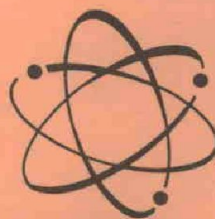




# ARMY

## RESEARCH AND DEVELOPMENT



MONTHLY NEWSMAGAZINE OF THE OFFICE OF THE CHIEF, RESEARCH AND DEVELOPMENT  
Vol. 4, No. 3 March 1963 • HEADQUARTERS, DEPARTMENT OF THE ARMY • Washington 25, D.C.

## National Junior Science, Humanities Symposium Opens Apr. 3

### Army Research Office Alters Divisional Structure After Approval of Technical Information Program

Management improvement realignments in the U.S. Army Research Office effected Feb. 12 provide for establishment, as one of its major elements, a new Office of the Director of Army Technical Information.

The Research Support Division, the only one of the original six divisions that had retained its name unchanged since USARO was established on Mar. 24, 1958, was abolished. Minus three of its former branches, it was redesignated the Scientific and Technical Information Division, with three new branches.

The STI Division is headed by Col Andrew A. Aines who had served as Chief of the RS Division since September 1962. Effective Oct. 24, 1962, he was designated Director of Army Technical Information by order of Assistant Secretary of the Army (R&D)

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### Info Program Acclaimed As Well-Considered Drive Against Challenging Task

The Army Scientific and Technical Information Program, approved by the Director of Defense Research and Engineering as a well-considered plan for an aggressive attack on problems in a troubled environment, is being set in motion.

Like any infant it will have to learn to walk before it can run and its multifarious midwives, including nearly 100 of the most respected authorities in the scientific information field, recognize a rocky road ahead.

Program implementation is assigned to a new Office of the Director of Army Technical Information, as of this time attended only by the Director, Col Andrew A. Aines, and his Deputy, Peppino N. Vlannes.

During coming weeks a highly skilled staff is to be recruited to ensure that proper care, guidance and support are provided the program at

(Continued on page 4)



Dr. Edward Teller



Col Andrew A. Aines  
Director, Army Technical Information

### Technology Group Experiments on Problem Solving

A 5-week panel discussion experiment in resolving specific scientific and technical problems to the most advanced state of knowledge is planned by the Advanced Technology Group, U.S. Army Research Office, with the support of other Army and Federal agencies.

Exploratory sessions Feb. 25 through Mar. 1 to develop the techniques that will be followed brought

### Dr. Edward Teller Accepts Keynote Address Invitation

Nationwide growth of the U.S. Army Junior Science and Humanities Symposium Program, aimed at interesting outstanding high school science students in Federal Civil Service careers, will reach a 5-year peak with the First National JSH Symposium.

Scheduled Apr. 3-5 at the U.S. Military Academy, West Point, N.Y., scene of the past three biennial Army Science Conferences for some 450 leading senior scientists, engineers and administrators, the Symposium will bring together 125 students selected from 16 regional JSH meetings during the academic year. About 50 selected science teachers will attend.

Dr. Edward Teller, internationally renowned nuclear scientist, will give

(Continued on page 2)

### Featured In This Issue . . .

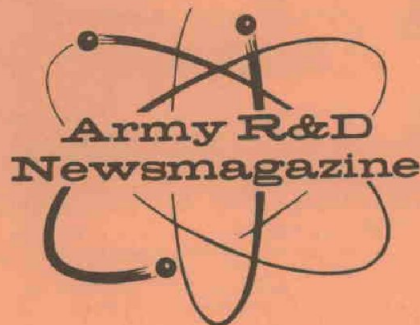
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together representatives of the U.S. Army Materiel Command, several Army laboratories, the Air Force, Navy and other governmental research and development activities.

One management and four technical problems presented by the technical divisions of the U.S. Army Research Office were considered with respect to

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Vol. 4, No. 3 March 1963

Editor . . . . . Clarence T. Smith  
Ass't Editor . . . . George J. Makuta  
Editorial Ass't Sp/4 Jerold Roschwalb

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**Purpose:** To improve informal communication among all segments of the Army scientific community and other Government R&D agencies; to further understanding of Army R&D progress, problem areas and program planning; to stimulate more closely integrated and coordinated effort among the widely dispersed and diffused Army R&D activities; to maintain a closer link from top management through all levels to scientists, engineers and technicians at the bench level; to express views of leaders, as pertinent to their responsibilities, and to keep personnel informed on matters germane to their welfare and pride of service.

**Picture Credits:** Unless otherwise indicated, all illustrations are by the U.S. Army.

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**By-lined Articles:** Accuracy and relevancy of contents of this publication to accomplishment of the Army R&D mission are of constant concern to the editors. Primary responsibility for opinions of by-lined authors rests with them; their views do not necessarily reflect the official policy or position of the Department of the Army.

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All other Department of the Army agencies should submit their requirements through channels to the Army Publications Distribution Center servicing them.

Changes in requirements of other Government agencies should be submitted directly to the Army Research Office, OCRD, Department of the Army, Washington 25, D.C., ATTN: Scientific and Technical Information Division.

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## First NJSH Symposium Opens at West Point Apr. 3

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the keynote address in his third appearance in that role at JSH Symposia. Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen is programed for a major address at one of the luncheon meetings, and Chief of Research and Development Lt Gen Dwight E. Beach is listed for the opening address.

"An Optimist's Outlook in the Atomic Age" is on the agenda as the title of Dr. Teller's address, to be given at the banquet in Cullum Hall Apr. 3. He will be introduced by Dr. Ernst Weber, Chairman of the JSHS Advisory Council, President of Polytechnic Institute of Brooklyn, and President of the Institute of Electrical and Electronic Engineers.

Another featured address titled "The Plunge Into Darkness," a discussion of a realistically imaginative approach to new frontiers of scientific research, is to be given by Dr. Ralph G. H. Siu, Scientific Deputy, Research Division, Army Materiel Command.

Maj Gen W. C. Westmoreland, Superintendent of the Military Academy, will welcome the conferees. Brig Gen William W. Bessell, Dean of the Academy, is to give a special academic briefing for adults.

More than 30 additional distinguished scientists and educational leaders are programed to speak or take part in concurrent career guidance "Curbstone Clinics." These give small groups of students an opportunity to discuss with panels of scientists their interests as related to significant current research accomplishments and their future implications.

The concluding session will take place at United Nations Headquarters in New York City, following field trips to laboratories of the International Business Machines Corporation in Yorktown Heights, N.Y., and the Texaco Refinery at Beacon, N.Y.

The U.S. Office of Education Science Youth Congress Program, an activity of the Department of Health, Education and Welfare closely paralleling and in a number of ways linked to the Army JSHS Program, will send 12 students and 8 teachers to the Symposium as observers.

Selected by the State Supervisor of Science, Department of Education, they will be representative of top talent unveiled in 12 Congress sessions in Oregon, Georgia, Texas and Massachusetts.

U.S. Commissioner of Education Francis Keppel, who has the distinc-

tion of long service as Dean of the Graduate School at Harvard University without having earned a doctorate degree, will send a message published in the conference program.

Dr. Charles H. Townes, renowned as the discoverer of the LASER principle acclaimed one of the most potentially important breakthroughs in recent years, now at the Massachusetts Institute of Technology, was expected to discuss the significance of LASERS. A change in his plans was announced this month, but his replacement had not been named at press time.

"Cybernetics," another exciting new field of scientific research, will be discussed by Dr. Warren S. McCulloch, Head, Neurophysiology Group, Research Laboratory in Electronics at MIT. Serving with him on a panel for his clinical discussion of this topic will be Dr. Julian Bigelow, a permanent member of The Institute for Advanced Studies, Princeton University.

Dr. Harold Cassidy, Professor of Chemistry at Yale University, will speak on "Science and the Arts" at a session presided over by Dr. Harry L. Levy, Dean of Students, Hunter College in the Bronx. Col E. R. Heidberg, Head of the USMA Department of Mechanics, is listed to speak at the same session, and three USMA cadets will report on "Operations Crossroads Africa."

Dr. William Van Royen, Head of the Department of Geography, University of Maryland, will give a presentation on "Our Unknown Earth." He will form a panel with Dr. Leonard S. Wilson, Chief of the Environmental Sciences Division, U.S. Army Research Office, at a clinic.

"The Moon—First Objective of Man Off the Earth" is the title of a presentation listed for Father F. J. Heyden, Director of the Georgetown College Observatory, Washington, D.C. Albert L. Nowicki, U.S. Army Map Service, will join with him in a clinic.

An explanation of the Army artificial heart pump, controlled by fluid pneumatics without moving parts other than heart ventricles and valves, will be given by Lt Col T. G. Barila, Chief, Department of Resuscitation, Division of Clinical Surgery, Walter Reed Army Institute of Research. He will be aided on a panel by the heart pump inventor, Kenneth Woodward, of the U.S. Army Materiel Command's Harry Diamond Laboratories, Washington, D.C.

Director of Army Research Maj  
(Continued on page 7)



## Army Research Office Alters Divisional Structure

(Continued from page 1)

Dr. Finn J. Larsen, and will continue to wear "two hats." His Deputy Chief in both offices is Peppino N. Vlanes.

Functions of the Overseas Research Branch, which was abolished, and the Research Contracts and Grants Branch, retained intact with Guy E. Mastin as Chief, were transferred from the Research Support Division to the Research Programs Office. Headed by Lt Col Norman R. Rosen, the Office will include the RC&G Branch and a Programs Branch, the latter under Roy D. Greene.

The STI Division includes a new Referral Branch under Parmely C. Daniels, a new Special Activities Branch headed by Lt Col Wendell G. Van Auker, and a new Publications Branch under Clarence T. Smith. The Scientific Information Branch was abolished and its functions absorbed mainly in the Office of the Director of Army Technical Information.

Changes within the Environmental Sciences Division, headed by Dr. Leonard S. Wilson with Col Norman L. Hall as his deputy, abolished the Polar and Arctic Branch and the Tropics and Desert Branch.

Dr. Hoyt Lemons remains Chief of the ES Division Geophysical Sciences Branch. Dr. Lester W. Trueblood, who was Chief of the T&D Branch, heads the new Regional Branch. Recruitment of the staff for a new Special Projects Branch has started.

The Research Planning Division was abolished and its operations research function assigned to a redesignated Human Factors and Operations Research Division (formerly Human Factors Division), headed by Col George J. Bayerle, Jr.

The RP Division technological forecasting function was assigned to the recently established Advanced Technology Group. Lt Col Raymond S.

Isonson, Chief of the Division's Research Planning and Forecasting Branch, was designated Chief of the Group. Dr. Paul A. Siple, who had led the Group in addition to serving as USARO Scientific Adviser, is leaving for a State Department assignment in Australia in May.

Plans, planning actions, and research planning methodology functions of the RP Division are now the responsibility of a new Research Plans Office, with Lt Col J. P. Oppenheimer designated Acting Chief.

Completely unaffected by the organizational changes are the Life Sciences Division, under Col Tyrone E. Huber with Dr. Carl Lamanna as Deputy, and the Physical Sciences Division, headed by Dr. I. R. Hershner, Jr., with Col H. L. Nolan as Deputy.

## President's Advisory Unit Stresses Tech Info Need

*Science, Government, and Information* is the title of a recently issued report of the President's Advisory Committee. Subtitle of the publication is "The Responsibilities of the Technical Community and the Government in the Transfer of Information."

In the foreword President Kennedy states:

"One of the major opportunities for

enhancing the effectiveness of our national scientific and technical effort and the efficiency of Government management of research and development lies in the improvement of our ability to communicate information about current research efforts and the results of past efforts.

"This report of the Science Advisory Committee draws attention to the importance of good communication to modern scientific and technical endeavor. It makes a welcome contribution to better understanding of the problems of scientific and technical communication both within the Government and outside of Government and of the steps that can be taken to meet these problems. . . ."

Under the chairmanship of Dr. Jerome B. Wiesner, Special Assistant to the President for Science and Technology, the committee analyzes the nature of the information problem and the attributes and weaknesses of the information transfer chain and of information systems.

A special panel on Science Information headed by Dr. Alvin M. Weinberg prepared the report. Dr. Weinberg, Director of the Oak Ridge National Laboratory, Oak Ridge, Tenn., was presented the Atoms for Peace Award and also the Lawrence Memorial Award in 1960.

A major portion of the pamphlet contains detailed suggestions for the technical community and Government agencies ranging from the need for more specialized information centers in the former to the need for Government-wide clearing houses.

The publication is available to the public at the cost of 25 cents, and may be obtained from the Superintendent of Documents, U.S. Government Printing O., Washington 25, D.C.

## AMC Board Official Attends Top Management Course

Col Shelton E. Lollis, Deputy President, United States Army Materiel Command Board, Aberdeen Proving Ground, Md., is one of five Army officers selected to attend the 2-month Advanced Management Program at Harvard University.

The Program, ending May 17, is conducted by the Graduate School of Business Administration at the University, and is designed for men considered promising candidates for top-most levels of management.

The Army officers enrolled in the advanced training course were selected by the Office of Personnel Operations, Department of the Army, Washington, D.C. Their attendance is keyed closely to the Army's anticipated needs for top managers extending through the 1970-1980 time frame, with respect to philosophy of management, ethical problems, evolving techniques and human demands.

The Program encourages the students, among themselves and along with the faculty, to think beyond what are now the frontiers of the known, out to new concepts and techniques.

As director of an advanced study group responsible for developing and presenting long-range concepts and objectives for the mission, organization and management of the Army

Materiel Command, Col Lollis has an extensive background in management.

A graduate from the University of Oklahoma in electrical engineering and of the Army Command and General Staff College, Fort Leavenworth, Kans., he served as Executive Officer to the Assistant Secretary of Defense for Engineering from 1953-1956. He attended the Army War College, Carlisle Barracks, Pa., in 1956-1957. Before assuming his present position, he was Senior Ordnance Officer, Military Advisory Group to the Government of the Republic of China.



Col Shelton E. Lollis



# Army STINFO Program Faces Challenging Task

(Continued from page 1)

the outset and sustained as it gathers strength for a difficult task.

Appointed Director of Army Technical Information by order of Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen, Col Aines heads an office that is composed of three elements: Research and Analysis, Systems, and Communications and Automation. As approved the office structure calls for a staff of 18, a number of whom will come from existing manpower in the Army Research Office.

Recruitment of the remainder of the staff is to be completed as rapidly as possible. Tentative grades range from GS-12 through GS-15. Needed are administrators qualified in the physical and life sciences, information specialists (a documentalist and a lexicographer), a mathematician skilled in information processing techniques, and experienced communications and automatic data processing personnel.

The Army STINFO Program was approved intact, as presented along with a massive study report. That document represented the consolidation of findings and recommendations of 23 task study groups in several weeks of intensive effort, under the guidance of an Army Ad Hoc Group on Scientific and Technical Information appointed by direction of the

Chief of Research and Development in April 1962.

As explained in the February 1963 issue of this publication, the Office of the Director of Army Technical Information activities will be conducted in consonance with overall Department of Defense program objectives established by Walter M. Carlson. He is the recently assigned Director of Technical Information on the staff of Dr. Harold Brown, Director of Defense Research and Engineering.

Designed to achieve a centrally coordinated, decentrally operated information network utilizing and integrating the efforts of existing facilities, the Army Program is divided into program support, exploratory development, and research.

Among primary objectives in launching the program is completion of a study of the capabilities of existing technical information activities within the Army, including facilities, personnel, types of automatic data processing equipment available, and the range of documents or service that can be integrated into the Army-wide effort.

To acquaint Army information activities with the scope and objectives of the STINFO Program, a series of briefings is planned during the next few weeks. Plans will be explained

for employment of computers and other automatic data processing equipment, when feasible, to achieve the most rapid and efficient collection, storage, cataloging, indexing and dissemination of information.

Basic to the Program is a broad training effort to develop the various types of specialists needed to carry on projected activities. Stimulation of professional pride in achieving maximum standards of efficiency is to be accomplished by programed management of their careers to ensure promotions and recognition through progressive broadening of responsibilities and opportunities.

The Director of Army Technical Information is authorized to negotiate scientific and technical information exchange agreements with other information centers within the Department of Defense, other Government agencies, private industry, universities, institutions and professional societies.

## Dr. Larsen Speaks on R&D At Army Management School

Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen gave the principal address at graduation ceremonies Feb. 14 at the Army Management School, Fort Belvoir, Va. His subject was "Management in Research and Development."

"Keep your management procedures simple," he advised, "and know the capabilities of your organization and its personnel. Most of the problems in management that I have encountered resulted from a lack of understanding or appreciation of those two statements."

Dr. Larsen emphasized that "Management of R&D activities in each of our commands is concerned with providing the optimum opportunity for creative professional talent to produce, change and make progress.

"For the Army this means weapons and equipment at a price that we can afford which are better than those of any potential enemy, and which can be deployed by our Armed Forces in time to provide tactical and strategic advantage."

In dwelling upon many of the major points of Army relations with industry in research and development that he outlined in a speech to the American Management Association in March 1962, Dr. Larsen discussed the importance of more effective utilization of engineers and scientists. Valuable time is being lost, he said, because of inefficient management practices, particularly with respect to contracting procedures and design of new materiel.

## USARO Engineer Officer Promoted to Colonel

Promotion to colonel came Feb. 18 to Norman L. Hall, Deputy Chief, Environmental Sciences Division, U.S. Army Research Office (USARO).

A project officer recently on Project HARP (see page 34) he joined the USARO staff in July 1960 in the Operations Research Branch.

Following graduation in 1941 from Auburn University with a B.S. degree in electrical engineering, he entered the Army and from 1942 to the end of World War II was operations officer with the 339th Engineer Regiment (later battalion) in the U.S. and in the Southwest Pacific area.

Late in the war he was a member of Task Force Baker, later known as the Gypsy Task Force, which lent engineering support to forces in Luzon. In 1945 he was awarded the Bronze Star Medal.

After a short tour as a civilian industrial engineer at the U.S. Naval Shipyard, Charleston, S.C., Col Hall rejoined the Army in July 1947 and served as Chief, Bridge Branch, U.S. Army Engineer School, Fort Belvoir.

Later assignments include Assist-

ant Professor, Military Science and Tactics, The Citadel, Charleston, S.C.; Deputy Director, Public Facilities, Korean Civil Assistance Command; Commanding Officer, 78th Engineer Battalion; in the U.S. and Germany; and Chief, Operations Section, Military Operations Branch, Engineer Division Hq., U.S. Army, Europe.



Col Norman L. Hall



# Advanced Technology Group Experiments on Problem Solving

(Continued from page 1)

the methodology that should be employed in seeking solutions. Techniques involved are described as a "sophisticated version of the brainstorming sessions of U.S. business of the 1950s."

Beginning Mar. 25 and ending Apr. 26, acknowledged leaders in the problem areas and the related scientific disciplines will assemble at Headquarters, U.S. Army Research Office, Arlington, Va., from 8:30 to 12:30 noon daily, Monday through Friday. Experts from industry and educational institutions will be invited to participate in future sessions.

The novel problem-solving concept was advanced by the recently activated Advanced Technology Group under the leadership of Dr. Paul A. Siple, U.S. Army Research Office Scientific Adviser.

Provided the experiment in problem solving is successful, services of the Advanced Technology Group will be offered to assist in solution of technical problems of research and development on an Army-wide basis.

Aid will include locating and providing the generalists (those knowledgeable in a range of scientific disciplines) and the specialists in the organization of synectic (another term for brainstorming) sessions.

"We are not attempting to reverse the trend of increasing specialization of our scientists," Dr. Siple explained.

## Underwood Succeeds Dodge

Brig Gen George V. Underwood, the new Army Chief of Information and Chief of Public Information, succeeds Maj Gen Charles G. Dodge, who has assumed command of the Fifth U.S. Army, Chicago, Ill.

General Underwood is a 1937 graduate of the U.S. Military Academy and has an M.A. degree in journalism from the University of Wisconsin. In January 1961 he was appointed Deputy Chief of Information.

During World War II the general served in the Operations Division, War Department General Staff and later in China with the G-5 Section and Plans Division, Hq., U.S. Forces China Theater.

Before returning to the U.S. he served as Assistant to the Special Representative of General George C. Marshall and as Executive Officer of the General Marshall Mission to China in Nanking.

Recent assignments include Direc-

"We are attempting to take advantage of their particular talents and experience by focusing the knowledge of an interdisciplinary group on a technical problem which normally might be considered related to a single scientific discipline.

"The problem is examined first by a body of generalists (senior scientists) and suggested solutions then are examined in detail by specialists in the sub-disciplines required for progressive steps toward solution."

During the 5-week experiment one of the five selected problems will be considered each week to bring into play the life, physical and environmental sciences as they may be inter-related to military planning for research and development. Discussions will progress so that each week's analysis of the problem will require a higher degree of specialization.

"The methodology," Dr. Siple said, "is based upon a premise that any complex problem requires consideration in both breadth and depth to reach a solution. Breadth is expected to come from the participation of persons among various disciplines and guest generalists with more than one field of science, technology or military operational need. Depth can be expected to come from those individuals highly specialized in any particular aspect of a problem."

If the experiment works out as expected, lists of suggestions for prob-

lem solving will be reduced immediately by the specialists to those regarded most promising. But care will be exerted "to prevent the casting away of new ideas unless the suggester is reasonably satisfied that the specialists' criticism is valid in the light of full consideration of new knowledge and techniques."

Discussions will attempt to examine, in the case of ideas that may have proved impractical in the past, "what is different about the problem today that did not exist then?" New materials, instrumentation or techniques may permit solution of a problem by use of an idea once rejected as unsuitable.

Groups during the experiment will be limited to about 20 persons. Generalists will serve for a minimum period of one week and may be retained for a full period. Specialists may be required for only a single day when specific knowledge is required.

The experiment, it was emphasized will concern itself only with scientific and technological aspects of the problems—what, why and which considerations. Who, how, where and other considerations with respect to policy and funding will be left for later deliberations by the U.S. Army Research Office elements which proposed the problem, and will have sustained follow-up action responsibility.

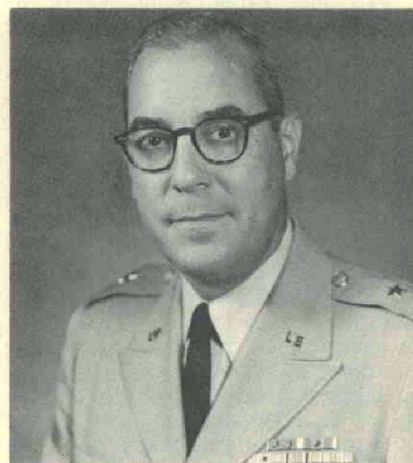
"The idea is not to develop another Army element to tell other people in detail what they should be doing or how they should conduct their business," Dr. Siple said. "Our desire is to develop a capability to assist others only to the extent of helping them to find problem solutions. Decisions remain with the normally responsible command, agency or staff division."

