



ARMY

RESEARCH AND DEVELOPMENT



MONTHLY NEWSMAGAZINE OF THE OFFICE OF THE CHIEF, RESEARCH AND DEVELOPMENT
Vol. 4, No. 10 November 1963 • HEADQUARTERS, DEPARTMENT OF THE ARMY • Washington 25, D.C.

Army Engineer Shares Honors With 5 Winners of 1963 Rockefeller Awards

Defense Supply Gains Operational Control of DDC

Operational control of the Defense Documentation Center passed from the Air Force to the Defense Supply Agency, effective Nov. 1. Management control remains under Defense Director of Technical Information Walter M. Carlson, Office of the Director of Defense Research and Engineering.

Dr. Robert B. Stegmaier, Jr., has taken over as the DDC administrator after serving as staff assistant to Mr. Carlson for the past 10 months. Col James O. Vann, DDC commander since it was redesignated as the successor to the Armed Services Technical Information Center Mar. 27, 1963, is being reassigned by the Air Force Systems Command.

Headquarters of the DDC at Cameron Station, Va., officially dedicated Sept. 18, 1963, is unaffected by the change of control. Headquarters of the Defense Supply Agency, under Lt Gen Andrew T. McNamara, is also located there.

The Department of Defense announcement of the operational control change said it is designed to provide

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Dr. Eugene W. Weber, Rockefeller Award winner, has served in the Office of the Chief of Engineers, Washington, D. C., since 1946. His duties have made him the principal representative of the Corps in numerous interagency committees necessary for coordination of major programs.

An Army engineer with 33 years of Government service is among five winners of 1963 Rockefeller Public Service Awards who will be honored at a presentation luncheon Dec. 5 in Washington, D.C. Each will receive \$5,000.

Eugene W. Weber, deputy director of Civil Works for Policy, Corps of Engineers, was chosen in the field of administration but is recognized also as an international authority in water resources planning and development.

Other winners of the award, made possible through a national trust fund contributed by John D. Rockefeller III, as administered by Princeton University, are:

- Henry Loomis, director, International Broadcasting Service (Voice of America), United States Information Agency—award in the field of foreign affairs or international operations.

- Carl M. Marcy, chief of staff, Committee on Foreign Relations, U.S. Senate — award in the field of law, legislation or regulation.

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CRREL Sets New Headquarters Open House Nov. 21-23

The U.S. Army Cold Regions Research and Engineering Laboratory has scheduled an open house program Nov. 21-23 to mark final acceptance of an impressive new headquarters and equipment at Hanover, N.H.

Expected to attract many high

ranking military leaders and a representation of cold regions research scientists and engineers from many parts of the Nation, the event also will serve to note attainment of USA CRREL's full-scale operation as a

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U.S. Army Cold Regions Research and Engineering Lab, Hanover, N.H.



Vol. 4, No. 10 November 1963

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Published monthly by the Army Research Office, Office of the Chief of Research and Development, Department of the Army, Washington 25, D.C., in coordination with the Technical and Industrial Liaison Office, OCRD. Grateful acknowledgement is made for the valuable assistance of Technical Liaison Offices within the U.S. Army Materiel Command, the U.S. Army Combat Developments Command, U.S. Continental Army Command, and Office of The Surgeon General. Publication is authorized by AR 310-1, dated 20 March 1962.

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.

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Submission of Material: All articles submitted for publication must be channeled through the technical liaison or public information officer at installation or command level.

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.

DISTRIBUTION is made automatically each month based on requirements stated on DA Form 12-4, permitting changes as necessary.

Distribution requirements for the Office of the Secretary of the Army, Under Secretary of the Army, Assistant Secretary of the Army R&D, Chief of Staff, Chief of Research and Development, and Chief of Information will be submitted by the Office of the Chief of Research and Development.

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.

SUBSCRIPTIONS. Public sale of this publication is authorized through the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C. Single copies sell for 20 cents. Subscription rates (12 copies annually) are: Domestic (including APO and FPO addresses), \$2.25; Foreign, \$3.00.

Theme of the Month: The Science of Mobility

By Major General Alden K. Sibley

Commanding General, U.S. Army Mobility Command

U.S. Military Academy graduate (1933) with Corps of Engineers commission . . . as Rhodes Scholar, attended Magdalen College, Oxford University, England . . . degrees in theoretical and nuclear physics . . . White House aide to President Franklin D. Roosevelt following graduation from Engineer School, Fort Belvoir, Va. (1937) . . . executive officer during construction of Conchos Dam, N. Mex., and St. Lawrence Seaway and Power Project . . . SHAEF (1944) . . . General Staff, SHAPE (1952-1955) . . . Chief of Staff for delegations for negotiations with Federal Republic of Germany and Philippine Governments . . . Division Engineer, U.S. Army Engineer Division, New England (1957).



Maj Gen Alden K. Sibley

The U.S. Army Mobility Command, which I have had the honor of commanding since its inception, completed its first year of operation in Detroit, Mich., on Aug. 1, 1963. One of the seven major subordinate Commands of the Army Materiel Command, headed by Lt Gen Frank Besson, Jr., the Mobility Command is charged with complete management responsibility for development and procurement of all Army mobility equipment for operations on land, water, and in the air.

The advent of nuclear energy, the attainment of what must be recognized as absolute firepower in the form of fission and fusion weapons of mass destruction, has changed forever and irrevocably the art of warfare. If we as a civilization are to have a history, this must be the last era in the history of mankind of the ascendancy of firepower. It is evident, therefore, that we are now at the dawn of the golden age of strategic and tactical mobility in the art of war.

As long as our national security is threatened by Communist aggression, in all its forms, we must continue to build our capabilities for quick, lightning-like thrusts to stamp out brush-fire wars, to enable the Army to respond ever more rapidly to a wide variety of conflict situations, from subversion and insurgency to major military operations.

To achieve this capability is the primary mission of the Mobility Command. The primacy of this mission is attested to by the fact that the Mobility Command, in terms of dollars, is by far the largest of AMC's seven major subordinate Commands. Of AMC's FY 1964 budget of some \$8 billion, which has been appropriated by Congress for procurement of all the equipment needed to permit the Army to move, shoot and communicate, the Mobility Command will manage approximately \$2 billion, or 25 percent, for development and procurement of the best possible mobility equipment that can be produced by our Nation's Army-industry team.

Thus, for the first time in the history of the Army, a single Command has full responsibility for placing in the hands of troops, within the shortest possible time, mobility equipment that will permit the Army to respond, with maximum speed and the appropriate level of firepower, to any type of conflict, anywhere in the world.

The Command's management responsibility for mobility equipment begins with research, design and development, and extends throughout the life cycle of each item, through its production and procurement, including cataloging and standardization, wholesale inventory management, and the training of troops in new equipment.

The equipment managed by the Mobility Command represents the broadest possible definition of the term mobility, including also the Army's antimobility devices. This equipment includes all automotive general and special wheeled vehicles; all fixed-wing and rotary aircraft, aeronautical and aerial delivery equipment; such amphibians as the LARC and BARC and other floating equipment, rail motive power and rolling stock, and special CONEX and cargo transporting equipment; barriers and bridging, night-vision devices, equipment for mine clearing and planting, mapping

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Federal Council for S&T Airs Scientific Personnel Management Problems

Under the auspices of the Federal Council for Science and Technology, a "Symposium on Current Problems in the Management of Scientific Personnel" was held Oct. 17-18 in Washington, D.C.

Attended only by key officials of Government agencies, field offices and laboratories, the closed session was conducted as the first in an experimental series covering a wide variety of topics of interest to Federal scientists and science administrators. Dr. Allan Astin, Director of the National Bureau of Standards, is chairman of the planning group for the symposia.

A detailed report on the discussions was being prepared for presentation to the U.S. Civil Service Commission at press time. No public announcement will be forthcoming until the Commission has decided what action should be taken.

Held in the General Services Administration auditorium, the discus-

sions were centered on five areas:

- Career Development of Federal Scientists and Engineers—Recognition of Research Competence, chaired by Dr. Byrton T. Shaw with Raymond Jacobson of the CSC, Dr. John W. Townsend of the National Aeronautics and Space Administration and P. A. Wells of the Agricultural Research Service as leaders.

- Incentives and Evaluation, chaired by Dr. F. J. Weyl with Harold Leich of the CSC, Dr. G. K. Hartmann of the Naval Ordnance Laboratory and Robert J. Lacklen of NASA serving as discussion leaders.

- The Senior Scientist, chaired by Dr. Harry T. Goett with Seymour Berlin of the CSC, Lt Gen William J. Ely of the Office of the Director of Defense Research and Engineering and Dr. G. Burroughs Mider of the National Institutes of Health spearheading the discussion.

- Current Controversies in Scien-

tific Personnel Administration, chaired by Dr. Leonard Carmichael following introductory presentations by Dr. Anna Roe, Graduate School of Education, Harvard University, and Dr. William Shockley, Shockley Laboratory, Palo Alto, Calif.

- Conflict of Interest and the Federal Scientist, chaired by Dr. Thomas B. Nolan and involving as discussion leaders Dr. John Burgess of the U.S. Air Force Rome Air Development Center, A. H. Helvistine of the Department of the Navy and Dr. J. L. McHugh, U.S. Bureau of Fisheries.

Civil Service Commission Chairman John W. Macy gave the major address at the concluding session, speaking on "Looking Ahead in Federal Science Administration." Dr. Wiesner closed the meeting with comments on his observations of the Federal technical establishment.

Among the questions considered during the discussions were:

- Does the system (Civil Service) recognize the impact of the outstanding professional on his job and grade? (Man-in-the-job concept.)

- What more needs to be done to insure that the individual creative worker can reach the same levels of pay and recognition that a science administrator can attain?

- Are Government-wide policies on outside compensation, teaching, writing, patents, consulting, etc., too restrictive or not restrictive enough?

- Are some agencies more successful than others in reconciling the desires of scientists for extra curricular activity with conflict of interest regulations?

- Are improvements needed in methods of selecting current GS-15 scientists and engineers for promotion to GS-16 and Public Law 313 jobs? For such jobs should present employees be compared to recruits from outside the agency?

- Should laws and regulations governing GS-16/18 positions and PL-313 positions be brought into closer harmony? In which direction?

- What criteria in individual cases should determine use of the GS route versus the PL-313 route?

The Federal Council for Science and Technology is an interagency coordinating body consisting of principal officials of the Federal Government concerned with science and technology. Dr. Jerome B. Wiesner, the chairman, serves also as Special Assistant to the President for Science and Technology and as Director of the Office of Science and Technology.

