Division.

The newly-elected president of the Society is E. Noah Gould, employed in the industrial engineering section. Other officers who will serve in 1962-63 are Ralph Lasselle, vice president, experimental mechanics laboratory, and Victor Preska, treasurer, Chief of the automatic weapons unit.

Mrs. Sillery's husband, John B. Sillery, is also an Arsenal cannon design engineer. She is a graduate of the Troy Technical Institute, where she studied mechanical drafting and design, and was first employed at the Arsenal as a machine operator. She became a draftsman, was assigned to design activity, and has worked on field artillery and tank weapon design, including the 120 mm. gun, 155 mm. howitzer and the Davy Crockett spotting rifle.

Mrs. Hickok was formerly employed at the General Electric Co. as a mechanical draftsman in turbine and radar system design. At the Arsenal she was first a draftsman and later advanced to design and concept work. Presently she is responsible for the design of the 81 mm. mortar systems. Her husband, Kenneth B. Hickok, is an architect in New York State, Department of Public Works.



Newly elected officers (left to right) are Ralph Lasselle, Vice President; Mrs. Ruth C. Sillery, Corresponding Secretary; E. Noah Gould, President; Mrs. Eleanor M. Hickok, Recording Secretary; Victor Preska, Treasurer.

## AEPG Tests Long-Range Mobile Telephone System

A new mobile radio telephone system recently tested at the U.S. Army Electronic Proving Ground, Fort Huachuca, Ariz., and now ready for testing by the Armor, Artillery and Infantry, permits calls from a moving jeep, for example, to be switched to any telephone in the U.S.

During tests a call was placed from a jeep on the Proving Ground to a telephone in the Office of the Chief Signal Officer in Washington, D.C.

Known as the Communications System AN/USC-3, it was developed by Motorola Inc., under a U.S. Army Signal Corps contract. Subscriber phones may be installed in any type of vehicle or aircraft. The switchboard can handle 12 subscribers and is transportable in a ¾-ton truck.

In addition to radio telephone subscribers, the switchboard can handle 16 wire subscribers. The system is designed to keep the commander and

his staff in telephone communication with his headquarters at distances of 1 to 10 miles over average terrain.

## Engineers Develop Rocket Kit

A rocket propulsion kit, which can breach obstacles better than the former Army standard, has been developed at the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va.

The kit adds a means of self-propulsion and remote (400 feet away) detonation to a 100-foot train of standard bangalore torpedoes for breaching a personnel path through mines and barbed wire obstacles. Less torpedoes, it weighs 122 pounds. The rocket motor uses a solid propellant, generating high thrust for a short duration.

The kit has been type classified Standard-A and the logistics responsibilities have been assigned to the Ordnance Corps.



# Materials R & D Leaders Discuss Effect of Reorganization

Materials research progress, plans and problems in priority areas of interest related to military requirements were discussed June 12-13 at the fifth meeting of the Army Materials Advisory Committee.

Forty-eight officials of Army agencies and the Office of Defense Research and Engineering met at the new headquarters of the U.S. Army Research Office, 3045 Columbia Pike, Arlington, Va. Theme of the conference was "Review and Analysis."

Norman L. Reed, AMAC Chairman, opened the session and called on Dr. Richard A. Weiss, Deputy and Scientific Director of Army Research, for introductory remarks. Substituting for Brig Gen Chester W. Clark, Director of Army Research, Dr. Weiss explained the impact of Army-wide reorganization on U.S. Army Research Office under the OCRD.

With emphasis on the importance of effective mid- and long-range technical forecasting, Dr. Weiss explained the scope of USARO activities at Durham, N.C., in conjunction with Duke University. He also reviewed functions of the U.S. Army Research Office, Europe, located at Frankfurt, Germany; the U.S. Army Research Office, Far East, near Tokyo, Japan;

the Army Research and Development Office at Fort Sherman, Canal Zone; and the relationship with the new Defense Research Office, Rio de Janeiro, Brazil.

Dr. Weiss also discussed USARO's relationship with sponsored contract agencies such as the Research Analysis Corp. (RAC), the Human Resources Research Office (HumRRO) at George Washington University, and the Special Operations Research Office (SORO) at the American University. All are located in Washington, D.C.

Dr. I. R. Hershner, Chief of the Physical Sciences Division, USARO, made a presentation on "Materials Research and Development—Its Place in the Reorganized Army and in the Army Materiel Command." Currently, he is on detached duty with the Planning Group of the AMC.

Dr. Sherwood Githens, Jr., U.S. Army Research Office-Durham, presented a "Research Plan for Basic Research in the Materials Sciences," covering the present status and problem areas, and Louis Reiss, U.S. Army Signal Research and Development Laboratory, outlined an electronic materials research plan.

Similar reports on an inorganic

nonmetallic research plan were presented by Elmer F. Clark, Office of the Chief of Engineers. The desirability of a research program in optical glass, as outlined by Ernest Rechel, Frankford Arsenal, was endorsed.

The castings research plan developed at the request of the Office of the Secretary of Defense was outlined by T. E. Dunn, Ordnance Materials Research Office. Dr. R. E. Weigle, Watervliet Arsenal, discussed an ultra high pressure research plan, and S. V. Arnold, Watertown Arsenal, reported on a beryllium research and development plan.

Lt Col Louis G. Klinker, Chairman of Tripartite Technical Coordination Program Testing and Evaluation Group, reported that the Director of Army Research has approved an Army T&E plan which is to be used as a model for an international T&E plan for materials research. At the same time, approval was given for U.S. Army support of the Fourth International Nondestructive Testing Symposium in London, England, during the fall of 1963.

Other conference speakers included J. P. Jones and V. H. Pagano of the Ordnance Tank Automotive Command, on the subject of "Trial Materials R&D Plan Tied to Technological Forecasts for a Category of Equipment"; E. R. Palmer, Office of the Chief of Engineers, "Conservation and Reclamation"; Dr. George R. Thomas, Quartermaster Corps, "Personnel Armor"; and Dr. E. M. Sporn, Chemical Corps, "Controlled Materials Degradation."

A "Summary of Actions" report on the conference prepared by the U.S. Army Research Office, stresses the need for "coupling" in the plan for basic research in the materials sciences. Coupling, with respect to materials R&D, is the dissemination of information to insure that essential knowledge that can be "taken off the shelf" is readily available to designers for application to engineering problem solving.

## AROD Preparing to Host Operations Research Meet

A second Army-wide Operations Research Symposium will be held at the Army Research Office-Durham on Mar. 26-27-28, 1963.

A follow-up of the successful initial Army-wide symposium on operations research held at Durham in March 1962, the forthcoming meeting has the approval of the Chief of Research and Development.

## 60 AMC Personnel Take Project Officer Training

Sixty military and civilian personnel who will be assigned as project managers or key project staff members when the U.S. Army Materiel Command becomes operational Aug. 1 are undergoing preparatory training. Secretary of Defense Robert S. McNamara is tentatively scheduled for the graduation address on July 14.

Conducted at the U.S. Army Logistics Management Center, Fort Lee, Va., the intensive 4-week course is the first of its type specifically designed to train the project managers who will develop new top-priority weapons systems in the Army.

Lt Gen Frank S. Besson, Jr., CG of the Army Materiel Command, directed that the course be arranged as a preliminary to adoption of the project manager system for major research, development and production projects.

Each manager will have full line authority to accomplish projects as expeditiously and effectively as possible, utilizing all existing capabilities within the Department of the Army.

Outstanding guest speakers from

the Department of Defense and industry scheduled to present their views during the course include: Assistant Secretary of Defense (Installations and Logistics) Thomas D. Morris, whose subject is "Future Army Development and Logistic Activities"; Deputy Assistant Secretary of Defense Procurement Graeme C. Bannerman, "The Push for Incentive Provisions in Government Contracting";

Assistant Secretary of the Army (Installations and Logistics) Paul R. Ignatius, "The Concept of Project Management"; Vice Adm William F. Raborn, U.S. Navy, "The Polaris Program and Inter-Service Relations"; and Dr. Paul W. Cherington, Consulting Project Director for United Research Services, "The Nature of the Weapons Acquisition Cycle."

General Besson addressed the opening session of the course, discussing the specific role of project managers in the U.S. Army Materiel Command.

Students will make field trips to visit part of the Air Force Systems Command at Inglewood, Calif., July 6-7 and the Martin-Marietta Aircraft Co. at Orlando, Fla., July 8-9.



## Army Presents Dr. Fothergill Highest Award

Dr. LeRoy D. Fothergill, Scientific Adviser to the Chief Chemical Officer, recently received the Army's highest civilian award. The Exceptional Civilian Service Award medal was presented by Maj Gen Marshall Stubbs, Chief Chemical Officer, U.S. Army, representing the Secretary of the Army.

The accompanying citation stated: "In recognition of his dynamic leadership as Scientific Adviser for the Biological Warfare Research and Development Program, U.S. Army Chemical Corps Biological Laboratories from 1944 to the present. Dr. Fothergill, through his position as a recognized leader in epidemiology and his sponsorship of research in infectious diseases of crops, animals and man, has been successful in bringing to the public and to the general scientific community a realistic portrayal of biological warfare. His dedicated service, characterized by the highest degree of integrity and judgment, reflects great credit to



Dr. LeRoy D. Fothergill is shown receiving Exceptional Civilian Service Award from Maj Gen Marshall Stubbs, Chief Chemical Officer.

himself and the United States Army."

Employed at Fort Detrick in 1943 as Chief of Defensive Division, Dr. Fothergill supervised all the defensive aspects of the biological weapons system. In May 1944, he became Technical Director, Special Projects Division, Chemical Warfare Service (now designated Chemical Corps), advanced to Assistant Director of the Biological Laboratories in 1946, and served as Director from November 1952 to October 1953, when he became Technical Director.

In 1963 he will retire from his post at Fort Detrick to assume duties as Professor of Epidemiology and Associate Director of the Zoonoses Center at the University of Illinois.

### Reorganization Results In New ARTS Numbering

Reorganization of the Army is reflected in a revised numbering system used in the 1962 Army Research Task Summary, now in process of preparation.

Because of the change, submission of data to the Scientific Information Branch, U.S. Army Research Office, has been deferred for two months.

The Research Study forms which are used in compilation of the Army Research Task Summary (ARTS) will be submitted to be current as of Aug. 30, instead of the original cutoff date of June 30.

The new numbering system for RDT & E (Research, Development, Testing and Evaluation) projects, as reflected in the ARTS, serves as a link between research tasks and a program and budget document.

## USAEPG Tests System For Combat Zone Use

A new navigation system to guide pilots, vehicle drivers and infantrymen in the combat zone is being tested at the U.S. Army Electronic Proving Ground, Fort Huachuca, Ari

Based on a system of low frequency radio transmitters, it is known as the Transmitting System Position Fixing and Navigation AN/GRN-14 (PFNS).

When transmitter waves are converted to grid lines superimposed on a map of the ground over which an airplane is flying, a stylus in the receiver is able to trace a line corresponding to the path of the plane. If the pilot has plotted a course beforehand, the line will show him how well he is maintaining his course.

Similar receivers may be used by drivers of tanks, trucks, jeeps and other military vehicles. Infantrymen will carry a special receiver weighing only 21 pounds which has two dials to indicate position in relation to the grid lines.

PFNS is designed to cover an area of 150,000 square miles, including mountains as well as plains, by day or night, and in good weather or bad. Designers anticipate that it will have many military applications for navigation and position fixing for aerial photography, combat patrols, corridor flying, air dropping of supplies, and evacuation of the wounded.

### USASRDH Hosts Parley On Tropical Meteorology

Weather experts from Europe, Asia, Africa, Latin America and the United States met recently in a Tropical Meteorology Symposium sponsored jointly by the U.S. Army Signal Research and Development Laboratory, Fort Monmouth, and University of Texas.

The University has a contract with the Laboratory to study tropical meteorology. Interest of the Signal Corps in tropical weather is a natural outgrowth of Pacific Ocean and African military operations in World War II and subsequent actions in such places as southeast Asia. Study of the functions of the atmosphere in the tropics, it became clear, would be of assistance in future operations.

Among prominent U.S. meteorologists who attended are Dr. E. B. Kraus, Woods Hole (Mass.) Oceanographic Institute; Dr. N. E. LaSeur, Florida State University; Dr. Herbert Riehl, Colorado State University and Robert Simpson, Weather Bureau.

### 67 Percent of Trainees Take WSMR Civil Service Jobs

Eight of 12 student-trainees at White Sands Missile Range who recently graduated from Texas universities have decided to continue their careers in Army science.

Graduates from New Mexico State University are Gilbert R. Apodaca, Jerry R. DeBusk, Bryant C. Ferguson, Thomas K. Hamilton, Arnold Ladwig, William J. Laumbach, Lyle W. Majors, Otis M. Pinto, Howard L. Rogers and Tom B. Thomas, Jr. Edward D'Arcy and James B. Mason received their diplomas from Texas Western, El Paso.

The cooperative student-trainee program at White Sands has been in operation almost 10 years and has helped greatly to meet recruiting requirements for well qualified scientists, engineers and technical personnel. Trainees attend college for six months and the remaining time have actual on-the-job training as Federal employees.

The eight graduates who will return to professional careers at White Sands are Ferguson, Hamilton, Majors and Pinto, all assigned to the Integrated Range Mission, Apodaca and DeBusk to the Ordnance Mission, and D'Arcy and Mason to the U.S. Army Signal Corps.

Ladwig, Laumbach and Thomas have accepted employment with private industry and Rogers is transferring to the Navy Department.



# Army Research Office Personnel Cited for Meritorious Service

Meritorious Civilian Service Awards, the first ever given to U.S. Army Research Office personnel, were presented June 25 by Maj Gen Dwight E. Beach, Chief of Research and Development designate, to Dr. Richard A. Weiss, Mrs. Frances Whedon and Clarence T. Smith.

The ceremony in the main conference room of USARO's attractively modern new headquarters building at 3045 Columbia Pike, Arlington, Va., was attended by Brig Gen Chester W. Clark, Director of Army Research, and all USARO professional personnel.