The initial problems selected for study and the Army Research Office chairmen during the trial period are:

- Ultrasonic Image Converters and Cinesonography, Lt Col Louis G. Klinker, Physical Sciences Division.
- More Effective Utilization of Land Sub-Surfaces, Dr. Leonard E. Wood, Environmental Sciences Div.
- Oxygen Requirement and Supply to Troops at High Elevations, Dr. Edward J. Baldes and Dr. Carl Lammanna, Life Sciences Division.
- Prediction of Performance of Individuals, Dr. Lynn E. Baker, Human Factors and Operations Research Div.
- More Effective Research Planning Techniques, Lt Col Gunther A. Brumme, Research Plans Office.

## as Information Chief

tor, Executive Office of the Secretary of Defense; Joint Logistics Plans Group, Joint Staff, Office of the Joint Chiefs of Staff; and Faculty, Army War College, Carlisle Barracks, Pa.



Brig Gen George V. Underwood



## Microminiaturization Successes Win Army Scientist Flemming Award for 10 Top Young Men in Government

Research and development successes in microminiaturization techniques at the Harry Diamond Laboratories (formerly Diamond Ordnance Fuze Laboratories), Washington, D.C., have earned an Army physicist acclaim as one of the 10 top young men in Government service.

Norman Joseph Doctor, 33, a member of the HDL staff since the organization was founded in 1953 as an offshoot of the National Bureau of Standards, was one of 10 recipients of Arthur S. Flemming awards at a Feb. 14 ceremony in the Nation's Capital.

Selection of the award winners was announced by the District of Columbia Junior Chamber of Commerce, and Secretary of the Interior Stewart L. Udall spoke at the presentation luncheon. The award was initiated by Arthur S. Flemming, former Secretary of Health, Education and Welfare under President Eisenhower.

Presently Research and Development Supervisor in the Microminiaturization Branch at the HDL, Norman Doctor began his Federal Career Service as a GS-5 physicist in the National Bureau of Standards in 1951.

When transferred to the HDL in 1953 he had advanced to GS-9 and was considered a young man with a bright future. Early in 1957 he originated a technique for miniaturizing electronic assemblies by densely packing hearing-aid-size component parts



Secretary of the Army Cyrus Vance congratulates Norman Joseph Doctor.

between etched wiring boards.

That same year he joined an informal interdisciplinary group that conceived the idea of incorporating the active element of a transistor in a cavity in a base plate and supplying it with "printed" leads. Further refinements by Mr. Doctor produced an essentially 2-dimensional module having an almost incredible density of components.

Importance of this revolutionary technique was recognized by industry with presentation of the First Annual Miniaturization Award, sponsored by Miniature Precision Bearings, Inc., as

a national competitive event, to the group in 1957.

In 1959 under the Civilian Incentive Awards Program the maximum award possible, \$25,000, was awarded to the group by the Secretary of the Army.

Subsequently the scope of Mr. Doctor's work broadened to operation on an inter-disciplinary basis encompassing thin-film technology, solid-state physics, semiconductor devices, and electronic circuitry.

Results of that research branched into timing devices for missile components, thin-film miniature ceramic rutile capacitors, short-wave receivers, range finders, and other military devices. The techniques employed have redounded to the benefit of the civilian population in numerous applications to consumer products.

In 1959 Mr. Doctor received a Certificate of Recognition as the Harry Diamond Laboratories nominee for the "outstanding young scientist award" in the District of Columbia area, presented by the Council of Engineering and Architectural Societies and the Washington Academy of Sciences. He also received a Department of the Army Meritorious Civilian Service Award.

Despite the diversity of his scientific interests, he is known for his numerous community activities, encouragement of young scientists, and numerous speaking engagements before educational and civic groups.

## Newsmagazine Distribution Inquiries Are Answered

One of the time-consuming problems with which the editor has coped unsuccessfully since the *Army Research and Development Newsmagazine* was established in December 1960 is that of explaining distribution.

Telephone calls and letters continue to pour in from Army installations, other Government agencies concerned with the Army research and development program directly or indirectly, and from industrial or non-profit research organizations—all inquiring: "How do I get your magazine?" Or: "We get so few copies that by the time they circulate they are two to three months old."

This effort to explain once again how the Newsmagazine may be obtained is provoked by an irate official at high level who exploded: "If *LIFE Magazine* handled its circulation as inefficiently as yours is handled, it would have been out of business long ago. We get one copy for 50 people."

Considering that the press run of the Newsmagazine ranges between

31,000 and 32,000 copies a month, the many indications that this supply is inadequate to serve those interested in reading it might be construed as flattering. The suspicion is, however, that distribution and circulation are not functioning efficiently.

Free distribution requirements for the Newsmagazine must be submitted to The Adjutant General, Department of the Army, on DA Form 12-4, as is explained every month in the masthead statement appearing on page 2 of this publication. No limitation is imposed on the number of copies an agency may receive as long as the request is properly justified, and requests for revised requirements may be submitted monthly if necessary.

Bulk lot distribution is made to requesting agencies, that is, TAG Regulations prohibit individual addressing of copies by name except in the case of officers assigned to the Army Research and Development and Atomic Energy Specialists Program. Their requirements should be addressed to Specialists Branch, OAD (XCP), De-

partment of Army, Washington, D.C.

Department of the Army agencies should submit their requirements through channels to the Army Publications Center or Publications Officer servicing them. "But WHO is our publications officer and where do we get the DA Form 12-4?" is the query the editor hears frequently when he conveys this information to someone on the telephone.

Changes in requirements of other Government agencies for free distribution should be submitted directly to the U.S. Army Research Office, Office of the Chief of Research and Development, Department of the Army, Washington 25, D.C., ATTN: Publications Branch.

Industrial organizations, educational institutions and other commercial research and development enterprises may obtain the Newsmagazine by sending requests to the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Single copies sell for 20 cents. Annual subscription rates are: Domestic (including APO and FPO addresses) \$2.25; Foreign, \$3.00.



# First National JSH Symposium Opens at West Point

(Continued from page 2)

Gen C. W. Clark will preside at the luncheon session Apr. 4 at which Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen will speak on "Research in Progress — Science in the Making."

Paired on a clinic panel for a presentation on "New Trends in Science and Mathematics Education" are Dr. Leon Cohen, Professor of Mathematics, University of Maryland, and Dr. Claude Gatewood of the National Science Foundation, Washington, D.C.

Two of the U.S. Army's internationally known experts on soils research will serve on the "Mobility" clinic panel. They are A. R. Reece, Land Locomotion Laboratory, Detroit Arsenal, Warren, Mich., and Dr. Willard J. Turnbull, Chief, Soils Division, U.S. Army Engineers Waterways Experiment Station, Vicksburg, Miss.

Dr. John D. Donoghue, Department of Anthropology, Michigan State University, will speak on "Anthropology" and lead a panel discussion. Teamed for a panel discussion of "Organic Synthesis" are Dr. George R. Seidel, a member of the JSHS Advisory Council and head of the education section for E. I. DuPont de Nemours and Co., and Dr. Thomas Simmons, Army Chemical Research and Development Laboratories, Edgewood, Md.

The subject of "Statistics" is assigned to a panel composed of Dr. Marion Bryson of Duke University, Dr. John W. Tuckey of Princeton University and Dr. William G. Cochran of Harvard University.

"Cells and Viruses" will be discussed by Lt Col Edward L. Buescher, Chief, Department of Virology, Division of Communicable Diseases and Immunology, Walter Reed Army Institute of Research. Dr. George C. Cole, Squibb Institute for Medical Research, Olin Matheson Chemical Corp., will serve with him on a panel for open discussion.

Topics of additional clinics and speakers are:

"Psychology," Dr. J. C. R. Licklider, Assistant Director for Behavioral Sciences Command and Control Research, Advanced Projects Agency, Washington, D.C.

"Polymers," Dr. David W. Levi, supervisory chemist, Picatinny Arsenal, Dover, N.J., and Dr. V. T. Stannett, Associate Director, Camille Dreyfuss Laboratory, Research Triangle Institute, Durham, N.C.

"Applied Mathematics and Computations," Dr. R. F. Clippinger, Technical Adviser to the President, Electronic Data Processing Division, Min-

neapolis-Honeywell, and Dr. John G. Giese, Army Ballistic Research Laboratories, Aberdeen Proving Ground, Maryland.

The concluding session at the Military Academy will be highlighted by a presentation on "Future Energy Sources" by Dr. Arthur E. Ruark, Director, Controlled Thermo-Nuclear Research Program, U.S. Atomic Energy Commission.

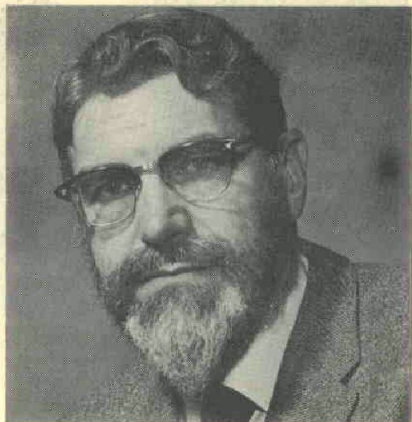
When participants tour the IBM Laboratories Apr. 5 they will be addressed by Thomas J. Watson, Chairman of the Board, IBM Corp., Dr. Charles R. DeCarlo, a member of the JSHS Advisory Council and IBM Director of Education, Dr. H. J. Greenberg, Assistant Director of Mathematical Sciences, and Dr. A. L. Samuel, Director of IBM Research Communications.

Speakers during the visit to the Texaco Refineries had not been announced at press time. The tour will include laboratories where the group will hear presentations by scientists on fundamental and product research, small-scale testing, full-scale evaluation, tests on used oils, and customer service.

The Symposium windup at United Nations Headquarters in New York City will be featured by presentations on:

"A General Survey of UN Activities," Brian Urquhart, Great Britain, Chief Assistant to Dr. Ralph Bunche.

"Report on Water Resources and



As the keynote speaker at the 1963 North Carolina Junior Science and Humanities Symposium at Durham, N.C., Mar. 14-16, Dr. N. W. Radforth, one of Canada's top scientists and educators, will speak on "Interdisciplinary Activity in Relation Organic Terrain." He is Chairman, Department of Biology, McMaster University, and in 1962 was appointed Canadian Secretary of International Society for Terrain Vehicle Systems.

Power," Father E. S. de Breuvery, S.J., of France, Chief of Water Resources and Power Section, Department of Economic and Social Affairs.

"Report on UNESCO Activities," Asdrubal Salsamendi, of Uruguay, Chief of Information for UNESCO.

"Disarmament and the Scientific Problems It Presents," William Epstein, of Canada, Chief of Armaments and Enforcement Measures Section, Dept. of Security Council Affairs.

## Beaudry to Head R&D Group When Ostrom Goes to BRL

Col Charles L. Beaudry, Director of Range Operations at White Sands Missile Range, N. Mex., is scheduled to relieve Col C. D. Y. Ostrom, Jr., in July as Chief, U.S. Army Research and Development Group, Europe.

Col Ostrom is closing a 3-year tour of duty and is listed to take command of the Ballistic Research Laboratories at Aberdeen Proving Ground, Md.



Col Charles L. Beaudry

Col Beaudry's new assignment in Frankfurt, Germany, will give him responsibility for monitoring Army research contracts with 14 European nations. Funded currently at a rate of about \$2.2 million annually, the contracts are with universities and other basic research organizations.

Qualifications of Col Beaudry for his new assignment include experience as a former Chief of Research at Frankford Arsenal, Philadelphia, Pa., and assignment to the Office of the Chief of Research and Development at a time when the 80 projects he monitored were a major portion of the Army research program. It now consists of approximately 3,000 tasks.

Graduated from the United States Military Academy in 1940, he served four years in the Coast Artillery before he was transferred to Ordnance. He is a native of Lexington, Mass., and was graduated from Stanford University in 1950 and from the Army Command and General Staff College.





Col R. J. MacDonald

Lt Col H. F. Grimm, Jr.

Lt Col D. C. Webster

Lt Col C. L. Friar

Maj R. H. Milam

## Assignments of Officers to OCRD Staff Announced

Newcomers to the staff of the Office of the Chief of Research and Development include:

Col Robert J. MacDonald, Chemical-Biological Office, Special Weapons Directorate; Lt Col Henry J. Grimm, Jr., Chief, High Altitude Systems Branch, Air Defense Division, Developments Directorate; Lt Col Donald C. Webster, Review and Analysis Office; Lt Col Clyde L. Friar, Defense Branch, Chemical Biological Office, Special Weapons Directorate; and Maj Ronald H. Milam, Human Factors and Operations Research Division, U.S. Army Research Office.

Since 1960 Col MacDonald has been with the airborne forces at Fort Bragg, N.C., most recently as G-3 of the 82nd Airborne Division and the XVIII Airborne Corps.

For three years during World War II he served as company and battalion commander with the 401st Glider Infantry Regiment of the 101st Airborne Division. Later he served as battalion commander of the 508th Parachute Infantry Regiment.

In Korea he saw action first as the operations officer of the 187th Airborne Regimental Combat Team and then as battalion and regimental commander with the 27th Infantry Regiment, 25th Infantry Division.

Other assignments include Chairman, Leadership Committee, The Infantry School, Fort Benning, Ga., and operations officer, Caribbean Command, Canal Zone.

Included among his decorations are the Silver Star (2 OLC), Bronze Star (2 OLC), Purple Heart and Army Commendation Ribbon (OLC).

LT COL GRIMM graduated from the U.S. Military Academy in 1943 and was assigned to the Pacific Theater of Operations where he commanded antiaircraft and field artillery batteries.

Prior to joining OCRD he was bat-

talion commander of the 4th Missile Battalion (Nike Hercules), 44th Artillery, Korea. From 1958-61 he was the Sergeant and Nike Hercules Project Officer, Artillery Board.

Other assignments include ROTC Instructor, Ohio State University; Assistant G-3, 4th Infantry Division, Europe; and S3 and Executive Officer, 20th Field Artillery Battalion, 4th Infantry Division.

During his tours of duty he has succeeded in earning two additional academic degrees: an M.A. in international relations from Ohio State University (1950), and an M.S. in mechanical engineering from the University of Southern California (1958).

LT COL WEBSTER comes to OCRD from his last assignment in Ankara, Turkey, where he was Assistant Army Military Attache.

A native of Lewiston, Maine, he earned an A.B. degree at Bates College in that city prior to Army service.

Recent assignments include tours as Chief, Instructor Training Branch, Fort Gordon, Ga.; Assistant Director of Training and battalion commander, U.S. Army Europe, Signal School, Ansbach, Germany.

LT COL FRIAR served for the past three years as Assistant Chemical Office, U.S. Army Pacific, Fort Shafter, Hawaii.

He entered the Army soon after graduating with a B.S. degree in chemistry (1942) from Kent State University, Kent, Ohio. He also holds an M.S. degree in chemical engineering from Massachusetts Institute of Technology (1955).

Recent assignments include Assistant Chief, Air Force Munitions Branch, Army Chemical Center, Md.; Executive Officer, Munitions Division Biological Laboratories, Fort Detrick, Md.; Round-out Coordinator, GB Plant, and Chief, Industrial Engineering, Rocky Mount Arsenal, Denver.

A graduate of the Command and General Staff College, he has been awarded the Army Commendation Medal (OLC).

MAJ MILAM graduated from the U.S. Military Academy in 1951 and soon after was assigned to Korea. He served for six years with the 82nd Airborne Division and the 7th Infantry Division and was awarded the Bronze Star Medal, the Army Commendation Medal and Purple Heart.

Following completion of the course at the Strategic Intelligence School, he served as an intelligence analyst with the Office, Assistant Chief of Staff for Intelligence.

Prior to joining OCRD he spent a year at Vanderbilt University where he earned an M.A. in psychology.

## RAC Adds Ostrich to Staff In Combat Development Unit

Ralph Ostrich has been appointed an operations analyst at the Research Analysis Corporation of Bethesda, Md.

Assigned to RAC's Combat Developments Division early in February, he recently was an operations analyst at Operations Research Inc., of Silver Spring, Md. From 1959 to 1960, he taught history at the University of Pittsburgh. At the same time, he worked for the University's Graduate School of Public Health, developing methods for analyzing hospital data and assisting a team which developed a technique for medical-legal information retrieval.

Author or coauthor of numerous technical reports and papers, he has worked as a research psychologist, a physiological psychologist, and as a statistician. He earned B.A. and M.A. degrees in psychology from George Washington Univ., Washington, D.C.

A commissioned officer in the U.S. Army Reserve Medical Service, he is a member of Phi Alpha Theta, the Institute of Aeronautical Sciences, American Historical Association, American Psychological Association and the American Association for the Advancement of Science.



## Dr. Alpert Assigned to Army R&D Office in Panama

Staffing of the U.S. Army Research and Development Office in Panama, Canal Zone, is near completion with the appointment of Dr. Leo Alpert as Chief of the Research Division.

Dr. Alpert has been with the Environmental Sciences Division of the U.S. Army Research Office, Office of the Chief of Research and Development, since October 1961. He will report for duty in Panama about Mar. 20 and will serve at the GS-15 level as an adviser and consultant on military research and development problems in the humid tropics.

Commanded by Col Robert T. Larson, the Panama R&D Office was established at Fort Clayton, Canal Zone, in April 1962 to coordinate and supervise research, development, testing and evaluation activities in the environment of the humid tropics.

Rehabilitation of buildings to provide offices, barracks and air-conditioned laboratory has been completed to accommodate more than 100 personnel at a recently established RDTE tropical rain forest site at Fort Sherman, Canal Zone.

Dr. Alpert is credited with supervising and coordinating the Five-Year Army Tropical R&D Program for closer integration of the research effort with development, testing and evaluation. He assisted in field operations and analysis of data obtained from Operation Swamp Fox II, con-

ducted by the Army Transportation Board in the Chepo region of the Republic of Panama from August through November 1962. (See September 1962 issue.)

As a consulting meteorologist since 1946, Dr. Alpert has served organizations in Puerto Rico, Guatemala, Brazil, Ecuador, Mexico, El Salvador, Galapagos Islands, Trinidad and the United States. He also worked a year at the Air Force Cambridge Laboratories and 10 years with the Army Corps of Engineers.

Listed in the professional directory of the American Meteorological Society as a consulting meteorologist, he is the author of more than 30 articles published in scientific journals, including the *Transactions of the American Geophysical Union*, the *Bulletin of the American Meteorological Society*, and the *Journal of Geophysics*.

During World War II he served as Staff Weather Officer, Sixth Air Force from 1941-1943, and as Chief of the Applied Meteorology Division, Research and Development, Headquarters, Air Weather Service, 1943-1946. When discharged in 1946 he held the rank of lieutenant colonel.

A member of the American Meteorological Society, Association of American Geographers, and the American Geophysical Union, he has served as a representative for the International Geographical Union and



Dr. Leo Alpert

the National Academy of Sciences-National Research Council at international meetings at Rio de Janeiro, Brazil; Toronto, Canada; Helsinki, Finland, and Stockholm, Sweden.

Dr. Alpert holds a B.S. degree from State College, Bridgewater, Mass., M.A. and Ph. D. degrees in Climatology-geography from Clark University, Worcester, Mass., and has done graduate work in meteorology at the Massachusetts Institute of Technology.

### USARO Personnel Study Requirements in Alaska

Evaluation of requirements for military equipment in cold weather operations took two members of the U.S. Army Research Office to Alaska to observe maneuvers in Exercise Timber Line which ended Mar. 15.

Dr. Carl Lamanna, Deputy Chief, Life Sciences Division, also represented the Environmental Sciences Division in translating field experience into specific needs in materiel research.

Maj William B. Ledbetter, Medical and Biological Sciences Branch, spent several weeks with the 64th Field Hospital observing field medical support for the exercise, including testing prototypes of medical equipment.

Exercise Timber Line began Jan. 9 and was designed to train command staffs and combined arms teams to operate on a nuclear battlefield in a primitive northern area. Approximately 8,000 troops in U.S. Army and Air Force units were joined by Canadian troops.

Special Forces and counter guerrilla operations were emphasized as was the use of troop carriers in tactical air supply. Chemical, electronic and psychological warfare were played as aggressor and defender forces simulated nuclear capability in the form of Little John, Davy Crockett and other air-delivered weapons.

## Tests Show Underwater Demolition More Destructive

Destruction of dams and other water barriers can be accomplished more effectively by demolition of explosives under water rather than above, states a report by the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va.

Howard J. Vandersluis, a senior engineer in the Demolitions Section, reports effectiveness of the under-water explosives method was proven in a series of spectacular tests conducted recently on the Ohio River.

Results contradicted the theory that under-water demolition of concrete should require approximately the same amount of explosive as demolition in air. As little as 30 pounds of explosive effectively breached a 5-foot wall as compared to 50 to 60 pounds of explosives above the water level. Two 40-pound charges placed under water 26 feet apart blasted a 35-foot breach in the wall.

A second theory tested was the "ear muff" technique in which charges are placed on opposite sides of a concrete wall and detonated simultane-

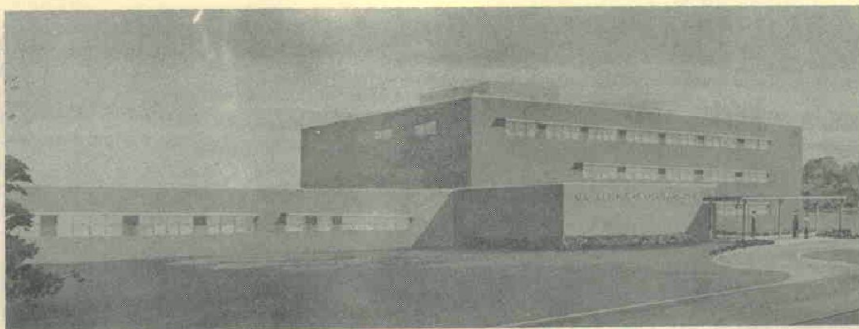
ously. In theory, this should produce a collision of shock waves within the concrete and destroy the wall. However, a wall remained structurally effective after two 20-pound charges were detonated, producing only two small craters a little over a foot deep. Equally unsatisfactory results were obtained when the procedure was repeated above and below water level.