Natick Labs Arrange Advanced Education Program

Psychologist Edward W. Youngling, Jr., is the first candidate to receive advanced educational training under a recently established cooperative program between the U.S. Army Natick Laboratories and the University of Massachusetts, Harvard and Massachusetts Institute of Technology.

In addition to assigned studies in the Institute of Environmental Psychophysiology, University of Massachusetts, he will have special training in the food psychology research areas of sensory evaluation, methods, panel tests, taste, odor, color and texture and measurement theory.

For the past 18 months he has worked in research studies designed to maintain combat troops at peak efficiency under stressful environmental conditions. As part of a 2-man investigative team in human factors problems associated with the use of American equipment by indigenous forces, he recently returned from Southeast Asia.

The cooperative program is designed to increase the knowledge and proficiency of personnel in the fields of food science and technology. This scientific upgrading of personnel, encouraged by the Department of Defense, will be achieved through courses in nutrition, food science, food technology, biochemical engineering, and associated research projects keyed directly to the student's regular assignments in the

Army's food research and development program.

Under the program, qualified scientists and engineers are assigned as graduate students at one of the universities for one year, after faculty members have approved the application for admission.

The program's 2-fold benefits give the individual improved professional competence, and the Army a better qualified employee for research. Participants must continue service in Army research for three years.

Mr. Youngling received his B.S. and M.S. in psychology from the University of Massachusetts.



Edward W. Youngling, Jr.

Congressional Record Statement Stresses STINFO Program Need

In a statement on the scientific and technical information problem confronting the Nation, as published in pages 18124 through 18129 of the Congressional Record on Oct. 9, Senator Hubert Humphrey (D-Minn.) reasserted his intention to push vigorously toward continued progress. For the past six years he has been recognized as a spearhead of the congressional attack on the problem, and is now Senate assistant majority leader.

Space does not permit a total reprint of his remarks. Excerpts from "Defense Information on Science and Technology: Key to Progress in National Research" follow:

Mr. President, I had intended yesterday, at the time of the approval of the conference report on the defense appropriation bill, to bring to the attention of the Senate a particular phase of that appropriation, namely, the part that deals with research and development. This is a fundamental part of our total defense effort.

The entire area of research and development in the Federal Government's activities is one that has been very closely watched by the Senate Committee on Government Operations and the Subcommittee on Reorganization and Interagency Coordination.

In my judgment, these appropriations will achieve their highest yield only if progress is quickened in improving the handling of scientific and technical information.

I refer to all phases of information—to storage, retrieval, abstracting, indexing, evaluation, and dissemination of information.

In the same way, the U.S. Government, as a whole, will reap maximum benefit from its \$14.7 billion expenditures for research and development only—if progress is accelerated in the field of scientific and technical information all along the line—in all the major scientific agencies.

THREE OBJECTIVES. In these next few months, I should like to mention several phases of the problems of Defense and of Government-wide research.

I shall do so from one viewpoint of getting the greatest results in science and technology; in the shortest period of time; through the most efficient and economical use of taxpayer's resources.

This is substantially the same challenge to which our colleagues in the House of Representatives have recently and very helpfully addressed themselves. It will be recalled that the House has just set up a 9-man select committee to study the Federal research and development program. I welcome this step. Out of the House study can, I believe, come great good.

A huge program which involves some \$15 billion—out of an almost



Sen. Hubert H. Humphrey

\$100 billion Federal budget—certainly does bear the most earnest study by both Houses. But it is not just the expenditure of money which merits our attention, as important as these funds are. For at stake also are other greater values:

First. The successful defense of America and of the Free World, including the deterrence of war.

Second. The growth and prosperity of the civilian economy.

Third. A higher standard of living for our own and other peoples.

Fourth. Success in the conquest of disease and disability.

It has been my personal privilege to work on Federal scientific problems as a former member of the Senate Committee on Agriculture and, now, as a member of the Committee on Appropriations. But I have been particularly honored to consider this issue, also, as chairman of two subcommittees: in the Government Operations and Senate Small Business Committees.

BROAD GOALS FOR TAXPAYERS. From these two vantage points, I have done whatever I could for two broad goals: they have been to make sure that—

First. The American taxpayer gets every possible cent of value out of every dollar spent for research, development, testing, and evaluation.

That means that Federal scientific missions in defense, space, and medicine must be accomplished with greatest possible efficiency.

Second. The American taxpayer gets every possible dividend and by-product from Federal science spending.

That means that our entire Nation must benefit—the defense and the nondefense communities; the space and the nonspace communities; business, large and, particularly, small; all regions, not just those already well-endowed with great university-defense complexes; nonprofit sources like universities, foundations, institutes, and cooperatives; dynamic industries and so-called lagging industries.

To achieve all these goals requires many things. One of the things is information—timely, reliable, easily accessible, reasonably complete information.

To whom? To five broad sources:

First. To the decisionmakers in the executive branch, including the President, the heads of agencies and policymakers and implementers.

Second. To the Congress—its committees, subcommittees, and individual Members.

Third. To the scientific community within Federal agencies—that is, in so-called intramural laboratories.

Fourth. To the scientific community which is not within either a contractor or grantee status.

Fifth. To the broad scientific community which is not within either a contractor or grantee status.

The flow of information is not a luxury; it is a "life and death" necessity, "life and death" for industries, for communities, for the Nation's economic health, for survival, for deterrence of war, for progress, for prosperity.

This is not an exaggeration. It is a hard fact.

And no single Federal agency has a greater responsibility in all of these respects than the Agency whose research appropriation we are now considering—the U.S. Department of Defense.

And so I should like to comment specifically on this Department's needs for scientific and technical information.

COMMENDATION OF PROGRESS. The year 1963 has witnessed impressive improvement in the han-

dling of scientific and technical information by the Department of Defense. These improvements come, I may say, as a result of a well-respected promise which was made by the able Deputy Secretary of Defense, Roswell Gilpatric, to the Senate Reorganization Subcommittee.

In our hearing of September 1962, Mr. Gilpatric frankly conceded the need for reforms. He stated:

"I am frank to admit that there are major deficiencies both in our technical information system in the Defense Department, and in the way we have organized to do it. We have no complaints and any criticisms which you and your staff have directed toward the Defense Department I must say have been merited in this area. I will go forth and do better."

The Deputy Secretary has been true to his word, as we knew he would be. He has faithfully discharged that responsibility. I should like to compliment him, Vice Adm Charles B. Martell who, during his recent tour of duty, carried out Mr. Gilpatric's mandate, and Mr. Walter Carlson who serves as Director of Technical Information for the Office of Director, Defense Research and Engineering.

At the same time, as these excellent leaders have been aware, the Pentagon must now try to make up for what have literally been lost years. The Pentagon has a long way to go toward converting what is now largely a chaotic, unplanned patchwork of information systems into a rationally integrated system of systems on a department-wide basis.

PANORAMA OF DoD INFORMATION NEEDS. The Defense Department, in effect, still confronts a mammoth backlog with respect to first, management information needs—all the way down the line of civilian and military administrators; second, in-house scientific and engineering information needs; third, contractor information needs; fourth, civilian economy; that is, noncontractor needs; fifth, needs for 2-way international flow of information; sixth, co-operation with professional and trade societies.

I shall mention only a few highlights of these needs.

I shall not mention other information problems, such as what are termed command-and-control challenges—which are somewhat distinct from issues of scientific and technical information, per se.

For the Department as a whole, reliance has been placed on what has

been known as the DD 613 information forms. This system is described in a 1961 report issued by our subcommittee which I will mention shortly. The DD 613 system has been a limited tool for management use; it has not served the scientific and technical performers, nor was it designed to so serve.

Dr. Stegmaier Appointed Administrator of DDC

Dr. Robert B. Stegmaier, Jr., has a new title as administrator of the Defense Documentation Center (DDC) and is fresh from an assignment as staff assistant to Walter M. Carlson, Defense Director of Technical Information.

Associates have learned to regard Dr. Stegmaier as a "practicable hard-hitting administrator," with a faculty for pinpointing the heart of a problem and achieving a solution.

Called to active duty two days before the attack on Pearl Harbor, he was discharged in June 1946 as a lieutenant colonel. That same month he entered Government service as deputy chief of the Management Branch, U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va.

In September 1948 he transferred to the Joint Research and Development Board of the National Military Establishment as chief of the Projects Branch, Programs Division, later known as the Resources Division. His prime responsibility was establishing a technical reference system of Army, Navy and Air Force R&D programs for information search, retrieval and program analysis.

When Dr. Stegmaier was promoted to GS-15 in December 1958, as a physical sciences administrator, he was then responsible for the operation of a library with about 15 employees. Much of his time since, particularly during the past three years, has been devoted to improving the operations of the Armed Services Technical Information Agency (ASTIA), which became the DDC in March 1963.

"Scientific and Technological Communication in the Government," a Task Force Report to the President's Special Assistance for Science and Technology, incorporated many of his views as a member of a 6-man group that conducted a study from January to May 1962. He also has participated in preparing presentations to Congress on dissemination of scientific information.

Dr. Stegmaier has authored a number of articles on engineering problems and on scientific research admin-

The Office of Director of Defense Research and Engineering does use the 613's as well as Technical Development Plans—TDP's. So do program managers in the individual services—for similar purposes of review, consolidation, and adjustment of programs. Some supplemental
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Dr. Robert Stegmaier, Jr.

istration and organization published in professional journals. All of his degrees were earned at the Johns Hopkins University with the aid of scholarships. Born in Cumberland, Md., he was reared in Baltimore, Md.

Defense Supply Assumes DDC Operation Control

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a direct channel of communication with which the DDC can function in its DoD-wide document services, and to insure a full range of services equally to all DoD components.

The primary mission of the DDC is to acquire, store and announce all technical reports prepared as the result of defense research, development, test and evaluation activities, now involving expenditure of about \$7 billion annually.

Based on a certified need-to-know in the case of classified documents, copies of RDT&E reports are furnished to industry and the defense community at no charge. Reports with no security or proprietary restrictions are released by the DDC for public sale by the Office of Technical Services (OTS), U.S. Department of Commerce.

Additional DDC services include the provision of bibliographic searches and maintaining a file of current research and development effort within the Department of Defense.

Growing Need for Human Factors Research Stressed at Parley

Physical condition as related to psychological aspects of effecting improved utilization of manpower was brought into sharp focus at the Army's Ninth Human Factors Research and Development Conference.