Dr. Weiss was honored in 1959 as one of the 10 outstanding Federal Civil Service career employees by the National Civil Service League. A veteran of more than 20 years as a Government scientist, he was presented the Meritorious Civilian Service Award for his work as Deputy and Scientific Director of USARO. He has served in this capacity continuously since USARO was activated Mar 24, 1958.

Widely known and acclaimed throughout the Department of Defense research and development agencies, and throughout the national scientific community, Dr. Weiss has for many years figured prominently on a large number of top-level international planning and coordination working groups.

One of the most revealing insights into Dr. Weiss' modesty over his own achievements is the pride he evidences in speaking of his father, also a U.S. Army Signal Research and Development Laboratory and Ordnance Corps scientist for more than 37 years prior to retirement.

Until he joined the staff of the Chief of Research and Development, leading to his selection for his present USARO assignment, Dr. Weiss was a veteran USASRD scientist. There his experience included a wide variety of research and administrative assignments qualifying him for his current responsibilities.

The citation accompanying the MCS award to Dr. Weiss reads, in part:

"For meritorious performance of duty as Deputy and Scientific Director of Army Research, Office, Chief of Research and Development, Washington, D.C., from September 1959 to April 1962. Dr. Weiss' broad comprehension of the Department of the Army organization and procedures, his scientific knowledge and sound analytical approach to problems con-



Lt Gen Dwight E. Beach poses with MCS Award Winners (left to right) Dr. Richard Weiss, Mrs. Frances Whedon and Clarence Smith after ceremony.

tribute notably to the Army research and development program. His ability to inspire confidence has resulted in excellent relations with executives in the Army, other Services, and foreign nations. His distinguished leadership and direction of the Army research program and his personal consecration to the interests of the Army reflect credit to himself, the Office of the Chief of Research and Development, and the Army."

MRS. FRANCES L. WHEDON, likewise, came to USARO from the Signal Corps, where she served 18 years as a meteorologist in the Office of the Chief Signal Officer. Recognized as one of the foremost woman meteorologists in the Nation, she was prominent in planning the Army meteorologist research program during the International Geophysical Year.

An illustrious Army career in science began for her at a time when women scientists in Government were few and far between. Likewise, she was graduated from Massachusetts Institute of Technology with a B.S. degree in physics at a time when the ratio of coeds was 25 to 2,500 male students.

Staff Meteorologist with the U.S. Army Research Office since August 1959, Mrs. Whedon is the Department of the Army representative on a number of top-level national and international working groups and committees in her specialty of upper atmosphere research using sounding rockets and balloons.

Her work figured in the rocketry investigations during the IGY at Fort Churchill in Canada, White Sands, N. Mex., and other ranges. For sev-

eral years she monitored "Project Cirrus," a joint Army Signal Corps-Navy effort carried on with Air Force planes under a contract with General Electric Co.

Mrs. Whedon's citation reads, in part:

"For meritorious performance of duty as Staff Meteorologist of the Office of the Chief of Research and Development, Department of the Army, from August 1959 to the present. Mrs. Whedon's distinguished achievements in the comprehensive and imaginative guidance of the broad research and development programs in meteorology and atmospheric sciences for the ultimate benefit of the field Army, reflect great credit to herself, the Office of the Chief of Research and Development, and the Department of the Army."

CLARENCE T. SMITH joined the USARO staff in November 1958 after serving two years with the Office of the Deputy Chief of Staff for Personnel. Previously, for almost nine years, he was with the U.S. Air Force and later the U.S. Army as a civilian employee in West Germany.

Backed by more than 19 years of Government service, he was city and sports editor of the Hibbing (Minn.) Daily Tribune at the age of 18. Except for five years in the Army during World War II, he has for 38 years been continuously in newspaper and public relations work.

In New York City, he helped to establish the magazine *Outfit*, a joint service publication distributed during World War II to more than 1,500,000 U.S. troops in hospitals all over the world, was a staff writer for *Yank* magazine, wrote Mel Allen's *Armed*



Forces Radio Service sport shows for a year, and for more than two years was managing editor of Armed Forces Press Service.

Overseas, he was on the editorial staff of *Stars and Stripes* before serving as editor of the daily *Task Force Times*, the official newspaper of the Berlin Airlift at Combined Airlift Task Force Headquarters in Wiesbaden, Germany. Later he was Command Information Specialist at Headquarters, U.S. Air Forces in Eu-

rope, followed by duty as Civil Affairs Officer and Director of Information Services at Fuerstenfeldbruck, the MDAP training complex center, and Deputy Civil Affairs Officer and Public Information Officer in Munich.

Mr. Smith's citation reads, in part:

"For meritorious performance of duty as Editor, Army Research Office, Office, Chief of Research and Development, during the period July 1960 to February 1962. During this

period, Mr. Smith undertook to plan and bring into being the *Army Research and Development Newsmagazine*. His efforts in this connection were without regard for personal hardship and were always centered on the goal of planning and producing a periodical which would be a credit to the Department of the Army and further the purposes of the research and development of the Army. His accomplishments in both respects have been outstanding."

## Army Materiel Command Prepares to Assume Functional Responsibility Aug. 1

(Continued from page 3)

Weapons Development at Fort Bliss, Tex., staffed by 41 personnel; and the Remote Area Conflict Office (RACO) at Fort Belvoir with a complement of 117.

The overall Combat Developments Command strength exceeds 6,000 and its budget during the fiscal year 1963, excluding military pay and maintenance, is approximately \$24 million.

Since the June issue of this publication, progress on Army reorganization is reflected also in assignment of leaders to head command elements or to serve in key staff positions. Among these are:

*Brig Gen James W. Sutherland*, will take command of the Combat and Development Experimentation Center, effective this month. He was at Headquarters, U.S. Army, Europe.

*Col John A. Goshorn*, nominated for promotion to brigadier general, has been reassigned to Headquarters, Army Materiel Command, as Deputy Director for Production and Procurement, effective in August. His present assignment is in the Office of the Deputy Chief of Staff for Logistics, Washington, D.C.

*Brig Gen Hallett D. Edson*, presently Assistant Division Commander, Headquarters 101st Airborne, Fort Campbell, Ky., has been assigned as Deputy for Aviation, Army Mobility Command, Army Materiel Command, effective in September.

*Brig Gen Harry L. Hillyard*, nominated for 2-star rank, is assigned as Deputy CG for Doctrine Development, Combat Developments Command, effective in August, and transferred from Deputy Commander, Army War College.

*Brig Gen Bruce E. Kendall*, assigned as Chief, Supply Operations, Supply and Maintenance Command, Army Materiel Command, previously was Deputy, Office of The Quartermaster General.

*Brig Gen Thomas H. Beck*, as-

signed as Director, Plans at AMC Headquarters, was transferred from the position of Deputy Director, Logistics, Office, Joint Chiefs of Staff.

*Brig Gen Melvin D. Losey* will take over in August as Chief of Transportation, Supply and Maintenance Command, AMC. He is currently Director of Military Operations, Office of the Chief of Transportation.

*Brig Gen Fred P. Campbell*, assigned as Chief of Staff, Army Materiel Command, previously was Chief of Staff, Com Z, U.S. Army, Europe.

*Brig Gen James M. Illig*, who takes over this month as Comptroller, U.S. Continental Army Command, was reassigned from duty in the Office, Deputy Chief of Staff for Logistics, Washington, D.C.

*Brig Gen John M. Cone*, assigned as Director of Maintenance at Headquarters, Supply and Maintenance Command, AMC, effective this month, was Chief of the Plans and Programs Div., Office, Chief of Ordnance.

*Brig Gen Elmer J. Gibson*, whose reassignment as Director of Produc-

tion and Procurement at AMC Headquarters is effective in August, is presently Commanding General of the Ordnance Weapons Command, Rock Island Arsenal.

*Brig Gen Robert C. Kyser* will soon assume his duties as Deputy Commanding General of the Army Supply and Maintenance Command. His previous assignment was Commanding General, Atlantic General Depot.

*Maj Gen Lipscomb*, assigned as Deputy CG for Materiel Developments, Combat Developments Command, was North Atlantic Division Engineer.

*Col Eads G. Hardaway* has been nominated for promotion to brigadier general and assigned to Headquarters AMC as Comptroller. He was previously Commander, Eighth Logistical Command, USAREUR.

*Col Lawrence E. Schlanser*, nominated for promotion to brigadier general, is assigned as Deputy for Operational Testing, Test and Evaluation Command. He was Commander, Seventh Army Training Center, U.S. Army, Europe.



JULY 2 WAS A HAPPY DAY for Director of Army Research Chester W. Clark, shown receiving the insignia emblematic of promotion to major general through cooperative effort of Lt Gen Dwight E. Beach and Mrs. Clark.





Deputy Secretary of the Army (Manpower) Alfred Fitt congratulates Arthur Boatwright after presenting \$500 check for his prize-winning tech paper.

## Army Science Conference Award Winners

(Continued from page 1)

the \$500 award-winning paper co-authored with Dr. Sam Saslow, Col W. D. Tigertt and Dr. F. R. McCrumb. Col Tigertt is a former Commanding Officer of the Medical Unit at Fort Detrick. The paper was titled, "Live and Killed Tularemia Vaccines: Evaluation in Animals and Man," and the reported findings are expected to be of far-reaching importance.

Awards of \$500 also compensated the contribution of two teams of researchers representing the U.S. Army Signal Research and Development Laboratory, Fort Monmouth, N.J. Arthur Boatwright presented a paper coauthored with Herbert L. Mette on "Fast Response Solid State PME Detector for Laser Signals" to win a top prize. Michael R. Mirarchi delivered "A Single-Pulse Ruby Laser for Ranging Applications," prepared jointly with 2nd Lt Robert O. Goodwin and Robert C. Benson, covering research which won them a 1962 Army R&D Technical Achievement Award.

The only other \$500 award went to a 3-man team representing the U.S. Army R&D Laboratories at Fort Belvoir, Va. Herbert J. Mueller gave a paper titled "Processes of Photon and Exo-Electron Emission from Alkali Azides," coauthored by Harold D. Tiller and George D. Singer.

Four individuals won awards of \$300 each for their papers, namely:

- Maj Janice A. Mendelson of the Chemical R&D Laboratories, U.S. Army Chemical Center, Md., "Effect of Mafenide (Sulfamylon<sup>®</sup>) and Penicillin in Tropical Therapy of C

Perfringens-Contaminated Experimental Wounds."

- Otto R. Gericke, Watertown (Mass.) Arsenal Laboratories, "Determination of the Geometry of Hidden Defects by Ultrasonic Pulse Analysis Testing."

- Charles Ravitsky, Diamond Ordnance Fuze Laboratories, Washington, D.C., "An Infrared Antimissile Feasibility Study."

- John N. Strange, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss., "The Attenuating Effects of a Bubble Screen on Underwater Shock."

Other \$300 awards for prize-winning presentations were shared by:

- Raymond H. Comyn and Maurice Apstein, Diamond Ordnance Fuze Laboratories, "Nuclear Timing."

- Edward J. Poziomek, David N.

Kramer and Bernard W. Fromm, U.S. Army Chemical R&D Laboratories, Army Chemical Center, Md., "Chemical Approaches to the Development of a Personal Expendable Detector for Chemical Agents."

- Karl H. Steinbach and Fran B. Varnum, U.S. Army Engineer R&D Laboratories, Fort Belvoir, Va., "Recognition of Subsoil Targets by Means of Microwaves."

In behalf of the Association of the United States Army, Lt Gen Walter L. Weible (USA, Ret.), AUSA Executive Vice President, presented cash awards to the four military authors — Sp/4 Felkner, Col Tigertt, Maj Mendelson and 2nd Lt Godwin.

Deputy Undersecretary of the Army (Manpower) Albert B. Fitt presented awards to civilians who shared in cash awards. Certificates of Outstanding Achievement were awarded by Deputy Assistant Secretary of the Army (R&D) W. S. Hinman, Jr., for presentations which did not win cash awards. Each of the winners of cash awards also received a certificate.

Authors of the 16 papers which won certificates and subjects are:

- Dr. Joseph Sperrazza and Dr. Arthur J. Dziemian, Army Ballistic Research Laboratories, Aberdeen Proving Ground, Md., "Incapacitating Potential of any Projectile as Based on Some Simple Procedures."

- George R. Taylor, Picatinny Arsenal, Dover, N.J., "Nuclear Altimeter."

- Solomon Levine and Howard C. Webb, Sr., Diamond Ordnance Fuze Laboratories, Washington, D.C., "The Cover System."

- Dr. Van M. Sim, William Groff and Dr. Ludwig A. Sternberger, Chemical R&D Laboratories, Army

## Authors of Invited Presentations at



Dr. Marion B. Sulzberger



Dr. Harrison J. Merrill



Chemical Center, Md., "Anticholinesterases (Nerve Agents): A Method for Continuous Human Bioassay of Agent Effect and Therapeutic Effects of Oximes."

- William Fishbein and Otto E. Rittenbach, U.S. Army Signal R&D Laboratory, Fort Monmouth, N.J., "Combat Surveillance Correlation Radar."

- Dr. Wolfgang J. Ramm, U.S. Army Signal R&D Laboratory, Fort Monmouth, N.J., "Magnetic and Telluric Detection of High-Altitude Nuclear Explosions."

- Kenneth E. Woodward, Lt Col Timothy G. Barila, Capt Daniel E. Nunn, George Mon and Henrik H. Straub, Diamond Ordnance Fuze Laboratories, Washington, D.C., "A Fluid Amplifier Heart Pump."

- Dr. Armando Giardini and J. A. Kohn, U.S. Army Signal R&D Laboratory, Fort Monmouth, N.J., "Ultra-Pressure High-Temperature Research: A Frontier in the Quest for New Electronic Materials."

- Dr. C. C. Mow and Dr. Michael A. Sadowsky, Watervliet Arsenal, Watervliet, N.Y., "Determination of the Critical Torque Inducing Buckling in a Twisted Spherical Shell Subject to Internal or External Pressure."

- Dr. Frederick Kaufman and John R. Kelso, Ballistic Research Laboratories, Aberdeen Proving Ground, Md., "Laboratory Studies of Upper Atmosphere Chemical Reactions."