The tests were made by invitation of the U.S. Army Engineer District at Huntington, W. Va., to participate in the destruction of Locks 29 and 30 near Ashland and Greenup, Ky. With the virtual completion of the new high-lift Greenup Locks and Dams, the old locks were no longer needed.

The invitation gave the Army an opportunity to test and develop under-water demolition theories and techniques at savings to the taxpayer. Expenses were about \$10,000 less than the estimated cost of \$25,000.

The Laboratories are a key agency in the Army's new Mobility Command, an element of the U.S. Army Materiel Command.





Architect's drawing of Kirk Army Hospital, Aberdeen Proving Ground, Md.

## New Hospital Named for WWII Army Surgeon General

Permanent honors will be accorded the late Maj Gen Norman T. Kirk, Surgeon General of the U.S. Army during World War II, with the dedication of a new medical facility in his name at Aberdeen Proving Ground, Md., this spring.

Kirk Army Hospital will replace a

### WRAIR Names Dr. Beyer Director in Biodynamics

Dr. James C. Beyer is the new Scientific Director in Biodynamics and Wound Ballistics for the U.S. Army Medical Research and Development Command in Washington, D.C. Now a civilian employee, he served from 1960-62 in the Army as Assistant for Biodynamics and Wound Ballistics in the Surgical Research Branch.

Known as an authority on wound ballistics and body armor, he was editor of the volume, *Wound Ballistics*, part of the official history of the Medical Department of the U.S. Army in World War II. It was prepared by the Historical Unit of the Army Medical Service, and published under the Surgeon General in 1962.

A native of Rockford, Ill., he earned a B.S. degree (1940) from St. Ambrose College, Davenport, Iowa, and two degrees from Loyola University Medical School in Chicago (M.D. in 1946 and M.S. in anatomy in 1950).

In 1951 he entered the Army Medical Service and was assigned to the Armed Forces Institute of Pathology, Washington, D.C., Fitzsimons General Hospital in Denver, Colo., and the Army Chemical Center, Edgewood, Md., prior to 1960. He resigned from the Army with the rank of lieutenant colonel in 1962.

During the Korean War, he was a member of the field team studying the effectiveness of body armor used by the troops. Findings supplement the World War II experience covered in *Wound Ballistics*.

World War II 500-bed hospital complex which since established in 1941 has served more than 165,000 hospital patients and millions more through outpatient clinics.

The new 75-bed hospital will offer the most modern patient care. Facilities include a patient-to-nurse intercom system, piped-in oxygen, and self-positioning, electrically controlled beds, and a 16-chair dental clinic.

Brig Gen William F. Ryan, Commanding General, U.S. Army Test and Evaluation Command and senior commander at the Proving Ground, will preside at the dedication ceremonies.

Born in Rising Sun, a few miles from the hospital which is to become his permanent Army memorial, General Kirk died in 1960. A 1910 graduate of the University of Maryland, he was commissioned a lieutenant in the Army Reserve in 1912, and in the Regular Army in 1913.

From 1919 to 1925, he was Chief

### Aberdeen Dedicates Hall to Honor Deceased CofOrd

Hughes Hall at Aberdeen Proving Ground, Md., was dedicated Feb. 21 to honor the memory of the late Maj Gen Everett Strait Hughes, Chief of Ordnance from 1946 to 1949 and an Ordnance officer for most of his 41-year military career.

Former Chief of Ordnance Maj Gen E. L. Ford (ret.) joined Brig Gen William F. Ryan, Commander of the U.S. Army Test and Evaluation Command at Aberdeen, and Vice President Woodrow F. Storey of The Martin Co. in dedicatory ceremonies.

Mrs. Kate Hughes, the general's widow, unveiled the bronze plaque designating Building 3072 as Hughes Hall. It houses the U.S. Army Materiel Command Board and elements of the U.S. Army Ordnance Center and School.



Maj Gen Norman T. Kirk

of Amputation and Orthopedics at Walter Reed General Army Hospital in Washington, D.C., and was credited with treating over a third of all the major amputees among United States casualties in World War I.

As a colonel in 1942, he established and commanded Percy Jones General Hospital, Battlecreek, Mich., the country's largest World War II hospital center. During that year he became a brigadier general and in 1943 was appointed The Surgeon General with the rank of major general.

During World War II, he was credited with being largely responsible for the planning which brought specialized medical care into the forward areas of combat, and for innovating modern techniques of evacuation. He won the Legion of Merit and the Distinguished Service Medal.

Former President Dwight D. Eisenhower, on whose staff General Hughes served during World War II in the North Africa and Germany campaigns, paid tribute to him in a telegram expressing his regrets over not being able to attend.

During the early years of his career General Hughes was Ordnance officer under the late General John J. Pershing in the Mexican Punitive Expedition, and in 1916 he devised the first Mobile Ordnance Repair Shop ever sent to field units.

General Hughes was Deputy Chief of Staff, European Theater of Operations from November 1942 to February 1943, and went to North Africa as Deputy Theater Commander. When he returned to England, he was Special Assistant to Eisenhower.



## ARTS, Problems Guide, Contractors Guide, Technical Forecast Being Revised

Publication schedules of four of the most important sources of information on the Army research and development program, outlining objectives, tasks in progress, anticipated requirements, and agencies or activities involved in specific contract areas, have been upset by Army reorganization.

Involved are the *Army Research Task Summary (ARTS)*, the *Technological Forecast*, the *Contractors Guide*, and the *Problems Guide*. Firm commitments as to when these publications will be in distribution are difficult to obtain because decisions pertinent to them are pending.

Phasing out of the materiel functions of most of the Army Technical Services and the establishment of the new major commands have necessitated a great many changes in the scope and format of the publications.

The ARTS is undergoing a major overhaul geared to automation that will make desired information more readily available, although that goal admittedly is still somewhat visionary and perhaps a year short of fully effective achievement.

Revised ARTS reporting forms that will provide more information were in the final stage of coordination with agencies concerned as this publication went to press. The best estimate an informed official would offer relative to publication was "the second quarter of Fiscal Year 1964."

That projected date would, in effect, mean that the ARTS would lose almost a year of the normal reporting period. The official explained that "thereafter the ARTS will be maintained through automation on a much more current basis, and in a much more immediately usable form as requested by the consumer."

Publication of the ARTS is still an Army Research Office function, assigned to the newly established Scientific and Technical Information Division in the headquarters at 3045 Columbia Pike, Arlington, Va.

The *Problems Guide*, which informs contractors and nonprofit basic research enterprises of problem areas in which the Army is soliciting assistance, is expected to go into distribution in the first quarter of FY 1964. Consisting in previous years of seven classified (one for each of the Technical Services) and one unclassified summary volume, it will come out in substantially changed format.

In its new form, the Guide will be much like the Ordnance Qualitative Development Requirements Informa-

tion, which it will incorporate along with the Chemical Corps Army Study Requirements. The current Problems Guide will remain in effect and be distributed without charge until the revised editions are available.

Responsibility for publication of the *Problems Guide*, the *Contractors Guide* and a part of the *Technological Forecast* has been transferred from the Office of the Chief of Research and Development to the U.S. Army Materiel Command.

The *Contractors Guide* is expected to provide more information than in previous years to enable contractors to deal more effectively with the par-

ticular agencies they are best qualified to serve. The revised edition is expected early in FY 1964.

The *Technological Forecast* (this name had not been firmly decided at press time) is being prepared as a joint effort. Responsibility for the volume dealing with materiel projections rests with the Materiel Command and for the nonmateriel volume with the Army Research Office.

Because of the interrelated aspects, it was explained, each of the volumes of the forecast will infringe on the respective areas by perhaps as much as 10 percent. Distribution is scheduled in June.

## Medics Apply Cancer Detection Method to Treatment

Walter Reed General Hospital physicians have converted a method of detecting cancer to a method of treating the disease, as announced in mid-February.

The Army radiologists and urologists are treating tumors of the genitourinary tract with radioactive iodine administered by means of lymphangiography, heretofore solely a diagnostic method. Their internal system of radiation therapy may precede or follow surgery.

Lymphangiography, the X-ray visualization of lymphatic vessels following the injection of a contrast material, has gained in popularity as a means of diagnosing cancer in recent years. The contrast material—ethiodol is used largely at Walter Reed—settles in the lymph nodes, and their distribution and construction can be studied by X-ray and fluoroscope.

By injecting a mixture of radioactive iodine and ethiodol, the Army researchers found they could not only detect cancer but could treat it at the same time. A much larger dose of radiation can be administered by this method than by external means.

The internal method of radiation, it was learned, can seek out and destroy lymph nodes which, because of their location, cannot be removed surgically. The Walter Reed method is used primarily to complement surgery by eradicating inaccessible - by - surgery lymph nodes.

Capt Fouad A. Halaby, Assistant Chief of the Diagnostic Section of the hospital's Radiological Service and spokesman for the Army team, said results obtained during this study of 15 individuals have been encouraging.

No complications or adverse side effects have been encountered in the use of radioactive iodine. The new meth-

od can be beneficial as an adjunct or as a palliation in those patients who cannot tolerate further external irradiation or chemotherapy.

The research team, headed by Maj David M. Seitzman, included Maj Robert Wright and Capt James H. Freeman. They recently reported their findings in *The American Journal of Roentgenology, Radium Therapy and Nuclear Medicine*.

A film titled "Lymphangiography: Its Technique" has been produced recently by the Medical Audio Visual Department of Walter Reed Army Institute of Research. It describes how a lymphangiogram is performed at the Army hospital.

Expected to prove a boon to physicians who in the past have been forced to rely on written descriptions of this technique, the film will be available in July at Army film libraries throughout the country.



Walter Reed General Hospital physicians Capt James H. Freeman (left), Capt Fouad A. Halaby and Maj David M. Seitzman (seated) examine X-rays to determine distribution of radioactive iodine ethiodol used in detecting, treating cancer.



## Medical R&D Command Sets Up CB Agent Division

The U.S. Army Medical Research and Development Command has announced the formation of a new division to centralize The Army Surgeon General's responsibility in chemical and biological warfare defense.

The Chemical and Biological Agent Defense Division will be headed by Lt Col James B. Moffett, MC, who is also Chief of the Chemical and Biological Warfare Defense Consultant Branch, Office of the Surgeon General.

The Division, composed of a Chemical Agent Defense Branch and a Biological Agent Defense Branch, will recommend policies and prepare operational plans in matters involving

medical aspects of chemical and biological agents.

Responsibilities of Lt Col Moffett include assignment and training of personnel in this field and participation in chemical and biological agent field trials. In addition, he will act as official representative of TSG to agencies, either civilian or military, on medical aspects of chemical and biological agents.

Assigned as Chemical and Biological Warfare Defense Consultant to The Surgeon General last September, he previously was with the U.S. Army Hospital, Sandia Base, Albuquerque, N. Mex.

## Mandels Wins QMREC Research Directors Award

Discovery of natural enzyme inhibitors in plants has earned microbiologist Dr. Mary H. Mandels the Research Director's Award for the scientific accomplishment of the year at the Quartermaster Research and Engineering Center.

Working with the Natick, Mass., installation's collection of 10,000 fungi cultures responsible for fabric, leather and other materials deterioration, she focused her research on the way fungi cause such damage.

After extensive investigation and evaluation of extracts of over 600 plants, she discovered powerful natural inhibitors of enzymes in these plants. Using cellulase, the enzyme responsible for degradation of all cellulosic materials, e.g., paper, cotton, wood, she found the most powerful inhibitor in the persimmon fruit.

As noted in her award certificate, Dr. Mandels' research "will aid in hastening the day when adequate con-

trol of the microbiological deterioration of materials will be achieved."

Other accomplishments for which she is known include investigation of previously unknown enzymes in fungi, coauthoring 18 scientific papers, and cooperating with other laboratories on such research as: isolation of lignin from wood (Forest Products Laboratory, USDA, Madison, Wis.); fungi-causing disease in humans (Fort Detrick, Md.); and the nature of the action of beta-glucanases (Prairie Laboratory, Saskatoon, Canada).

Employed at the Natick installation since 1954, Dr. Mandels holds a Ph. D. degree (1947) from Cornell University. A native of Rutland, Vt., she worked as a part-time research and teaching assistant while studying at Cornell. Her husband, Dr. Gabriel Mandels, is Associate Director for Life Sciences at the Quartermaster R&E Center which are a part of the U.S. Army Materiel Command.



Dr. Mary Mandels receives 1962 Research Director's Award for the outstanding scientific accomplishment of the year from Brig Gen Merrill L. Tribe, Commanding General QMREC, and Dr. Dale Sieling, Scientific Director.

## Trotter Receives Award For Meritorious Service

In recognition of his role in Army reorganization, Elmer D. Trotter, Chief of the Plans and Programs Office, U.S. Army Transportation Combat Developments Agency, was recently presented the Meritorious Civilian Service Award at Ft. Eustis, Va.

Col Hubert D. Thomte, Commander of the Combat Service Support Group at Fort Lee, Va., made the presentation of the Army's second highest award for civilian service.

Trotter served on the Army reorganization planning group of the Combat Developments Command and was cited for his contribution to the smooth transfer of the Transportation CDA to the CDC.

The citation accompanying the MCS Award also commended Trotter for his initiative in establishing a procedure for developing and processing operational research studies, and for his administrative achievements.

Since joining the Federal service in 1960 he has received 14 letters of commendation or appreciation in addition to outstanding and sustained superior performance ratings.

Trotter also has won recognition for leadership in civic activities and is currently president of the Denbigh Lions Club in Newport News, Va.

## BRL Scientist Discusses Liquid-Filled Shell Dynamics

Dr. B. G. Karpov of the Ballistic Research Laboratory (BRL), Aberdeen Proving Ground, Md., lectured at the February colloquium sponsored by the University of Cincinnati Department of Aerospace Engineering.

His topic was "Dynamics of Liquid-Filled Shells," and he discussed the problems associated with sloshing of fuels in tanks of liquid-fueled rockets as complicated further when both container and liquid are spinning rapidly.

The problem is of interest to the Army because artillery shells are attractive vehicles for carrying chemical agents to the target. Dr. Karpov discussed work done at BRL which clarifies the problem.

A native of Russia, he came to the U.S. as a boy and later earned a doctorate degree in astronomy from the University of California. He joined the BRL staff in 1942 and prior to his current post was head of the Free Flight Branch.



## Air Mobile Concept for Ground Forces Under Test



Brig Gen Harry W. O. Kinnard, left, newly assigned Commander of the 11th Air Assault Division (Test), receives divisional colors from Lt Gen John K. Waters (right), Commanding General, U.S. Continental Army Command. Maj Gen Ben Harrell, Commanding General, U.S. Army Infantry Center and Commandant of the Infantry School, Fort Benning, Ga., observes the ceremony.

Activation of the 11th Air Assault Division (Test) Feb. 15 at Fort Benning, Ga., advances Department of the Army plans to form new air assault and support units to test and develop further the air mobile concept for ground combat.

The initial increment of military personnel and equipment required for the test units are drawn from existing Army resources.

The air mobile concept, detailed in a Department of Defense fact sheet, calls for movement and support of combat units in the battle area by simple, rugged helicopters and aircraft capable of operating in the environment of the soldier with primitive base facilities.

Further, the Army ground combat units are provided the capability to relocate immediately by air when desirable for sustained land combat.

The air mobility concept and tactics being tested result from studies ordered by Secretary of Defense Robert S. McNamara and conducted by a board headed by Lt Gen Hamilton H. Howze. Advances in light aviation technology in recent years have made the new tactics feasible.

Full advantage is taken of experience gained in counterinsurgency operations. In addition, the tactics increase capability for the widely dispersed frontages and depths that can be expected to develop in any tactical operations involving nuclear weapons.

Brig Gen Harry W. O. Kinnard, former Assistant Division Commander, 101st Airborne Division, Fort Campbell, Ky., has been named Commanding General of the 11th Air Assault Division (Test) along with other test units at Fort Benning. Grouped into the 11th are these test units:

An Air Assault Infantry Battalion



Brig Gen Harry W. O. Kinnard

(a lighter version of the conventional Infantry Battalion), a composite Artillery Battalion including 105 mm. howitzers, Little John missiles and light aircraft armed with rockets, and an Aviation Group. A variety of aircraft and aircraft support equipment is provided for surveillance, troop lift in the battle area, and air transport for supply and support functions.

Other supporting elements to be activated are an Air Cavalry Troop for reconnaissance, a Support Group for administrative and logistical needs, a Signal Company and an Engineer Company.

The test division will be supported by a test version of an Air Transport Brigade using both helicopters and fixed-wing aircraft. In addition to its capability for hauling combat echelons, the brigade also has the capability to "retail" to divisional units in the battle area the supplies brought to "wholesale" distribution points by the Air Force.

The Department of Defense announced that air mobile operations, while increasing the Army's tactical mobility in the battle area, will not reduce, and may well increase, the Army's present reliance on the Air Force for air support such as strategic air lift and troop movements.

The test units are under the control of United States Continental Army Command, Fort Monroe, Va., for the organization and training portion of the program. The U.S. Army Combat Developments Command, Fort Belvoir, Va., is supervising the development and implementation of appropriate Army tests and evaluation.

## Army Briefs NSIA Unit On Man-Machine Problem

Mutual problems confronting industry and the Army in man-machine compatibility were discussed at a recent 2-day training conference held for the National Security Industrial Association at Fort Bliss, Tex.

Sponsored by the U.S. Continental Army Command, the conference provided NSIA's Training Advisory Committee a comprehensive briefing on Army activities. Discussions covered operational maintenance training programs, basic educational programs, and new teaching methods. About 150 Army and industrial representatives attended.

Principal speakers included Maj Gen R. J. Meyer, USCONARC, Maj Gen T. H. Lipscomb, U.S. Army Combat Developments Command, Brig Gen A. W. Meetze, U.S. Army Materiel Command, and Robert L. Walsh, NSIA Secretary.

Maj Karl H. Borcheller, Human Factors and Operations Research Division, U.S. Army Research Office, introduced as speakers: Dr. Leon T. Katchmar, Chief, Systems Research Laboratory, Human Engineering Laboratories, Aberdeen Proving Ground, Md.; Dr. William H. Helme, U.S. Army Personnel Research Office, Washington, D.C.; and Dr. William A. McClelland, Human Resources Research Office, George Washington (D.C.) University.

NSIA was founded in 1944 to perpetuate the mutual respect and co-operation developed between industry and the Armed Forces in times of war. It provides a channel of communication to share the benefits of new knowledge and discuss mutual interests. With national headquarters in Washington, D.C., NSIA has 500 members, some 50 task committees, 25 staff members and 7 state groups. R. N. McFarlane is Executive Director.



# Army Preparing Film to Stimulate Research on Fuel Cell Power

A 30-minute 16-mm. color film titled "The Search for Fuel Cell Power" is to be prepared by mid-summer to stimulate greater interest in research efforts meshed into Army combat and remote area power requirements.

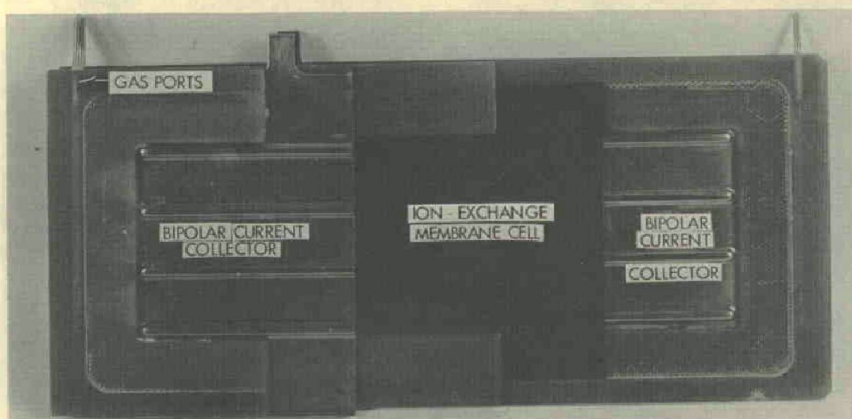
Financed jointly by the U.S. Army Materiel Command and the U.S. Army Research Office, the film is being prepared under direction of Leo Lieb, now with the USAMC Pictorial Section. Formerly he was employed in a similar capacity in the Office of the Chief of Research and Development.

Ernst Cohn is the technical adviser. Coauthor of the widely read *Status Report No. 2 on Fuel Cells*, a U.S. Army Research Office publication, he resigned in April 1962 to join the staff of the National Aeronautical and Space Administration. Arrangements are being coordinated through Lt Col J. S. Oppenheimer, Acting Chief, Research Plans Office, U.S. Army Research Office.

More than 40 copies of a shooting script for the film, prepared under the guidance of the U.S. Army Pictorial Center, are being mailed out for coordination among fuel cell research leaders in other governmental agencies, universities and industry.

Shooting of the movie is expected to begin on or about Apr. 1 to show fuel cell developmental progress at four of the leading industrial organizations — Allis-Chalmers, General Electric, Union Carbide, Pratt and Whitney.

Work in progress at Leeson-Moos Laboratories in New York and at two of the Army's leading fuel cell research centers—Fort Monmouth, N.J., and the Harry Diamond Laboratories in Washington, D.C.—also will be pic-



Component parts of ion-exchange membrane fuel cell.

tured, as will be the activities at one or more universities.

Dr. Herbert Hunger, Chief of the Fuel Cells Branch at the U.S. Army Electronics Research and Development Laboratories at Fort Monmouth, will explain the principles and the potential of the biological fuel cell. This is one of the exciting new concepts presently under development.

High priority interest of the Army in fuel cell power research stems from potentially dramatic logistic advances, tremendous economies and such combat advantages as rapid portability of power sources, completely silent operation, no moving parts to break down, operation without detectable waste products other than water, absence of fumes of any kind that might be detected by the enemy, and low-temperature energy production virtually immune to infrared heat detection devices.