Held for the first time at the Walter Reed Army Institute of Research in Washington, D.C., Oct. 14-17, the conference was sponsored, as in previous years, by the Chief of Research and Development.

In that environment, with many distinguished Army medics participating, attention turned naturally to how variables in physical fitness of military personnel affect mental attitudes and their responsiveness to situations.

Chief of Research and Development Lt Gen William W. Dick was resoundingly applauded for his hard-hitting keynote address on the ascending importance of human factors research and engineering to a modern army. He said, in part:

"... But the simplest way to understand the Army and Army problems is to understand that the Army is *Men*. The backbone, the power, the strength, the excellence of the Army reside in the men who comprise it.

"For all of our progress in weaponry, and regardless of the superiority of our materiel, not a missile flies, not a tank moves, not a rifle fires, until the man takes his place in the picture. Only when we have well-trained and well-disciplined troops, competently led, do we have an Army....

"Establishment and appreciation of the new attitudes, the new institutions, and the new values required, is a much more complex process than the mere providing of funds for equipment to rebuild an armed force for defense. It calls for new procedures, new techniques, and an appreciation of the value of the social science disciplines which, as recently as 10 years ago, were not frequently called upon....

"Our difficulties with certain items of materiel are, to me, due to a lack of appreciation of the human element. These items have been designed and developed around an engineering or physical principle with the naive idea that the human, as a matter of course, will be able to interpret the output of the equipment. This has not always proven to be true.

"... In the interest of budgetary economy, it will be necessary to evalu-



HUMAN FACTORS R&D CONFEREES include (l. to r.) Brig Gen Walter Lotz, Director of Army Research; Lt Gen W. W. Dick, Jr., CRD; Dr. Roger W. Russell, Chairman of Indiana University Department of Psychology; Dr. Lynn E. Baker, Chief Psychologist, U.S. Army; Brig Gen Robert E. Blount, Commanding General, U.S. Army Medical R&D Command; Col W. D. Tigertt, director and commandant, Walter Reed Army Institute of Research.

ate proposals much more diligently than we have been doing before undertaking development, particularly with respect to the place of the human in the system as well as the ability of the human to utilize the system....

"I wish to turn for a few moments to certain specific deficiencies which exist in the field of human factors knowledge. Why is it that we have so inadequately correlated the measures of the physiological condition of the body with the performance of the individual? We know enough to reasonably expect correlations to exist.

"I raise this point merely as a specific example typifying the urgent need for a comprehensive and intensive program of research to advance the understanding and prediction of human performance and individual behavior.

"Essential to this advancement is the extension of knowledge concerning the fundamental psychological, physiological and biomechanical features which influence human performance....

"In reviewing his troops before Waterloo, Wellington pointed to them and said: 'It all depends on that material.' The truth of that terse utterance has not diminished with time, and it is with 'that material' you are concerned.

"... Man is pretty much what he was thousands of years ago. The machine appears to do better than man. It can see and hear better, move faster, punch harder. Perhaps another reason for regarding the machine as the important component in our man-machine systems is that the production of machines involves people's livelihood. Machines mean jobs. Production of people, I am informed, is avocational, a leisure activity....

"The technologies of physics and chemistry have a long head start over the behavioral sciences, especially the applied human factor sciences. It is true that the hardware sciences have developed first because they found ready-to-hand mathematical tools.

"It is true that man is a knottily complicated phenomenon, difficult to unravel. It is because man is so complex that the behavioral sciences have had, comparatively, such a late start. It is because of man's complexity that we tend to think of machines as the constants and human factors as the variables in the man-machine system.

"There are many good reasons for devoting time, effort and money to the research and development of machines, but this does not mean that we can ignore in any way the other important factor in the weapons systems—the human being—the soldier. I doubt that automation will ever reach the stage where man is no longer needed.

"In fact, as automation proceeds, the human will become even more significant, since the jobs left for humans to do are jobs that the machines cannot do. What will remain are the jobs that man can do better, what he can contribute uniquely to the system.

"Remember that General Wheeler, the Chief of Staff, recently wrote that we in the Army cannot get so fascinated by the complex equipment and advances in organization and tactics as to forget that our number one weapon is still the individual soldier.

"In the United States Army combat effectiveness must begin with the individual. The Army relies heavily on human factors research and development for continued improvement of our already high quality soldiers."

An unexpected highlight was provided when Maj Gen Stephen R. Hanmer, Chief of the Office Personnel Operations, Department of the Army, stood up as a member of the audience at the closing session and gave an extemporaneous speech that won enthusiastic response.

General Hanmer acclaimed the value of the conference to the Army General Staff agencies in directing attention to key problems related to the sense of urgency they have with respect to cold war, guerrilla warfare and anti-insurrection activities. Human factors in such situations, he said, are more important sometimes than hardware items.

Comprehensive, coordinated and integrated effort of General Staff agencies in human factors research with respect to the Army's personnel problems is an objective to be diligently pursued, General Hanmer said. He urged abandonment of a "piecemeal approach" to human factors problems and the integration of personnel planning requirements with the hardware development cycle.

Another speaker who earned a resounding ovation was David McK. Rioch, director, Division of Neuropsychiatry, Walter Reed Army Institute of Research. His subject was "Relations Between Military Psychiatry and Human Factors Research," and he touched upon problems with penetrating insight.

The second session was chaired by George S. Harker, director, Psychology Division, U.S. Army Medical Research Laboratory, Fort Knox, Ky. The presentations included:

Functional Aspects of Ionizing Irradiation of the Retina, by William W. Dawson, Auburn University, Auburn, Ala. *Primary Task Factors in the Reduction of Performance Decrement*, Lt Col Harold L. Williams, Walter Reed Army Institute of Research. *The Influence of Task and Environmental Variables on the Maintenance of Vigilance Performance*, Bruce O. Bergum, Air Defense Human Research Unit, Fort Bliss, Tex. *Human Factors Study of Design Configurations for the Laser Range Finder*, A. Charles Karr and Pfc James T. O'Connor, Frankford Arsenal, Philadelphia, Pa. *Studies in the Use of Television as an Aid to Helicopter Flight*, C. B. Elam, Bell Helicopter Co.

The second day sessions were chaired by John L. Kobrick of the Engineering Psychology Laboratories, U.S. Army Quartermaster Research and Engineering Center, Natick, Mass. Presentations were:

Some Effects of CB Protective

Clothing on a Soldier's Performance in a Hot Climate, Maj R. J. T. Joy and R. F. Goldman, Army Research Institute of Environmental Medicine, Natick, Mass. *Gunner Stability in a Firing Environment*, Robert T. Gschwind, U.S. Army Human Engineering Laboratories (USAHEL), Aberdeen Proving Ground, Md. *Firing Shock Effect on Gunners in a Lightweight Armored Vehicle*, Francis M. McIntyre and John Waugh, USAHEL.

Chairmen of the sessions on the final day were Leon T. Katchmar, chief, Systems Research Laboratory, USAHEL, and J. E. Uhlman, director, Research Laboratories, U.S. Army Personnel Research Office (USAPRO), Washington, D.C. The presentations included:

Information Assimilation from Command System Displays, Seymour Ringel, Charles H. Hammer and Frank L. Vicino, USAPRO. *ADP Brevity Coding — Design of Compatible Info-Transfer Vocabularies Between Personnel and Processors of the Fielddata System*, R. E. Packer, Automatic Data Processing Dept., U.S. Army R&D Activity, Fort Huachuca, Ariz. *Processing and Evaluating Information Derived from Knowledgeable Consultants*, John L. Houk and James E. Trinnaman, Special Operations Research Office (SORO), Washington, D.C.

Human Factors Considerations in the Army's New Multichannel Carrier System Employing Pulse Code Modulation, Peter Zakanycz and Hal Buckbee, U.S. Army Electronics R&D Laboratory, Fort Monmouth, N.J. *An Experimental Evaluation of the Application of Programmed Instruction and Teaching Machines to Weapon System Training*, Maurice A. Larue, Jr., Martin Co.



Army Commendation Medal was recently presented to Lt Col Robert F. Patterson, Deputy CO, U.S. Army Research Office, Far East, by Maj Gen Chester W. Clark, CG, U.S. Army, Japan and former Director of Army Research. Lt Col Patterson received the award for meritorious service as project officer, Random Access Discrete Address System Office, Communications Department, U.S. Army Electronics R&D Laboratory, Fort Monmouth, N.J.

The Criteria for Social Science Research, Philip I. Sperling, SORO. *Criteria for Human Performance Research*, J. E. Uhlman and Arthur J. Drucker, USAPRO. *The Evaluation of Systems—Analytic Training Programs*, Eugene A. Cogan, Human Resources Research Office, Washington, D.C. *Study of Artificially Acclimatized, Naturally Acclimatized and Non-Acclimatized Troops on Exposure to Heat*, Lt Col J. M. Adam, Royal Army Medical Corps, National Institutes of Health, London, England. The latter paper was the first ever given by a foreign scientist in the history of the conference.

General chairman of the conference was Lynn E. Baker, U.S. Army Chief Psychologist. Welcoming remarks at the opening session were made by Brig Gen Robert E. Blount, CG of the U.S. Army Medical Research and Development Command, Office of the Surgeon General, and Col William D. Tigertt, director and commandant, Walter Reed Army Institute of Research.

Among the 230 participants in the meeting were human factors research leaders from the United Kingdom, Canada and Australia, including Col E. F. Campbell, commander of the Psychology Corps, Royal Australian Army. About one-third of the participants were representative of industrial firms interested in human factors engineering.

Leading nonprofit research organizations operating as Army contract agencies also were well represented, including the Human Resources Research Office of George Washington University, Washington, D.C., the Special Operations Research Office of the American University, and Research Analysis Corp., Bethesda, Md.

Outstanding Students Represent Army, Navy, Air Force in Japan Science Fair

Outstanding science students selected by the U.S. Army, Air Force and the Navy to participate in the 7th Japan Student Science Awards in Tokyo, Nov. 5-10, might give judges fits in vying for a single prize.

Rhea L. Keller, a 17-year-old "beauty with brains," is the Army



Rhea L. Keller

choice. Eric Edward Sundberg, 18, the Air Force selectee, definitely is stamped as a young man with a future in science, and that applies equally to Paul Vincent Roling, 17-year-old representative of the Navy. All are considered to have exceptional talents.