- Frederick Klein, Lt Dean R. Hodges, Bill G. Mahlandt, William I. Jones, Jr., Bertram W. Haines and Dr. Ralph E. Lincoln, U.S. Army Biological Warfare Laboratories, Fort Detrick, Md., "Evidence That Rhesus Monkeys Die From Anthrax Toxin."



Deputy Assistant Secretary of the Army (R&D) W. S. Hinman, Jr., shown with George Mon after presenting a Certificate of Outstanding Achievement.

- Amory H. Waite, Jr., and Mr. Stanley J. Schmidt, U.S. Army Signal R&D Laboratory, Fort Monmouth, N.J., "Exploring the Antarctic with Ice-Sounding Radar."

- Marvin J. Lowenthal, U.S. Army Signal R&D Laboratory, Fort Monmouth, N.J., "Winds and Atmospheric Turbulence at Very High Altitudes."

- Dr. Leonard Hatkin, U.S. Army Signal R&D Laboratory, Fort Monmouth, N.J., "Fast Wave Radiators."

- Mrs. Carol K. Pearce, U.S. Army Signal R&D Laboratory, Fort Monmouth, N.J., "Effect of Ionizing Radiation on Pyridine."

- William D. Ohmstede, U.S. Army Electronic Proving Ground, Fort Huachuca, Ariz., "Solution of Non-Steady Moisture Transfer."

Four notable presentations at the conference were made by guest speakers

selected from among the Army's most eminent scientists, namely:

- Dr. Marion B. Sulzberger, Office of The Surgeon General, whose topic was "Progress and Prospects in Idiophylaxis (Built-in Self Protection of the Combat Soldier)."

- Dr. Harrison J. Merrill, U.S. Army Signal Corps, who spoke on "Laser Progress and Applications."

- Dr. Carl Lamanna, U.S. Army Research Office, who reported on "Problems and Progress in the Study of Oral Toxicity of Bacterial Toxins."

- Dr. Bruno Papirmeister, U.S. Army Chemical Center, who discussed "Effects of Mustard Gas (H) on T2 Bacteriophage and DNA Synthesis."

The four guest presentations were not eligible for prize consideration. The 96 competitive papers were screened carefully from approximately 500 research paper proposals submitted. Final judging of papers was accomplished by a panel of distinguished judges consisting of:

Dr. Floyd S. Daft, Chairman, Federation of American Societies of Experimental Biology and Medicine; Dr. John B. Youmans, Director of Scientific Activities, American Medical Association; Dr. Paul M. Gross, President, American Association for the Advancement of Science;

Dr. W. O. Milligan, The William Marsh Rice University; Dr. Ralph E. Fadum, Head, Department of Civil Engineering, North Carolina State College; Dr. Harwood S. Belding, Professor of Environmental Physiology, Department of Occupational Health, University of Pittsburgh; and Donald G. Fink, Vice President-Research, Philco Corp.

## d Biennial Army Science Conference



Dr. Bruno Papirmeister



Dr. Carl Lamanna



## Thorlin Reassigned From OTAC to Take White Sands Missile Range Command

Brig Gen John Frederick Thorlin, formerly Commanding General of the Ordnance Tank-Automotive Command (OTAC) in Detroit, is the new Commander of White Sands Missile Range. President Kennedy has nominated him for 2-star rank.

General Thorlin replaced Maj Gen John G. Shinkle, who was reassigned to the U.S. Army Element, North Atlantic Treaty Organization International Staff in Paris, France.

An Ordnance Corps officer since 1939, General Thorlin had held the OTAC position since June of 1960. OTAC is responsible for providing the Army units with tanks, trucks and jeeps, as well as any necessary repair parts and tools to keep these vehicles in running condition.

In his new assignment he will supervise the WSMR activities in the testing of such Army Ordnance Corps weapons as Nike Zeus, Hawk, Sergeant and Nike Hercules, as well as the range support of all services.

A native of Portland, Ore., and a 1933 graduate of the U.S. Military Academy at West Point, General Thorlin was an Artillery officer in Texas and the Philippines (Corregidor) for his first six years in the Army.

After being transferred to Ordnance, he served as the ground Ordnance Officer on the Joint Army-Navy Staff of Fleet Admiral Chester W. Nimitz during World War II.

While with Admiral Nimitz, he participated in planning the Kwaja-



Brig Gen Frederick Thorlin

lein, Marianas, Iwo Jima, Palau, Leyte and Okinawa campaigns. For this service he received the Navy Bronze Star and Navy Gold Medal.

After the war, he headed the Tank-Automotive Testing Division of Aberdeen Proving Ground, Md., followed by four years in the Pentagon as Director of tank-automotive research and development activities for the Chief of Ordnance.

Transferred to Europe, he operated several large automotive repair centers and later became a policy director and planner for the supply and repair of all Army tanks, trucks, guns and other Ordnance material in Germany and France.

Returned to the United States in 1957, he was assigned as Chairman of an Advanced Study Group for the Chief of Ordnance to suggest solu-

tions to current or anticipated problems in organization, manpower and management. Before becoming OTAC Commander, he was Commanding General of the Ordnance Training Command with branches at Aberdeen and Huntsville, Ala.

General Thorlin is a graduate of the Army Artillery School, 1939; the Ordnance School, 1940; Command and General Staff College, 1943; Naval War College, 1946; Massachusetts Institute of Technology (master of science degree in mechanical engineering), 1948; and Armed Forces Industrial College, 1954.

General Thorlin is a member of Sigma Xi (MIT Chapter), American Ordnance Association, American Management Association and the Association of the U.S. Army.

## Culp Quits Army School To Head Ohio College

Col William W. Culp, Commandant of the U.S. Army Management School, Fort Belvoir, Va., since 1958, is the new President of the Ohio College of Applied Science and Ohio Mechanics Institute, Cincinnati, Ohio. He retired from active duty June 30 after 30 years in the Army.

A native of South Carolina, he was graduated from the U. S. Military Academy in 1932. During World War II, he served in Australia, New Guinea, Leyte and Manila as an officer in General Headquarters, Southwest Pacific. He is a graduate of the Army War College and the Armed Forces Staff College.

## Dr. Jewel Designated to Head Electro-Mechanical Laboratories at WSMR

Dr. William R. Jewel, a man who has devoted most of his professional life to engineering research, has been named Director of White Sands Missile Range's high-powered Electro-Mechanical Laboratories. He has served as acting director since January 1962 and as Chief of the Rocket Vehicle Laboratory since 1958.

The laboratories are responsible for the analyses and tests of missile system elements and components. Testing encompasses environmental, nuclear effects, static and electronically simulated missile flights which can be studied in detail.

Dr. Jewel succeeds A. O. Crobaugh, who accepted a position with the National Aeronautics and Space Administration.

Dr. Jewel began his career as an educator in 1925 and for several years taught science and mathematics. In 1939, he became an instructor in the College of Engineering at the University of Colorado and

served until 1946, when he began studying for his doctorate in physics at the University of Oregon at Corvallis.

Upon completion of his work for his Ph. D. degree in 1948, he entered private industry and began his research work in the missile and rocket field. He also has a B.S. degree in engineering from the University of Illinois and an M.S. degree from the University of Colorado.

Dr. Jewel has several technical publications and two patents and inventions to his credit, and is an honorary Sigma Pi Sigma for his work in physics. He is a member of Sigma Xi, American Institute of Physics, American Ordnance Association, the White Sands Scientific Advisory Committee and other administrative committees.

Most recently, Dr. Jewel completed the Industrial College of the Armed Forces course on "The Economics of National Security" with honors, placing in the top 10 percent of the college's graduates.



Dr. William R. Jewel



# Human Factors Studies Yield Device to Protect Ears From Firing Damage

Human factors studies at the U.S. Army Medical Research Laboratory (USAMRL) at Fort Knox, Ky., have resulted in an electronic device to protect armored soldiers from hearing damage caused by gunfire sounds.

The device complements a natural physiological protective mechanism of the ear, by activating, in advance of firing, the contraction of the tensor tympani and stapedius (outer and inner ear) muscles—thereby reducing the transmission of sound pressures.

Research has determined that the contraction of these muscles, the acoustic reflex, requires some 9/1000 of a second to occur. Gunfire sounds reach their peak loudness in only 1/1000 of a second. Thus it is understandable that this natural protective mechanism is not normally effective in reducing damage to the ear from gunfire sounds.

The U.S. Army Medical Research

## McLucas, Weyl Chosen For Defense R & E Posts

Dr. John Luther McLucas was appointed Deputy Director of Defense Research and Engineering (Tactical Warfare Programs), effective last month, and Dr. F. J. Weyl assumed his duties June 1 as Assistant Director of Defense R&E (Research).

Dr. McLucas is responsible for supervision of research, development, test and evaluation programs and projects relating to tactical warfare.

Since 1948 he has been employed at HRB-Singer, Inc., State College, Pa., and in 1957 became President. He has a B.S. degree from Davidson College, a master's degree from Tulane University, and a Ph. D. in physics from Pennsylvania State University.

Until he assumed his new post, Dr. Weyl was Deputy Chief and Chief Scientist, Office of Naval Research. He will be on detail for six months to assist Dr. Harold Brown, DDRE, in formulation of policy and advising on Department of Defense research programs.

Dr. Weyl has served since 1947 in the Office of Naval Research. He received his Ph. D. in mathematics from Princeton University in 1939 and is the son of Prof. Hermann Weyl, internationally known mathematician and one of the founders of the Institute for Advanced Studies at Princeton.

Laboratory electronic device provides a series of sharp pulses of sound in the intercom system of an armored vehicle. Warning is given sufficiently in advance of the firing of the weapon to permit the acoustic reflex to be operative when the sound waves from the firing impinge upon the operator's eardrums.

To demonstrate the effectiveness of this device, researchers of the Psychology Division, USAMRL, devised a measure of hearing conservation termed "Temporary Threshold Shift Reduction (TTSR)."

TTSR expresses, in decibels, a standard sound intensity unit, the difference in temporary hearing loss induced by gunfire sounds when the individual is and is not protected by the ear-defender system.

Some persons do not show a temporary hearing loss in response to experimentally feasible exposures of gunfire sounds. Most individuals do, and a significant number experience a marked protection of their hearing used. Temporary threshold shift reductions of from 1-60 decibels have been recorded in persons protected by the acoustic reflex device.

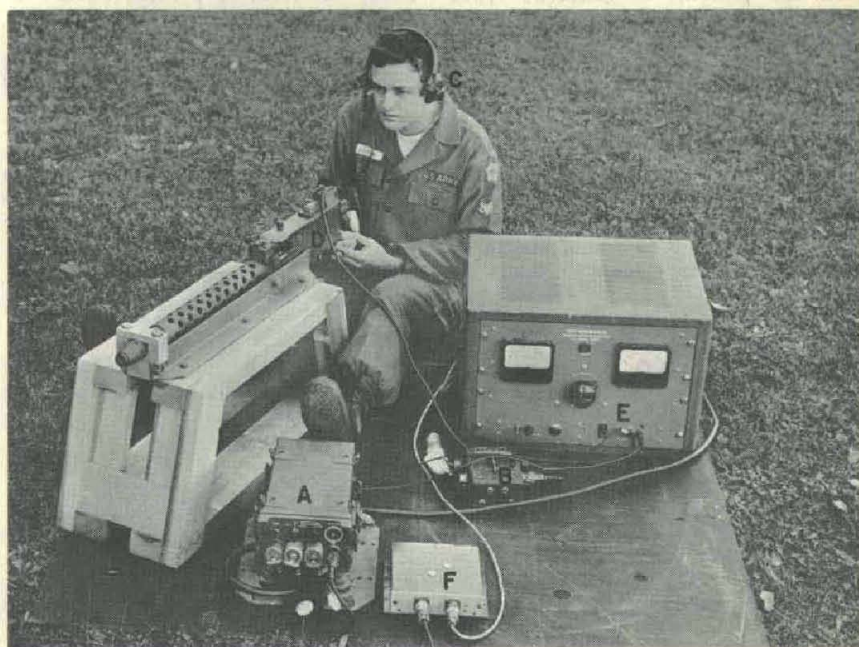
Elements of the ear-defender system as developed by Capt John L. Fletcher, MSC, an Army research psychologist, for employment in armored vehicles are shown in the illustration

below, lettered A through E. The modification unit, which was designed to be compatible with the AN/65 intercom is illustrated as item F.

Prototype models have been installed in two T41 medium tanks and field firing tests carried out against moving targets. The hit proficiency of two crack tank crews of the U.S. Army Armor School instructor staff showed no negative effect of the small time delay (.15 sec.) introduced by the system—between closing of the firing switch and the actual firing of the 76 mm. gun to permit time for the activation of the acoustic reflex.

The Acoustic Reflex Ear-Defender System is currently being submitted to the Chief of Research and Development for inclusion in the military specifications of present and future armored vehicles.

Acceptance of the system will increase the efficiency of the armored soldier in combat, medical researchers believe, by assuring him the use of his hearing when it is needed to receive commands in the height of battle. From the viewpoint of taxpayers, it may reduce future compensation claims for noise-induced hearing loss. The Veterans Administration according to current information, is handling some 49,282 veteran claims for which payments amount to about \$36,000,000 annually.



Acoustic Reflex Ear Defender System: (A) AN/65 Intercom, electronic components (B) AN/65 junction box (C) AN/65 earphones (D) vehicle armament with electric firing switch (E) 24 v.d.c. power (F) modification unit cabled to existing intercom components with plug-in connectors.



## ABMA 'Surgeons' Probe Missile Defects

A group of missile doctors at the Army Ballistic Missile Agency cut up their patient in an effort to give it better health and longer life.

The patient, in this case, is not flesh and blood but metal alloy used in rocket motor casings. The ABMA doctors hold Ph. D. degrees in engineering and chemistry rather than medicine. But they study their patient with some familiar instruments, such as the X-ray and microscope.

Ailments they are out to cure also have some names that would not be thought strange in a clinic. The missile doctors hope to prevent "fatigue," cure the "creeps" and stop "fracturing."