The forthcoming film will point out that the fuel cell power plant offers

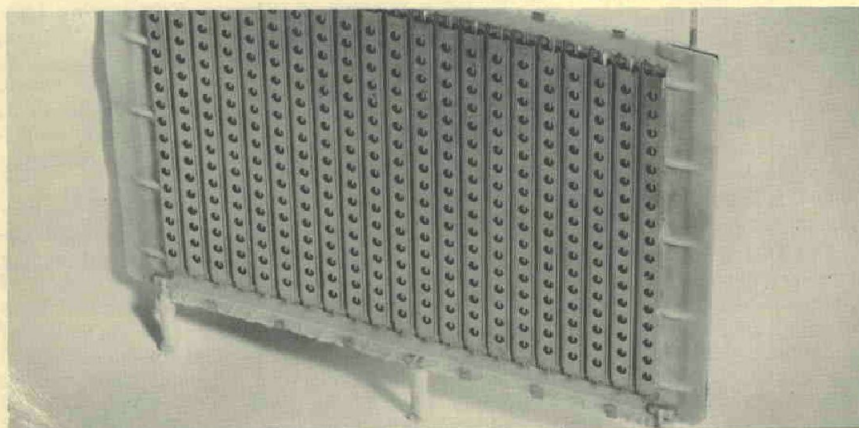
the possibility of producing twice as much power with half as much fuel. Whereas conventional power plants achieve at best perhaps 25 percent efficiency from fuel (that is, 75 percent of the energy goes out the smoke-stack), the fuel cell holds the promise of well above 50 percent efficiency.

Hydrocarbon fuels presently offer the best prospect of fuel cell power developments geared to military requirements. Research is being conducted on cells employing gasoline, kerosene and diesel oil.

Fuel cell powered tanks are envisioned though that objective admittedly is far in the future. An armored division of 300 tanks requires about 140,000 gallons of diesel oil for a 100-mile advance. When logistic lines are long, sometimes involving transportation costs as high as \$45 on a gallon of oil costing only a few cents, the exciting potential of the fuel cell power plant becomes obvious.

A look at some of the more glamorous possibilities of fuel cell power plants will be offered in the film by showing work on the plant being developed for the Project Gemini 2-man space capsule shot to the moon. The only waste product from this cell would be water that could be used for drinking. The work on the Apollo satellite power plant also will be pictured, as will the plant shown at the World's Fair in Brussels—a plant in continuous operation since 1958.

In conclusion the narrator will point to the possibility of fuel cell developments that will permit their use to power automatic radar units at remote areas in the arctic — to serve there as silent sentinels against sneak attacks employing intercontinental ballistic missiles.



Air-breathing fuel cell is compact and rugged. Cells can be stacked in series or parallel to form power packages of practical size and output.



## New Program Seeks Better Use of Technical Societies in Army Research

An exploratory program focused on better use of national technical societies and associations for information and guidance in research is underway by joint effort of the U.S. Army Materiel Command and the Army Research Office.

Professional organizations which have been helpful to the Army primarily in production engineering and advanced development now are being regarded as sources of aid for more sophisticated research and exploratory development.

One approach considered promising is extension of the "military theme" plan. It enables societies to suggest specific areas where research may pay off in strengthening industrial capabilities linked to defense needs. Indirectly, Department of Defense supported project evolving as a result would improve the defense posture.

Under consideration also is a method that would call upon industrial organizations, through employees affiliated with the technical societies, to ensure that the state-of-the-art with respect to projects is completely reviewed. This purpose would be served by having individual organizations divulge, on a confidential basis, research near payoff and unpublished.

Awareness of the military requirement would come from Army briefings based on selected abstract material from research planning documents. Some societies and associations have indicated interest in proving out, at their own expense, products from Army supported research. Army officials said this might be called manufacturing or applications research.

A third method of dealing with the problem would acquaint the designer with "on-the-shelf" developments considered important to investigate. The

### Army Studying Feasibility Of RADAS Communications

A tactical radio system that could replace most battlefield wire and some radio gear now in use is the goal of Army feasibility study contracts. Findings are to be reported following evaluation in about 18 months.

Maj Gen Stuart S. Hoff, Commander of the U.S. Army Electronics Command, Fort Monmouth, N.J., stated that the cost of the proposed Random Access Discrete Address System (RADAS) would approximate that of present tactical communication equipment, and would yield greatly increased flexibility and mobility.

societies could designate specific companies which have developed unusual components or production processes. Army scientists and engineers in in-house R&D facilities then could visit the companies when necessary to "trigger new design concepts."

Success of the exploratory program, it is emphasized, is dependent upon the Army effort to improve relations with industries represented in technical societies and associations.

The American Ceramics Society, the American Ordnance Association Materials Division, and the Steel Founders Society of America have indicated interest in the program. The American Ceramics Society has proposed establishment of a committee to serve

as liaison with the Army.

That action followed an executive board meeting Feb. 27 in the Society's headquarters in Columbus, Ohio, at which Henry Handler, Technical adviser to the Commanding General of the U.S. Army Materiel Command, gave a briefing on the proposed program. Lt Col Louis G. Klinker detailed the U.S. Army Research Office plan for integrating its ceramics (inorganic nonmetallic materials) R&D program.

Discussion revealed that the Society's electronics, glass and ceramic-metal systems divisions could offer substantial assistance to the Army in a prototype program in this area that might be applicable to groups.

## Change in Hydraulic Fluid Specifications Discussed

Specifications of the hydraulic fluids to be used in all automobiles after Mar. 1, 1964, were discussed at a Feb. 12-13 conference of representatives of Government agencies, the automotive industry, chemical firms, and brake manufacturers.

The U.S. Army Materiel Command's Coating and Chemical Laboratory at Aberdeen Proving Ground, Md., was host to the group, an Ad Hoc Committee of the Society of Automotive Engineers. Modifications of current specifications, stated in terms which lend themselves to more exact measurement, will be recommended to the Department of Commerce.

If acceptable to the Department, the specifications will be utilized in

enforcing Public Law 87-637. This law requires that hydraulic brake fluids for motor vehicles used on the public highways be of a quality to insure safe operation.

Manufacturers of brake fluids will be required to meet the modified specifications by Mar. 1, 1964, as published in the *Federal Register*, June 1, 1963.

Col Richard R. Entwistle, commander of the Coating and Chemical Laboratory, welcomed the group on behalf of his command and Lt Gen Frank S. Besson, Jr., Commanding General, U.S. Army Materiel Command, Washington, D.C. Dr. Charles F. Pickett, Director of the Laboratory, served as host.



Test samples of hydraulic brake fluids are inspected by (left to right) Dr. A. T. McPherson, National Bureau of Standards, Thomas H. Risk, Chairman, SAE Ad Hoc Committee on hydraulic brake fluids, Dr. Charles F. Pickett, Director, Coating and Chemical Laboratory, and Dr. Robert D. Stieler, NBS.



# Army Contracts Exceed \$85 Million

Contracts totaling more than \$85 million for development and procurement of military materiel were announced recently by the Department of the Army.

The largest contract, \$16,590,039, was awarded to General Dynamics, Pomona, Calif., for continued research and development on the Mauler missile system.

Burroughs Corp., Detroit, Mich., received a \$14,000,000 classified contract. Other classified contracts included Texas Instrument Co., Inc., Dallas, Tex., \$1,755,000; Ford Instrument Co., Long Island City, N.Y., \$1,632,231; and Raytheon Co., Bedford, Mass., \$1,100,000.

For production of Hawk missile system radar equipment, Raytheon Co., Andover, Mass., received an \$11,202,124 contract. A \$10,006,800 contract let to Continental Motors Corp., Muskegon, Mich., calls for 8,339 multi-fuel engines for the 2½-ton truck.

Metal parts for high explosive

bombs are to be produced under a \$7,932,813 contract awarded to Aero-Jet General Corp., Downey, Calif. Bell Helicopter Corp., Fort Worth, Tex., received a \$4,655,934 contract for production of 150 light observation helicopters.

Copperweld Steel Co., Glassport, Pa., received a \$3,762,969 contract for noncorrosive reinforcing fabric and twist wires. A \$1,999,904 contract let to Aeronca Manufacturing Corp., Middletown, Ohio, is for metal parts for the Nike Hercules warhead. For production of metal parts for the Mighty Mite vehicle, American Motors Corp., Detroit, Mich., was awarded a \$1,929,859 contract.

Research on solid propellants is the basis of a \$1,952,100 contract let to ESSO Research and Engineering, Linden, N.J. Sperry Rand Corp., Salt Lake City, Utah, received a \$1,785,000 Sergeant missile system contract.

Curtis-Wright Corp., Woodbridge, N.J., was awarded a \$1,523,808 con-

tract for Pershing missile motor cases. Research on radar for use in ballistic missile defense is called for in a \$1,250,000 contract awarded to General Electric Co., Schenectady, N.Y. Production of air defense equipment is ordered in a \$1,156,306 contract let to Hughes Aircraft Co., Fullerton, Calif. Union Carbide Consumer Products Co., N.Y.C., was awarded a \$1,129,204 contract for radio batteries.

## Maj Gen Hoff Observes PFNS at Fort Huachuca

The Position Fixing Navigation System (PFNS) scheduled for field testing in the near future brought Maj Gen Stuart S. Hoff, Commander of the U.S. Army Electronics Command, to Fort Huachuca, Ariz., for a recent briefing.

General Hoff made a weekend trip from Fort Monmouth, N.J., to the Electronics R&D Activity-Arizona (ERDAA), a subordinate unit of the Electronics Command. For the briefing on PFNS he was joined by Maj Gen F. F. Urhane, Commander of the U.S. Army Electronic Proving Ground, and AEPG staff member.

General Hoff visited a PFNS master transmitter site in the field, observed a demonstration of the man-pack and vehicular receiver units of the system, and flew in an Army helicopter for an in-flight demonstration of the airborne receiver unit.

The field demonstrations were presented and supervised by Capt Lee M. Hand, Chief of the Avionics Division (Electronics Department) of ERDAA, and Capt Robert E. Denney, PFNS Test Manager, who is assigned to the Air Electronics Division of the Test Operations Department, Electronic Proving Ground.



Maj Gen Stuart S. Hoff checks chart with Capt Robert E. Denney, Position Fixing Navigation System test manager, at recent Fort Huachuca tests.

## ASTIA Accelerates Service in Policy Change

Technical questions on specific subjects telephoned to the Armed Services Technical Information Agency (ASTIA) at Arlington Hall (Va.) Station will be answered within one hour under a new policy now being implemented.

Col James O. Vann, USAF, Commander of ASTIA, announced this fast response will be available to the 300,000 scientists and engineers working directly or indirectly for the Department of Defense whose organiza-

tions have been authorized ASTIA services.

The first subject for this service is semiconductor devices. Nearly half a thousand documents on semiconductor devices have been indexed in depth, using a new microthesaurus of specific retrieval terms developed for this rapid service.

Additional documents will be indexed as fast as they are added to the ASTIA collection, now growing at the rate of 42,000 reports a year.

Other subjects that will be added to this service within the next few months are radiobiology; lasers and masers; ultraviolet, visible and infrared radiation; metals and metallurgy; oceanology; plasma physics, biological warfare; rocket motors, and bionics.

Unclassified and unlimited release information pertinent to DoD problems will be given by telephone within one hour, Col Vann said. Classified information, bibliographies and reports, as desired, will be forwarded to the requester by the most rapid means available.

To provide this fast response, Julius Frome, ASTIA Deputy for Science and Technology, has assigned specialists in the subject to receive telephone calls. They can be reached by telephoning Arlington Hall Station, Va., 525-5800 and asking for the special extension number 2479 for semiconductor devices.

## New Mexico Ranchers Agree To Move During WSMR Tests

Some 70 ranchers in central New Mexico have again agreed to evacuate their homes during White Sands Missile Range special missile firings.

Maj Gen J. Frederick Thorlin, WSMR Commander, said agreements for co-use of the 1,600-square-mile area occupied by the ranchers, which went into effect in early 1960, have been extended for a 2-year period.

The extension to the Nation's only overland missile range increases the range's 100-mile length by additional 40 miles for the testing of long-range tactical and air-defense missiles.

Landowners are reimbursed and evacuate only on those days when missile firings are scheduled into the area. The range uses the extension about 20 times a year for periods no longer than 12 hours.



# USAMC, USACDC Memorandum of Agreement Identifies Their Responsibilities, Procedures

Operational functions in the inter-related responsibilities of the U.S. Army Materiel Command (USAMC) and the U.S. Army Combat Developments Command (USACDC) are clarified in a Memorandum of Agreement on Research and Development.

Ratified by Lt Gen Frank S. Besson, Jr., of the USAMC, and Lt Gen John P. Daley of the USACDC, the agreement is implemented by provisions of Army Regulation 705-2 dated Jan. 8, 1963. Objective: To develop the required materiel for the Army in the least amount of time at the lowest practicable cost.

The Regulation identifies areas of responsibility and provides for a closely coordinated and cooperative modus operandi at all levels and organizational elements of the two commands. It is designed to facilitate the exchange of information and outline procedures in the accomplishment of those elements of their respective missions involving mutual interests.

General Besson said he expects the spirit of the Agreement to prevail throughout the USAMC "to the end that the goal of reduction in lead time from initiation of development to production will be achieved."

Distribution of AR 705-2 and the Agreement has been made to all elements of commands concerned. Provisions include:

- **Liaison Officers.** These will be established as required and as mutually agreed between the two commands. The command or agency to which a liaison officer is assigned will provide such officers with all available information required by the liaison officer's parent command in the execution of its mission.

- **Processing Qualitative Materiel**

## OCRD Officer Joins Industry

Col Mont S. Johnston, Chief of the Review and Analysis Office, Office of the Chief of Research and Development, will retire this month and accept employment with the Allied Chemical Corp., National Aniline Div.

As manager of research administration for the Chesterfield, Va., plant he will carry into his new responsibilities 22 years of experience with the U.S. Army Corps of Engineers. He is a registered professional engineer with a B.S. degree in mechanical engineering from Oklahoma A&M College and a master's degree in administrative engineering from New York Univ.

**Development Objectives, Qualitative Materiel Requirements, and Small Development Requirements.** All echelons of the USACDC must maintain an awareness of maintenance concepts as well as knowledge of the progress of basic research and component development programs conducted by the various elements of the USAMC and the scientific and technological community.

- **In-Process Reviews and Coordination Groups.** In-process reviews will be conducted by the USAMC in accordance with the provisions of AR 705-5, Army Research and Development. The USACDC will participate in such activities.

- **Materiel Testing and Evaluation.** Informal coordination of test plans will be accomplished at the operating level between USAMC and USACDC agencies. As the representative of using agencies, the Commanding General, USACDC, is responsible for providing guidance to USAMC regarding objectives and requirements reflecting the viewpoint of troop operational employment.

- **Technical Committees.** USACDC will participate as a member of the USAMC Technical Committee and sub-elements established in accordance with AR 705-9, Technical Committees.

- **Maintenance Package Development.** USACDC will review and comment on Technical Manuals prepared by USAMC during the development cycle and will furnish representation, as required, on committees formed by USAMC to develop Task and Skill Analysis and Maintenance Allocation Charts.

- **Visits, Reports and Other Media.** Visits by personnel of one command to various agencies and activities of the other are encouraged in the interest of promoting a better understanding and great degree of coordination.

The Agreement emphasizes that if the USAMC and the USACDC are to accomplish their missions effectively, unrestricted distribution between them of studies and technical reports is mandatory.

Stressed also is the use of research symposia and other informational reviews and briefings as a contributing factor to the acquisition of knowledge and the coordination of objectives and programs. Each command sponsoring such activities has agreed to ensure

that the other is afforded an opportunity to participate, as appropriate.

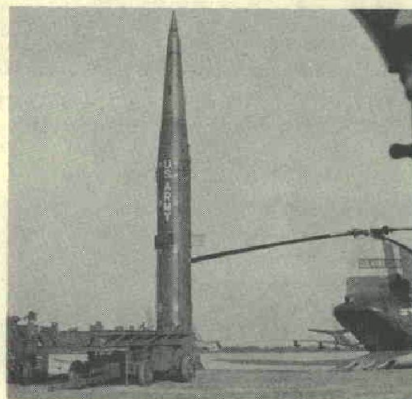
Other references cited in the Agreement are: AR 10-5, Army; AR 11-25, Reduction of Lead Time; AR 70-10, Army Materiel Testing; AR 71-1, Army Combat Developments; AR 700-20, Type Classification of Materiel; and AR 750-6, Maintenance Planning, Allocation and Coordination.

Army Regulations entitled United States Army Materiel Command (AR 10-11), and United States Army Combat Developments Command (AR 10-12), will be published in the future, as stated in the list of references in the agreement.

The U.S. Army Combat Developments Command was activated June 20, 1962 at Fort Belvoir, Va., and assumed charge of its far-flung subordinate agencies and programs on July 1, 1962. It is responsible for establishing doctrine, determining how the Army will fight and what kind of equipment it needs.

The U.S. Army Materiel Command became operational Aug. 1, 1962, with headquarters in Washington, D.C. It exercises control over a vast network of military installations, involving some 166,000 civilian employees and 20,000 officers, with a total inventory of \$23.5 billion and estimated annual expenditures of \$7.5 billion.

The U.S. Continental Army Command, the USAMC and the USACDC are the three major commands directly subordinate to the Chief of Staff.



**COMPATIBLE** — Army's Pershing missile undergoes post-flight countdown ending Pershing-Chinook helicopter tests in Orlando, Fla. The Pershing system was airlifted by the CH-47A (right), then mated on the erector launcher. Tests were conducted by the Army Missile Command, Army Aviation Board, Army Airborne, Electronic and Special Warfare Board, Army Transportation Materiel Command, Martin Co., Vetrol Division of the Boeing Co., and Lycoming Division of Avco Corp.



## Civil Service Hall of Fame Exhibit Shows Incentive Awards Inventions



AT CSC HALL OF FAME EXHIBIT, John W. Macy, Jr. (center), Chairman, U.S. Civil Service Commission, and Charles F. Mullaly (right), Director of Civilian Personnel, Department of the Army, listen to Jerry H. Mason, Chief of Army Incentive Awards, describe double antenna kit display.



ARTIFICIAL HEART PUMP EXHIBIT is explained by Kenneth E. Woodward, Harry Diamond Laboratories, to Chairman John W. Macy, Jr (left) and Commissioner Frederick J. Lawton (right) of the CSC and Charles F. Mullaly.



ADVANCES IN MICROMINIATURIZATION accomplished by Donald J. Belknap (left center) and Norman J. Doctor (right center), Harry Diamond Laboratories, are reviewed by Chairman Macy and Commissioner Lawton.

Inventions indicative of exceptional creative abilities of Department of the Army civilians contributed to the success of a recent Hall of Fame exhibit arranged by the U.S. Civil Service Commission in Washington, D.C.

The display was linked to activities commemorating the 80th Anniversary of the Civil Service Act, and it highlighted achievements of employees recognized through the Incentive Awards Program.

Many of the inventions had been given recognition earlier in two recent editions of the *Civil Service Journal* which featured the work of civil service inventors.

The Army displays were reviewed by Chairman John W. Macy, Jr., and Commissioner Frederick J. Lawton of the CSC. They were accompanied by Charles F. Mullaly, Director of Civilian Personnel, Department of the Army, and R. O. Anderson, Chief of the Employee Management Division, Army Office of Civilian Personnel.

Recent developments in Army prosthetic devices on display showed the various stages of cosmetic surgery and the progressive assembly of artificial limbs. Technical details were explained by Dr. Fred Leonard, Scientific Director, U.S. Army Prosthetics Research Laboratory, Walter Reed Army Medical Center, a recent recipient of the Meritorious Civilian Service Award for outstanding contributions to medical science.

An exhibit which fascinated many visitors was a working model of an artificial heart pump using the principle of fluid dynamics, invented by Kenneth E. Woodward, a supervisory mechanical engineer at the Harry Diamond Laboratories, with developmental assistance from Walter Reed Army Institute of Research heart specialists under the leadership of Lt Col Timothy G. Barila.

Mr. Woodward and his associates are collaborating with scientists of the Office of the Army's Surgeon General to develop further the 8-pound heart pump which simulates the action of the human heart and functions without moving parts.

Advances in microminiaturization accomplished by Donald J. Belknap and Norman J. Doctor were illustrated in another Army display. Belknap's contributions to lamp technology include the smallest light bulb in the world, used in satellites and other electronic instrumentation. Doctor's work has led to advancements in transistor circuitry resulting in approximately \$25 million in benefits to the

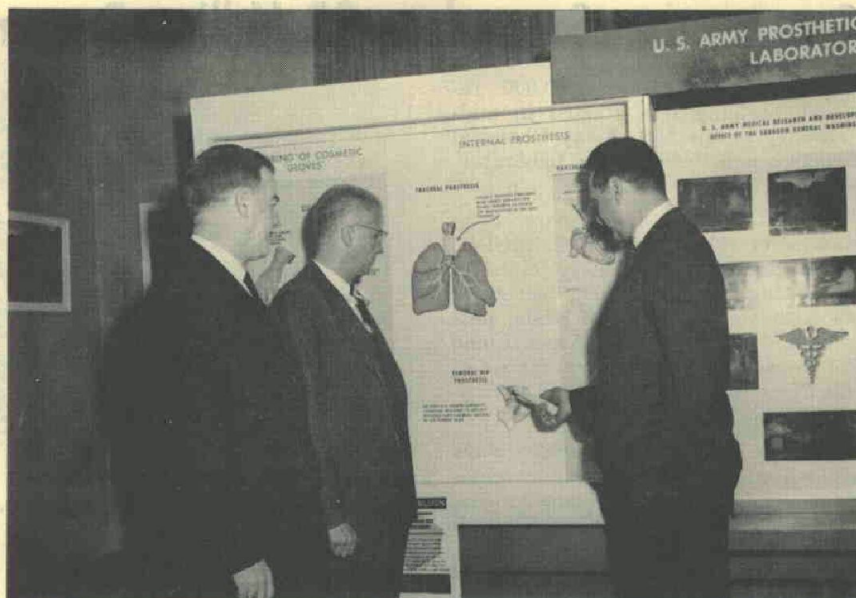


Government, according to his citation.

In addition to the Army's highest award for achievement, the Exceptional Civilian Service Award, Belknap has received a \$5,000 Special Act or Service Award. Doctor was one of four Harry Diamond Laboratories scientists who shared a \$25,000 Special Act or Service Award for advances in microminiaturization.

The fourth Army display was a double antenna kit designed for use with tactical vehicles, modifying the conventional vehicle radio serial assembly from 65 to 12 items. John C. White, an employee of the Airborne Electronics and Special Warfare Board, Fort Bragg, N.C., received a \$2,390 award presented by the Secretary of the Army in October 1962 for development of the kit.

The dedication and ingenuity of these men, in the opinion of Army civilian personnel leaders, make progress in many areas with benefits accruing to the defense effort and the general welfare of the Nation.



PROSTHETICS RESEARCH DISPLAY is described by Dr. Fred Leonard (right), Scientific Director, U.S. Army Prosthetics Research Laboratory.