Miss Keller was one of 20 students chosen by Army judges at the 1963 National Science Fair-International for one-week, all-expense-paid visits to or summer employment in Army laboratories.

While at Walter Reed Army Institute of Research in Washington, D.C., she impressed professional scientists with her research on virus causation of cancer. Her winning exhibit at the NSF-I was titled, "Subcutaneous Induction of Malignant Melanoma in the Syrian Hamster with Cell-Free Extracts."

Rhea is the daughter of Mr. and Mrs. Ernest L. Keller, 3232 Congress Ave., Fort Wayne, Ind., and is a student at New Haven High School. Brother Ray is attending Indiana State College and sister Romona is in junior high school. Mr. Keller is a clerk in the Fort Wayne Post Office and his wife is an accountant with a CPA firm.

Science is Rhea's major interest and she has been a winner at science fairs for the past five years as well as a National Honor Society member. Still she finds time for music, golf, dancing, photography, church activities, membership in a 4-H Club, cook-

ing at home, serving on the Student Council, and taking part in Junior Red Cross. She is also interested in philosophy, public speaking, teaching, foreign languages, and a wide variety of reading.

Listing honorary awards Miss Keller has accumulated at age 17 would require more space than is here available. Among them are the Isaac Knapp Dental Award, the Cancer Society Award, a citation by the National Committee for Careers in Medical Technology, and summer scholarships at Howard University in Washington, D.C., Indiana University, and the Indiana Medical Center in Indianapolis.

AIR FORCE CHOICE Eric E. Sundberg, 18, is a "slow starter" (his own description) in science. Selected by the Air Force each of the past two years at the NSF-I as a first-place winner, he barely maintained a C average during his first two years of high school but gradu-



Eric E. Sundberg

ated with an A average.

Eric's exhibit at the NSF-I in 1963 was titled "The Characteristics of an Unconventional Rocket Engine-Plus Nozzle." In 1962 he won with a display captioned "First Possible Origins of Lunar Craters."

In recognition of his demonstrated ability, the Air Force employed him this past summer as assistant to the top scientists at the Air Force Space Laboratory, Wright Patterson Field, Dayton, Ohio.

The Sundberg family, including Eric's brothers Kim, 15, and Mark, 11, live at La Selva Beach, just south of Santa Cruz, Calif. Mr. Sundberg is an instructor of English and drama at Cabrillo Junior College. Eric was graduated from Watsonville H.S. and is attending Cabrillo J.C., intent on preparing for a career as an astrophysicist, aeronautical engineer or aerospace engineer.

Hobbies and interests listed by Eric

include art, astronomy, chess, coin collecting, drama, philosophy, metalwork, Boy Scouts, DeMolay, camping, fishing, hunting, swimming, skin diving, surfing and cooking.

Comment by his mother: "He has always been a tinkerer since I can remember. In grade school he tried to be a second Edison. I think I am the only mother around here who collected burnt-out light bulbs."

NAVY SELECTEE Paul V. Roling graduated from Wahlert H.S. in Dubuque, Iowa, last June and is attending Loras College in Dubuque. His father, Vincent H. Roling, is a productions layout inspector in a tractor plant and his mother was graduated from Clark College in Dubuque with a B.A. degree. Sister Susan is a junior in Wahlert H.S. and brother Michael is a freshman.

Interested in a career as an analytical and organic chemist, Paul was selected for a Navy Science Cruise after winning first place in the chemistry division of the NSF-I. His research project demonstrated ease of identification of minerals by using organic compounds. He showed that of a total of 56 metallic ions, 34 can be identified conclusively by use of the 24 organic compounds.

Paul's work also won the attention of Army judges at the NSF-I as well as that of the Armed Forces Chemical Association, resulting in his selection as an alternate. Graduated from high school with the highest honors, he is now a lieutenant in the ROTC, and a member of the Armed Forces Chemical Association as well as the



Paul V. Roling

Mathematics Honor Society. Among his honors is the Bausch and Lomb Honorary Science Award.

Hobbies and interests include art, music, camping, hunting, fishing, geology, hiking, mathematics, Scouting (Star Scout and Explorer), and stamp collecting.

Honors for Dr. Mandels Accent Women in Science

Women in Army science are finding a champion to lead their cause in Dr. Mary H. Mandels, newly selected Civil Servant of the Year as honored Oct. 23 by the New England Civil Service Commission. In March this year she was awarded the U.S. Army Natick Laboratories Research Directors Award.

Achievements of Dr. Mary Mandels and her husband, Dr. Gabriel R. Mandels, also employed at the Natick Laboratories, were traced in a feature article carried on page 23 of the September 1963 issue of this publication. Her work is credited with opening the door to eventual control

of microbiological deterioration of materials.

U.S. Civil Service Commissioner Ludwig J. Andolsek of Washington, D.C., was a guest speaker at the ceremonies honoring Dr. Mary Mandels as Civil Servant of the year. The award, a plaque, was presented by the Federal Personnel Council of Boston, Mass., and is inscribed:

"The Civil Service Commission takes pleasure in recognizing the scientific contributions of Dr. Mary Mandels in the field of microbiology. Dr. Mandels has produced significant scientific accomplishments in studies on the enzymatic acceleration of — and inhibition of—degradative processes in cellulosic materials. These results have contributed to the growing recognition of Government scientific endeavors in the scientific communities in this country and abroad. Very recently this work has been brought to a point where several important applications now appear possible. It is with considerable pleasure, therefore, that we give due recognition to these accomplishments by designating Dr. Mandels as a Civil Servant of the Year."



Dr. Mary H. Mandels

USAELRDL Expecting 1,000 At Wire, Cable Symposium

Under the auspices of the U.S. Army Electronics Research and Development Laboratories (USAELRDL) in cooperation with industrial firms, the 12th annual Wire and Cable Symposium will be held Dec. 4-6 in Asbury Park, N.J.

As the largest gathering of its kind, the Symposium is expected to attract more than 1,000 manufacturers, scientists and engineers from the United States and foreign countries.

Col James M. Kimbrough, Jr., USAELRDL commanding officer, will make the welcoming address.

A total of 26 papers will be presented on the latest developments in wire and cable for communication and other electronic uses on levels that range literally from underground and submarine to outer space.

Cochairmen of the Symposium are electronics engineers Howard F. X. Kingsley, Office of the Comptroller and Director of Programs, U.S. Army Electronics Command, and Fred W. Wills, USAELRDL Communications Department.

Other members of the Symposium planning committee are F. W. Horn, of Bell Telephone Laboratories; R. C. Mildner, Dow Chemical Co.; B. W. Tyrrell, Northern Electric Co., Ltd.; J. J. Roache, from the Army's Frankford Arsenal; A. N. Averill, Photo Plastics Corp., and F. E. Harden, Camden Wire Co.

Interested persons who want more information on the Symposium may write Mr. Wills or Jack Spergel in care of the U.S. Army Electronics R&D Laboratories, Fort Monmouth, N.J. Mr. Wills may be called on 535-2920 and Mr. Spergel on 535-1959. The Fort Monmouth Area Code is 201.

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.

Dr. Gabriel Mandels is Associate Director for Life Sciences at the Natick Laboratories, an element of the U.S. Army Materiel Command.

The Mandels and their children, Joan, 19 and Peter, 15, reside at 106 Everett Street, Natick, Mass.

SARS Student Plans Microbial Parasitism Report

Information on microbial parasitism obtained during a year of study under a Secretary of the Army Research and Study (SARS) Fellowship is being prepared by Dr. Irvin W. Gibby for publication soon.

Employed at the U.S. Army Edgewood (Md.) Arsenal since 1956, Dr. Gibby conducted his SARS project at the Cornell Medical College Department of Health in New York City. The Department is headed by Dr. Walsh McDermott, internationally renowned for his work on tuberculosis and public health.



Dr. and Mrs. Irvin W. Gibby

Dr. Gibby is a senior biological scientist with the Operations Research Group at Edgewood and is backed by five years experience at Dugway Proving Ground, Utah, and four years at Fort Detrick, Md., both Army installations.

Assisted in the SARS project by his wife Ann, who volunteered her services, Dr. Gibby conducted laboratory experiments concerned with the basic interactions between a microbial species and an animal host.

Of primary interest was the examination of a hypothesis that interactions between host animal and parasitic microbes can show an extreme range of effects—such that the outcome of an experimental infection may range from latent or inactive disease to rapidly fatal disease.

Some of the conditions that control the severity of the disease process and permit alteration of disease-producing capabilities of microbes were defined during the work in the laboratory. The information obtained from this intensive study will soon be published by Dr. Gibby.

A graduate of Brigham Young University, he received his M.S. and Ph. D. from the Department of Microbiology, Cincinnati Medical College.

USAPRO Blends Research Into Information Effort

An experimental surveillance information processing facility is being established at the U.S. Army Personnel Research Office (USAPRO) in Washington, D.C., and research will be associated with the activity.

Studies on interpreter performance in advanced surveillance systems will provide basic information for use by the designers of future equipment, system engineers and tactical reconnaissance officers.

Plans for a human factors research program in a computerized surveillance system were described recently by Dr. Joseph Zeidner, chief of the USAPRO Support Systems Research Laboratory, and Dr. Robert Sadacca, senior task leader, Image Systems Task. Dr. Abraham Birnbaum, senior task leader, Image Interpretation Task, is concerned with computer-driven displays and interpreter techniques within the system.

The nature of the work being programmed by USAPRO in surveillance systems was explained at the Inter-service Meeting on Human Factors Research for Reconnaissance and Reconnaissance/Strike Systems. Held at Wright-Patterson Air Force Base, the meeting was hosted by the Aerospace Medical Association Labs.

The USAPRO facility will use the recently installed GE 225 computer, along with an experimental viewing device and peripheral and on-line equipment. Work will be in cooperation with the U.S. Army Materiel Command's Electronics Command.

Using imagery with known target identifications, the computer can be used to maintain the proficiency of image interpreters by providing feed-

back for accuracy determination.

Dr. Zeidner has pointed out that the human factor inputs into the various parts of an information processing system vary considerably in their importance and ultimate effect of the output. The function of the interpreter, it was emphasized, is not likely to be automated very soon.

With the expected increase in the amounts and kinds of imagery, including infrared, radar and television, it is necessary to determine performance capabilities of image interpreters under a variety of conditions.

USAPRO image interpretation research has shown that background information provided the interpreters should be carefully controlled because such information may suggest presence of nonexistent targets. Findings also indicate that interpreters per-

form equally well on photographs, positive transparencies and negative transparencies, voiding the special equipment need.