Dr. Bernard Steverding, Associate Director for Chemistry and Materials Research in ABMA Research and Development, holds a Ph. D. in engineering. As head doctor on the staff, he has charge of all metals research and specializes in "fatigue."

Applied to a missile, it means about what it would if applied to a human; fatigued metal is tired metal. Tired metal in a rocket motor case is liable to rupture when the missile is fired.

To test the life expectancy of metal and its resistance to fatigue, Dr. Steverding places samples on a specially designed machine and subjects his patients to different types of atmospheres and vibration. He

looks for reactions in total vacuum or how the metal behaves when exposed to corrosive gasses as compared to normal air.

Dr. Leo L. Werner, Chief of the Materials Research Branch, specializes in X-raying metals to detect breaks or fractures that may occur when they are put under pressure. A hair line crack in a motor case could mean a lost missile.

Dr. Joseph Majowicz, Chief of the Physical Chemistry Branch, and Dr. James Merritt, Chief of Structural Chemistry, work with rust and evaporation problems apt to occur when metals are exposed to high temperature and pressure.

Part of Dr. Majowicz' job is to estimate "creep" in metal, to determine how far it can stretch and still retain its shape and characteristics. Creep is produced in laboratory samples by suspending a piece of metal vertically and attaching a weight.

All the doctors are engaged in making tomorrow's Army missiles tougher, lighter and more reliable. They test their patients to the yield point in the laboratory, to make sure missile metal stays healthy when heavy demands are put upon it.

This "in-house" research, supported by Army contracts with industry and research institutions, is typical of the continuing investigation the Army conducts to provide double insurance on "health" of missiles.

## DOFL Appoints Hoff Chief of R&D Laboratory 400

Robert Stephen Hoff, 42-year-old "charter member" of the staff, Diamond Ordnance Fuze Laboratories, Washington, D.C., has been appointed Chief of Research and Development Laboratory 400. It is one of the largest of DOFL's nine laboratories, with 165 employees.

Fresh out of the University of Florida, where he obtained his M.S. degree in electronics while serving as a project engineer on a U.S. Air Force program, Mr. Hoff joined the National Bureau of Standards staff as an electronics specialist in 1950.

That portion of the NBS in which he was employed was transferred to the Department of the Army in September 1953 and activated as the Diamond Ordnance Fuze Laboratories, which since have gained international renown.

Born in Delevan, Ill., in 1920, Mr. Hoff moved with his family to Texas at an early age. He received his B.S. degree in electrical engineering

from Texas A&M in 1941. During five years of military service he achieved the rank of major in the U.S. Army Signal Corps. From 1946-50 he was employed at the University of Florida.



Robert Stephen Hoff



By Dr. Ralph G. H. Siu  
Technical Director, R&E, OQMG

**THE WELL FROG.** According to an old legend, the Spirit of the Ocean once told the Spirit of the River: "You cannot speak of the ocean to a well-frog—the creature of a narrower sphere. You cannot speak of ice to a summer insect—the creature of a season. You cannot speak of Tao to a pedagogue; his scope is too limited. But now that you have emerged from your narrow sphere and have seen the great ocean, you know your own insignificance and I can speak to you of great principles."

**SCIENTIFIC PATHOLOGY.** I believe Professor Whitehead was a bit too rough on the scientist in the following quotation from *Function of Reason* (1929). Nevertheless, he does have a point, which merits consideration in the selection of incumbents for high positions.

"As a question of scientific methodology there can be no doubt that the scientists have been right. But we have to discriminate between the weight to be given to scientific opinion in the selection of its methods, and its trustworthiness in formulating judgments of the understanding.

"The slightest scrutiny of the history of natural science shows that current scientific opinion is nearly infallible in the former case, and is invariably wrong in the latter case. The man with a method good for purposes of his dominant interests, is a pathological case in respect to his wider judgment on the coordination of this method with a more complete experience.

"Priests and scientists, statesmen and men of business, philosophers and mathematicians, are all alike in this respect. We all start by being empiricists. But our empiricism is confined within our immediate interests. The more clearly we grasp the intellectual analysis of a way regulating procedure for the sake of those interests, the more decidedly we reject the inclusion of evidence which refuses to be immediately harmonized with the method before us. Some of the major disasters of mankind have been produced by the narrowness of men with a good methodology."



## 'Copter Warning System Spots Engine Flame-out

An r.p.m.-limit warning system that detects engine flame-out has been developed for turbine-powered HU-1 helicopters, used extensively by the U.S. Army and other Military Services.

Textron's Bell Helicopter Co. reported that the system detects upper and lower engine and rotor limits from tachometer generators. Instant warning by independent light and audio signals is given whenever any limit has been exceeded.

Installation is planned in the turbine-powered light observation helicopter (HO-4) the company is building for the Army.

Although the system has been developed specifically for the HU-1 series, broad application for conventional jet aircraft as well as helicopters is envisioned. Besides power loss before an engine flames out, said Bell electronics engineers, the system will detect turbine governor failures, power train failures (drive shaft, couplings, etc.) and rotor overspeed or underspeed during autorotation.



New r.p.m. limit warning system being developed for HU-1 helicopters weighs less than two pounds and is approximately six inches square.

The system also has provisions for predicting turbine compressor stall and governing engine r.p.m. (revolutions per minute). It is designed for use on any single or multiengine aircraft, for fail-safe operation.

Now being evaluated in military tests, the system is being installed in service test versions of the HU-1D and may be installed in future HU-1Bs. Retrofit kits have been proposed for HU-1B and HU-1A aircraft in service.

## Signal Corps School Commandant Retiring July 31

Brig Gen Charles M. Baer, Commandant, Army Signal Corps School, Fort Monmouth, N.J., will retire on July 31 after more than 30 years of communications assignments, ranging from the level of Infantry company to the Joint Chiefs of Staff.

General Baer was graduated from the United States Military Academy in 1932. During World War II, he was awarded the Legion of Merit for his services as Commander of Task Force Unit 99.3.7 which was responsible for all communications in the Okinawan Operation.

Following the war, General Baer served for three years on the faculty of the Armed Forces Staff College,

then was graduated from the National War College, and subsequently was assigned to the staff of the Joint Chiefs of Staff and as Signal Officer of the 2nd U.S. Field Army.

Prior to his current post, he served concurrently as Chairman of the European Military Communications Coordinating Committee, Standing Group, North Atlantic Treaty Organization, and Chairman of the Civil Communications Planning Committee of the North Atlantic Council, NATO, in Paris, France.

## DOD Sponsors Tube Parley

The Advisory Group on Electron Devices, Office of the Director of Defense Research and Engineering, will sponsor the Sixth National Conference on Tube Techniques, Sept. 19-21.

Scheduled at the Western Union Auditorium, 60 Hudson Street, New York City, N.Y., the program will cover all phases of electron tube making techniques, processes, and materials.

Discussions will deal with micro-miniaturization, microphonics, ion pumping, radioactive tracer techniques, gas discharge effects, ceramic seals, insulators, welding, brazing, soldering, radiation and high-temperature environments effects, and related or similar subjects.



Brig Gen Charles M. Baer

## Mathematicians Meet At Army Math Center

Twenty technical papers presented at the Eighth Conference of Army Mathematicians, held at the Mathematics Research Center, U.S. Army, early in June, indicated the modern Army's dependence upon the most advanced mathematical techniques.

Attended by 70 representatives of 25 Army installations, the conference at the University of Wisconsin covered such topics as heat flow, ballistics, dynamics, numerical analysis, simulation, and probability and statistics.

As guest speaker, Prof. B. R. Seth of the Institute of Technology, discussed "Simple Cases of Transition Phenomenon." He is also associated with the Mathematics Research Center staff.

Dr. Rudolph E. Langer, Director of the MRC, spoke on the desirability of stimulating a close working relations among MRC and Army scientific personnel, and stressed that MRC services are available to solve problems.

Sponsored by the Army Mathematics Steering Committee, the conferences serve to aid the Chief of Research and Development in planning, coordinating and supervising mathematics research interests of the Department of the Army.

Arrangements for the conference were made by Dr. Francis G. Dressel of the U.S. Army Research Office in Durham, N.C., (AROD) and Dr. Philip Anselone of the MRC staff. Conference proceedings will be published by AROD.

## SCIENTIFIC CALENDAR

International Congress of Radiation Research, Harrogate, Yorkshire, England, August 5-11.

Fourth Annual Explosives Safety Seminar on High Energy Solid Propellants, sponsored by the Armed Services Explosives Safety Board, Langley Field, Va., August 7-9.

Symposium on Trace Gases and Natural and Artificial Radioactivity in the Atmosphere, Utrecht, Netherlands, Aug. 8-14.

Symposium on Antarctic Logistics, sponsored by NAS-NRC, Boulder, Colo., Aug. 13-17.

3rd International Conference on Precision Electromagnetic Measurements, Boulder, Colo., Aug. 14-16.

International Congress of Mathematicians, Stockholm, Sweden, Aug. 15-22.

Symposium on Far Infrared Spectroscopy, sponsored by AFOSR, Cincinnati, Ohio, Aug. 21-24.

Conference on Science & Engineering in Nuclear Education, Gatlinburg, Tenn., Aug. 20-22.

Ninth International Symposium on Combustion, Ithaca, N.Y., Aug. 25.

Symposium on Environmental Control of Plant Growth, sponsored by the International Union of Biological Sciences, Canberra, Australia, Aug. 25-31.

Fourth Symposium on Naval Hydrodynamics, sponsored by ONR, Washington, D.C., Aug. 27-31.



# Army Announces Contracts Totaling More Than \$75 Million

Contracts aggregating more than \$75 million for development and procurement for military materiel were announced recently by the Department of the Army.

The largest contract was \$19,874,524 to Raytheon Co., Lexington, Mass., for guidance and control systems for the Hawk air defense missile system.

Hughes Aircraft Co., Fullerton, Calif., received a \$4,922,948 award for signal components for an air defense command post.

Two contracts totaling \$4,556,659 for Nike Hercules repair parts and 184 20 mm. Vulcan guns and spare parts were let to General Electric Co., Syracuse, N.Y.

Harvey Aluminum Sales, Inc., received a \$4,224,848 contract for ammunition. Other contracts for ammunition supplies included: \$2,368,574 to Holston Defense Corp., Kingsport, Tenn.; two contracts totaling \$2,297,861 to Avco Corp., Richmond, Ind.; \$1,130,336 to Minneapolis Honeywell Regulator Co., Hopkins, Minn.; \$1,118,985 to Olin Mathieson Chemical Corp., East Alton, Ill., and \$1,002,700 to Aerojet General Corp., Downey, Calif.

A \$4,130,732 award to Barker and Williamson, Inc., Bristol, Tenn., is for field radio equipment.

For production of rocket motors and parts for the Army's new light antitank weapon and a mobile electronics telephone system, General

Dynamics Corp., Rochester, N.Y., received contracts totaling \$3,353,992.

Contracts aggregating \$3,163,020 to Chrysler Corp., Detroit, Mich., call for continued production of engines and repair parts for the M-113 armored personnel carrier and repair parts for the M-60 tank.

Northrup Corp., Van Nuys, Calif., received two contracts aggregating \$2,670,034 for the surveillance drone system and 200 target missiles.

Consolidated Welding and Engineering Co., Chicago, Ill., received a \$2,402,340 contract for 240 low bed trailers for use with the Nike Hercules missile system.

A \$2,300,054 contract let to Ortronix, Inc., Orlando, Fla., is for lightweight transportable shelters to be used in connection with the installation and housing of communications equipment.

A \$2,135,870 contract went to RCA, Camden, N.J., for power supply amplifiers and module testers for radio sets for field use. Admiral Corp., Chicago, Ill., received a \$2,108,708 contract for 5,825 lightweight field radio sets. For water distillation units, Aqua-Chem, Inc., Waukegan, Wis., received a \$2,093,898 contract.

Classified contracts included: \$2,000,000 to Burroughs Corp., Detroit, Mich., and \$1,052,868 to Instruments for Industry, Hicksville, N.Y.

Elgin Watch Co., Elgin, Ill., received a \$1,976,304 contract for telegraph terminal equipment. A \$1,843,-

929 contract let to Continental Motor Corp., Muskegon, Mich., is for 125 M-88 tank recovery vehicle engines.

Additional contracts included: Convento Manufacturing Co., \$1,600,227 for semitrailers; Allison Division, General Motors Corp., Indianapolis, Ind., \$1,513,658 for transmissions and spare parts for the T-195 and T-196E1 self-propelled howitzers; Long-Temco-Vought, Dallas, Tex., \$1,194,906 for six launchers for the Sergeant missile system; Gates Radio Co., Quincy, Ill., \$1,196,340 for an air transportable broadcast facility.

## Transistorized MOBIDIC Used To Test AEPG Firing Systems

The U.S. Army Electronic Proving Ground at Fort Huachuca, Ariz., recently put into operation the MOBIDIC AN/MYK-1(U), the fifth in a line of large mobile computers manufactured for the Signal Corps.

Manufactured by Sylvania Electric Products Corp., at a cost of about \$1.5 million, the computer will be used, among other things, to test future systems of electronic fire planning for artillery and rockets.

The MOBIDIC has no electron tubes. The electronic "thinking" is done by tiny, rugged transistors. It has a "vocabulary" of 8,000 words and can add, subtract and multiply in a matter of a millionths of a second.

## Picatinny Devises Kit to Anchor Missile Launcher in Frozen Ground

How can a missile launcher be anchored solidly into ground that has been frozen solid at temperatures as low as 65 degrees below zero? Or how can the launcher be tied down securely when the ground is so rocky it is impossible for a man to drive a pick-axe into it?

Engineers at Picatinny Arsenal, Dover, N.J., have devised a neat little package whose sole purpose is to punch four holes, properly spaced, to receive tie-down stakes for the Army's Littlejohn ground-to-ground rocket launcher. Littlejohn is easily transportable and can be launched on a few moments notice.

The package comes to the user in the field with the cord already strung through four shaped charges. One end of the detonating cord is crimped into a special adapter which simplifies attachment of the cord to the ignition assembly.

The kit can be unpacked, assembled, positioned and fired in a matter of minutes by a soldier wearing arctic mittens. No special training is required. When a ring pin is pulled,

a blasting cap is detonated and the reaction is set off. A 40-second time delay provides an added safety factor.