## WRAIR Medics Presented High Honorary Ratings

The "A" prefix for professional superiority was awarded recently to Lt Cols Thomas J. Whelan, Jr., and Edward J. Jahnke, Jr., of the Walter Reed Army Medical Center staff, Washington, D.C.

Surgeon General Lt Gen Leonard D. Heaton officiated at the presentation and described the criteria for selection of individuals to be so honored: "A very dependable degree of clinical maturity and medical resourcefulness, technical skill, approbation of his colleagues and the ability to impart one's knowledge to others."

The "A" rating is a highly coveted designation given only to Army Medical Service physicians whose qualifications are carefully screened by a professional committee and approved by the Army Surgeon General.

COL WHELAN, Assistant Chief of Walter Reed General Hospital's Department of Surgery since August 1962, had previously been assigned for three years to the Walter Reed Army Institute of Research in the Experimental Vascular Surgery department. He is also Chief of the hospital's General Surgical Service and of its Peripheral Vascular Section.

A native of Lynn, Mass., he received an M.D. degree from Yale University School of Medicine and is a diplomate of the American Board of Surgery and a fellow in the American College of Surgeons.

COL JAHNKE, Chief, Thoracic and Cardiovascular Service, is a native of Pittsburgh, Pa., and was graduated from Jefferson Medical College, Philadelphia, in 1948. He served his internship and residencies in both general surgery and thoracic surgery at Walter Reed. In 1952, he was a key member of a surgical team doing battlefield repair of arterial wounds in Korea. Assigned to the 97th General Hospital in Europe in 1957 he was

Chief of its Thoracic and Cardiovascular Service while serving as consultant in these two specialties to the U.S. Army Surgeon in Europe. He returned to Walter Reed in 1961.

He is a member of the American Association for Thoracic Surgery, American College of Surgeons, American Thoracic Society, Society for Vascular Surgery, International Cardiovascular Society and the Cardiovascular Council of the American Heart Association.

## Cold Regions R&D Report Prepared for Publication

Intensified research pointed toward development of greater military operational capability in northern areas of the world is delineated in a forthcoming unclassified report of the U.S. Army Conference on Cold Regions Research and Development.

Sponsored by the U.S. Army Research Office on behalf of the Office of the Chief of Research and Development, the Nov. 14-15 conference featured presentations by polar research leaders of the Army, Navy and Air Force, included in the report.

Chief of Research and Development Lt Gen Dwight E. Beach keynoted the meeting, citing aspects of cold region tactical operations that called for new developments, including air and surface mobility refinements, target acquisition methods, communications equipment and special clothing.

Representatives of the U.S. Army Materiel Command, which coordinates the Army cold regions program, outlined activities underway in the area. Dr. T. R. A. Davis, Director, Division of Cold and Altitude Research, U.S. Army Institute of Environmental Medicine, Natick, Mass., addressed the group on the medical program for the cold regions of the Office of the Surgeon General.

Col W. E. Egbert, Combat Developments Office, U.S. Army, Alaska, presented an analysis of U.S. operating capabilities in the cold regions. He noted that a better term for the geographical locales involved might be "northern areas" since some points in the regions have temperatures ranging from a wintry -76° to summer highs of 100° F., requiring year-round capability for combat forces.



# Construction Started on \$3 Million Research Labs at Edgewood

Construction of a \$3,000,000 research building was started in mid-February at the U.S. Army Chemical Research and Development Laboratories, Edgewood Arsenal, Md.

Brig Gen Fred J. Delmore, commander of the Army's Chemical-Biological-Radiological Agency, joined in conducting groundbreaking ceremonies with Col Frank M. Arthur, post commander at Edgewood Arsenal, and Col James A. Hebbeler, commander of the Chemical Research and Development Laboratories.

The building will provide work areas for 140 scientists and technicians in 53 individual laboratories, specially designed for advanced studies of chemical compounds and materials. When completed in late 1964 the laboratories will increase Army chemical defense research capabilities.

A \$2,969,000 construction contract awarded to the Piracci Construction Co., Inc., Baltimore, is under supervision of the U.S. Army Corps of Engineers. Architectural engineering work was done by Howell Lewis Shay and Associates, Philadelphia.

Safety in laboratory operations is a primary consideration in the design of the new facility. Air intakes will supply outside air to each laboratory and each will have its own air exhaust system. Exhaust hoods, ranging from standard lab bench hoods to large walk-in types, 160 in all, will carry airborne chemical materials by filtering systems to the outside.

Change rooms, where research personnel can shower and change cloth-



Research building artist's sketch that will house 53 individual laboratories for chemical research at the USACRDL, Edgewood Arsenal, Md.

ing when entering or leaving the various labs, will be located between adjacent laboratories throughout the building. Exterior walkways at each floor level will permit the movement of laboratory materials and experimental compounds between working areas without the risk of accidental contamination of interior corridors.

Another safety factor will be the maintenance of air pressure at different levels in the various areas. Corridor air will be kept at a positive pressure, change rooms at slightly lower pressure, and laboratory working areas at still lower pressure. In this way all airborne chemical material is contained in the areas of the lowest pressure, where the exhaust system will be in constant operation.

Auxiliary diesel generators will provide emergency power and light.

A 2-story laboratory will normally

function as two single laboratories—one above the other—on the second and third floors of the wing of the building. Removable floor sections will permit conversion of the two laboratories to one lab two stories high when extra height is needed to set up special apparatus.

Scientists engaged in certain types of experimentation requiring continuous operation will have the facilities of an overnight laboratory. Building design and special equipment will permit unattended overnight continuation of the day's processes. Protective equipment in the overnight lab will include an automatic carbon dioxide fire extinguisher system.

In each of the 53 laboratories an individual air conditioning unit and heating unit will be provided.

## Army Changes Long Range Active Duty Program

The U.S. Army Long-Range Active Duty Program is being changed to provide that Reserve officers may be retained on active duty beyond attainment of retirement eligibility on the basis of grade attained.

Basically, captains and majors will be separated at 20 years active service, lieutenant colonels at 21 and colonels at 28, with each grade to be considered for further retention.

Captains and majors can be retained to 22 years to meet valid requirements that cannot otherwise be met, and some may be retained beyond 22 years as exceptions to policy. Determination as to what constitutes a valid requirement and selection of officers to fill these requirements is made by Headquarters, DA.

Upon being considered by selection

boards against the qualifications governing promotion to lieutenant colonel or colonel, Regular Army, if selected, lieutenant colonels and colonels will be retained to 28 or 30 years respectively.

In addition, Reserve officers selected for the temporary grade of major will be retained until promoted and a minimum of six months thereafter. Majors and lieutenant colonels selected for the next higher temporary grade will be retained until promoted and a minimum of one year thereafter. These officers will then be considered for retention to 28 and 30 years as outlined above for lieutenant colonels and colonels.

The majority of officers retained under current procedures will be assured of the same tenure as officers who will be retained in the future.



Blueprints of \$3-million research building are inspected by principals in groundbreaking ceremony. From left are Lt Col Heber C. Brill, Deputy Post Commander, Col James A. Hebbeler, CRDL Commanding Officer, Lt Col Joseph A. Bacci, Deputy District Engineer, Baltimore District, Corps of Engineers, and Col Frank M. Arthur, Edgewood Post Commander.



## Army Math Center Program Discussed at AMSC Meet

Advanced educational possibilities provided for Army mathematicians at the U.S. Army Mathematics Research Center, Madison, Wis., were stressed at the recent 14th meeting of the Army Mathematics Steering Committee (AMSC).

Conducted at headquarters of the Research Analysis Corporation in Bethesda, Md., the meeting gave Dr. R. E. Langer, Director of the Center, an opportunity to explain the 1963 program of lectures, advanced seminars and symposia that will be offered Army mathematicians.

The Center, located on the University of Wisconsin campus, welcomes inquiries from Army installations and from individuals regarding problems calling for the highest mathematical

skills, Dr. Langer said. Many of the world's foremost mathematicians are associated with the Center on a temporary resident basis.

A report of progress and projected work on the Program in Special Research in Numerical Analysis was delivered by Dr. John J. Gergen, for Dr. F. J. Murray, program director.

Dr. Murray's group has been working with the Walter Reed Army Institute on the use of computers and will soon submit a report on its findings concerning WRAIR's needs in the mathematical sciences area.

The group is assisting the Strategy and Tactics Analysis Group (STAG) on the development of a war game, Fort Monmouth on the measurement of orbits, White Sands Missile Range

on data collection, and the Naval Training Devices Center on a trainer.

Reports were given on three conferences sponsored during the past year by the AMSC, on behalf of the Office of the Chief of Research and Development. Participants, it was stated, expressed appreciation for the opportunity to confront mutual professional problems with peers from distant points in the Army scientific establishment.

Dates for future conferences are: Army Mathematicians Conference, June 5-6 at Watervliet Arsenal, Watervliet, N.Y.; Design of Experiments Conference, 3rd week in October (site undecided); Computer Conference, 1st week in November (site undecided). The 15th AMSC meeting will be held in May at Ann Arbor, Mich. Part of the program will consist of briefings by members of Project MICHIGAN.

An outgrowth of the Army Mathematics Advisory Panel, the AMSC was established in February 1956 to provide assistance to the Chief of Research and Development in planning, coordinating and supervising mathematics research interests of the Army.

The AMSC is composed of about 20 representatives of Army commands and includes four nongovernmental advisers. Dr. Ivan R. Hershner, Jr., Chief, Physical Sciences Division, is chairman and Fred Frishman, Chief, Mathematics Branch (both of the U.S. Army Research Office), is secretary.

## Mathematicians Schedule Watervliet Arsenal Meet

The Ninth Conference of Army Mathematicians will be held June 5-6 at Watervliet Arsenal, Watervliet, N.Y., sponsored by the Army Mathematics Steering Committee on behalf of the Office of the Chief of Research and Development.

Prof. Richard C. DiPrima of Rensselaer Polytechnic Institute, Troy, N.Y., has accepted an invitation to speak on "Stability of Flow Between Rotating Cylinders and Related Topics."

Presentation of approximately 20 technical papers is scheduled during the 2-day meeting which will be extended, if warranted, to accommodate additional papers.

Army mathematicians are encouraged to deliver papers. Anyone interested in further details should contact Dr. F. G. Dressel, U.S. Army Research Office-Durham, Box CM, Duke Station, Durham, N.C.

The Conference is open to Army personnel. Invitations may be obtained by writing to Dr. W. E. Weigle, Chief Scientist, Watervliet Arsenal.

## Engineer Cited for Designing Snow Tunnel Trimmer

Design and development of a snow trimmer used in maintaining the size of under-ice tunnels at Camp Century, Greenland, and other arctic installations have earned an Army employee an "outstanding young engineer of 1963" award.

The Metropolitan Washington Area National Capital Award, a gold key and certificate, was presented to Crawford Henderson, a 31-year-old mechanical engineer at the U.S. Army Mobility Command Engineer Research and Development Command, Fort Belvoir, Va.

The Feb. 20 ceremony climaxed the annual observance of Engineers Week sponsored jointly by the Washington Academy of Sciences and the District of Columbia Council of Engineering and Architectural Societies.

An abundance of engineer nominations and a scarcity of nominations for an "architect of the year award" resulted in a second "outstanding young engineer of 1963" award. The recipient was Robert E. Fischell, supervisor of the Satellite System Engineering Group, Applied Physics Laboratory, Johns Hopkins University, Baltimore, Md.

Dr. Hans Griem, associate professor of physics at the University of Maryland, was cited as the "outstanding young scientist of 1963."

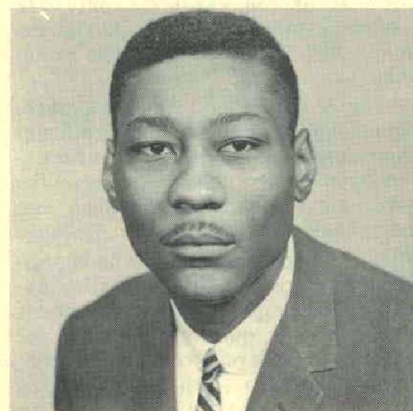
The snow trimmer designed by Crawford Henderson helped to solve one of the continuing problems at arctic under-snow installations, that is, the narrowing of tunnel walls due to pressure. If unchecked by snow removal processes, the encroachment on tunnel walls eventually would close them. Until the trimmer was developed, manpower and hand tools were costly and time-consuming.

Described in the September 1962 issue of this publication, page 15, the trimmer is an electrochemical machine mounted on a self-propelled platform which runs on a track suspended from the roofs of the tunnels.

The system includes a machine to crush blocks of snow or ice removed during excavation, and a pneumatic conveyor system to move the snow to the outside.

Henderson is the third employee of the Engineer R&D Laboratories to receive an ES&A Day award. Horace Leathers received an engineer award in 1959 and Dr. J. Thomas Cox, a physicist, the scientist award in 1961.

A native of Oxford, N.C., Henderson attended North Carolina Agricultural and Technical College, Greensboro, where he received a B.S. degree in mechanical engineering in 1949. He served in the U.S. Marine Corps from 1953 to 1956, and became a civilian employee of the Laboratories in 1959. He is presently employed in the Mechanical Equipment Branch.



Crawford Henderson



## Internationally Renowned Expert on Rubber Retires



Willard D. England, Chief of the Detroit Army Tank-Automotive Center (ATAC) Materials Laboratory, receives best wishes on his retirement, after 23 years Government service, from Brig Gen John G. Gramzow, CG at ATAC.

Leaders of the rubber industry and the Armed Forces honored Willard D. England, an Army pioneer in development of synthetic rubber tires and an internationally known expert, when he retired recently after 23 years of Government career service.

Three years after he joined the Quartermaster Engineering Division of the U.S. Army at the Holabird (Md.) Ordnance Depot, his research on synthetic rubber tires won him the highest civilian award the United States can confer.

That Exceptional Civilian Service Award was presented to him in 1944. One year later the Canadian Government accorded him a similar honor for coordinating U.S. and Canadian synthetic rubber developmental programs.

Most of England's more than 22 years of civilian scientist service with the Army was at the Detroit Tank-Automotive Center (ATAC) Research and Engineering Directorate, of which he was Chief when he retired.

Shortly after graduation from Wesley College in 1916 (now a part of Southern Methodist University) with a B.S. degree in engineering, he joined the Goodyear Tire and Rubber Co. and served 25 years in research and sales.

An Army civilian career began for him when he anticipated that entry of the United States into World War II was inevitable and that the Nation's supply of natural rubber might be cut off. He proposed to the late General George C. Marshall, then

Chief of Staff, that the Army should develop a synthetic rubber for tires.

The proposal led to an invitation to set up a rubber research laboratory for the Army. General Marshall joined in persuading Congress to approve funds for the program which was located at Camp Bullis, Tex., still an Army proving ground for tire performance and durability tests.

Commercial tire producing firms were quick to come to the aid of the Government in the synthetic rubber developmental program, and Mr. England has expressed his opinion that there never has been a better example of private enterprise working with the Government toward a common goal.

England's faith in synthetic rubber research has been vindicated. He points out that "tires on the passenger cars of today contain only 2½ percent natural rubber . . . the remaining 97½ percent synthetic materials."

Army leaders credit him with establishing and directing many significant programs, including an R&D information exchange system between the Government and all the wheel, rim and rubber manufacturers in America.

The information program is coordinated through the Tire and Rim Association, an agency which determines and maintains quality standards for the entire commercial rubber industry.

The world's largest prefabricated ozone chamber, located at ATAC's Arsenal Laboratory in Warren, Mich.,

was developed from England's concept. It is used to study and evaluate the deteriorating effects of ozone on rubber and polyethylene wrapping material in storing rubber products.

The Department of Agriculture, the Department of Health, Education and Welfare, the U.S. Weather Bureau, the Bureau of Standards and the Department of Defense are engaged in a joint test program which relates rubber deterioration to the percentage of ozone in the atmosphere. England initiated and directs the program.

Another major economy accredited to England is the idea of retreading military tires and tank roadwheels, which has saved millions of dollars.

During his civilian career he has served as military chairman of the following groups: Ordnance Technical Advisory Committee on Rubber; Ordnance Advisory Tire and Rim Committee; Ordnance Tire Reconditioning Committee; Ordnance Advisory Bogie Roller Committee; Society of Automotive Engineers Consultant for Ordnance; American Chemical Society Consultant for Ordnance.

Articles on rubber and its uses authored by England have been published in *Rubber World*, *Rubber Age*, *India Rubber World*, *TBA Merchandising* and the journal of the American Chemical Society.

## DoD Saves \$58.5 Million By Employee Suggestions

Approximately 30 percent of the more than 225,500 suggestions made by Department of Defense personnel during the past fiscal year were placed in effect, resulting in about \$58,538,000 in tangible benefits.

The savings in manhours, supply and military materiel, paperwork, longer equipment life and simplified methods amounted to over 90 percent of the total measurable benefits for all Federal agencies in FY 1962.

One of the major awards went to John C. White, an electronic engineer with the U.S. Army Airborne and Electronics Board, Fort Bragg, N.C. He was awarded \$2,390 for recommending use of a lightweight antenna kit on tactical vehicles using medium-high frequency radio equipment.

Installed by the average operator in less than 10 minutes, the new kit weighs about 9 pounds and costs \$69.10. It replaces a kit weighing 169 pounds, costing \$309 and requiring two trained men as much as one hour to install. Estimated annual savings accruing from adoption of the suggestion will be \$1,760,866.



## Fort Detrick Training Spurs Self-Improvement

U.S. Army Biological Laboratories at Fort Detrick, Md., have conducted during the past 10 years an ambitious training program for all employees.

Realizing that cross-indoctrination of personnel is a requisite to the advancement of the research mission, management officials are continuing efforts in developing and administering a training program designed to improve job performance.

Under this stimulus Detrick employees have recognized the need for self-improvement and many continue to study on their own time. Several are working toward advanced degrees. During a 12-month period 540 employees participated in 26 on-post and 36 off-post courses in science and technology, management and general subjects.

Most of the training has been conducted at Fort Detrick. However, a number of employees have gone off post to attend specialized courses conducted by the Department of the Army, other Government agencies, universities and industrial firms.

Closed-circuit television also has been utilized in the local training. Most of the instructors are drawn from qualified employees and their interest and enthusiasm in teaching has been a big contributing factor to the success of the program.

"Just how successful?" was the question raised by the Commanding Officer, Col Carl S. Casto, when he requested the Training Branch, Civil-

ian Personnel Office, to coordinate with the Comptroller in preparing a study on training costs and an evaluation of the results.

Veronica Catlett and Frank Hart of the Training Branch were assigned the task. Through carefully prepared questionnaires filled out by users of the training, the intangibles involved in an evaluation of this sort were made tangible. In December 1962, Catlett and Hart gave their report.

The study revealed that training is "a way in which management gets its job done. Therefore, it is an integral

and fundamental part of personnel management. Increased understanding resulted in improved relationships. Management officials, supervisors and employees indicated the training paid off in application to their jobs.

"In terms of time saved, increased efficiency, greater productivity, and improved maintenance, the costs of the training were justified. Positive results were evident in other aspects, also. Improved morale, employee advancement and improved work methods are a positive result. . . ."

The report concludes with a recommendation that a well-rounded program of training at all levels of employment be continued.

## 2 Fort Detrick Lab Specialists Keep Running Around

Aspirations pointed to the 1964 Olympic Games are keeping two enlisted laboratory specialists on the run at the U.S. Army Biological Laboratories, Fort Detrick, Md.

Pfc Larrie M. Sweet and Specialist Ralph Buschmann average about 100 miles each week as they prepare for the track season with their ambitions pinned on competition in major meets.

A graduate ceramic engineer from Alfred University, N.Y., (1961), Sweet has stacked up an impressive supply of trophies for his efforts.

As a member of the All American college cross country team, he consistently turned in near record time—1:53 in the 880-yard dash, 4:14 in the mile, and 9:20 in the 2-mile. The 24-year-old soldier now runs for the Baltimore Olympic Club.

Assigned as a chemical laboratory specialist, Pvt Sweet reported for duty at Fort Detrick in February

1961. Following his military service, he plans to work toward a graduate degree in ceramic engineering at the University of California.

Specialist Buschmann, 23, reported to Fort Detrick in December 1961, following basic training at Fort McClellan, Ala. He is a graduate of Punchard High School, Andover, Mass., and received a B.S. degree in chemistry from the University of Massachusetts.

In high school and college track meets he was clocked at 4:24 for the mile, 9:44 for the 2-mile, and two minutes for the half mile. In a recent AAU-sponsored 25-kilometer road race at American University, Washington, D.C., Buschmann bettered the national mark for the score by more than two minutes, covering the distance in 1:23 as compared to the record of 1:25:54.

Buschmann is directing his efforts toward competing in the Boston Marathon which will be run Apr. 19.

## Brig Gen Davison Assigned To Lead USMA Cadet Corps

Brig Gen Michael S. Davison, Chief of Staff, V Corps, U.S. Army, Europe, since June 1962, has been assigned as Commandant of Cadets at the U.S. Military Academy effective this month.

Chief of the Combat Materiel Division, Office of the Chief of Research and Development from 1958-60, he is a 1939 graduate of the Academy. He served as Commanding Officer, 1st Regiment, U.S. Corps of Cadets, at West Point from 1954-57.

During World War II he saw combat action with the 45th Infantry Division in the Mediterranean Theater of Operations and with the VI Corps, European Theater of Operations.

Other recent assignments include Office, Chief of Legislative Liaison, Washington, D.C.; Office, Chief of Staff, U.S. Army; and Senior U.S. Representative, U.S. Army Standardization Group, London, England.



Pfc Larrie M. Sweet (left) and Specialist Ralph Buschmann display wide array of trophies won in track and field competition around the country.



# Redstone Scientists Develop Pure Fluid Valve for Missiles

Research scientists at the U.S. Army Missile Command, Redstone Arsenal, Ala., have developed a valve that may solve one of the difficult problems in missile work — that of providing an efficient lightweight device for valving high pressure gases.

The valve is being perfected and tested by scientists in the Electromagnetics Laboratory of the Directorate of Research and Development. Working models of the fluid (pneumatic) valve have no moving parts to corrode, wear or warp. Development work to date has been directed toward control of small missiles.

[Fluid amplification devices (fluid dynamic controls) were first developed by researchers at the Harry Diamond Laboratories, Washington, D.C., an element of the U.S. Army Materiel Command, and are the basis of the Army's dramatic new artificial heart pump. For description of operational principles, see February 1961 issue.]