Plans for the coming year involve a program of in-house research at USAPRO as well as contract activities. A contract with North American Aviation Co., Columbus Division, seeks to determine whether human judgment of image quality as well as physical measurements of quality are dependably accurate for speedy selection of those image frame which will provide the most information payoff.

The end-product of the North American Aviation contract research is expected to be a photographic scale which will be used to measure image quality in terms of the probability that targets can be correctly identified. Such a probability estimate will help to speed up the imagery screening for significant information.

\$108 Million UH-1 Helicopter Contract Let by Army

Award of a \$108,320,407 contract for UH-1 series helicopters, to be delivered to the Army between December 1964 and November 1965, was announced Oct. 29 by Textron's Bell Helicopter Co.

Announcement of the contract, the largest received by Bell since it moved to Texas 12 years ago, was made at its Fort Worth headquarters during a program noting the transfer of plant cognizance from the Navy to the Army.

Participating in the program were Paul R. Ignatius, Assistant Secretary of the Army (Installations and Logistics), Kenneth E. Belieu, who holds the same post in the Navy, and Representative Jim Wright for the 12th Congressional District, Tarrant County, Tex.

A highlight was delivery of 39 helicopters to the Army, said to be the greatest one-day delivery in the history of rotary-wing aviation and the largest one-day delivery of Army aircraft since World War II.

The UH-1B, UH-1D and OH-13S helicopters were flown away one by one, seconds apart, at the conclusion of the program.

The UH-1 Iroquois series has made headlines since development began in 1955. It has set world speed and climb records, was the first helicopter to fly at the South Pole, and has earned from Army pilots the sobriquet of "Cadillac of the helicopters." (See March 1963 issue, p. 36.)

The UH-1B is a 9-place and the UH-1D is a 13-place ship. Each is powered by the Lycoming T53-L-11 engine of 1,100 horsepower.

CRDL Mathematician Gets 3-Year NDEA Fellowship

Arthur R. Poskocil, a mathematician at the U.S. Army Chemical Research and Development Laboratories (CRDL), Edgewood Arsenal, Md., was recently awarded a Fellowship under the National Defense Education Act.

Employed in CRDL's Systems Analysis Division, he has a leave of absence to work on his Ph. D. degree at the State University of Iowa in Iowa City. He was nominated for the Fellowship by the University, and will receive a stipend each year for a period of three years.

Poskocil received his B.S. degree in mathematics from Loyola College, Baltimore, Md., in 1962. His graduate work is in social psychology.



Delivery of thirty UH-1 and nine OH-13S helicopters to the U.S. Army is made at Bell Helicopter Co. (Other models in photo were on exhibit.)

Army's First Moon Contact Radar Memorialized at USAELRDL

Diana, the first radar to record an echo bounced off the surface of the moon, was memorialized Oct. 23 with the unveiling of an historical marker on the site of what is now the U.S. Army Electronics Research and Development Laboratories.

Installed by the New Jersey Department of Conservation and Economic Development, the marker was unveiled by Col Thomas K. Trigg, acting commander of the Laboratories at Fort Monmouth, N.J.

Marked with the seals of the State of New Jersey and the State's Tercentenary Commission, the marker reads:

"Diana Radar. Communications in space started here on Jan. 10, 1946, when the U.S. Army Signal Corps made radar contact with the moon."

Guests at the dedication included Dr. Harold A. Zahl, USAELRDL director of research; Dr. Walter S. McAfee, of the Labs, who made the theoretical calculations for the original experiment and is still a USAELRDL scientist; C. K. Shultes, director of the USAELRDL Surveillance Department; and Mayor Walter Lukowitz of Monmouth County's Wall Township.

Kenneth Crevling, chief of the Resources Division, New Jersey Department of Conservation and Economic Development, and Robert A. Roe, commissioner of the Conservation and Economic Development Department, were also present.

The idea of pinging an electronic echo from the moon was conceived by Lt Col John D. DeWitt, Jr., who headed a team of U.S. Army Signal Corps officers and civilian scientists and engineers from USAELRDL (then called the Signal Corps Engineering Laboratories).

Among those who worked with him when he began planning the Diana project in August 1945 were Dr. Harold D. Webb, Herbert P. Kauffman, E. K. Stodola, Jack Mofenson and Dr. Walter S. McAfee.

The overall system, made up largely of standard equipment taken from early-warning radar sets used in World War II, included a receiver and transmitter designed by Maj E. H. Armstrong with no apparent thought that they would be used to sound out the moon.

On the epochal day the 40-foot-square "bedspring" antenna atop a 100-foot tower was traversed to face the spot above the horizon where the moon would rise at 11:48 a.m.

At moonrise, quarter-second pulses of energy, radio waves traveling at the 186,000 mile-a-second velocity of light, were fed every four seconds through the 111.5-megacycle transmitter of the electronic array, named Diana after the mythological huntress and goddess of the moon.

At 11:58 a.m., a return signal, recognizable by its clearly audible ping, was heard. The radio waves, transmitted at a peak power of 3,000 watts, had traveled the quarter-million miles to the moon, struck the rough surface, and retained energy for the return journey to the earth.

The round trip had taken approximately two and one-half seconds, but in that brief time man had for the first time put the imprint of his own devices on a body beyond the atmosphere of the earth.

The Diana experiments heralded the Space Age by showing that communications could be established across the universe. The increasing range and capability of Signal Corps radar were demonstrated in the project. Use of the moon as a handy reflector suggested another way to transmit line-of-sight microwave radio messages over the barrier of the horizon to distant points on the earth.

The Diana name was retained after the historic lunar contact, but the equipment has been modernized. The original antenna has been replaced by a 50-foot paraboloid (dish) and a 60-foot dish-shaped antenna alongside.

The powerful radar system has been used for numerous radio transmission studies since 1946. Some of the information obtained was put to direct use in the design of Project Score, the world's first radio-relay satellite, and Vanguard II and Tiros I, pioneer meteorological satellites.

In view of the Nation's plans to land men on the moon, the moon-reflected signals used for the continuing radio studies also are providing new information on fine-scale features of the lunar terrain too small to be resolved by optical telescopes.

As for Col DeWitt, time already has largely confirmed his tentative prophecy. For in a statement recorded a few days after the 1946 event, he said:

"If one allows the imagination free rein, many future possibilities appear. Spaceships carrying passengers at thousands of miles per hour can be controlled and communications established with their passengers, for we now know that the atmosphere can be penetrated."

The great number of successful communications and weather satellites now or recently in operation are also proof of the validity of Diana's early work. No less than seven such satellites, which carry on the tradition of space communications, have been researched, developed, built or controlled in New Jersey within 50 miles of the original Diana site. These are:

- Score, the world's first successful communications satellite, launched Dec. 18, 1958, developed by the Fort Monmouth Laboratories.

- Echo, the first passive communications satellite, launched Aug. 12, 1960, developed by Bell Telephone Laboratories.

- Courier, the first space vehicle to provide high-speed, multiple-bit store-and-forward and direct relay communications through space, launched Oct. 4, 1960, also an Electronics Labs development.

- Tiros I, the first successful weather satellite, that transmitted television pictures back to earth, launched Nov. 23, 1960, first worked out by the Fort Monmouth Labs.

- Telstar, the world's first television relay satellite, launched July 10, 1962, developed by Bell Telephone Laboratories.

- Relay, a sophisticated television relay satellite, launched Dec. 12, 1962, made by Radio Corp. of America.

- Syncom, first "stationary" communications satellite—hovering over one spot on the earth—launched July 26, 1963, developed by the National Aeronautics and Space Administration. Ground stations were built and monitored under the direction of Fort Monmouth's Satellite Communications Agency.

(See Illustration back cover)

M132 Flamethrower Undergoing Final Testing Before Issuance

An improved self-propelled flamethrower developed by the U.S. Army Edgewood (Md.) Arsenal is undergoing final testing prior to issuance to troops.

Designated the M132, it is mounted on the M113 armored personnel carrier and provides greater mobility, speed and range than any of its predecessors. It can be transferred from one personnel carrier to another in a relatively short time.

The kit consists of a cupola-mounted flame gun with fuel spheres and pressurizing air containers. No structural modifications to the vehicles are required for installation.

CDC Leader Views Command Role in Materiel Tests

Military materiel end-items have a life cycle that involves, on the average, some 60-odd steps. Maj Gen Thomas H. Lipscomb, Deputy CG for Materiel Requirements at the U.S. Army Combat Developments Command, presented that information at a recent combat developments conference at Fort Lee, Va.

"They are complex steps, too," he said, "and there is only one man who knows if the system works. He's not a research analyst or management expert; he's the User — the lonely American or Allied soldier at the end of the supply line who must carry the item, drive it, fire it or repair it."

In achieving its mission of developing concepts and requirements to meet objectives during the medium- and long-range time frame, from 5 to 15 or longer years, the Combat Developments Command is the or-

ganization which represents the User from the beginning to the end of the materiel item.

Operational, organizational and materiel objectives and goals are determined in respect to the potential enemy, the threat presented, and the expectations of science and technology, General Lipscomb explained.

Ideas, new and old, are evaluated against a simple criteria: Will this idea, when implemented, actually increase the Army's combat effectiveness during the time frame for which it is intended?

In functioning as the "Army's idea proving ground," the general explained, the CDC is the proving agency for the User and for the U.S. Army Materiel Command, which has prime responsibility for design, test and production of military hardware.

Life Sciences Leader Views South American Science

Findings and recommendations pertinent to more mutually advantageous working relationships with scientists in Latin and Central America were submitted recently to Director of Army Research Brig Gen Walter E. Lotz.

Dr. Carl Lamanna, deputy chief and scientific adviser in the Life Sciences Division, U.S. Army Research Office Headquarters, Arlington, Va., presented his views in a report on a 40-day study visit.

Included in his itinerary were discussions with personnel in the U.S. Army Element of the U.S. Regional Science Office for South America in Rio de Janeiro, Brazil. There he also attended the International Congresses of Tropical Medicine and Malaria. Later he conferred with scientists in the U.S. Army Research and Development Office, Canal Zone, Panama.

Dr. Lamanna discussed the problems of achieving better understanding of the objectives of U.S. Army research in South America with scientists and administrators in the Brazilian Academy of Science and various medical research institutes.

In Argentina he visited the National Research Council, the University of La Plata, the Institute of Human Physiology, and conferred with the faculty of Natural Science and Museum. Likewise, in Uruguay, Chile and Costa Rica, he talked to faculty members of universities and leaders of research institutes.