Tested under varied conditions, the kit has proved its capability. One shaped charge, placed 20 feet away from a sheet of three-quarter-inch

plywood, can punch a 3-inch hole. At 65 degrees below zero, it can penetrate nearly 20 inches of frozen earth.

Developed by Picatinny in just three months, the kit has already created strong interest among other Army agencies and services.



Edmund Demberg, mechanical engineer in Picatinny Arsenal's Artillery Ammunition and Rocket Development Laboratory, demonstrates explosive anchor kit, which can be unpacked, assembled and detonated in minutes.



## General Trudeau Receives Tributes in Korea, From Staff Members, University on Retirement

When a great general retires from active military service, the loss to the Nation sets most heavily upon those who have known him closely as a leader, as a man of strong virtues, and as a friend of rare caliber.

In the case of Lt Gen Arthur G. Trudeau, who retired June 30 to end an Army career spanning more than four decades, climaxed by four years as Chief of Research and Development, Department of the Army, the emotional tug reached into many hearts in many lands.

Before departing July 1 for his new job as President of the Gulf Research and Development Co., in Pittsburgh, Pa., General Trudeau was honored at a number of farewell testimonial activities, including a full-scale retirement ceremony in Korea.

Lt Gen Dwight E. Beach, who served as Deputy CRD for 14 months before taking over the top job July 1, touched a responsive chord emotionally with his tribute to General Trudeau at a farewell banquet June 28 at the Fort Belvoir (Va.) Officers Club.

To the large group of distinguished military leaders and Army R&D personnel who attended to pay their respects, General Beach's tribute was a well-merited recognition of exceptional qualities of ability, a pervading consciousness of moral values, and remarkable energy in pursuing to the fullest the task at hand.

More than a little of the devotion of General Trudeau's staff and working associates was expressed in a

commemorative scroll signed by 44 division chiefs of OCRD and in the Office of the Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen. Another token of esteem, prepared and presented by the OCRD Pictorial Branch, was a short documentary film covering highlights in General Trudeau's career.

In Chester, Pa., where General Trudeau spoke to the graduating class at the 141st commencement exercises of the Pennsylvania Military College, and was awarded the honorary degree of Doctor of Science, he expressed his moral convictions with characteristic vigor:

"We must guard against the arrogant intellectual who is now convinced that the world had no Creator—that the world evolved from hydrogen gas. This type of individual never even answers satisfactorily the basic question—who made hydrogen gas?"

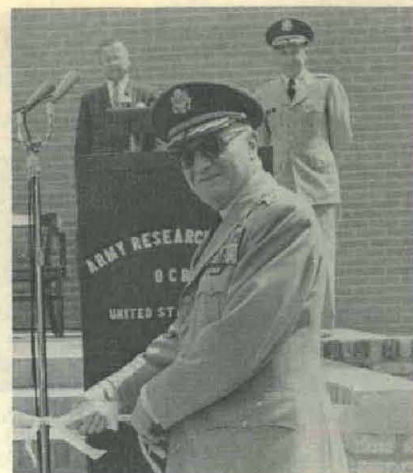
"Despite Aldous Huxley and Bertrand Russell, we can be thankful there are a host of brilliant scientists today who continue to believe as you and I that:

"True learning is with reverence crowned.

And science walks with humble feet

To seek the God that faith has found."

In Korea, where General Trudeau served as CG of the 7th Infantry Division during some of the hardest



When General Trudeau cut the ribbon to signify opening of new headquarters of U.S. Army Research Office, it was a rewarding occasion—marking his long-continued efforts to provide an adequate facility.

fighting of the Korean War—the battles of Pork Chop, Old Baldy, T-Bone and Arsenal Hills—a "Special Trudeau Edition" of *Bullseye*, publication of I Corps (Group), carried a "Trudeau Comes Home" headline.

At the formal retirement ceremony, he was awarded the Distinguished Service Medal with Second Oak Leaf Cluster and also the Korean Service Medal, the Korean Government's highest military award.

The policy to which the *Army Research and Development Newsmagazine* has adhered rigidly since it was established in December 1960, is "No editorializing," as applied to articles without an author's by-line. Admittedly, this account of farewell activities for General Trudeau is suspect of violation.

The defense: Excusable as a rare offense, justified by a rare type of man.

### Trudeau Honors Employees With Parting Citations

One of Lt Gen Arthur G. Trudeau's final actions as Chief of Research and Development, Department of the Army, was to recognize the work of five civilian employees by presenting them Certificates of Achievement.

The awards were made June 29 to: John W. Green, the veteran Assistant Executive for Administration, OCRD; John K. Koepf, Industrial Affairs, and William J. Webb, Public Affairs, Technical Industrial Liaison Office, OCRD; John E. Horton, special film consultant, OCRD; and Pauline Dorman, secretary to the Chief of Research and Development.

## FAREWELL MESSAGE

*In my forty-two years of Army life I have had many unique opportunities to serve my country, but never in a more challenging way than as Chief of Research and Development nor in association with more dedicated and loyal men and women.*

*The contributions which each of you—individually and collectively—have made to the modernization and readiness of that military service we all love so well—will always stand as an inspiration to me. As I conclude my Army career, please accept my deepest thanks for your tireless energy and loyal devotion to the jobs at hand—and extend to your families my admiration for their understanding, indulgence, and patience.*

*I know that you will always maintain those high standards of intellectual honesty and moral integrity which have endowed this great country with a magnificent heritage. Our Nation will surely continue to shine in brilliance provided individuals like you forever remember our heritage and what it cost our forefathers in blood and sacrifice.*

*The present is a time of crisis, demanding the best that is in each of us—and our determination to give it.*

*Now, as you continue your R&D efforts or go on to other jobs elsewhere, it is my warm wish that you will continue to serve America in full measure, and personally achieve ever-greater success and happiness in your future endeavors.*

*Good luck and Godspeed.*

ARTHUR G. TRUDEAU  
Lieutenant General, GS  
Chief of Research and Development





Brig Gen Hallett D. Edson   Brig Gen Harry L. Hillyard   Brig Gen Bruce E. Kendall   Brig Gen Thomas H. Beck

## Biographical Sketches of Leaders Assigned to New Commands

**BRIG GEN EDSON:** Scheduled to take over as Deputy for Aviation, Army Mobility Command, Army Materiel Command, effective in September, Hallett D. Edson carries into his new job a distinguished career.

Combat honors accorded him include the Silver Star with two Oak Leaf Clusters, the Legion of Merit, the Bronze Star Medal, the Soldier's Medal, the Croix de Guerre with Palm (France), the Fourragere (France), and Presidential Unit Citation Badge.

Graduated from the United States Military Academy in 1934, he has completed the courses of the Naval War College, the Army War College and the Army Aviation School. He is qualified as a senior parachutist and as an Army aviator in both fixed and rotary wing aircraft.

During World War II, from 1943 to 1946, he served as Battalion and Regimental Commander of the 15th Infantry Regiment of the Third Infantry Division. He participated in campaigns of the 15th Infantry Regiment of the Third Infantry Division. He engaged in the campaigns in Italy, France and Germany.

In Korea, he commanded the 8th Cavalry Regiment in three campaigns, from the Pusan beachhead to the Chinese Communist intervention in North Korea. In 1954 he commanded the 351st Infantry in the Free Territory of Trieste when the agreement was signed between Italy and Yugoslavia.

Returning to the U.S. in 1955, he organized and commanded the 351st Regimental Combat Team at Fort Rucker, Ala., and for three years served as Deputy Director and Director of Army Aviation, Office of Deputy Chief of Staff for Plans and Operations.

Before assuming his present post

as Assistant Division Commander, Hq. 101st Airborne, Fort Campbell, Ky., he served for two years as Senior Adviser to the Second Republic of Korea Army.

**BRIG GEN HILLYARD:** In his new assignment as Deputy Commanding General for Doctrine Development, Combat Developments Command, effective in August, Harry Lester Hillyard is backed by experience in several major campaigns and as Secretary of the Joint Chiefs of Staff. He has been nominated for 2-star rank.

Graduated from the United States Military Academy in 1934, he served with Infantry units in the U.S. and Philippines prior to World War II. In 1942 he commanded the only medium tank battalion participating in the invasion of North Africa, then served out World War II with the 2nd Armored Division. As a tank battalion and task force commander, he took part in invasions of Sicily and France and in campaigns in France, Belgium, Holland and Germany.

In 1946 he attended the Second Command Class and stayed on as an instructor at the Command and General Staff College, Fort Leavenworth, Kans.

After a year of study at the Air War College, he was assigned to the Plans and Operations Division of the General Staff. There he served in the Joint War Plans Branch and as Secretary of the General Staff in the Office of the Chief of Staff.

Subsequent assignments included a 2-year tour as Assistant Commandant at the United States Military Academy, study at the National War College, and service in the J-3 Division, Far East Command.

In 1956 he became Deputy Secre-

tary and later Secretary of the Joint Chiefs of Staff. Promoted to brigadier general, he served in Korea from 1960 to 1961 as Assistant Division Commander, 7th Infantry Division. His next assignment was Deputy Commandant of the Army War College, Carlisle Barracks, Pa.

**BRIG GEN KENDALL:** Assigned as Chief, Supply Operations, Supply and Maintenance Command, Army Materiel Command, Bruce E. Kendall is numbered among the select who reach military prominence without attending the U.S. Military Academy.

Commissioned a second lieutenant upon graduation from the University of Arkansas in 1933, he has held increasingly important assignments in the managerial, supply and logistical fields since he entered upon active duty with the Quartermaster Corps early in 1941. Until reassigned, he was Director of Administration, Office of the Quartermaster General.

For outstanding service as Supply Officer at Army Service Depots during World War II, he received the Legion of Merit. A tour in the Field Service Division, Office of the Quartermaster General was followed by assignment as Quartermaster, Headquarters, Eighth Army, Far East Command.

Other major assignments include: Board Member in the Army General Staff, Assistant Chief of the Military Planning Division, Executive Officer to the Deputy for Operations, and Deputy Commander of the U.S. Army Logistics Management Center.

In 1960 General Kendall returned to Washington to serve as Assistant Director of Supply Operations in the Office of the Deputy Chief of Staff for Logistics. Promotion to brigadier general and assignment as Director of Administration came in





Brig Gen Melvin D. Losey    Brig Gen Fred P. Campbell    Brig Gen James M. Illig    Brig Gen John M. Cone

August 1961.

During his career he has graduated from the Adjutant General's School, the Command and General Staff College, the Industrial College of the Armed Forces, the Logistics Management Center and the Advanced Management Program at Harvard University.

**BRIG GEN BECK:** Assigned as Director, Plans, Headquarters, Army Materiel Command, effective this month, Thomas H. Beck has served as Deputy Director, Logistics, Office, Joint Chiefs of Staff, since 1960.

A graduate of the U.S. Military Academy in 1933, he received the rank of Brigadier General in March 1957 and from then until August 1960 served as CG, Yukon Command and Acting and Deputy CG, U.S. Army, Alaska.

During World War II he served in Europe as G-3 of the Eighth Infantry Division and CO of the 28th Infantry. For his combat performance he received numerous decorations including the Silver Star, the Legion of Merit with Oak Leaf Clusters, the Bronze Star Medal and the Croix de Guerre with Palm.

In the years following the war General Beck served as Assistant Chief of Staff, G-1, Second Army, graduated from the Armed Forces Staff College, was Assistant Chief, Deputy Chief and Chief of Staff, Philippine Command, completed the course at the National War College and held various staff positions.

In Korea he was CO, Headquarters 180th Infantry Regiment, Administrative Inspector, Korean Military Advisory Group and Senior Adviser to the Infantry School, Republic of Korea Army.

Returning to the U.S. in June 1954, he was appointed Chief of the Combat Developments Office, Long-Range Doctrine Section. In March 1956 he

became Assistant Commandant of the U.S. Army Infantry School for Combat Development, Fort Benning, Ga.

**BRIG GEN LOSEY:** Presently Director of Military Operations, Office of the Chief of Transportation, Melvin D. Losey is on orders to become Chief of Transportation, Supply and Maintenance Command, effective in August.

Nearly half of his time during the past 11 years has been as a Transportation Officer in the Far East, Japan and Hawaii, from June 1951 to August 1953 and from February 1956 to August 1959.

From 1953-54 he was a student at the National War College, Carlisle Barracks, Pa., followed by a 19-month tour as Transportation Officer, Headquarters, Fourth Army, Fort Sam Houston, Tex. He was Chief of Staff, U.S. Army Transportation Training Command, Fort Eustis, Va., from August 1959 to August 1960.

Born in Tomkins, Mich., June 17, 1908, he lists Leesburg, Fla., as his home address. The General entered on active duty in 1940, following a career in management with Swift and Co. in Des Moines, Iowa. During World War II he saw action in 10 campaigns covering 15 countries in the European and Mediterranean Theaters of Operations.

His assignments included participation in the invasion of North Africa as G-3 Operations Officer of General Patton's Western Task Force and G-3 Plans and Operations Officer in the campaign in Sicily and Italy, including the attack at Anzio Beach.

For the next several years he held posts on the War Department General Staff and was a member of the Joint Intelligence Group, Office, Joint Chiefs of Staff. During the Korean Conflict he was Deputy Transportation Officer, General Headquarters, Far East Command.

Among his many decorations are the Legion of Merit, the Bronze Star, the Army Commendation Medal and the Belgian Croix de Guerre with palm.

**BRIG GEN CAMPBELL:** More than 26 years of military assignments of increasing responsibility have prepared Fred P. Campbell for his new assignment as Chief of Staff, U.S. Army Materiel Command. Until reassigned, he was Chief of Staff, Communications Zone, U.S. Army, Europe, since April 1961.

A graduate of the United States Military Academy at West Point, N.Y., General Campbell also has completed courses at the Field Artillery School (Battery Officers' Course), the Command and General Staff School, and the Armed Forces Staff College.