Two research scientists, Charles Schreiner, Chief of the Electrodynamics Branch, and Kenneth C. Evans, project leader of the group of scientists and engineers, feel the valve is not limited to these uses but also has application to direct bleed secondary injection.

The research group headed by Evans is made up of Joe Halisky, William E. Lane, J. C. Dunaway, Carroll Godwin and Vernon Ayre.

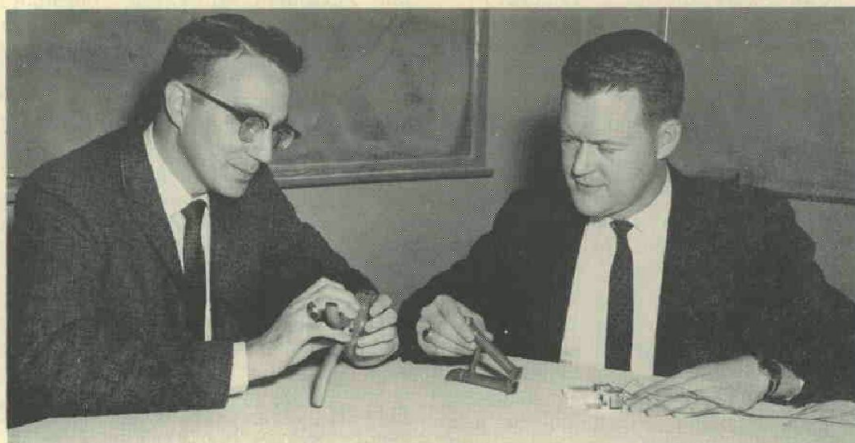
The valve is simple because it is a block of metal with holes, contains no moving parts exposed to hot gas and its tolerances are not critical. It is made of low-density metal weighing only a few ounces for small missile applications, and is efficient because it provides a high percentage of the energy available in the gas in the form of side thrust.

The device consists of a converging-diverging nozzle similar to a missile motor nozzle, two side ports for admission of atmospheric pressure, and a chamber with two exhaust openings.

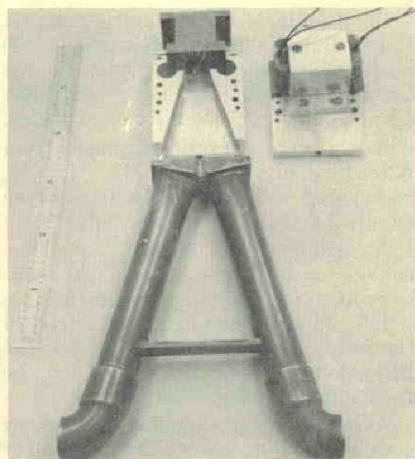
While the construction of the valve is simple, principles involved in valving high pressure hot gases are not.

Gases from a solid-propellant gas generator are normally released through the valve's nozzle into the main chamber at a velocity of approximately Mach 3.6, which is almost four times faster than sound.

The design of the new nozzle increases the velocity of the hot gases. Previous low-pressure designs had a



Scientists Charles Schreiner and Kenneth C. Evans discuss pure fluid valve perfected by the Electromagnetics Laboratory of the Directorate of Research and Development, U.S. Army Missile Command, Redstone Arsenal, Ala.



**DISASSEMBLED FLUID VALVE** illustrates simple construction of the device. Hot gases from a gas generator are sent through the valve's nozzle (top of picture) at supersonic velocities, moved to one side in the main chamber and forced to exhaust from ports (bottom of photograph). Used in guidance control of small missiles, the device has no moving parts except in electromechanical rocker arm, at right of illustration.

straight tube-type nozzle.

Evans pointed out that the problem is to get the high-velocity gases to move to one side of the chamber and exhaust out the desired opening. This is done by opening one atmospheric port and closing the other. The open port supplies a relatively high-pressure differential across the gas stream as well as momentum from the incoming air.

Both the pressure differential and

the momentum of the air combine to form a pushing effect on the exhaust stream, causing it to deflect and in turn to exhaust at the surface of the missile to create a reactive thrust for missile control.

The reaction achieved by valving the hot gases to the proper channel provides pitch, yaw or roll control for the missile, Evans said. Three valve units are used in the system the scientists used as a test model.

Evans pointed out that the only moving part in such a system is a rocker-arm device used to open and close the atmospheric ports. Response time to guidance commands is limited only by the reaction time of the electromechanical rocker-arm.

Relatively little power is required to move solenoids used with this technique because the moving parts are not exposed to the wear and tear of the high-velocity hot-gas exhausts.

Schreiner said the valve has been found to be effective at source pressures of up to 1,200 pounds per square inch and temperatures to 2400° F., and that these are not the upper limits. Because of the inherent nature of the device it can be made to operate at the same temperatures and pressures motor nozzles withstand.

Valves of varying sizes are being tested at the Electromagnetics Laboratory. Some smaller than one's hand produce an output of 18 pounds thrust, while valves weighing only a few pounds produce 50 pounds thrust.

Scientists test the experimental valve with high-pressure air before using hot-gas generators. Gas tests



must be completed under range safety conditions.

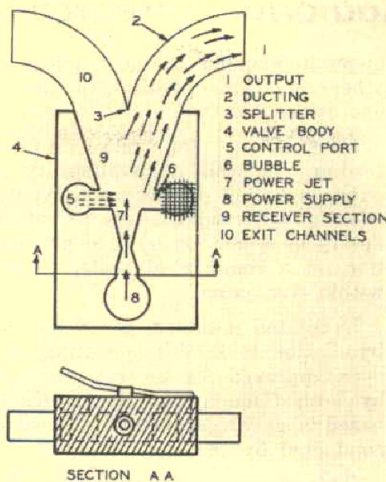
Schreiner said work done in the laboratory on the "pure fluid" valve, in progress for about one year, is an extension of principles developed by the Harry Diamond Laboratories. He stated his research scientists have developed new concepts which work for low-pressure systems, and extended them in high-pressure, high-temperature missile applications.

A pure fluid control system is one in which all functions are accomplished by interaction of fluid flow, as opposed to systems which use electronic, electromechanical and mechanical means.

Projecting the future uses of the new valve, he said that the device could be used to valve hot gasses in a completely pure fluid control system.

Schreiner pointed out that moving parts, such as jet vanes and flapper type valves, exposed to high pressures and temperatures are less desirable, particularly at higher temperatures, because the parts corrode and warp.

Electromechanical devices such as relays and solenoids made to operate conventional valves will not work efficiently when moving parts stick and bind. Quick response to guidance sig-



**VALVE SCHEMATIC** — Parts 1 through 10 depict operating features of pure fluid valve developed by the U.S. Army Missile Command. Section AA shows a cross section of the valve with electromechanical rocker arm which controls the operation.

nals is also lost when this occurs.

Gases from a rocket motor could be valved efficiently, he said, to be used in exhaust deflection, providing guidance more trouble-free than jet vanes exposed to rocket motor exhausts.

## Worldwide Conference Considers Army Management

"The Managing Function in the Army" was the theme of a worldwide management analysis conference, sponsored by the Office of the Comptroller of the Army, Feb. 17-20, at the Army Management School, Fort Belvoir, Va.

Comptroller of the Army Lt Gen Charles B. Duff chaired the conference. In his welcoming remarks he noted that the expanding management job in the Army called for studies designed to achieve greater assistance from management analysts in helping commanders carry out their missions.

Representing Lt Gen Frank S. Benson, Jr., Commanding General, U.S. Army Materiel Command (USAMC), Brig Gen Fred P. Campbell delivered the keynote address on "The Management Science Office and Resource Utilization in the U.S. Army Materiel Command."

Other speakers, representing Government, industry and various universities, included: John Diebold, author of the book *Automation*, and president of The Diebold Group, Inc., an international management service;

Maj Gen W. C. Westmoreland, Superintendent, U.S. Military Academy; J. E. Judge, Project Planning Manager, Lincoln-Mercury Division, Ford Motor Co.; Dr. James L. Hayes, Dean, School of Business Administration, Duquesne University; Dr. Harold J. Leavitt, Department of Industrial Administration and Psychology, Carnegie Institute of Technology; Solis Horwitz, Director of Organizational and Management Planning, Office, Secretary of Defense; and L. W. Hoelscher, Deputy Comptroller, Army.

Chiefs and key members of the management analysis staffs of commands and agencies participated in round table discussions and seven study groups which focused on such facets as decision-making, forecasting, systems design and control, organizing, program management and utilization of management sciences.

Brig Gen Robert N. Tyson, Director of Management, Office of the Comptroller, delivered closing remarks. He emphasized the value of the conference as a means of bringing together management specialists for an exchange of experiences to explore ways to attain military-industry goals.

## Reassignments Announced For 10 General Officers

Secretary of the Army Cyrus R. Vance recently announced new assignments for 10 Army general officers.

Maj Gen Charles W. Rich, formerly Commanding General, 101st Airborne Division, Fort Campbell, Ky., has assumed command of the Infantry Center, Fort Benning, Ga. He succeeds Maj Gen Ben Harrell who was named Assistant Chief of Staff for Force Development.

Maj Gen Harry H. Critz was reassigned from Artillery Commander, VII Corps, U.S. Army, Europe, to succeed Gen Rich at Fort Campbell.

Effective this month Maj Gen Robert G. MacDonnell, Director of Civil Works, Washington, D.C., will become Deputy Chief of Engineers, U.S. Army. He will be succeeded by Brig Gen Jackson Graham, Division Engineer, Cincinnati, Ohio, who has been nominated for 2-star rank.

Maj Gen Edwin H. Carns, Assistant Deputy Chief of Staff for Military Operations, Plans and Operations, Washington, D.C., has been assigned to the Army Training Center (Infantry), Fort Ord, Calif., in April.

Maj Gen Orlando C. Troxell, Jr., Commanding General, Army Training Center (Infantry), Fort Ord, Calif., is assigned to Headquarters, Second Army, Fort Meade, Md., in May.

Maj Gen Roland H. del Mar, Commanding General, Antilles Command, Fort Brooke, Puerto Rico, has been named Director, Inter-American Defense College, Fort Lesley J. McNair, Washington, D.C., in May.

Brig Gen Henry K. Benson, Jr., Assistant Chief of Staff, G-4, Headquarters, Eighth U.S. Army, Korea, has been assigned to Headquarters, Army Materiel Command, Washington, D.C., effective in May.

Brig Gen Harry W. O. Kinnard, who was Assistant Division Commander, 101st Airborne Division, Fort Campbell, Ky., recently assumed new duties at the U.S. Army Infantry Center, Fort Benning, Ga.

Col Charles W. Eifler, Commander, Frankford Arsenal, Philadelphia, Pa., is assigned to Headquarters, U.S. Army Missile Command, Redstone Arsenal, Ala., effective in April. Col Raymond L. Shoemaker, Jr., Commanding Officer, Army Troop Information Support Unit, Washington, D.C. assumed the duties of Deputy Chief of Information, U.S. Army last month. Both colonels have been nominated for brigadier general rank.



## Army's 10-Year Food Radiation Research 'Brings Home Bacon'

"Bringing home the bacon," long a popular phrase applied to successful productive effort, is in actuality the first milestone of practical progress in the U.S. Army's 10-year research effort to preserve food by irradiation.

The U.S. Food and Drug Administration approved irradiated bacon for unrestricted U.S. public consumption in mid-February after consideration of an Army proposal submitted in July 1962. Bacon was selected as the first irradiated food proposed for public consumption because of the volume of research data readily available.

Investigations are being conducted at the U.S. Army Radiation Laboratory, Natick, Mass., on some 20 additional irradiated food items expected to be ready for submission to the FDA for approval within two or three years. The Laboratory is under the U.S. Army Materiel Command and the research is being conducted as a joint effort with The Surgeon General.

FDA clearance of irradiated bacon does not mean that it will be introduced now as a standard Army ration item, nor that it will become a commercial food item in the immediate future, although it is also the first food approved by the FDA at the sterilized level.

Extensive troop feeding tests will be conducted to establish acceptability of irradiated bacon as a standard

menu item under arctic, tropical and other conditions peculiar to military operations.

Procurement for mass military feeding, as well as availability for public use, will depend upon eventual adoption of irradiation by private industry as a method of food preservation on a commercial scale, possibly within five years.

Irradiated potatoes, given low-dose irradiation to inhibit sprouting, have been approved for several years now by both Canada and Soviet Russia, based largely upon results of research conducted by the U.S. Army.

Over the past 10 years the U.S. Army's food irradiation research program has involved active participation of more than 70 industrial firms, 40 universities, 10 nonprofit organizations and many major Federal agencies.

Except for canning, irradiation is hailed as the first completely new form of food preservation developed since the dawn of history. Drying, smoking, freezing and other standard form of food preservation are as old as civilization.

The advantage of irradiation, as compared to canning, is that it permits the preservation of foods in a fresh state, i.e., without having to be "cooked" by extensive application of heat, and without having to be kept under refrigeration.

Some irradiated food requires a slight blanching process to inhibit chemical changes, but the effect in most instances is negligible on the so-called freshness.

Irradiated bacon will come out of the can in a state practically indistinguishable from so-called raw bacon and ready for frying in the normal manner. The advantage over non-irradiated bacon is that it will keep at room temperature without having to be held under refrigeration.

Food and Drug Administration clearance has been granted specifically for bacon irradiated with a 4.5 megarad dose of gamma rays from a cobalt 60 source and packed in tin cans. This will be the type irradiated bacon used for the forthcoming troop acceptance tests.

Research will continue to perfect other forms of irradiation and packaging, including flexible plastic coverings, not only for bacon but for other foods now in various stages of development. Packaging is necessary for most foods since irradiation kills existing microorganisms which cause spoilage in foods. But foods still must be protected from subsequent contamination.

Packaged irradiated food will keep approximately as long as comparable canned foods, usually from six to 12 months, with no noticeable deterioration of taste, odor, texture or color, Army researchers report.

Some test foods have been held at room temperature for as long as two and three years with no appreciable deterioration. Army plans call for the usual turnover of irradiated food stocks with approximately the same frequency as standard canned foods.

Principal problems remaining to be solved in the food irradiation field lie in the areas of palatability and packaging, i.e., developing the precise type and degree of irradiation, and the sort of packaging, which achieves the maximum "shelf life" with the minimum effect upon normal taste, odor, texture and appearance for each particular food item.

Items expected to be submitted by the Army for FDA clearance during the next two years include potatoes, wheat flour, chicken, pork loins and fresh oranges. Other fresh foods also under development include peaches, carrots, shrimp, codfish, tuna fish, ground beef, green beans, cabbage.

## Frequency Coordinator Carries On at USAEPG

An important but little publicized operation at Fort Huachuca, Ariz., is that of the Office of the Area Frequency Coordinator. It is the only activity at the U.S. Army Electronics Proving Ground remaining under the supervision of the Chief Signal Officer after Army reorganization in 1962.

Headed by William R. Foley, the office is a part of the worldwide Army Signal Radio Propagation Agency.

The principal responsibility of the office is to provide technical advice on the use of radio frequencies by Army, Navy and Air Force commands within the State of Arizona. Foley serves also as a consultant to officials of the U.S. Army Electronic Proving Ground and tenant commands at Fort Huachuca in the field of radio frequency engineering and management.

Prior to reporting to Fort Huachuca as Area Frequency Coordinator in 1955, Foley had been associated with the Federal Communications Commis-

sion and predecessor agencies since 1930. During military service (1943-'46) he was assistant to the Chief, Frequency Section, Naval Communications.



William R. Foley



## WSMR Training Technical Librarians on Post

In view of the Department of Defense emphasis on achieving more effective use of available scientific and technical information, White Sands Missile Range (N. Mex.) has come up with a training program that may be of widespread interest.

Through an arrangement with New Mexico State University in Las Cruces, a special course for technical librarians is being taught at the national missile range.

Walter McGuire, NMSU library science instructor, comes to WSMR two days a week and holds a 90-minute class each day. WSMR's large and modern technical library is utilized as a work-laboratory.

"Because technical librarians are very scarce and we have specific needs, it is to our advantage—as well as more economical — to have the training given on post," explained W. E. Scharfenberg, Employee Development, of Civilian Personnel Office.

Margrett D. Zenich, WSMR technical librarian, was instrumental in setting up the program and in defining material to be used. Each course is tailored to meet specific needs at the

missile range as well as to meet specific requirements by the school.

Initiated last year, the courses include cataloging and classification of materials. The current course deals with reference materials, ranging from gathering and classifying to compiling bibliographies. Students have the advantage of working under library operating conditions and with real technical material.

"These 10 people are getting professional training for less than it would cost to send one person to school," said Mrs. Zenich. "At the same time, we have their services while they are receiving the training."

WSMR is recognized as having one of the most complete technical libraries in the Southwest, serving also as an archive and procurement center, with some 20 employees. Its more than 200,000 nonexpendable volumes and thousands of expendables facilitate the work of missile scientists, engineers and technicians.

The reports section—the heart of research and development—contains approximately 300,000 documents including reports and technical manuals,

both classified and unclassified prepared by practically every recognized authority in the field of science. Many of these are from foreign countries.

Catalogues are kept on hundreds of reports and scientific papers obtainable on loan from the Armed Services Technical Information Agency (ASTIA) in Washington, D.C., or from contractors and individuals.

Under development is an Information Retrieval System. This is a program for compiling bibliographies on particular subjects by means of an electronic computer. Once the program is set up, a complete and accurate bibliography can be compiled on any subject within seconds.

## Computer Symposium Reviews NELIAC Gains

Joint military-industry research and standardization for economy in national defense expenditures was the theme of a recent 2-day Computer Programming Symposium at the U.S. Army Electronic Proving Ground (USAEPG), Fort Huachuca, Ariz.

Progress was reviewed in the development of a specialized computer language called NELIAC (Naval Electronics Laboratory International Algorithmic Compiler) by some 60 conferees representing 20 military and civilian R&D agencies.

Col Geoffrey D. Ellerson, Deputy Commander, USAEPG, welcomed the group and James J. Lamb, Chief Scientist, Electronics Research and Development Activity, Fort Huachuca, an activity of the U.S. Army Materiel Command, gave the opening address. Robert L. Patrick, Northridge, Calif., made one of the major addresses on "The Financial Implications in Design of Programming Systems."

Panel discussions were chaired by Dr. Harry D. Huskey, professor of mathematics, University of California; Dr. Clair E. Miller, director of applications, Data Control Corp., Palo Alto, Calif., and Dr. Maurice Halstead, head of the U.S. Navy Electronic Laboratory Computer Center, San Diego, Calif. Drs. Huskey and Halstead are credited with pioneering the development of NELIAC.

The symposium was cosponsored by the Automatic Data Processing Department (ADPD), Fort Huachuca Electronics R&D Activity, commanded by Lt Col Charles H. Burr, Jr., and Thompson Ramo Wooldridge, Inc., RW Division, technical assistance contractor to the ADPD. Dr. Fletcher Donaldson, RW Division, was chairman.

## WSMR Dismantles 100,000-Pound Static Test Stand

One of the testing landmarks at White Sands (N. Mex.) Missile Range, the 100,000-pound static test stand built into the east face of a spur of the Organ Mountains, is being dismantled.

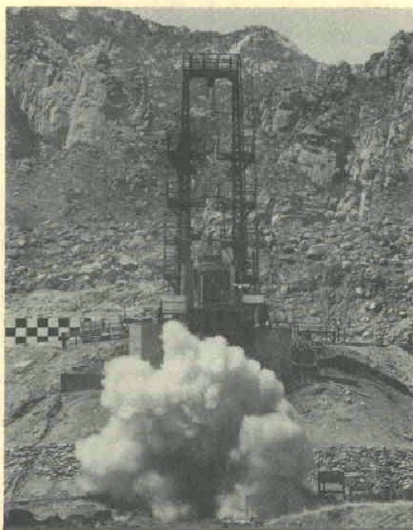
Although the instrumentation and operating controls have been removed as well as the outrigger mount, the test stand in all probability has not seen the last of its useful days. It will be refurbished and placed in a standby position.

Used for "in place" testing of missiles and their components, the stand is operated by the Propulsion Laboratory of the Army Missile Test and Evaluation Directorate.

Built a year after White Sands was officially opened, the giant stand was used first to static fire the German V-2 missiles prior to their actual flight tests. Later, the Air Force's Bomarc booster was tested. Corporal had the longest run on the stand. One of the Nike air defense missile family—Nike Ajax—also underwent engineering tests.

The 100,000-pound static test facility is suited for static firing of liquid-propellant rocket engines in vertical or horizontal position. The 50-foot-steel tower, used for vertical

firing only, has a thrust capacity up to 100,000 pounds and is suitable for a missile component, test package or a complete missile not more than 8 feet in diameter or 50 feet long.



LANDMARK built into the east face of the Organ Mountains, the 100,000-pound static test stand, now in standby status, spews forth smoke and steam as a memento to its earlier full-operations role at WSMR.



# Army R&D Leaders Favor Postdoctoral Program Expansion

Stimulus provided by the U.S. Army Biological Laboratories at Fort Detrick, Frederick, Md., in encouraging employees to take part in a Postdoctoral Program of research and to seek Ph.D. degrees may prove contagious. That is a hope of Army research and development leaders.

Success of the overall effort is reflected in some 35 employees who have earned doctoral degrees and others who have been granted postdoctoral resident research associateships.

The latter, sponsored by the National Academy of Sciences-National Research Council, are described in detail in the January 1963 issue of this publication, page 8. Recipients of as-

sociateships get an annual gross stipend of \$9,475.

Dr. Richard A. Weiss, Deputy and Scientific Director of the U.S. Army Research Office, recently studied the Biological Laboratories program to raise the proficiency level of employees, as outlined by Col Carl S. Casto, commander of the installation.

Dr. Weiss is interested in exploring the possibilities of establishing or expanding similar programs to upgrade professional competence at other Army R&D in-house facilities. The current Biological Laboratories program has been developed by more than four years of effort.

Actually, on the basis of information currently available, it appears that the Biological Laboratories have provided a practical approach unrivalled by any other Army installation in achieving one of the major objectives of Army Regulation 705-55, dated Oct. 11, 1962.

The 5-year program prescribed by that Regulation permits expenditure of up to \$10 million a year to stimulate creative research and increase the professional competence within Army in-house laboratories.

Initial overtures to establish the postdoctoral resident research associateship program in the Army Biological Laboratories were made to Dr. C. J. Lapp, Deputy Director, Office of Scientific Personnel, National Academy of Sciences-National Research Council.