One of the pressing needs of Latin

American scientists, Dr. Lamanna said, is for scientific periodicals and books of U.S. origin as well as from other countries. That problem has been aggravated particularly by inflation in Brazil and resultant shortage of funds for purchases.

The report recommends the exploration of possibilities of working out a cooperative support arrangement with publishers of scientific journals and textbooks in the U.S. to give the necessary aid to scientific research institutes, universities and other organizations.



During a visit to the U.S. Army Research and Development Office, Panama to view the progress of tropical research and testing, Dr. Carl Lamanna is shown the fungus growth on the tracking radar of a Nike Ajax complex. Chief scientist Dr. Leo Alpert of the research center points to the fungus as Maj Don Bronson (right) and Michael Fradel observe.

"While working with the major consumers, like the overseas commands and STRAF, on the new item's possible training implications," the general said, "USACDC subjects its accompanying operational and organizational concepts to more operations research, in-house war-gaming and field experimentation in our live laboratory at Fort Ord, Calif."

"At the same time, we are also developing the Field Manuals and Tables of Organization and Equipment timed to integrate the new materiel the moment it is produced by industry and procured by AMC."

"As the Army's filter-center for new concepts and ideas, we may not always be the most-popular of organizations because we also have the mission of saying No to an idea. This is not only a mission but an obligation to the man we represent—the User."

Tri-Service Meet Considers Radio Frequency Problems

A matter of mounting concern to the Armed Forces — radio interference continually being aggravated by the communication advances competing for channel space—was considered at the Ninth Tri-Service Conference on Electromagnetic Compatibility.

Discussions on the increasing requirement for action to minimize the radio frequency problem—that is, to insure a suitable portion of the electromagnetic spectrum to meet military communication requirements — were held at Chicago, Oct. 15-16-17.

Under the sponsorship of the U.S. Army Electronics Research and Development Laboratories, Fort Monmouth, N.J., the meeting was devoted to possible action to provide all the Services with maximum radio, surveillance, air navigation and other electromagnetic facilities without interference.

Analysis of the entire electromagnetic spectrum and establishment of communication equipment design criteria for optimum use without causing undue interference were among the problem approaches considered.

A detailed report on findings and recommendations resulting from the parley was not ready at press time.

(For an illuminating article on the problem of electromagnetic compatibility, see the July 1961 issue of this publication, p. 14, "Services United in Assault on Radio Frequency Woes.")

Secretary Vance Highlights ASAP Meet by Exchange on R&D

Secretary of the Army Cyrus R. Vance won audience acclaim for his role in making the Oct. 14 meeting of the Army Scientific Advisory Panel one of the liveliest and most informative ever conducted.

Prevented by the press of other business from making a scheduled welcoming address, Secretary Vance held a "press conference" discussion immediately following the luncheon. For about 40 minutes he indulged in a free exchange of questions and answers on R&D and related matters.

In his first appearance before the Panel as Assistant Secretary of the Army (R&D) after having served as a member for several years, Willis M. Hawkins made the welcoming remarks. His predecessor, Dr. Finn J. Larsen, who resigned to return to Minneapolis Honeywell Co., sat for the first time as an ASAP member.

Vice Chief of Staff General Barksdale Hamlett, Lt Gen Dwight E. Beach, CG of the Combat Developments Command, Lt Gen Frank S. Besson, Jr., CG of the Army Materiel Command, and Lt Gen Ben Harrell, Acting Chief of Staff for Force Development, were present.

Other dignitaries in attendance included Maj Gen Frank H. Britton, Director of Research and Development for the Army Materiel Command; Charles L. Poor, Deputy Assistant Secretary of the Army (R&D); and Dr. Craig Crenshaw, chief scientist, Materiel Command.

Present also were officers representing each of the Office of the Chief of Research and Development Directorates, namely: Brig Gen William T. Ryder, Director of Special Weapons; Brig Gen Walter E. Lotz, Jr., Director of Army Research; Col John A. Graf, Deputy Director of Plans and Programs; and Col Allen G. Pixton, Director of Developments.

The meeting was noteworthy also in that it initiated a new policy of briefings of the Panel as necessary to keep members currently informed on significant development programs and projects.

Chief of Research and Development Lt Gen William W. Dick made remarks introductory to the briefings, which emphasized trends of development and development planning rather than detailed reports on projects.

Planning relationships with other elements of the General Staff, the Combat Developments Command, Army Materiel Command, the Joint Chiefs of Staff, and the Department of Defense were defined during the

briefings as they apply to developmental activities.

Dean Morrrough P. O'Brien, ASAP chairman, made remarks introductory to progress reports, as follows: Anti-tank Weapons, Richard S. Morse; Army Aircraft R&D, Charles H. Zimmerman; Forward Area Air Defense, Dr. William C. Tinus; In-House Laboratories, Dr. Hector R. Skifter;

Scientific Personnel, Dr. Roger W. Russell; Tactical Communications, Donald G. Fink.

Lt Col K. R. Bull, executive secretary of the ASAP, told a representative of this publication that a more detailed report on the precise nature of much of the discussion at the meeting could not be made available because of security.



ASAP participants in Oct. 14 meet (L. to R.) include: Top, Dr. William Van Royen (foreground), ASAP vice chairman; Dean Morrrough, P. O'Brien, ASAP chairman; Lt Gen William W. Dick, Jr., Chief of Research and Development; K. T. Keller, ASAP Member emeritus; Lt Col Kenneth R. Bull (background), ASAP executive secretary. Right, Dr. Charles C. Lauritsen, ASAP and Lt Gen Dwight E. Beach, Commanding General, Combat Developments Command. Bottom, General Barksdale Hamlett, Vice Chief of Staff, USA; Willis M. Hawkins, ASA (R&D), and K. T. Keller.



CRREL Open House at New Headquarters Marks Full-Scale Operation Goal

(Continued from page 1)

U.S. Army Materiel Command unit.

Extensive fire damage to the headquarters building when construction and installation of equipment was well advanced in 1961 necessitated major repair work, particularly in the intricate wiring and refrigeration systems, and delayed the final acceptance originally expected early in 1962.

Organized as a consolidation of the Army's major cold regions research activities formerly located in Wilmette, Ill., and Waltham, Mass., CRREL is now situated on an 18-acre tract donated by Dartmouth College. The headquarters structure provides 72,000 square feet of space.

CRREL is assigned mission responsibilities for the conduct of basic and applied research and investigations in snow, ice and frozen ground, on and below the earth's surface, research in cold regions environments, and photographic interpretation research on a worldwide basis.

The Laboratory's activities cover not only Alaska, Greenland, the Arctic and the Antarctic, but the high-altitude, low-latitude regions on the world as well. Considerable competence also has been developed in temperate zones where cold weather is of concern in problems such as building of roads or airports and the removal of snow and ice.

Overflow Crowd Responds To Information Symposium

More than 700 persons participated in "Information Processing in the Nation's Capital—1963," an Oct. 17 symposium at the University of Maryland sponsored by the Washington Chapter of the Association for Computing Machinery (ACM). Lack of space prevented many others from taking part.

Centered around addresses by Dr. Alan J. Perlis, ACM president, and Congressman Roman C. Pucinski, chairman of the House Ad Hoc Subcommittee on a Research Data Processing and Information Retrieval Center, the symposium attracted top leaders of Government, industry and education.

Acknowledged leaders in the field composed a panel for discussion of "Information Processing—Where are the Gaps?" Members included R. A. Kirsch, National Bureau of Standards; J. Moshman, C.E.I.R., Inc.; A. J. Perlis, Carnegie Institute of Technology; Frank Riley, Post Office Department; H. E. Tompkins and Werner C. Rheinboldt, U. of Maryland.

CRREL's widening area of activities traces back to World War II and the urgency of constructing air bases in many parts of the world where seasonal frost and permafrost (permanently frozen ground) posed severe problems.

Engineering requirements involved pointed to research. Broad knowledge of cold regions environments and how to cope successfully with them was needed to establish new criteria for military operations objectives.

Prior to establishment of the U.S. Army Materiel Command, which became fully operational in August 1962, all cold regions research, testing and developmental work was done under Corps of Engineers direction.

The decision to consolidate Army cold regions research at Hanover, however, was approved by Lt Gen Arthur G. Trudeau, then the Chief of Research and Development, during the summer of 1960 following extensive studies.

Hanover was selected as the site for the single activity with respect to its proximity to other major research

activities. The Army's Arctic Construction and Frost Effects Laboratory was then located at Waltham, Mass., and the Army Snow, Ice and Permafrost Research Establishment (SIPRE) at Wilmette, Ill. ACFEL was created in 1953, SIPRE in 1949.

In the area of CRREL Headquarters are the U.S. Army Natick (Mass.) Laboratories, formerly the Quartermaster Research and Engineering Laboratories, as well as the Massachusetts Institute of Technology Laboratories and the Air Force Laboratory at Cambridge, Mass.

Staff capabilities of CRREL encompass a wide range of advanced technical skills in such fields as civil, mechanical, electrical and chemical engineering; also, physics, geology, geography and meteorology. Many of the staff scientists and engineers have won high honors for work in the field of cold regions R&D.

In addition to the regular staff, some 40 scientists and engineers known nationally or internationally as experts contribute efforts to the program aimed at improving U.S. Army capabilities in cold regions.

Theme of the Month: The Science of Mobility

(Continued from page 2)

and surveying, as well as camouflage and prefabricated buildings and tentage, all electrical power and generating equipment, construction and materials handling equipment—in other words, all the material needed to not only provide mobility for the Army but to render immobile the forces of an enemy.

The Command's mission is executed in seven major field installations, staffed by over 13,000 military and civilian personnel. Basic to this great task is, of course, the Command's research and development programs, which must assure continued creation, improvement and modernization of mobility equipment and bring into the Army inventory the equipment that will assure the "mobility differential" that means victory in the battlefield.

The Mobility Command's research and development programs are carried on, under the direction of the MOCOM R&D Directorate, in four of the Command's seven field installations: the Army Tank-Automotive Center in Detroit, Mich.; the Aviation and Surface Materiel Command (formerly TMC) in St. Louis, Mo.; the

Engineer Research and Development Laboratories, Fort Belvoir, Va.; and the Transportation Research Command, Fort Eustis, Va.

In these installations a total of 1,700 personnel work directly in research and development, test and evaluation—over 13 percent of our manpower effort. In FY 1964, about \$160 million of MOCOM's budget will be devoted to research and development, test and evaluation, and product engineering.