Major permanent duty assignments of General Campbell during the past decade include: Chief, Plans Branch, and later Deputy Director for Plans, Logistics Division, European Command; Secretary of the Joint Staff, United States European Command; Special Assistant to the Assistant Chief of Staff, G-4, General Staff, Army Headquarters in Washington; Chief of the Business and Industrial Management Office, Office of the Assistant Chief of Staff, G-4;

Office, Deputy Chief of Staff for Logistics; Chief, Progress Analysis Group, Office, Chief of Staff, U.S. Army, Washington, D.C.; Chief, Program and Analysis Group, Office, Chief of Staff; Commanding General 8th Infantry Division, Artillery, United States Army, Europe.

**BRIG GEN ILLIG:** Designated Comptroller of the U.S. Continental Army Command, effective this month, James M. Illig has served in the Office, Deputy Chief of Staff for Logistics, since August 1961. Originally assigned as Director of Finan-

(Continued on page 28)



(Continued from page 27)

cial Operations, he later was named to head the Office of Management Analysis.

Other ODCSLOG assignments have included Special Assistant to the Deputy Chief, and Chief, Command Programs and Budget Division.

Graduated from the United States Military Academy in 1936, he has completed the courses at the Command and General Staff School and the Industrial College of the Armed Forces.

Major assignments in the past decade include: Assistant Chief and later Chief, Budget Branch, Control Office, Office, Assistant Chief of Staff, G-4; Assistant Chief and later Acting Chief, Programs and Budget Division, Office, Assistant Chief of Staff, G-4; Deputy Chief of Staff for Logistics, (Coordinating Agent and Adviser to the Superintendent) United States Military Academy; Deputy and later Commander, U.S. Army Base Command, Hawaii; and Deputy Commander and then Deputy Chief of Staff, Administration, U.S. Army, Hawaii, 25th Infantry Division.

Among the citations General Illig has received are the Legion of Merit and the Army Commendation Medal.

**BRIG GEN CONE:** This month when he takes command as Director of Maintenance, Headquarters, Supply and Maintenance Command, Army Materiel Command, John M. Cone can look back on 30 years of military service. His career began at Fort Oglethorpe, Ga., when he enlisted as a private. In 1933 he was enrolled at the U.S. Military Academy and was graduated in 1937.

Reassigned to his new duties from two years of service as Chief, Plans and Programs Division, Office of the Chief of Ordnance, General Cone was stationed in Japan from 1956-58. Assigned as Deputy for Operations and later as Commanding Officer of the Oppama Ordnance Depot, he finished his tour in command of all Ordnance Depots in Japan.

In 1955 he was assigned as a student at the Army War College, Carlisle Barracks, Pa., after serving three years in Washington, D.C., on the General Staff and as Chief of the Purchases Branch, Procurement Division. From January 1959 to August 1960 he was Commanding Officer at Anniston Ordnance Depot, Anniston, Ala.

Following his graduation from the U.S. Military Academy, he was assigned to the 18th Field Artillery until he received training in aviation ordnance at Aberdeen Proving



Brig Gen Elmer Gibson

Brig Gen Robert Kyser

Maj Gen T. H. Lipscomb

Ground, Md., in 1939 and at Langley Field, Va., in 1940.

In World War II he became an Ordnance Officer with the XXVI Fighter Command, Albright Field, Canal Zone, and then served with the AAF I Concentration Command at Cincinnati, Ohio. Graduated from the Command and General Staff School in 1943, he was assigned briefly to the Air Service Command until ordered to Europe with the U.S. Strategic Air Forces in March 1944.

Following three years of duty in England, France, Belgium, Holland and Germany, in June 1947 he was named Commanding Officer of the Detroit (Mich.) Ordnance District.

**BRIG GEN GIBSON:** Effective in August, Elmer J. Gibson will take command as Director of Production and Procurement, Headquarters, Army Materiel Command. Since February 1961, he has served as CG of the Ordnance Weapons Command, Rock Island Arsenal, Ill.

In Korea he served from December 1959 until he was assigned as Assistant Chief of Staff, G-4, following promotion to brigadier general in April 1960.

Graduated from the U.S. Military Academy in 1935, he served in various Artillery units until he was detailed to Ordnance in 1940 at Fort Bliss, Tex. From 1942-44 he was Executive Officer, Ordnance Section, Headquarters, Army Ground Forces. Later he served as a member of the Army Ground Forces Board in Australia and New Guinea, and took part in the Okinawan campaign.

Assignments immediately following World War II included attendance at the Command and General Staff College, a tour at Headquarters, U.S. Army, Pacific, followed by duty in Hawaii, and a year of study at the Industrial College of the Armed Forces.

From 1948-52 he was Chief, Pro-

duction Section, G-4, Department of the Army, followed by a 2-year tour as Commanding Officer of the Ordnance Procurement Center at Mannheim, Germany. From August 1957 to October 1959, he was Chief, Procurement Division, Office of the Deputy Chief of Staff for Logistics. He then served as an Ordnance Officer, and later as Acting Chief of Staff, Hq., Eighth U.S. Army, Korea.

**BRIG GEN KYSER:** Newly assigned as Deputy Commanding General, Headquarters, Army Supply and Maintenance Command, Robert C. Kyser previously was Depot Commander, Atlanta General Depot, Forest Park, Ga. From 1957 to 1959 he was Quartermaster, Headquarters, U.S. Army Communications Zone, Europe.

Graduated from the United States Military Academy in 1934, he served in the Infantry prior to World War II. From 1941 to 1944 he was assigned to the Office of the Quartermaster General. He designed the War Department Shipping Document system which was adopted for worldwide use.

While on the staffs of General of the Army Omar Bradley and Field Marshall Montgomery, he assisted in preparation of plans for the invasion of Normandy and operations in Central Europe. As a special assignment for the Secretary of War, with two other officers he studied the wartime logistical operations of six European countries. Published in 1947, their report was titled, "Foreign Logistical Organization and Methods."

Other staff assignments include Offices of the Under Secretary of the Army and the Secretary of Defense; Deputy G-4, U.S. Army, Europe; Commander, Quartermaster Depot, Nahnollenbach, Germany and, successively, Chief of Procurement, Chief of Distribution, and Chief of the Office of Supply Policy.



General Kyser has completed courses at the Command and General Staff College, the Industrial College of the Armed Forces and the School of Business Administration, Harvard University. Included among his many decorations are the Bronze Star Medal, the Legion of Merit with Oak Leaf Cluster and the French Croix de Guerre with Palm.

**MAJ GEN LIPSCOMB:** North Atlantic Division Engineer, New York City, since August 1959, Thomas Heber Lipscomb has been nominated for 2-star rank and assigned as Deputy CG, Materiel Developments, Combat Developments Command, Fort Belvoir, Va.

In 1958-59 he was Engineer, Eighth U.S. Army in Korea, and also served for three months as a member of the United Nations Military Armistice Commission. From 1954 until he became a student at the National War College in 1957, he was Chief of the Plans Division and Liaison Officer to the G-3 of the Department of the Army.

Responsibilities in the latter post included analysis and evaluation of the effects of massive atomic attacks and the measures which could be taken for rescue, relief and reconstruction.

Graduated from the United States Military Academy in 1934, he earned an M.S. degree in engineering from Cornell University in 1939. He has completed courses at the Command and General Staff College, the Air War College and the National War College.

Early in World War II, he was Engineer Combat Battalion Commander and later G-3 of the 86th Infantry Division. Subsequently he commanded the 1131st Engineer Combat Group and served with the ZZI and XXII Corps in England and Germany.

Following the enunciation of the Truman Doctrine in 1947, General Lipscomb was assigned to the Joint Military Mission for Air to Turkey. Here he developed a program for a new system of airfields designed to support modern aircraft, established an Engineer School for the Turkish Army, and supervised the organization and training of the Turkish Corps of Engineers.

As District Engineer of the Portland (Ore.) Engineer District for four years (1951-54), his major contribution was the initial design and completion of the first half of the \$260 million Dalles Dam project on the Columbia River. It was constructed at a cost almost \$90 million lower than estimated.

## OCRD Colonels Assigned to Joint Staff Posts With Research and Development Responsibility



Col Vester M. Shultz

Col John K. Boles

Col C. B. Hazeltine, Jr.

Assignments to the Office of the Joint Chiefs of Staff in Washington, D.C., became effective early this month for Col John K. Boles and Col Vester M. Shultz, resulting in reshuffling of OCRD replacements.

As Executive, Office of the Chief of Research and Development since May 1960, Col Boles distinguished himself by performance which earned him assignment to Chief of the Research and Development Division, J-5. He was graduated from the U.S. Military Academy in 1939.

Col Vester M. Shultz moved up to his new duties as Chief, Strategic Branch, Research and Development Division, J-5, after serving since September 1961 as Assistant Director of Army Research. Previously he was Senior Military Adviser to the Operations Research Office, predecessor to the Research Analysis Corp. He is a

1939 graduate of the United States Military Academy.

Newly assigned as successor to Col Boles is Col D. G. Gauvreau, who was reassigned after serving more than a year as Chief of the International Division, OCRD. Col Ned Morris now heads the Division and Don Grand Pré is his Deputy. Col Norris was reassigned from duty as Commanding Officer of Combat Command "C," 1st Armored Div., Fort Hood, Tex.

The new Assistant Director of Army Research is Col Charles B. Hazeltine, Jr., who was Commanding Officer of Combat Command "A" at Fort Hood preceding his assignment to the U.S. Army Research Office in 1960. He was moved up from duty as Chief of the Research Planning Division of USARO, and is a graduate of the United States Military Academy, Class of 1940.

## Theme of the Month: Electrical Power Program

(Continued from page 2)

generator set comparable in efficiency to present diesel engines and smaller in size and weight than present-day turbine-driven generator sets by virtue of advances in electrical generators and converters. They will supply precisely-controlled output power at any desired frequency from direct current to 3,200 c.p.s. They will indeed represent advances in the state-of-the-art and substantially improve our power generation capability.

Further gains, however, primarily in fuel consumption or energy conversion efficiency, are still needed. Therein lie the primary objectives of our long-range programs. To illustrate—consider the fuel requirements using diesel engine efficiency in the form we have to provide it as a conversion index (20 percent) to meet present and projected electrical power demands. This chart shows the fuel required per day to provide our presently required 2,000,000 kw./hrs.

### Fuel Required Daily (Lbs x 10<sup>6</sup>)

	1960	1970
Diesel (20 percent Conv. Eff.)	1.5	3.0+
50 percent Conv. Eff.	0.8	1.6+
70 percent Conv. Eff.	0.6	1.2+

If we project this to our estimated 1970 requirement, you can see the result. This corresponds to approximately 27 tank cars of fuel per day. This is a real problem area. Consider the net effect on fuel required if conversion



efficiencies of 50 percent could be achieved.

Nuclear devices will undoubtedly supply a continually increasing portion of the future military electrical power requirement. However, it is difficult to visualize the time when nuclear devices will be practical in highly mobile ground applications, which are the primary source of the growing requirements I have described. Therefore, all of the research and development programs to be discussed here are predicated on hydrocarbons being the basic fuel unless special exceptions for highly special applications are mentioned.

Since we know that the greatly improved conversion efficiencies the Army requires cannot be achieved in heat engines, we have turned to other energy conversion techniques now in the scientific forefront—thermoelectric generators, thermionic generators, solar generators, magnetohydrodynamic generators, and fuel cells. I would like to give you very briefly our present appraisal and effort in each of these.

**Thermoelectric Generators.** We have a modest program under way to develop small (from 150 watts to 5, possibly 10 kilowatts) thermoelectric generators to replace small gasoline-engine-driven sets. Thermoelectrics offer modest size and weight reductions, silent operation which is quite significant in these small sets, and greater life and reliability. They do not offer efficiency gains. However, the other advantages are sufficiently significant to justify use.

**Thermionic Generators.** We have no developments involving this technique, primarily because the high temperatures required for substantial output are not readily achieved with hydrocarbon burners. Recently, however, there have been some burner developments which warrant further examination.

**Solar Generators.** We have no developments involving this technique simply because we cannot depend on solar radiation for continuous duty systems.

**Magnetohydrodynamics.** We are initiating in-house experiments to study this technique. Our interest stems from applications which involve very high short-duration loads, such as radars in the discrimination mode. It may be possible to evolve practical MHD topping devices and ultimately continuous generators. MHD appears to offer possibilities for generating large amounts of power from a very compact package at efficiencies approaching 50 percent.

**Combinations.** Since MHD, thermionic and thermoelectric devices operate at successively lower temperatures, the possibility of combining all in a single system to extract the maximum energy is worthy of consideration and is being studied. Such a configuration may prove very attractive.

All of the preceding are, of course, subject to the Carnot Cycle limitations, as are heat engines. They are, however, potentially more efficient than a heat engine because greater temperature differences are possible. Nonetheless, conversion efficiencies which will satisfy the bulk of the military need will be difficult to achieve by these techniques.

**Fuel Cells.** Fuel cells constitute our major effort in advanced power sources. Let me tell you briefly of our approach and desired goals. Again we have based our fuel cell program on hydrocarbons and air as the fuels. We are not attempting to devise special cells for special situations that can tolerate exotic fuels. Rather, we are working to satisfy the bulk requirement. We hope to achieve a basic fuel cell which can conceivably be applied in various configurations to satisfy every power generation requirement we have. We are attempting to keep the operating temperature and pressure low (100° C. and atmospheric). We may have to compromise in this regard on initial systems, but the ultimate fuel cell must have these or very similar characteristics to be used widely.

This may appear to be a very idealized and impractical objective in view of the problems involved, but we are completely serious in stating and maintaining it. Results of research to date are sufficiently encouraging to maintain this objective and expand the effort.

For an electrical engineer, it's quite exciting to contemplate the impact that an ideal fuel cell could have on military material, not to mention civilian applications. We could replace every prime mover we might have with a silent, highly efficient, highly reliable, long-lived static device. All propulsion would be electrical. We might even fly by electricity. Our maintenance problems would be gone. Our logistic train would be greatly reduced. *The potential payoff of these devices is almost unlimited.*

In this "Theme of the Month" Newsmagazine feature, I have attempted to present an insight to the Army electrical power generation situation. Requirements have overtaken and exceeded the technology. Striking gains in conversion efficiency and weight and volume per unit output are needed. The interim solution will probably be high speed turbine-engine-driven electrical machinery. The most promise for the long-range solution appears to lie in electrochemical conversion. I sincerely hope that these remarks contribute to broadened understanding of the critical need and the significance that successful efforts may have.