Before approving the request to participate, the NAS required that a coordinating committee of scientists be selected at Fort Detrick and that a description be given of facilities and projects that might prove applicable.

Steps then were taken to secure approval of five Schedule A positions at Fort Detrick, that is, positions not included in the normal competitive system, either for recruiting or selection of applicants. Schedule A positions require endorsement by the U.S. Civil Service Commissioners and subsequent listing in the Federal Register.

Approval of the Commissioners for the five positions at Fort Detrick was granted Oct. 30, 1958 and the first appointments by contract with NAS were made in November 1959, under provisions of Civilian Personnel Regulation R2, 6.105(K) (1). No commitment on the part of the Associate or the laboratory with regard to later employment is implied.

As of Dec. 31, 1962, a total of 16 applications for associateships had been approved by the NAS for consid-

eration of Biological Laboratories leaders. Nine applicants had accepted offers and reported to Fort Detrick for a year of advanced training. Five of the nine remained longer than one year and three are still employed.

Col Casto commented on the caliber of participants by saying:

"... We have found these young men to be sincere, diligent workers who have contributed to our program. We also take some pride in knowing that these men have acquired experience and training here at Fort Detrick which will be of utmost benefit to themselves and possibly to our country in the years to come. This is in full keeping with the intent of the program and the desires of the National Academy of Sciences."

What might be regarded as a challenge to other Army R&D activities is contained in Col Casto's submission to Dr. Weiss of material on the program, calling his attention to the fact that "the Biological Laboratories represent the only Army establishment in this program."

Among administrative mechanisms by which the Biological Laboratories have enabled qualified investigators on the staff to complete their work to the Ph.D. level and, in some cases, specialized postdoctoral training, Col Casto listed:

- *Leave of absence*—By granting extended leave of absence, approximately 17 individuals have been permitted to work for advanced degrees.

- *Adjusted work schedules*—Approximately 14 individuals have worked for advanced degrees in universities near Fort Detrick through adjustment of their work schedules in the Laboratories to meet study requirements.

- *Grant program*—Under Section 9, CPR T4, based upon a recently passed Training Act, individuals are eligible for advanced educational training, with Government paying full salary less any amount which the university makes available to the individual in the form of a grant.

- *Postdoctoral Fellowship*—Under Section 5, CPR, based upon the Training Act, it is possible to enter into contracts up to one year in duration for specialized postdoctoral training.

- *Training in Novel Techniques*—Under Section 5, CPR, it is possible to enter into contracts up to one year in duration for training qualified individuals in novel techniques that have been developed subsequently to their prior university education.

## CRDL Employee Presents Paper at Meet in Japan

Margaret G. Filbert, an Army research physiologist, presented a paper on the use of luminescence as a tool for studying organic chemical compounds at a recent science conference in Tokyo.

Employed at the U.S. Army Chemical Research and Development Laboratories, Edgewood Arsenal, Md., Mrs. Filbert was one of the U.S. representatives at the 18-nation meeting sponsored by the Science Council of Japan. After attending a week-long symposium on molecular structure and spectroscopy, she later attended a meeting at the University of Kyoto.

Mrs. Filbert has done extensive graduate work in preparation for her doctorate after earning her B.A. and M.A. degrees from the University of Maryland in zoology and physiology. Secretary of the Subcommittee on Molecular Fluorescence of the American Society of Testing and Materials, she is the author of a number of articles on fluorometric analysis.



Margaret G. Filbert



## ODCSOPS, Reserves Involved in Staff Changes

Reorganization of the Office of the Deputy Chief of Staff, Operations (ODCSOPS) and the centralizing of general staff responsibility for development of the Reserve Forces of the Army under the Office, Chief of Reserve Components, are progressing as recently directed.

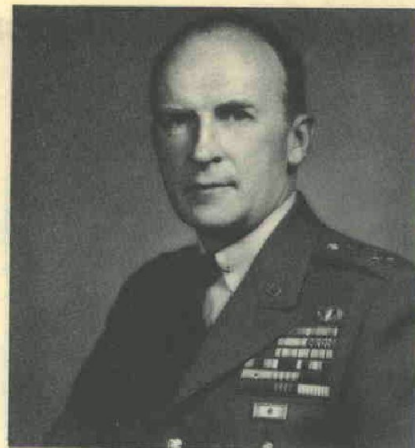
Secretary of the Army Cyrus R. Vance said the changes are being made "to simplify and strengthen" Army planning and programming. ODCSOPS will continue as a general staff agency but will transfer various functions to a new Office of the Assistant Chief of Staff for Force Development (OACSFOR).

The Chief, Office of Reserve Components (CORC) is now authorized

staff supervision of all plans, policies and programs affecting the Reserve Components within the Army staff.

Previously, responsibility for specific elements of the program were dispersed throughout the Army staff. CORC continues to exercise general staff supervision over the Army Reserve Component activities of the Chief, National Guard Bureau, and the Chief, Army Reserve Affairs.

Lt Gen Theodore W. Parker continues as DCSOPS. He will be principal adviser to the Chief of Staff on all joint affairs and on the establishment of requirements for and utilization of major combat ready forces, and will serve as Army Operations Deputy for the Joint Chiefs of Staff.



Maj Gen W. H. S. Wright

ODCSOPS will also provide staff advice on special warfare and civil affairs matters.

The new ACSFOR, to be designated later, will be the principal adviser to the Chief of Staff on the coordinated development of Army forces to include combat doctrine, training, organization and equipment. His office will provide staff advice on chemical, biological and radiological warfare and Army Aviation.

Maj Gen William H. S. Wright, nominated for promotion to lieutenant general, assumed the duties of CORC Feb. 21. He succeeds Maj Gen Carl Darnell, Jr., who was reassigned to the U.S. Army, Pacific.

Responsibility for the Army Reserve Officer Training Corps (ROTC) has been transferred from the former Office, Chief of Army Reserve and ROTC Affairs (now redesignated the Office, Chief of Army Reserve Affairs) to Office, Reserve Components.

### Report Covers Conference On Endogenous Metabolism

The New York Academy of Sciences recently published Volume 102 of its annals, devoted to the 1962 Conference on Endogenous Metabolism with Special Reference to Bacteria held last September in New York City.

Dr. Carl Lamanna, chairman of the conference, served also as consulting editor of the publication reporting the results. He is Deputy Chief of the Life Sciences Division, U.S. Army Research Office, which partially financed the conference since it was on a subject of military interest.

In 1959 Dr. Lamanna and Dr. F. M. Mallette coauthored a revised edition of their *Basic Bacteriology*, first published in 1953 and generally regarded as a definitive textbook on the subject of endogenous metabolism with reference to bacteria.

## Aberdeen Realigns Units for Improved Management

Changes in the organizational structure of Aberdeen Proving Ground, Md., Headquarters of the U.S. Army Test and Evaluation Command (USATEC) and many other major Army agencies, were effected in February.

Col Elmer W. Grubbs, post commander, said the reorganization had been under study for several months to streamline operations through consolidation of functions, elimination of duplication, and compliance with criteria of the USATEC.

The Civilian Personnel Office and the Manpower Management Office, together with the military personnel and education services functions formerly assigned to the Adjutant Office, are now elements of a consolidated Personnel Management Office.

Activities responsible for the principal administrative and support missions, formerly under the deputy post commander, are assigned to a new Technical Support and Troop Support Directorate. Headed by Lt Col R. T. Binder, it consists of Engineering

Support Services, Communications-Electronics, Transportation-Maintenance, Quartermaster, Procurement, Central Supply, Property Disposal, Technical Library, Command Maintenance and Supply Inspection offices.

Development and Proof Services, the principal test and evaluation mission element of the APG, now reports directly to Col Grubbs. Col Eugene C. Barbero heads this element.

In addition to its technical missions and internal support services, the APG is responsible for logistical and administrative support to the U.S. Army Ordnance Center and School, the U.S. Army Ballistic Research Laboratories, the U.S. Army Human Engineering Laboratories, and the U.S. Army Limited War Laboratory.

Additional elements at APG include the U.S. Army Coating and Chemical Laboratory, the U.S. Army Ordnance Combat Developments Agency, U.S. Army Guided Missile Shop, and liaison offices of the U.S. Army Combat Developments Command, U.S. Navy and U.S. Air Force.

## LOGEX 63 Interservice Maneuver Slated at Fort Lee

The need for continuous logistical and administrative support under assumed combat conditions with an enemy capable of using nuclear, chemical and biological weapons will be stressed in LOGEX 63, Apr. 28-May 11.

The annual interservice logistical command post exercise and map maneuver will be held at Fort Lee, Va. More than 6,000 Active Army and Army Reserve personnel will join with participants from the Navy, Air Force and State Department.

The exercise will employ as its tactical

framework a hypothetical combination of a general war situation in Europe and a new conflict in the Middle East requiring the employment of a Joint Task Force. Special Forces units will be used as a counterinsurgency measure against aggressor subversive activities in the Middle East. Nuclear play will be utilized as in past LOGEX scenarios.

Under supervision of Hq., U.S. Continental Army Command, LOGEX 63 will be directed by Lt Gen John S. Upham, Commanding General, Second U.S. Army, Fort Meade, Md.



## Army Electronics Laboratory Troop Command Set Up



Maj Wallace H. Traver

The Support Battalion of the U.S. Army Electronics Research and Development Laboratory, whose roster includes scientists, engineers, highly skilled technicians and globe-trotting equipment instructors, is being streamlined.

Col James M. Kimbrough, Jr., of the Fort Monmouth, N.J., unit, announced Feb. 15 that its new designation is the Army Electronics Laboratory's Troop Command, comprised of some 500 personnel.

The change is more than a mere switch in names, he said. One of the major gains is that a larger percentage of men will be engaged in operational activities through reduction of administrative overhead.

The new Command, a more compact

### Watervliet Arsenal Leader Serves as USMA Consultant

Dr. Robert E. Weigle, Chief Scientist and Technical Director of the Benet Laboratories at Watervliet (N.Y.) Arsenal, has accepted an invitation to serve also as consultant to the Ordnance Department, U.S. Military Academy.

Advisory service will include technical guidance as to course content and instruction methods in the fields of engineering, mechanics, thermodynamics, computer technology, materials science and weapons development. He will advise Col John D. Billingsley, head of the Military Academy Ordnance Department, on programing matters.

Dr. Weigle holds an M.S. in mechanics and a Ph. D. in mechanics and nuclear science from Rensselaer Polytechnic Institute in Troy, N.Y.



Capt Harold D. Jacob

organization, operates directly under a consolidated headquarters. Fewer personnel are required for administration and support of elements.

Functions in the reorganized unit, commanded by Capt Harold D. Jacob, are divided into research and development, and new equipment assistance.

Maj Wallace H. Traver, who had commanded the Support Battalion for approximately a year, has been named Research and Development Coordinator in the office of Col T. K. Trigg, Director of the Army Electronics Laboratory's Surveillance Department. His job is to assist scientists

and engineers in the development of avionics and surveillance systems.

The men who make up what becomes the new Troop Command have attracted national attention on many occasions. Highly skilled in Army electronics, they assist scientists and engineers in the military applications of equipment and systems, perform equipment maintenance, and introduce new equipment to troops in the field.

The new equipment instructors, who normally travel a million-odd man-miles a year, teach U.S. soldiers virtually the world over how to operate and maintain the latest electronic and kindred equipment and systems.

A recent check, for instance, showed that teams were in Europe, Okinawa, Panama and Alaska, as well as at several points in the continental United States. A swift move from the Arctic to the tropics is commonplace, and transportation may range from jet to jeep to donkey.

The instruction for combat troops doesn't end when an equipment team finishes conducting a course. The soldiers they have just taught then instruct other men in their outfits or elsewhere, a method by which vital information is spread rapidly.

The Troop Command mission is: To support the Laboratory in research and development, to get new equipment into the field as quickly as possible, and teach the users operation and maintenance procedures.

## SCIENTIFIC CALENDAR

Quantitative Spectroscopy at Elevated Temperatures & Selected Applications in Space Science, sponsored by AFOSR, AF-CRL, ARPA, NASA, Institute for Defense Analyses and ONR, Pasadena, Calif., Mar. 20-22.

Annual Technical Meeting of the Protective Coatings Division of The Chemical Institute of Canada, Toronto, Ontario, Canada, Mar. 21.

Annual Technical Meeting of the Protective Coatings Division of The Chemical Institute of Canada, Montreal, Quebec, Canada, Mar. 22.

2nd Latin American Medical Conference, Panama Canal Zone, Mar. 24-27.

1963 Army Operations Research Symposium, ARO-D, Durham, N. C., Mar. 26-28.

International Symposium on Photochemistry, sponsored by AFOSR, Rochester, N. Y., Mar. 27-29.

National Society for Programed Instruction San Antonio Mar. 28-30.

5th Symposium on Process Automation, Santa Monica, Calif., Apr. 1-2.

Oak Ridge Radioisotope Conference—Applications to Physical Science and Engineering, Gatlinburg, Tenn., Apr. 1-3.

Symposium on Image Evaluation Techniques & Instrumentation, Wright-Patterson AFB, Ohio, Apr. 3-4.

2nd Symposium on Systems, Cleveland, Apr. 4-5.

4th Symposium on Engineering Aspects of Magnetohydrodynamics, Berkeley, Calif., Apr. 10-11.

International Symposium on Pulsatile Blood Flow, Philadelphia, Apr. 11-13.

International Symposium on Natural Radiation Environment, Houston, Apr. 11-13.

32nd Symposium on Shock, Vibration & Associated Environments Albuquerque, N. Mex., Apr. 15-18.

International Symposium on Optical Masers, N.Y.C., Apr. 16-18.

International Conference on Nonlinear Magnetics, sponsored by IRE, Washington, D. C., Apr. 17-19.

3rd International Congress on Man, Technology & Medicine in Nuclear and Space Age, Rome, Italy, Apr. 17-21.

V/STOL Aircraft Symposium, sponsored by DoD, Kirtland AFB, N. Mex., Apr. 22-23.

3rd Symposium on Biomedical Engineering, San Diego, Calif., Apr. 23-24.

Radioisotopes and Radiation in Plant and Animal Insect Control, Athens, Greece, Apr. 22-26.

Boron-Nitrogen Chemistry Symposium, ARO-D, Durham, N. C., Apr. 23-24.

Electronic Processes in Dielectric Liquids, Durham, England, Apr. 23-25.

Transient Radiation Effects on Electronics, sponsored by DASA, Bethesda, Md., Apr. 29-May 3.

MORS Symposium on Limited War, sponsored by ONR, Annapolis, Md., Apr. 30-May 2.

2nd Congress on Hazards of Electromagnetic Radiation to Ordnance, sponsored by the Bureau of Naval Weapons, Philadelphia, Apr. 30-May 2.



## Col Eifler Returns to Key Missile Command Post

Col Charles W. Eifler, former Commandant of the U.S. Army Ordnance Guided Missile School, Redstone Arsenal, Ala., will return in April to take a key post in the U.S. Army Missile Command.

Brig Gen H. P. Persons, Jr., Commanding General, has announced that Col Eifler, currently commanding Frankford Arsenal at Philadelphia, Pa., will assume duties as Deputy Commander, Land Combat Systems, in Missile Command Headquarters. A 48-year-old native of Altoona, Pa., he has been nominated for general rank.

Col Oliver M. Hirsch, who has held the Land Combat post since last October, will continue as project manager for the Pershing ballistic missile system and commodity manager for the Lacrosse guided missile system.

Col Eifler will supervise work on

## Second MOBIDIC Shipped To U.S. Army in Europe

Delivery of a MOBIDIC system to the U.S. Army Ordnance Supply Control Agency near Orleans, France, in February was the second shipment of the original large-scale digital computer to the U.S. Army, Europe. It will provide data processing control of ordnance supplies within the Communications Zone.

One MOBIDIC system is in use at the Seventh U.S. Army Stock Control Center in Zweibrücken, Germany. There it is supporting the Army's tactical striking force in such areas as computations in fire support, surveillance, intelligence, logistics and administration. (See February 1961 issue of the *News Magazine*, p. 10.)

MOBIDIC was developed as the first and most powerful of the Army Field data family of computers by Sylvania Electric Products, Inc., a subsidiary of General Telephone and Electronics Corp. The ability of computing systems in the field to communicate with one another is essential to the Fielddata processing concept.

Under the technical direction of the U.S. Army Electronics Research and Development Agency, Fort Monmouth, N.J., the MOBIDIC series presently consists of five models. In addition to those in Germany and France, a third serves as the data processing heart of a prototype electronics command post now under development at Newport Beach, Calif. A fourth is at the U.S. Army Electronic Research and Development Activity, Fort Huachuca, Ariz. An evaluation model is at Fort Monmouth.

many of the Army's major missile programs, including the new selective-range Pershing and the shorter-range Sergeant, now phasing into the Army inventory of operational weapons.

Other projects in his charge will include the Lance, Redstone, Corporal and Lacrosse missile systems, the Honest John and Little John rockets, antitank and aircraft weapons.

A 1936 civil engineering graduate of Pennsylvania State College, he received an M.S. degree from Massachusetts Institute of Technology in electrical engineering and is a graduate of the Industrial College of the Armed Forces.

His missile and rocket experience includes a 3-year tour of duty at White Sands Proving Ground, N. Mex., ending in 1951, followed by four years in the Office, Chief of Ordnance—first as Chief, Guided Missile Section, Research and Development Division, and later as Chief of the Division's Rocket Branch. World War II service included assignments with ground forces in Europe and as Ordnance Officer for the XXVIII (Airborne) and VII Corps. His decorations and awards include the Bronze Star and the European-African-Middle East Service Medal (3 stars).

## Ordnance Magazine Carries Address by Maj Gen Clark

A speech titled "Man is the Center of Army Research," given by Director of Army Research Maj Gen C. W. Clark to the American Ordnance Association Industrial Readiness Seminar, is published in the March *American Ordnance*.

Presented in New York City last December, the speech outlined the modern methods of training being developed through research to produce a "force of individual, self-reliant soldiers—men of decision, adaptation, and reason."

Importance of the Army Human Factors Research Program, conducted largely through the U.S. Army Personnel Research Office, with its five laboratories, and the Human Resources Research Office (HumRRO) of George Washington University, is linked in the speech to need for military materiel designed for high standards of man-machine compatibility.

Stressed also is the interdisciplinary research related to human factors studies, including investigations of effects of environmental conditions, food, clothing and medical care on the capabilities of combat troops.

## Amory Waite Adds Honors For Antarctic Research

Amory H. (Bud) Waite, polar explorer and electronic engineer from the U.S. Army Electronic Research and Development Laboratory, Fort Monmouth, N.J., received the Veteran Wireless Association's Marconi Gold Medal Feb. 23. In December he was elected a Fellow of Britain's Royal Geographic Society.

Waite was given the award at a New York dinner. He was cited for his participation as radio man in the group rescuing the late Admiral Richard Byrd from his advanced Antarctic base in 1934, and for his recent activity in perfecting an accurate radio altimeter which can determine for polar flyers the exact height over land or water, regardless of the thickness of the icecap. (See April 1962 issue, page 14.)

Recently returned from Europe, he explained his polar altimeter and ice-depth measurer to scientists in Austria, France, Switzerland, Germany and Britain. He has participated in 10 Antarctic expeditions, 8 Arctic programs and 14 nuclear bomb tests. He has been a radio operator since 1914 and his present radio call is W2ZK.

While his first military service was with the Navy, he has been with the Army Fort Monmouth Laboratories as a civilian employee since 1941, and received the Bronze Star for aiding in establishment of radio communications during the Normandy invasion.

## WSMR Man Claims Rating As Suggestions Leader

Unofficial champion of the Government's Incentive Award program is an electronic development technician at White Sands Missile Range, N. Mex. William E. Trexler of the Radar Division has received cash awards for over 50 percent of his suggestions.

In nearly 20 years as a Federal employee, working for both the Navy and Army, Trexler submitted 47 suggestions, 26 of which won prize money—cash that paid the expenses of bringing his first son into the world and the down payment on his home.

On two of his suggestions the U.S. Government saves \$28,000 annually. He designed and manufactured a test adapter to be used in microwave stations, conserving \$12,000 a year, and his twist-lock connector suggestion means a yearly savings of \$16,000.



## Missile School Enrollment Nearing 10-Year Peak

Registrations at the U.S. Army Ordnance Guided Missile School, Huntsville, Ala., indicate that the average number of students in training will be close to 1,800 per month by June, the highest in the school's 10-year history. Graduates total about 5,000 a year.

Col William J. MacPherson, Commandant, said the first students from Korea, along with new groups from China, France, Germany, Italy and the U.S. Army and Marine Corps have reported for individual training on several missile systems.

Seventeen American and foreign missile support units also are programmed for instruction by the school's Unit Training Command between now

and June. These units will be deployed with tactical forces in the U.S. and overseas.

Part of the student increase is due to the transfer from Fort Monmouth, N.J., of a course in basic electronics required for all Army missile maintenance technicians. About 250 students per month will receive this course, coming directly from the eight weeks of basic military training they receive upon entering the Army. Elimination of travel to and from Fort Monmouth and other Army posts is expected to result in substantial savings.

Adoption of the Hawk air defense missile as a standard weapon for the 15 nations of the North Atlantic Treaty Organization will bring addi-

tional students from Europe.

Neutral Sweden also purchased the Hawk from the United States, and the first Swedish Hawk unit was trained at the School last year. Hawk systems for use in Europe are being manufactured there by firms in five NATO countries.

A large increase in German students is expected as a result of the recent adoption of the Sergeant ballistic missile by West Germany.

By June, the foreign students will comprise more than 40 percent of the Missile School's monthly average enrollment for courses ranging from a few weeks to almost a year.

## CGSC Commandant Shifted To ODCSOPS Assignment



Maj Gen Harold K. Johnson

Maj Gen Harold K. Johnson, since August 1960 Commandant of the U.S. Army Command and General Staff College, Fort Leavenworth, Kans., has been reassigned to the Office, Deputy Chief of Staff for Military Operations.

A 1933 graduate of the U.S. Military Academy he participated in the Bataan "death march" and was a prisoner in several Japanese camps during World War II.

Following the war he attended and later taught at the Command and General Staff College. In August 1950 he led the first provisional infantry battalion to Korea to join in the defense of the Pusan perimeter. Later he served as Assistant Chief of Staff, G-3, I Corps in Korea.

Recent assignments include Chief of Staff, Central Army Group (NATO), Germany; Assistant Chief of Staff, G-3, U.S. Army, Europe; Chief of Staff, Headquarters, Seventh Army, Europe; and Assistant Chief, Plans Division, Office of the Assistant Chief of Staff, G-3, Washington, D.C.