This \$160 million R&D budget does not include "customer work" programs carried on in MOCOM R&D installations for other services and other Army agencies. In ERDL, for example, a research and development program in fuel filter separators is being conducted for the Navy and Air Force; in the ATAC laboratories in Detroit a large R&D program is underway for the Weapons Command in the development of tracked vehicles, as well as a program for development of ground support vehicles and equipment for Missile Command.

A primary objective of the 1962 Army reorganization and creation of the "Commodity Commands" of AMC

(Continued on page 26)

Generals Merriam, Gribble Elevated by Reassignments In AMC R&D Directorate

Brig Gen Wheeler G. Merriam has succeeded Brig Gen John G. Zeirdt, nominated Nov. 5 for 2-star rank as the new CG of the Army Missile Command, as deputy director of the Research and Development Directorate, U.S. Army Materiel Command.

Brig Gen William C. Gribble, Jr., stepped into the spot General Merriam had held since June 1962 as chief of the Development Division, R&D Directorate, AMC.

BRIG GEN MERRIAM's 31-year career includes three years of front-line duty during World War II in the Central European Theater of Operations with the 82nd Armored Reconnaissance Battalion of the 2nd Armored Division.

Born in Brookfield, Mass., Apr. 15, 1911, he was graduated from the University of Maine with a B.S. degree in mechanical engineering in 1932. He received his M.S. in education from Harvard in 1940, after eight years of teaching and counseling in the secondary school systems of Massachusetts.

Following World War II, he returned to the Cavalry School at Fort Riley, Kans., where he was head of the Department of General Instruction until he entered the Command and General Staff College in 1947. He taught at the CGSC for four years following graduation.

Upon graduation from the Army War College at the Carlisle Barracks, Pa., General Merriam was assigned as deputy to the Senior Representative of the U.S. Army Standardization Group, UK, with station in the British War Office, London, England.

In September 1955, he went to Fort Hood, Tex., where he first served as G-4, III Corps and later headed Combat Command A, 4th Armored Division.

In 1957, he went to Headquarters, U.S. Continental Army Command, Fort Monroe, Va., as chief of the Combat Vehicle Division of Materiel Development. He was assigned to Korea in January 1961 as chief of the Armistice Affairs Division, United Nations Command and Secretary of the Military Armistice Commission.

BRIG GEN GRIBBLE's previous assignment was deputy director of Military Construction, Office of the Chief of Engineers, Washington, D.C. He had served in that capacity since 1961, following service as chief of the U.S. Army Nuclear Power Program after graduating from the National



Brig Gen W. G. Merriam

War College in 1960.

Born in Ironwood, Mich., May 24, 1917, General Gribble attended the Michigan College of Mining and Technology for three years before he entered the U.S. Military Academy at West Point, N.Y.

Commissioned in 1941, he was assigned to the 18th Engineer Regiment. Later, with the 340th Engineers, he was regimental supply officer and company commander during construction of the Alaskan Highway.

Graduation from the Command and General Staff School, Fort Leavenworth, Kans., was followed by engi-



Brig Gen W. C. Gribble

neer officer assignments in the Pacific Theater during World War II. Two years at the University of Chicago were climaxed by an M.S. degree in physical science in 1948, after which he served until 1952 as a metallurgical engineer with the Los Alamos (N. Mex.) Scientific Lab.

From 1953 to 1956 he was deputy assistant director, Reactor Development Division, U.S. Atomic Energy Commission, and in 1957 received the Legion of Merit for developing technical specifications for design, construction and test operation of the Army's first nuclear power plant at Fort Belvoir, Va.

Army Engineer Chosen for Rockefeller Award

(Continued from page 1)

• Gabriel Otto Wessenauer, manager of power, Tennessee Valley Authority—award in the field of general welfare or national resources.

• Allen V. Astin, director, National Bureau of Standards—award in the field of science, technology or engineering.

In announcing selection of the award winners, Princeton University President Dr. Robert F. Goheen stated:

"... Winners represent a wide cross-section of the career services required by a Nation of 190 million people in the mid-twentieth century and they represent distinguished performance in these services.

"Although the agencies from which they come are known to millions, the men themselves are possibly known to few outside the Government. We are pleased to help bring them the wider recognition they deserve.

"Collectively, these five men have served us all with intelligence, devotion and outstanding achievement for over 130 years. The public's debt to them and to the thousands of others

in the career services of the Federal Government is deep indeed."

The selections were made from among hundreds of nominations made by past and present employees of the Federal Government and executives outside the Federal service.

Each winner will be privileged, though not required, to make available to others some of the knowledge gained in their years of service through writing, lecturing or consulting. They are eligible for additional grants for this purpose.

The Rockefeller Public Service Awards have been administered for the past 11 years as part of a program to strengthen the public service. From 1952 through 1959, 79 awards were made to mid-career Government employees to finance additional self-training.

Passage of the Government Employees Training Act of 1958, which gave broad authority for in-service training to all executive agencies of Federal Government, shifted the purpose of the awards.

Since then the emphasis has been turned to recognition of long and distinguished careers. The 1963 awards raise the new plan total to 21.

SRI Communications Expert Gets Army OCSA

Assistant Secretary of the Army (R&D) Willis M. Hawkins, acting on behalf of Army Secretary Cyrus R. Vance, recently presented the Army's Outstanding Civilian Service Award to E. Finley Carter, former president of Stanford Research Institute, at an honorary dinner in Washington, D.C.

Cosponsors of the dinner were Maj Gen David P. Gibbs, Chief Signal Officer, U.S. Army, and Dr. Karl Folkers, president of Stanford Research Institute.

Currently associated with SRI as senior management counselor and a member of its board of directors, Mr. Carter joined the Institute in 1954 after association with General Electric, the United Research Corp., and Sylvania Products, Inc. Holder of 18 patents in radio and carrier current communication, his basic discoveries are in common use in radio communication and control systems.

The award citation states in part:

"For outstanding service to the Department of the Army from 1954 to April 1963 . . . through his exceptional leadership, the Institute pioneered and advanced the development

of inter-disciplinary research techniques for analysis of major, complex Army and other military weapons, operational and command and control programs, systems and attendant national and military plans, policies and strategy.

"Mr. Carter unfailingly responded to numerous requests of the senior officials of the Army, Department of Defense and the U.S. Government on important research and study projects and groups . . . the outstanding quality of research of the Institute has made possible the timely formulation of policies and decisions on vital Army and National programs and problems."

Col Katz Succeeds Furphy as Missile Command CofS

Retirement of Army Missile Command chief of staff Col Foster L. Furphy Oct. 31, ending a 34-year Army career, moved his deputy since September 1962, Col Henry J. Katz, into the vacated slot.

Col Katz was first assigned to the Army Missile Support Command in 1961 as deputy commander, follow-



Willis M. Hawkins (left), ASA (R&D), presents Outstanding Civilian Service Medal to E. Finley Carter.

ing service as commander of the Ordnance Industrial Center, responsible for Ordnance procurement and depot maintenance for the U.S. Forces in Europe.

Graduated from the United States Military Academy in 1936, he later served there four years as an instructor and assistant professor of mathematics. His major assignments have included service at Rock Island Arsenal, Erie Ordnance Depot, the Ordnance Tank Automotive Center in Detroit, commander of the 59th Ordnance Group in Korea, and Office of Chief of Ordnance, Washington, D.C.

COL FURPHY was praised at his retirement ceremony by Brig Gen John G. Zierdt, CG of the Missile Command, as a man whose retirement "will be a great loss to the command. He takes with him a terrific amount of ability and experience in top-level management that has been of inestimable value to the success of the Army's missile programs."

Among the qualifications of Col Furphy for his long military career were membership in the National Guard (1929), study at Rensselaer Polytechnic Institute prior to enrollment at the U.S. Military Academy, from which he was graduated with an engineering degree in 1936, and an M.A. degree in mechanical engineering from Massachusetts Institute of Technology.

Assigned to Redstone Arsenal, Ala., Headquarters of the Missile Command, in 1959, he served first as comptroller of the Ordnance Missile Command before he became chief of staff, serving under Maj Gen August Schomburg and the late Maj Gen Francis J. McMorro.

Freeze-Dehydrated Foods Slated for Troop Tests

In its continuing search for modern preservation methods to provide better foods for troops, the Army has turned to the freeze-dehydration process. Beefsteak thus treated will soon be an item on Army menus throughout the U.S.

Other freeze-dehydrated foods scheduled for Army messhalls at an early date include pork chops, fish patties, beef patties and flaked beefsteaks. Introduction of these items is part of the Army research program to provide top quality foods while simplifying the storage and logistics problems.

Freeze-dehydration involves freezing followed by dehydration of the items. Meats preserved in this manner can be packed in cans, require no refrigeration and are lightweight.

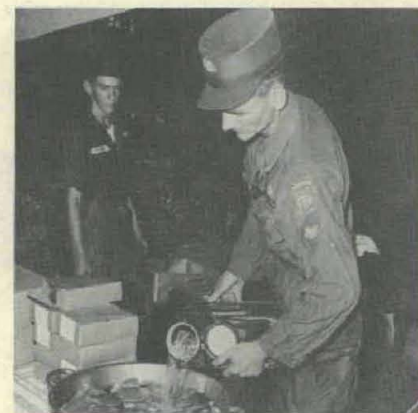
In forward areas where refrigeration, shipping and storage facilities are extremely limited, the advantages of freeze-dehydration are important. The new foods are being developed for use under operational conditions.

When reconstructed by the addition of water, freeze-dehydrated meats resemble fresh meats in appearance and can be grilled like ordinary steaks, chops and patties.

Freeze-dehydrated foods procured for large-scale usage in the Army

Master Menu during a period of trial servings, to obtain data on the adequacy of preparation directions as well as data on troop acceptability, will be discontinued after tests are completed.

The U.S. Army Subsistence Center in Chicago, Ill., a Class II activity under jurisdiction of the Chief of Support Services, and the Defense Subsistence Supply Center, also in Chicago, are cooperating in the program of developing and test scheduling of the freeze-dehydrated meats.



Addition of water reconstitutes freeze-dehydrated beef steaks for troop feeding during "Water Moccasin" exercises held at Fort Stewart, Ga.

Heart Association Honors Army Expert Dr. Gregg With Achievement Award

World renowned U.S. Army expert in heart and blood diseases Donald E. Gregg has added the 1963 Research Achievement Award of the American Heart Association to his impressive list of honors. In August 1962, John F. Kennedy presented him with the President's Award for Distinguished Federal Civilian Service.