## Provocative Ponderables

"All that is necessary for the forces of evil to win in the world is that enough good men do nothing."  
—Edmund Burke.

\* \* \*

"Science in itself without the guidance of true humanism is like an unbridled stallion lacking reins. The quicker and craftier it is, the more dangerous."—Dagobert D. Runes, in *Letters to My Teacher*.

\* \* \*

"It is possible that in the light of history it will have been the destiny of American society to make its unique contribution to mankind by applying its experience with vast projects to the major requirements of the world. For a nation that has used its peculiar genius to generate freedom, educational opportunity and a standard of living unparalleled in history, it is in any event a worthy ambition to aspire to use its special abilities for the purpose of passing on its knowledge to the rest of mankind."—Frank Pace, Jr., Ex-Secretary of the Army, Chairman of the Board, General Dynamics Corp.

\* \* \*

"Four cents out of every dollar spent in the U.S. goes to research and development, according to the Bureau of the Budget. By this standard, \$1 billion out of the annual \$25 billion expenditure on education should be invested similarly. . . . Yet less than \$10 million goes into research, and probably not much more than \$60 million on development."—*The New Republic*, June 11, 1962.

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"While we help our children to plan a lifetime career and design our homes and structures for a 40 to 60 year life, we seem content to trust our future and the fortunes of our Nation to short-term planning. Someone said recently we should look 10 years ahead. This was assumed to be revolutionary. I say that unless we set our sights on the year 2,000 A.D. we may never reach it as a leading nation." —Lt Gen Arthur G. Trudeau, former Chief of Research and Development, Department of the Army.



## Engineer R & D Labs Honor 200 Employees With Length of Service Awards

An employee with 40 years of service and more than 200 civilians with 10, 20 and 30 years of service were honored June 15 by three agencies at Fort Belvoir, Va.

The U.S. Army Engineer Research and Development Laboratories (USAERDL), the U.S. Army Engineer Geodesy, Intelligence, and Mapping Research and Development Agency (USAEGIMRADA), and the Nuclear Power Field Office (NPFO), honored long-service employees at Open House ceremonies in observance of the 187th anniversary of the U.S. Army and the U.S. Army Corps of Engineers.

Richard F. (Sarge) Carver received a 40-year pin — 31 years of military and nine years of civilian service. He has been a civilian employee of the Camouflage Branch of the Laboratories since May 1953.

Col John E. Walker, Deputy Director of the Laboratories, presented the pin to Mr. Carver. Col W. H. Van Atta, Director of GIMRADA, and Capt Ralph T. Garver, NPFO, presented awards to their personnel.

Letters of appreciation for their service to the Corps of Engineers were presented to Sims Hugh Green and Carroll F. Carter, on the occasion of their retirement. The letters were signed by the Chief of Engineers, Lt Gen Walter K. Wilson, Jr.

Letters of commendation were presented to Dwight L. Gravitte, Maurice Pressman and Amos J. Coleman for their achievement in obtaining college degrees by completing after-duty courses. Gravitte obtained a master's in government and Pressman and Coleman a master's in chemistry.

Thirty-year awards were presented to the following USAERDL employees: Dr. George W. Howard, Technical Director; Frank Calligarrich, George A. Mason, Frank B. Rudder, Peter P. Skrinshi and Kernebert C. Johnson. A similar award was presented to James L. Langford, employed by NPFO.

Recipients of 20-year awards, all employed by USAERDL, are Mrs. Marjorie Hansford, Walter H. Spinks, Mrs. Dorothy J. Wilson, Kenneth E. Young, Mrs. Margaret H. Mahon, Weller C. Collier, Oliver W. Graves, Mrs. Mary V. Newman, William V. Thompson, Osborn A. Kinzer, Adrian I. Timbrook, Charles L. Rollins, Mitchell H. Howard, Drewery E. Moore, Edward F. Kelley, and Erik K. Woods, the latter a GIMRADA employee.

Other 20-year award winners in-

cluded William E. Bennett, Robert S. Casteel, Chester W. Hughes, Kenneth L. Treiber, Oscar P. Cleaver, Isadore Kessler, Baldwin H. Moss, Bernard Chasnov, Dwight L. Gravitte, Charles M. French, Turner G. Timberlake, Russell T. Carr, Guy D. Reynolds, William H. Whalen, Ray W. Wood, Elmer C. Strobeck, John H. Yancey, Harry P. Byerly, Ernest Earman, Jr., Malcolm W. Fitzgerald, Woo G. Tang, Howard L. Edberg, William C. Bailey, Erwin E. Baldrige, Glenn W. Hall, Thomas W. Hammond, Clarence T. Jones, Jr., Anthony A. Ritz, James R. Bryant, Max W. Collins, Jr., David H. Flandermeyer, Milton B. Litch, Jr., Albert C. Paradis, and James A. Dennis.

Also, Richard P. Schmitt, Joseph A. Kumbur, Donald E. Ames, Claude J. Anderson, Jr., Joe P. Roysdon, Ira S. Varner, Ero O. Oikkonen, Clarence K. Hallman, Sulvanus C. Harris, Herbert F. Freeman, Isabelle T. Clark, John W. Lamb, Felton C. Gilliam, Raymond E. Travers, Vernon W. Urie, Earl W. Brown, Edward E. Miller, Ross W. Panneton, Joseph R. Sholtis, Robert L. Hetrick, Edwin S. Hartman, and Edward C. Smallie.

Also, Solmon Goldfein, William B. Spangler, Albert N. Williams, Wilbert D. Hunt, Martha A. Hall, Richard A. Green, Charles G. Simmons, Harold E. Mohaupt, Mrs. Marie D. Fravel, Mrs. Arline F. Callan, John MacClarence, Maurice Newman, William H. Gordon, Leo T. Helmcamp, Leonard E. Simpson, Glyndon A. Wolfe, Walter H. Edwards, Edwin J. Dodd, Clarke F. Dodson, Joseph M. Kerby, Walter B. Meyers, Woodrow Thurston, Elmer L. Reed, Ormond H. Ryan, Provie L. Henderson, Vivian Miller, Wade Bell, and I. H. Jones.

GIMRADA employees awarded 20-year service pins included James R. Quick, Alfred R. Castorina, James E. Gillis, Jr., Abraham Anson, Ivan R. Jarrett, and Charles R. Manor.

Archie L. Liming, William J. Nash, Charles R. Wortman, Frank L. Smith, Herman Jacobs, Miss Lida E. Talbott, Miss Olive W. Beall, Frederick M. Kirby, Justice E. Hawks, Maurice M. Carter, William H. Parker, William Graubard, James R. Davidson, Edward H. Sheppard, Harold P. Mullins, Frizelle O. Givens, Warner L. Birkhead, Aubrey Thomas, Roger H. Ferrell, and B. W. Howard.

Ten-year awards went to Mrs. Helen B. Carmola, Mrs. Shirley R. Harris, George L. Beyer, Alexander C. Carlow, Mrs. Frances M. Dougherty, Mervyn J. Lilley, Mrs. Thelma J. Thomas, William A. Yauss, Ronald E. Coffey, Louis Reznick, Earl R. Stegman, Wesley S. Trindal, John F. Denier, Joseph L. Rogers, Mrs. Mabel H. Scott, Donald P. Kelley, Sidney F. Williams, Jr., Delmar L. Craft, Harry A. Rothwell, Jr., Lloyd

R. Johnson, Robert B. Trader, Dr. J. Thomas Cox, Gordon F. Jacobus, Edward C. Walker and J. W. Updegraff.

Ten-year service awards were presented also to Mrs. Naomi K. Nelles, Robert Hill, Kemper S. Flint, Mrs. Helen Z. Miller, Edward P. Yamarik, Edward J. Lopes, Abraham Perez, Earl B. Woods, Dallas V. Grimsley, Albert W. Klein, James H. Childs, Mrs. Joyce T. Holland, Mrs. Ruby K. Heflin, Mrs. Mary E. Bryant, Ledell Kimbrough, Mrs. Margaret T. Arnesen, Miss Marie Conner, Mrs. Barbara J. Schulz, William F. Raugust, and George R. Stacy, all of USAERDL, and to George T. Elliott, Joseph R. Randall, both of NPFO, and the following from GIMRADA: Mrs. Marcia Bowker, William H. Carr, Joseph P. Goodwald, James R. Shepard, Clifford J. Crandall, Maurits Roos, Nathan Fishel,

Jery A. Jones, Arlie J. Frazier, Mrs. Grace C. Corbin, Mrs. Ardell J. Brumit, Melvin W. Carter, James A. Queen, Bobby L. Daves, Jacob Davis, Wilbur M. Moore, Donald R. Rogers, Walter J. Corbin, Lonnie W. Myers, Mrs. Gloria M. Moore, James D. Wright, William B. Super, and Charles R. Kline.

## Reserve Officers Invited To USAERDL R&D Seminar

U.S. Army Engineer Research and Development Laboratories at Fort Belvoir, Va., will entertain their fifth annual Research and Development Seminar for Reserve Officers, July 29-Aug. 11.

The seminar will enable more than 50 reserve officers from all parts of the country to spend their annual two weeks active duty learning what the Corps of Engineers' principal field agency is doing in developing new material, methods and techniques.

Civilian employees of the Laboratories, and also of the U.S. Army Engineer Geodesy, Intelligence and Mapping Research and Development Agency, who are officers in Mobilization Designation Detachment No. 39, will serve on the Seminar staff.

Robert G. Alexander, civilian chief of the USAERDL Mechanical Equipment Branch, will serve as the Seminar Director.

Lt Col Turner G. Timberlake, civilian Chief of the Engineering Department, will be Assistant Director.



## AIME Award Presented To Watertown Scientist

Dr. Ernest P. Abrahamson, II, Chief of the Physical Metallurgy Section of the Watertown Arsenal Laboratories, is the winner of the first annual award given by the New England Regional Conference of the American Institute of Mining, Metallurgical and Petroleum Engineers (AIME).

The conference recently instituted an award to the author of the technical paper judged to be the best contribution, from a member of the AIME residing in the New England area, appearing in an AIME publication in the preceding calendar year.

A series of three technical papers earned the award. The first was titled "The Rate of Dilute Binary Transition Element Additions in the Recrystallization of Vanadium." The others reported on identical work on columbium and zirconium.

Dr. Abrahamson joined the Watertown Arsenal Laboratories in 1957. He studied at the Massachusetts Institute of Technology, receiving an S.B. degree in 1954, S.M. in 1955 and a Sc. D. in 1957, all in physical metallurgy.

From 1954 to 1957 he served as a research assistant and research associate on the MIT Metallurgy Department staff, carrying out research on high-temperature materials. He is a member of Sigma Xi and Phi Lambda Epsilon Honorary Societies.

## If You Want to Know All the Details See June Issue Account on Army Science Conference

An easy, accurate way to report agenda activities at the 1962 U.S. Army Science Conference is to refer readers to the detailed advance account of the scheduled program in the June issue of this publication.

Praised in general by participants as the "most successful" of three meetings since the Army Science Conference was initiated in 1957 at the U.S. Military Academy at West Point, N.Y., the 1962 parley ran very smoothly.

Authors presented 100 technical papers without a hitch. Chairmen of the four concurrent sessions—Dr. Gilford G. Quarles, Dr. George H. Lee, Dr. Maurice J. Murray and Dr. Craig M. Crenshaw—kept discussions well in control. An enjoyable tone was established at the conference banquet by Dr. Ralph G. H. Siu as toastmaster and Dr. Chris Argyris of Yale University as guest speaker.

Maj Gen Dwight E. Beach, Deputy Chief of Research and Development pinch-hitting for Lt Gen Arthur G. Trudeau, who was in Korea for a formal retirement ceremony in his honor, made the opening address an appreciative tribute to members of the Army scientific community, and was well applauded.

Deputy Under Secretary of the Army (Manpower) Alfred B. Fitt, Deputy Assistant Secretary of the Army W. S. Hinman, Jr., and Lt Gen

(USA, Ret.) Walter L. Weible, representing the Association of the United States Army, shared in presenting awards to authors of prize-winning technical papers.

Superintendent of the U.S. Military Academy Lt Gen W. C. Westmoreland was prominent and affably gracious in his role as the host official. Other conference officials who earned acclaim for its success included the overall director, Brig Gen Chester W. Clark, Director of Army Research; the presiding chairman, Dr. Harold C. Weber, Chief Scientific Adviser, Office of the Chief of Research and Development; and Dr. Richard A. Weiss, Deputy and Scientific Director of Army Research, who served as general chairman.

Finally, when the distinguished group of top military officials and scientists who attended had departed, conference officials gave a "well-done" acknowledgement of appreciation to those who worked on arrangements.

That included the U.S. Academy team headed by Lt Col George C. Benson, chairman of the project committee, with Lt Col Lee H. Burns as security officer, and the U.S. Army Research Office team of Charles E. McCabe, Lt Col Charles E. Ramsburg and Jack B. Fenn, all of the Research Support Division which has had primary responsibility for each of the three Army Science Conferences.

## Sulzberger Sets Fast Pace Speaking at Conferences

Dr. Marion B. Sulzberger, Technical Director of Research for the Army Medical Service, was a featured speaker at a scientific seminar in Paris, France, only 24 hours after he was the first guest lecturer at the biennial Army Science Conference.

Dr. Sulzberger spoke at a seminar sponsored by the famed Chair of Experimental Medicine of the College of France. His subject was "Allergic Reactions of the Skin to Simple Chemical Substances." The paper was prepared in collaboration with two of his former colleagues of the Department of Dermatology, New York School of Medicine, Drs. Cyril March and Sonia Merrill.

As the invited speaker at the opening session of the Army Science Conference on June 20, Dr. Sulzberger discussed "Progress and Prospects in Idiophylaxis (Built-in Individual Self-Protection of the Combat Soldier)." Many of his views on this subject were presented in the May issue of this publication in "Theme of the Month: Body Armor," page 2.