## Natick Inventors Share in 46 Patent Awards

Inventions to protect combat troops against land mines and heat of nuclear explosions are among the 46 patents issued over the past 18 months to Quartermaster Research and Engineering Center personnel.

Fifty-two scientists, engineers and technologists of the U.S. Army Materiel Command Natick (Mass.) Laboratories shared in the patent awards.

Among the inventions are designs for containers for fuels and fluids, mobile equipment, clothing and camouflage, food processing, preservation and packaging, shelters, air-delivery cushioning materials and their manufacture, improved parachute construction, and chemical processes to protect troops and their equipment.

The inventors at Natick are chemists, microbiologists, chemical engineers, mechanical engineers (aeronautical equipment), clothing designers, physical geographers, body armor technologists, food technologists, and packaging and packing technologists.

A combat boot steel shank and a honeycombed material fitting between the insole and outsole, patented separately, are designed to dissipate or absorb much of the blast of an anti-personnel mine.

Eyeshields, gloves and a double material reflective camouflage covering provide protection against the thermal effects of nuclear weapons. The camouflage covering protects men from burns and supplies from being ignited by the heat waves of nuclear explosions.

A patented air-conditioned fuel-handlers suit uses a 21-pound tank of liquid oxygen as both a coolant and source of oxygen for breathing. The

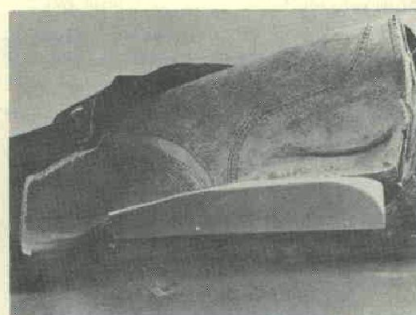
invention permits personnel to be encapsulated in a suit, free of restraining wires or hoses, and protected from any fuel's toxic agents.

A food mixture of wheat gluten and shaped raw meat which produces a flake meat when subjected to freeze-vacuum dehydrating was patented. After rehydration, the combination has the taste, appearance and texture of fresh flake meat.

A chemical composition was patented to preserve and sterilize feathers against microbiological attack and loss of filling power even after prolonged storage and repeated wettings.

Other patents included: "Free-drop container for air delivery," "Coating of metal with layers of titanium esters and a polymer by exposure to high energy radiation," "Demountable shower stand," and "Ground contact shock-absorbing system."

All rights are assigned by Army inventors to the United States of America as represented by the Secretary of the Army.



Cutaway of combat boot shows experimental steel shank designed by Quartermaster R&E Command to dissipate force of anti-personnel mine.



## Boss Encourages Reading Newspapers on Job

Army Sp/7 B. J. Soshinsky's typical work day at Redstone Arsenal, Ala., is apt to begin when his boss walks into the office and invites him to read the morning newspaper.

While this sort of on-the-job reading is generally regarded in the same bad taste as a snake bite, he has a firm corner on his newspaper reading market. The ones he reads are printed in Russia.

Soshinsky is the only Russian-reading translator in the Army Missile Command's Directorate of Missile Intelligence. At 46, he can look back on a 20-year military career which has been about as drab as a missile belching flames at lift-off.

One of the more interesting episodes in his career involves a boost he once gave to a charming premiere ballerina in her bid to escape her suppressed Lithuanian homeland to the Free World. And he did it all in the line of duty.

His military career has been molded around his linguistic ability which comes somewhat naturally. His father was born in the Russian Ukraine; his mother in Russian controlled Lithuania. He was born in Iowa, where his parents moved in 1912.

After attending Cortland (N.Y.) State Teachers College from 1934 to 1937, he studied Russian at Windham College in Putney, Vt., and expanded his language talent at a place well known to Army translators — the Army Language School at Monterey, Calif. He is fluent in English, Russian and Polish, speaks some German, and is familiar with Slavic languages.

Because of his linguistic ability, Soshinsky worked for the United Nations Relief and Rehabilitation Agency (UNRRA) in the British Sector of Germany during 1946-47. He "screened displaced people in order to eliminate those who did not qualify for displaced person status"—such as Hitler's SS (secret police).

Soshinsky's Missile Intelligence job today is less exciting than the UNRRA assignment but interesting.

"I spend most of my time reading Soviet military and scientific publications," he said. "It's only one facet of the Missile Intelligence Directorate's job of making technical evaluations of foreign missile systems."

As a constant reader of Russian newspapers and scientific reports, Soshinsky has his finger in the middle of the Soviet propaganda pie. Nearly everything printed by the Soviet



Sp/7 B. J. Soshinsky

Union has a specific purpose, he believes, such as:

- To stimulate Russians who are not Communist Party members toward more activities so that they may be accepted by the party.
- To enhance the feeling of nationalism inherent in the Communist ideology, government and politics.
- To make leaders of the Communist Party immortal.
- To encourage Russians and Party members alike to sacrifice current needs for a better life in the future.

Soshinsky believes that fear and nationalism, in that order, are perhaps the primary factors in keeping the Russian people in line with Communist Party thinking. He estimates that 90 percent of all stories in Soviet newspapers and similar publications are printed only as propaganda.

"Scientific papers are different," he said. "They usually stick to the facts and a detailed explanation. They are just like scientific papers printed in America."

During the Korean conflict, he served in Korea—the same place his father was stationed as an Imperial Russian Army sergeant during the Russian-Japanese war of 1904-05.

### Soldier's Idea Wins Cash Award

A White Sands (N. Mex.) Missile Range soldier whose Incentive Award Program suggestion is saving the Government an estimated \$6,040 each year has been awarded a \$305 check and a Certificate of Achievement.

Sp/4 Dallas R. Wolfe was recognized for his idea on handling magnetic instrumentation tape used in a classified program. He is a science and engineering graduate of Wingate College in Wingate, N.C., with further engineering study at North Carolina State University.



By Ralph C. H. Siu

**MODERN PARABLE OF THE TALENTS.** We continue to hear about the shortage of able people. It may even be worse than it sounds. As Eli Ginzberg explains\*:

The shortage is aggravated by the continued spinning of the able people we have—a spinning to which there appears to be no end.

The reasons for travel, for too many commitments, for overextension are obvious. A man's reputation, his power, his prestige are very much conditioned by his being "on the inside." Only those who circulate, who circulate in the right circles, who have the right connections are likely to be called on to give advice, to be remembered when funds are distributed, to be elected when an opening occurs.

It is not easy to turn one's back on possible appointments, on other opportunities, and to stay put in a laboratory or library to struggle with one's problems and possibly to fail. . . .

We chew up the best people in this country. We do it for good or bad reasons, but we do it. The most important lesson that we have to learn is the importance of one word—no. For creative work requires time and repose. The Nation is not suffering from a shortage of talent. It is suffering from a shortage of talented people who know how to preserve and protect their time.

\*Science 133, 1305 (1962)

**THE OLD LADY AND HER SNORTS.** Just how much independence of action and authority of decision should one echelon pass on to another is a much debated issue.

I suppose some of the more conservative supervisors have undergone experience similar to that of the dentist with a frightened little old lady in the chair. He sympathetically asked her if there was anything he could do to allay her fears.

She suggested a snort. After one little jigger, the old lady was still shaking like a leaf. Then followed a second, a third, and so on until half the bottle was gone.

Whereupon the dentist asked, "Well, have you regained your courage?"

"Yes, I have," snarled the old lady, "and I'd like to see anybody fool with my teeth now, Buster!"



# Project HARP Conducts First Firings in Probes of Atmosphere

Project HARP (High Altitude Research Program) has recorded the first two firings of atmospheric probes from the 16-inch, smooth-bore, naval gun tube recently emplaced at Barbados, West Indies Federation.

Conducted by McGill University of Canada, under the sponsorship of the U.S. Army Research Office, Project HARP entails a series of gun-probe tests designed to explore the atmosphere to altitudes of 500,000 feet.

Maj Gen Chester W. Clark, Director of Army Research, and Dr. Hoyt Lemons, U.S. Army Research Office Project Officer for HARP, were among the high-ranking military and civilian observers. Scores of reporters and photographers from Canadian, American and Barbadian newspapers and magazines witnessed the initial successful firings.

A 700-pound steel and wood test slug was fired Jan. 25, in the first test which sent the probe to an apogee of 13,000 feet at an initial speed of 2,900 m.p.h. A second shot followed on Jan. 26. A Martlet IB gas-seeding projectile, utilizing 730 pounds of propellant, was fired to 74,000 feet.

Firing of the Martlet IB was designed to test sabot separation of the projectile, structural design, vehicle stability and performance, functioning of telemetry transmitters, radar and optical tracking systems, and wind shear measurement.

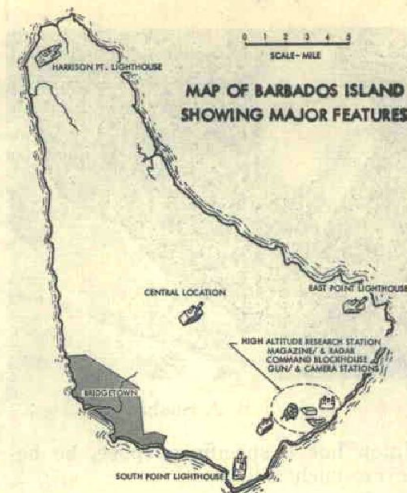
Firings were launched from a complex (see map above) which includes the gun tube emplacements, control room, radar system and instrumentation facilities, located on the southeast coast near Seawell Airport, and several instrumentation out stations equipped with photographic systems.

A modified M-33 fire control system furnished by the Meteorology Division of the U.S. Army Electronics Command, Fort Monmouth, N.J., was used in the tracking of the vehicle.

Tracking of sabot separation, flaring and smoke trials, gun recoil, trajectories, and high altitude flare release was recorded by theodolites at the out stations and 60 cameras.

Under analysis by McGill University scientists at the time this publication went to press, results of the initial firings of Martlet IB and successive firings will be reported in future issues.

Successive planned tests include firings of an improved structure Martlet I vehicle to an altitude of 250,000 feet and four Martlet II instrument carrier vehicles to an altitude of 450,000 feet to test further the vehicle



design, stability and performance.

Upon completion of the present planned series of firings, further tests with the Martlet III vehicle, using rocket boosters, are designed to reach altitudes of 500,000 feet.

Moving of the gun tubes (75 feet long, 5 feet in diameter at the breech, and each weighing 140 tons) from Hampton Roads (Va.) Army Terminal to the launching site, 2½ miles inland from Foul Bay, entailed one of the most difficult logistical feats ever performed by the U.S. Army Transportation Corps. (See August 1962 issue for initial story.)

With the support of the U.S. Army Research Office and the assistance of Lt Col Norman L. Hall and Dr. Lemons of the U.S. Army Research

Office who were credited with major technical support and material procurement for the project, Movietone News and the Canadian Broadcasting Company have released films on the movement of the gun tubes. *LIFE* magazine will report on the project in an early issue.

Given the assistance of the Government of Barbados from the outset, the project has been followed with great interest by the Barbadians. Visitors to the site report that local Barbadian musicians have written calypsos on the unloading of the gun tubes on the beach, their dangerous and exceedingly difficult movement up a steep incline, and emplacement of the gun at the site of the tests.

The gun tube used in the initial firings has taken on a new look since its emplacement on the plateau. To enhance visibility for photographic purposes, the barrel was painted white and the retaining blocks and girder mounts painted red. Emblems of McGill University and the U.S. Army Research Office also were painted on the barrel.

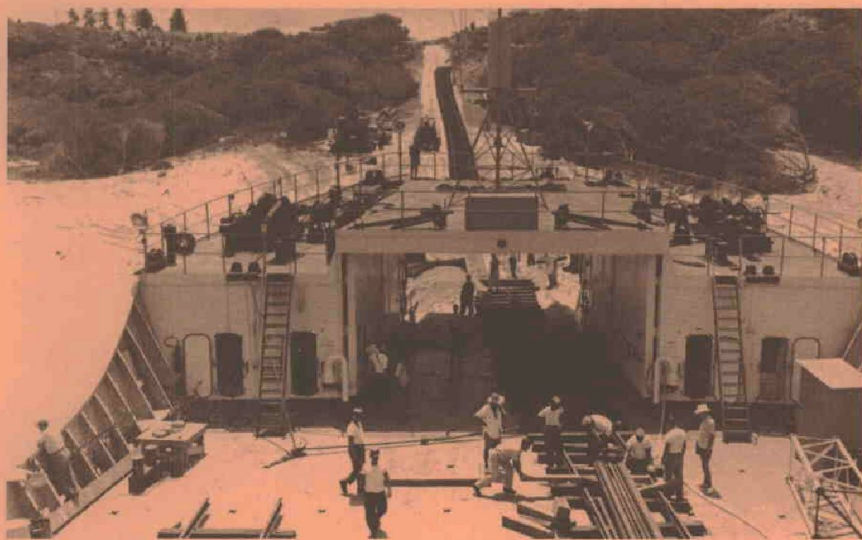
The tubes were loaded aboard the Army's beach discharge lighter (BDL) Lt Col John U. D. Page and sailed from Hampton Roads on July 17. Captained by CWO E. S. West, the *Page* reached Barbados July 21, without incident on the voyage.

D. L. Mordell, Dean of the Faculty of Engineering, headed the McGill University team in the project. Army assistance was led by Capt R. V. MacGillivray and Lt Col J. K. Hanks, U.S. Army technical advisers to Mc-



Bulldozers push sand near ramp of USS PAGE in preparation for laying of track and unloading of gun tubes onto the beach at Barbados, W.I.F.





Picture from bridge of USS PAGE shows track running from "mouth" of vessel and up the first incline leading to final emplacement of the gun.

Gill University for the project.

Professor A. R. McKay (later succeeded by Geza Kardos as HARP project field manager) led the advance team for the operation.

Arrangements were made for motor transport; and the rails, ties, track hardware, timbers, and loose cargo were unloaded and hauled overland to the unloading site at Long Bay.

Difficulties were first encountered when it was discovered that the proposed beaching site, based on early surveys made at Long Bay, was unsatisfactory for further beaching and unloading operations. Foul Bay, a site approximately 2 miles east of Long Bay and 2½ miles from the eventual gunsite, was acceptable.

Further blasting operations were required to clear a channel through the dangerous reefs for passage of the *Page* to the new beaching site. Track and miscellaneous equipment unloaded at Long Bay had to be transported by commercial trucks to the new site.

Assistance was provided by Barbadian Minister of Transport Capt George Ferguson, and Denis Atkinson, owner of the local launch *St. Eval*, in piloting the *Page* through the treacherous seas and reefs to the landing site. Hundreds of spectators from the nearby districts lined the overhanging cliffs to watch the approach of the gun-laden ship.

An unsuccessful beaching attempt was made through the reef channel and choppy seas, and the ship returned to Bridgetown on Aug. 3.

The channel was again blasted and the vessel moved through the passage in the reefs with no difficulties. The ship grounded 15 feet from the shore-

line and directly in line with the previously laid track Aug. 6.

Ashore, D7 and D9 Caterpillars were put to work moving sand to build a ramp. The sand was continually washed away by the storm-tossed waves. This was partially remedied by securing timbers to the side of the ship's ramp and by using jammed-down dunnage.

The first pull was made Aug. 6 on the girder (gun cradle) weighing 42 tons. Cable was secured to the girder through square holes cut in the face and fastened on the reverse side by very heavy pins.

The D7 and D9 were arranged on opposite sides of the track to permit "steering" the girder, which rested on the track. The load was pulled to the

end of the track, 700 feet from the ocean, and stopped on an incline.

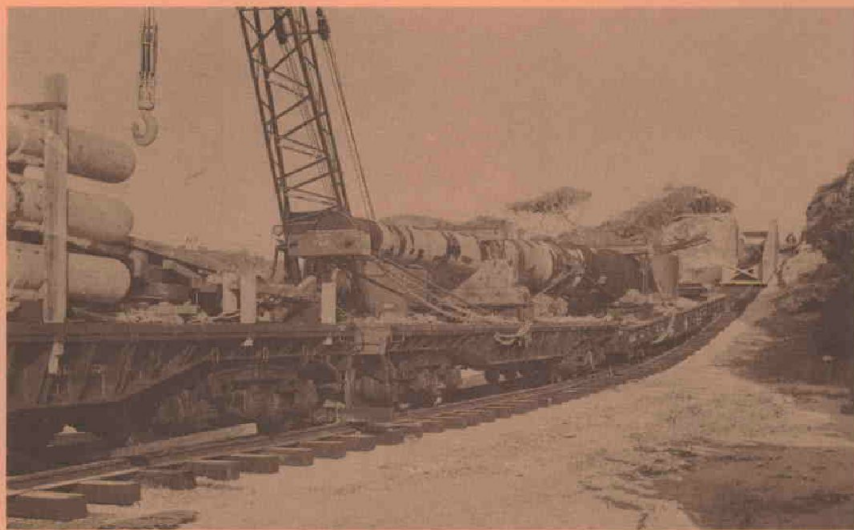
The critical part of the operation came with the unloading and towing of the 140-ton starboard-mounted gun. Near disaster was averted only by the careful training and teamwork that prevailed during the operation.

Mounted on two flatcars, the gun tube was unloaded and secured by cable to the tractors, one on each side of the track, and both resumed the pull. When the left tractor backed up too quickly to avoid a gulley, the strain of the load was passed to the right tractor and its cable parted.

The two cars with the gun tube started back down the steep incline. Two enlisted men from the 3rd Transportation Group riding the rear of the second car applied the air emergency brakes and jumped clear of the cars, as previously instructed against such an event.

The cars rolled down the grade for about 120 feet until they slammed into and derailed three cars left secured at the bottom of the hill near the shoreline. A fresh supply of cable was obtained, the cars were lifted back onto the rails, and another pull of the gun tubes to the site of the tests proceeded without further unfortunate incident—but by dint of prodigious effort by the joint team of U.S. Army Transportation Corps and Barbadian workers.

Project HARP is expected to blaze a new trail in upper atmosphere research techniques. And in years to come, when exploits of the U.S. Army Transportation Corps are recounted, it will provide those who helped to move the gun tubes something about which to harp with considerable pride.



Gun tube carriage and three flatcars carrying one of the gun tubes and components are unloaded from the PAGE and started up the first incline.



## Helicopter Landings at South Pole Accent Army Aviation Role in Antarctic

The first landing of a helicopter at the South Pole Feb. 4 by three U.S. Army Iroquois (UH-1B) aircraft, as reported in the February issue, helped to focus attention on the role of U.S. Army Aviation in Antarctica.

The Army flight team, led by Capt Frank H. Radspinner and including pilots Capt Neal E. Earley and 1st Lt Charles W. Beaman, completed a topographic survey for a U.S. Geological Survey project concerned with charting a vast expanse of the Antarctic. They then flew the remaining 182 miles from Mount Weaver to Amundsen-Scott Station at the Pole.

The turbo-powered helicopters were furnished by the U.S. Army Transportation Board, Fort Eustis, Va., and transported to the Antarctic last October by U.S. Air Force C-124 aircraft.

The Army aircraft are serving with Air Development Squadron Six (VX-6) of the Navy, which provided aerial support for the scientific research of the United States in that area during the International Geo-



U.S. Army HU-1B Iroquois helicopters arrive at South Pole after completing "Topo East" mapping during Operation Deep Freeze 1963.

physical Year of 1957-58.

Army ground elements have been provided in the past years for the Navy's Operation Deep Freeze. Air support was a joint responsibility of the Navy and Air Force until 1961 when the first two HU-1B Iroquois helicopters were furnished by the U.S. Army Transportation Board.

First used in quantity by the Army in 1961, the Bell Iroquois has proved the ideal aircraft for mapping work in the Antarctic because of ability to work at high altitudes and to operate

in extreme cold without extensive pre-heating. The craft has a range of 400 miles, travels at speeds of up to 150 knots, and is powered by a Lycoming turbine engine. It is equipped with a fixed skid-type landing gear.

The Army Iroquois is the fourth type of aircraft to land at the South Pole since the advent of aviation in the Antarctic in 1928. The first was a twin-engine R4D (DC-3) transport which set down on Oct. 31, 1956 with Rear Adm George Dufek, USN, then Commander of Operation Deep Freeze. Numerous P2V Neptune flights followed from 1957 through 1959. The giant, ski-equipped 4-engine C-130 Lockheed "Hercules" transport commenced landing at the South Pole in 1960.

Flying in the Antarctic has been marked by spurts rather than continual, steady progress. An Australian, Sir George Hubert Wilkins, made the first Antarctic flights over the Palmer Peninsula in 1928. Admiral Richard E. Byrd used aircraft that same year while he was at Little America I and in Nov. 1929 he accomplished the first flight over the South Pole.

Aircraft were not flown again in the Antarctic until 1946 when the Navy arrived during Operation Highjump and Twin-Engine R4Ds, launched from the aircraft carrier USS *Philippine Sea*, were flown across the ice to Little America IV.

A 9-year lull then took place until the arrival on the Continent of the newly commissioned Air Development Squadron Six which set the stage for aerial support of science during the International Geophysical Year. VX-6 has continued to operate in the Antarctic since that time.

Other members of the U.S. Army flight detachment at Antarctica, normally attached to the U.S. Army Transportation Board, are: CWO Joe R. Griffin, CWO John P. D'Angelo, S/Sgt Robert J. Anderson, Sp/5 Frank L. MacPherson, Sp/5 Paul L. George, Sp/6 James C. McCaslin, and Sp/5 Louis J. Harrison.



PILOTS AND COPILOTS of the three HU-1B Iroquois which made the first helicopter landings at the South Pole. All from the U.S. Army Transportation Board, Fort Eustis, Va., they are (left to right, kneeling) SP/5 Paul George, 1st Lt. Charles Beaman, Capt Neal E. Earley, CWO John P. D'Angelo, SP/5 Louis J. Harrison. Standing: Sp/5 James C. McCaslin, Capt Frank H. Radspinner, Jr., S/Sgt Robert J. Anderson, CWO Joe R. Griffin, and Sp/5 Frank L. MacPherson. In subsequent ceremonies at the Pentagon, Washington, D.C., General Barksdale Hamlett, Vice Chief of Staff, U.S. Army, presented the Distinguished Flying Cross to Capt Radspinner, Capt Earley, 1st Lt Beaman, CWO D'Angelo and CWO Griffin. Anderson and Harrison won the Air Medal.