THE PATRIOTIC CIVILIAN SERVICE AWARD and a Certificate of Appreciation for Patriotic Civilian Service were presented recently to Dr. Eugene Lieber, Chairman of the Department of Chemistry, Roosevelt University, Chicago, Ill. He was recognized for his contributions to the Government's knowledge of the chemistry of explosives while working with the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va. (Left to right) Maj Gen Lloyd R. Moses, Fifth U.S. Army; Brig Gen T. D. Rogers, Division Engineer, U.S. Army Engineer Division, North Central; Dr. Edward J. Sparling, President, Roosevelt University; and Dr. Lieber.



# Army's Soldier-Scientist Program Gets Boost From Felkner

The only enlisted man in a field of 96 outstanding scientists presenting papers at the 1962 Army Science Conference at the U.S. Military Academy won the top individual award of \$500.

Sp/4 Ira C. Felkner, of the U.S. Army Chemical Corps Biological Laboratories, Fort Detrick, Frederick, Md., was the sole author of "DNA Isolation by an Improved Procedure for Transformation of *Bacillus* SP."

A panel of eminent American scientists, representing a broad range of scientific disciplines, judged the paper as a notable illustration of Army research contributing to the exceptionally high overall standard of presentations at the conference.

Specialist Felkner received hearty congratulations from participants and Maj Gen William C. Westmoreland, Superintendent of the Academy, as an outstanding example of the increasingly important role of the soldier-scientist.

Felkner, 26, is a native of Alice, Tex., a city of about 25,000 population, and a graduate of the University of Texas, where he received his B.A. in zoology, and his M.A. in bacteriology. His mother and stepfather, Mr. and Mrs. J. A. McVay, reside in Corpus Christi.

Dr. Ralph E. Lincoln, Felkner's laboratory supervisor, stated the research assignment on which Felkner reported as: "To work on the problem of genetic transfer in the pathogen, *Bacillus Anthracis*."

"Specialist Felkner is one of our scientific and engineering people," Dr. Lincoln said, "who requires very little supervision. I know that he takes considerable interest in his work here because he likes it, and it is in line with what he hopes to pursue when he leaves the Army this year to continue his academic studies."

A brief abstract of the prize-winning paper states:

"An improved procedure has been developed which permits the isolation of biologically active deoxyribonucleic acid (DNA) from members of the *Bacillus* genus which are insensitive to the normally employed enzymatic disruption. . . . The potential values of this gene exchange system and the streptomycin dependent and resistant mutants obtained for this study will be discussed."

When questioned about his future



Col Carl S. Casto, Commanding Officer, U.S. Army Chemical Corps Biological Laboratories, Fort Detrick, Md., reviews prize-winning technical presentation with Sp/4 Ira C. Felkner and Dr. Ralph E. Lincoln.

plans, Felkner said:

"I have as one of my main interests, early release from the Army so I may study for my Ph. D. in microbiology at the University of Texas. I am interested in university teaching and research, and will also look into the possibilities of entering industrial or Government research in the field of microbial genetics. My decision will be made after I complete my studies."

After majoring in zoology, Felkner became interested in microbial genetics when he was exposed to classical genetics, partly as a result of reading the works of Lederber, Tatum and Beedle.

"I like basic research and I like the University of Texas because of its large genetics department, a fine microbiology and biochemistry department, and because the opportunity is there," Felkner commented. "Very fine work is being done there by outstanding investigators. Departmental lines are generally ignored so that several disciplines can be merged for work on a research problem."

Graduated from Williams Adams High School in Alice, where he became interested in science, with particular interests in medicine and biology, he decided during his first year at Austin College to major in zoology, partly due to the influence of Dr. M. D. Bryant, and transferred to the University of Texas.

Felkner said that his work there under Dr. Orville Wyss, Chairman, Department of Microbiology, and a member of the Advisory Council to the Chemical Corps, accelerated his desire to follow bacteriological studies and basic research, seeking an-

swers to questions such as, "What constitutes a living thing?" and "What are the mechanisms which determine what something is?"

"I am most grateful to the Army and the people at Fort Detrick for the opportunities and stimulation I have been given since I was drafted," Felkner commented. "My experience here has been most fruitful, and I have had the honor and privilege of talking to such eminent scientists as Dr. Werner Braun of Rutgers and Dr. J. D. Watson of Harvard. They are leaders in their respective fields—Dr. Braun in genetics in microbes and Dr. Watson in biochemistry."

Felkner has worked with other University of Texas graduates now at Fort Detrick, Dr. W. C. MacDonald (formerly a first lieutenant) and Dr. Thomas S. Matney. With the latter he coauthored a scientific paper presented to the American Society for Microbiology last May. This association encouraged him to follow through in the field of basic research.

"Through my work at Fort Detrick I have learned some of the answers to those questions which early aroused my curiosity," he said. "Studying the role of DNA, the material which determines inheritance, is an intriguing subject. The paper I presented was the result of the successful exchange of genes in the Fort Detrick laboratories. I owe a real debt of gratitude to Dr. Lincoln, Dr. Matney and Dr. MacDonald, the geneticists, who kindled initiative in me to prepare it."

His initial task on *Bacillus Anthracis* research was to set up a system to exchange genes from one or-

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ganism to another. He consulted with Dr. Lincoln, Dr. Matney and other associates, and then worked out the gene transfer system. Findings provide the genetic tools which will permit a much deeper understanding of the anthrax disease in the future, he believes.

Asked about his opinion of Army science, Felkner replied, "Military personnel at Fort Detrick have an opportunity to do research in their area of interest. How well a man does depends on how interested his

supervisor is in him and how interested the individual is in his work. It is as simple as that.

"I think that often there is a conflict in scheduling a man's working time. Supervisors should stimulate personnel. If there is credit to be given, it should be handed out, and not kept within the breasts of supervisors. A little pat on the back once in a while is the greatest stimulant for the enlisted man.

"Right now, I believe the Army science program is progressing and I think it will continue to improve," Felkner concluded.

## Repeaters Take Large Percentage of ASC Awards

Thirty of the authors of 96 competitive technical papers presented at the 1962 Army Science Conference also were among finalists judged for cash awards or Certificates of Outstanding Achievement at the 1957 or 1959 conferences.

Only three authors qualified in a select group of finalists at all three conferences. They are Dr. Stanley M. Levenson, Walter Reed Army Institute of Research, who shared one of the top awards of \$500 in 1959 and was assigned to WRAIR as a captain in 1957; Dr. Harald W. Straub, Diamond Ordnance Fuze Laboratories; and J. V. Richard Kaufman, Picatinny Arsenal.

Among the authors at the 1959 and 1962 conferences are six scientists who received cash awards in addition to certificates, namely: Dr. D. N. Kramer, Chemical R&D Laboratories,

shared \$300 in 1962; John M. Strange, Waterways Experiment Station, \$300 individual award in 1962; Dr. George Goubau and Robert J. Christian, U.S. Army Signal R&D Laboratory (USASRD), shared \$300 in 1959; Dr. Armano A. Giardini, USASRD, shared \$500 in 1959; Otto R. Gericke, Watertown Arsenal, \$300 in 1962.

Other authors of papers presented at the 1959 and 1962 conferences are: James E. Abel, Picatinny Arsenal; F. A. Brand, Robert J. Christian, William Fishbein, Dr. Harold Jacobs, Dr. J. A. Kohn, Chester E. Sharp and Amory H. Waite, Jr., all of USASRD.

Arthur Cohen and Dr. Joseph Sperrazza, U.S. Army Ballistic Research Laboratories, Aberdeen Proving Ground; Dr. Torsten Hasselstrom, Dr. Malcolm C. Henry, Adolf



Sp/4 Ira C. Felkner (in rear) with one of his counselors, Dr. T. S. Matney, who contributed to research which won Felkner an award of \$500.

Krebs and Thomas D. Miles, all of the Quartermaster R&E Command; and Leo F. Ingram, Waterways Experiment Station at Vicksburg.

Six authors qualified as finalists whose papers were considered for cash awards or certificates at the 1957 and 1962 conferences, namely: Dr. Andrew A. Assur, Cold Regions R&E Laboratory, \$300 in 1957; Dr. Arthur J. Dziemian, \$300 in 1957, and Dr. Roger A. Strehlow, both of the Ballistic Research Laboratories at Aberdeen Proving Ground; Paul W. Levy, Picatinny Arsenal; Charles Ravitsky, Diamond Ordnance Fuze Laboratories, \$300 in 1962; Dr. Ralph E. Lincoln, Chemical Biological Laboratory.

## Father-Son Combination Highlights Authors at Army Science Conference

One of the human interest side-lights of the 1962 Army Science Conference was the appearance of a father and his son, both employed at the Diamond Ordnance Fuze Laboratories in Washington, D.C., among authors of 96 technical papers judged for awards.

Dr. Harold W. Straub, moreover,

was among three scientists who have presented papers at each of the three Army Science Conferences held since 1957. His son, Henrik Herman Straub, was one of the coauthors of a paper titled, "A Pulsing Blood Pump Without Electronics or Moving Parts" — a report on the Army's amazing new heart pump using fluid

amplification controls.

Employed at the Diamond Ordnance Fuze Laboratories since 1954, when he brought his family to the United States from Germany, Dr. Straub has distinguished himself as a gifted physicist who holds nine patents and is the author of 15 published professional papers.

Born in Marburg on the Lahn, Germany, Nov. 21, 1905, Dr. Straub studied at the University of Freiburg and received his Ph.D. degree from the University of Munich in 1930. Backed by a wide range of experience in the physical sciences, he is a member of the Optical Society of America, the Washington Academy of Sciences, and the German Physical Society.

Henrik Herman Straub was born in Dresden, Germany, Sept. 5, 1939, was graduated from Woodrow Wilson High School in Washington, D.C., obtained his B.S. degree from the University of Maryland in 1962, and is studying for his M.S. degree at George Washington University. He was employed at DOFL as a student aide for two summers before appointed to a professional position.

Principal author of the technical paper on the heart pump is Kenneth E. Woodward, the inventor, who enlisted the assistance of Henrik Straub and George Mon during early developmental work and then brought in Dr. Timothy Barila and Dr. Daniel Nunn of Walter Reed Army Institute of Research for technical aid.



Henrik Herman Straub is seen with his father, Dr. Harold W. Straub, in a Diamond Ordnance Fuze Laboratories setting. Heart pump shown on wall.

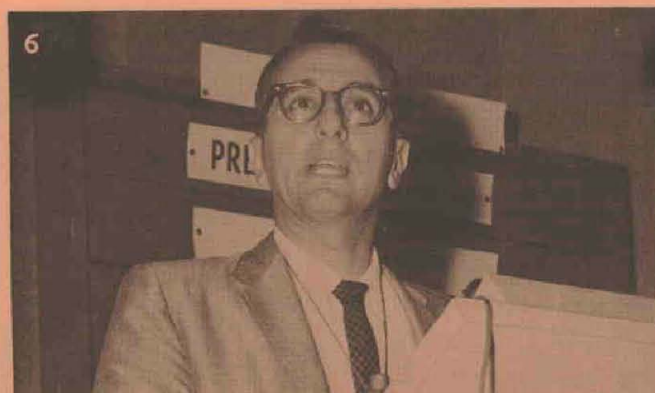


## Authors of Award-winning Technical Papers at Army Science Conference



*SEE ARTICLES on pages 1, 32, 33, 34 and additional pictures on back cover.*

**TOP AWARD WINNERS AT THE 1962 Army Science Conference included:** (1) Maj Janice A. Mendelson, Chemical R&D Laboratories, Army Chemical Center, Md. (2) Dr. H. T. Eigelsbach, Chemical Corps Biological Laboratories, Fort Detrick, Md. (3) Herbert J. Mueller, Army Engineer R&D Laboratories, Fort Belvoir, Va. (4) Edward J. Poziomek, Chemical R&D Laboratories. (5) Raymond H. Comyn, Diamond Ordnance Fuze Laboratories, Washington, D.C., shown with Deputy Under Secretary of the Army (Manpower) Alfred B. Fitt. (6) Michael R. Mirarchi, Army Signal R&D Laboratories, Fort Monmouth, N.J. (7) Charles Ravitsky, Diamond Ordnance Fuze Laboratories. (8) Karl H. Steinbach, Army Engineer R&D Laboratories. (9) John N. Strange, U.S. Army Waterways Experiment Station, Vicksburg, Miss. (10) Otto H. Gericke, Watertown Arsenal Laboratories, Watertown, Mass.







**AMONG LEADING PARTICIPANTS** in the 1962 Army Science Conference at the U. S. Military Academy at West Point, N.Y., were: (1) Dr. Chris Argyris of Yale University, principal speaker at the banquet. (2) Dr. Ralph G. H. Siu, banquet toastmaster, in a typically exuberant attitude. (3) Brig Gen W. W. Bessell, Dean of the U.S. Military Academy, briefing (left to right) Gordon B. Watson and Brigadier Donald A. G. Waldock of the Canadian Army staff, and Dr. Richard A. Weiss, Deputy and Scientific Director, U.S. Army Research Office. (4) Dr. Harold C. Weber, Chief Scientific Adviser, Office of the Chief of Research and Development, U.S. Army, and his Chief, Lt Gen Dwight E. Beach, with Academy Superintendent Maj Gen W. C. Westmoreland. (5) Col Leonard M. Orman, who will head the new U.S. Defense Research Office in Latin America, and his wife. (6) Reserve R&D Unit officers Col E. L. Davis and Col. W. V. Chandler with Maj Gen Chester W. Clark, Director of U.S. Army Research, and Dr. M. E. Freeman, Director, Science Information Exchange, Smithsonian Institution, Washington, D.C. (7) N. C. Thomas, U.S. Army Transportation Research Command, Fort Eustis, Va., Brig Gen Fred J. Delmore, Commanding General, Chemical R&D Command, Dr. Paul A. Siple, Scientific Adviser, U.S. Army Research Office, and Dr. L. H. Rumbaugh, Director, Research Analysis Corps., Washington, D.C. (8) Lt Gen Dwight E. Beach making opening address. (9) Participants filing out of Thayer Hall.