Consisting of an illuminated scroll and a \$1,000 honorarium, the Heart Association award was conferred on Dr. Gregg by Dr. James V. Warren, AHA president, Oct. 25 in Los Angeles, Calif.

As chief of the Department of Cardiorespiratory Diseases, Walter Reed Army Institute of Research, Washington, D.C., Dr. Gregg was honored for his contributions to knowledge of the coronary circulation, his improvements in experimental instrumentation and design, his scientific integrity and far-reaching influence on fellow scientists.

Established by the American Heart Association in 1961, the Research Achievement Award is the most important recognition given by the Association to research scientists and is presented annually for distinguished achievement in the cardiovascular field. Previous recipients were Dr. Charles H. Rammelkamp, Jr., of Cleveland (1961) and Dr. Maurice B. Visscher of Minneapolis (1962).

The ceremony also launched three



Dr. Donald E. Gregg

days of scientific sessions that were conducted by the American Heart Association in conjunction with its 39th annual meeting.

Dr. Gregg has been actively engaged in experimental work for more than three decades. In that period, his citation notes, "he has explored new concepts; validated and refined research techniques; and developed new instruments or adapted existing ones to his studies—all with the objective of learning more about the body's most important vascular bed."

His studies are described as having illuminated many facets of the way circulation in the heart muscle adapts under normal and disease conditions.

Findings have been vital to the evaluation of drugs and surgical procedures that seek to improve the blood supply to the heart muscle when it has been impaired by a heart attack.

Through his lectures and numerous original articles, reviews, monographs and chapters in standard handbooks of physiology and cardiology, Dr. Gregg has paved the paths of learning for other scientists, both present and future, the citation states.

Born in Bridgeport, Conn., Dr. Gregg graduated from Colgate University, Hamilton, N.Y., with a B.S. degree in chemistry. He received an M.S. degree and Ph. D. degree in physiology and his M.D. from the University of Rochester. He taught physiology at the University of Rochester from 1928-30 and from 1930-44 at Western Reserve Medical School in Cleveland.

Before attaining his present position in 1950, he was for four years chief research physician at the U.S. Army Medical Corps' Medical Research Laboratory, Fort Knox, Ky.

He has been active on the editorial boards of several journals of physiology and cardiovascular research and has served on the various councils and committees of the American Heart Association for many years. He is presently on the editorial board of its publication *Circulation Research*, and on the nominating committee of the Council of Basic Science.

AMEDS Develops Field Medical Treatment MUST

A new concept in field medical treatment facilities termed the Medical Unit Self-Contained Transportable (MUST), has been developed by the Army Medical Service (AMEDS).

Expected to replace existing equipment, the unit is compact, lightweight and easily movable. Surgery and ward containers and a self-contained utility system providing electric power, air conditioning, heating, hot and cold running water, and waste water service are incorporated.

Listed advantages of the system are that it will provide operating capability under any environmental condition (worldwide), improve medical treatment capability, allow maximum use of physicians' and nurses' skills, and increase mobility of combat support units.

The MUST complex is expected to be in the hands of selected AMEDS field units for troop testing about September 1964.

When not performing their basic functions, the shelter containers fold

into a shipping container which can carry all equipment in addition to the basic load required for their primary function.

The surgery container has modern facilities for performing the most complex and delicate operations. It can fold into a small package that holds all equipment and can be carried by a standard 2½-ton truck, trailer, military cargo aircraft, helicopter, ship or rail.

The hospital ward container holds an inflatable ward shelter capable of providing intensive medical treatment for 20 combat casualties together with basic hospital ward equipment.

Aireasearch Manufacturing Co., a division of Garrett Corp., of Phoenix, Ariz. is the developer and will produce a limited number of MUST prototypes. The ward element in the MUST is a modified version of an inflated tube structure developed and produced by Garrett for the Army Pershing missile system.

Administrator Cited



Deputy Commander Lt Col Richard R. Taylor of the U.S. Army Medical R&D Command received the John Shaw Billings Award at the 70th Annual Meeting of the Association of Military Surgeons in Washington, D.C., Nov. 4-5-6. The award cited him as the young (under 41) candidate with the greatest medical administrator potential.

OCRD Staff Officer Additions Include 3 Lieutenant Colonels, 4 Majors

Staff officer additions to the Office of the Chief of Research and Development since the previous issue of this publication include three lieutenant colonels and four majors, namely:

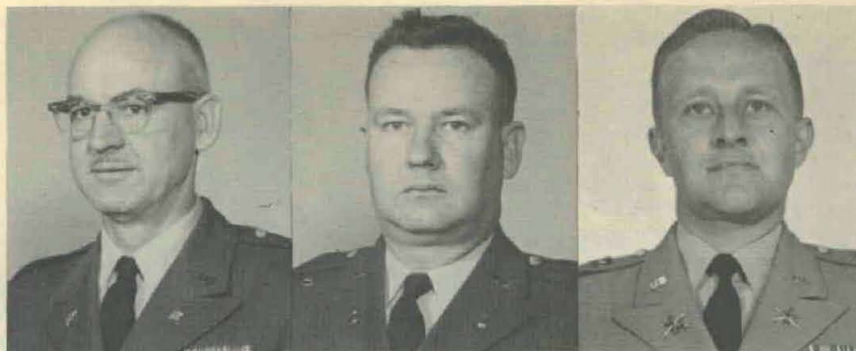
LT COL BENNETT (Robert B.), new action officer in the Medical and Biological Sciences Branch, Life Sciences Division, is starting a second tour with OCRD. In 1961-62 he served as chief, Combat Materiel Division, General Materiel Branch, prior to assignment to Headquarters Eighth Army (Korea) as chief, Plans Division, Quartermaster Section.

After receiving a B.S. degree in social sciences and education in 1938 from Mount Union College, he continued with graduate work in psychology at Ohio State University. He was awarded an M.S. degree in management from New York University in 1948, and has attended the Army Command and General Staff College, Army Management School and the Radiological Defense Course.

While in Korea, he taught three semesters in the field of business administration and personnel administration for the University of Maryland's branch campus.

LT COL QUINNELLY (James L.), new staff officer in the Combat Materiel Division, holds a B.S. degree in chemical engineering from Mississippi State College (1941) and an M.S.E. degree from Michigan (1948).

Prior to arriving in Washington, D.C., he served with the Advanced Research Projects Agency Research and Development Field Unit in Saigon, Vietnam (1962-63); the Artillery and Vehicle Systems Branch, R&D Division (1957-62); in the Office of the Chief of Ordnance as a member and, later, chairman of the Tripartite Ordnance Standardization Committee, and chief of the Tech-



Lt Col R. B. Bennett

Lt Col J. L. Quinnelly

Lt Col D. R. Keith

nical Branch, U.S. Army Europe Ordnance Division (1953-56).

He has coauthored a technical paper entitled "A Theoretical Investigation of Detonation in the Gasoline Internal Combustion Engine," given at a meeting of the American Society of Mechanical Engineers and authored a paper on "The Body Design of Military Vehicles."

LT COL KEITH (Donald R.), new staff officer in the Combat Materiel Division, is a 1949 graduate of the U.S. Military Academy and earned a master's degree in science education from Columbia University in 1958.

After completing the Basic Artillery Course, Officers Guided Missile Course and the Command and General Staff College, he served from 1958 to 1961 as an assistant professor at the United States Military Academy in the Department of Physics and Chemistry. In Korea from 1961-63, he was assigned to G-3 Operations.

MAJ MAGILL (Henry F.), project officer in the Chemistry and Materials Branch, Physical Sciences Division, U.S. Army Research Office, earned a bachelor's degree in engineering from Clemson A&M in 1952. In 1961 he received an M.S. degree

in engineering from the University of Alabama.

He has attended the Advanced Artillery School, Basic Ordnance Course, Electronic Fire Control, Ordnance Indoctrination Program (Guided Missile), Ordnance Career Course and Radiation Safety Course.

Included among his assignments are tours as an Aide-de-Camp to the commanding general of the Army Ballistic Agency and an occasional traveling Military representative to Dr. Werner von Braun (1956-58); and chief of the Plans Branch, Anti-missile Missile and Space Defense Projects Office, Army Rocket and Guided Missile Agency Redstone Arsenal, Ala. (1960-61). He has served as a gunnery instructor at the United States Military Academy and as a gunnery officer in Korea, where he later commanded the 57th Ordnance R&C Company.

He has written an article on "Anti-missile Measurements" that was published in *Ordnance Magazine*.

MAJ ALLEN (Boyde W., Jr.) is newly assigned to the Space Office of the Director of Special Weapons. Graduated from the U.S. Military Academy in 1949, he received a master's degree from the University of



Maj H. F. Magill

Maj B. W. Allen, Jr.

Maj J. B. Hughes

Maj DeWitt Cook

Southern California in guided missile propulsion in 1957.

Entering military service under the Navy V-12 program, he transferred to West Point two years later. Other military schooling includes: Ground General School (1949); Artillery School (1950); Infantry School (1950); Advanced Artillery School (1954-55); and Command and General Staff College (1960-61).

From 1961 to 1963 he was a division chief and test officer with the U.S. Army Arctic Test Board and was involved in testing artillery weapons systems under Arctic conditions. *The Artillery Trends* has published his contribution titled "Arctic Operations and Artillery Support Requirements."

Assigned to the Fort Sill, Okla., Artillery Center from 1957-60, he chaired a committee on war games and also was concerned with Army aviation and artillery concepts set in the time frame of the 1970s.

MAJ HUGHES (John B.), new staff officer in the Special Warfare Office, was graduated from the U.S. Military Academy in 1948 and received an M.S. degree in physics

from the Univ. of Virginia in 1956.

He has attended the Ground General School, Armored School (Advanced and Basic courses) and the Command and General Staff College. While at the Armor School, he taught a course in differential equations at the University of Louisville.

Included in his assignments are a 3-year tour as an instructor at the Nuclear Weapons Branch of the Armor School, and duty from 1959-61 as Aide-de-Camp to the Chief of Staff, Central Treaty Organization, Ankara, Turkey.

MAJ COOK (DeWitt), an action officer in the Programs and Budget Division, Programs Branch, received his B.A. in education from the University of Omaha (Neb.) in March of this year.

Commissioned via the Officers Candidate School program after starting as a rifle platoon leader in 1943, he has attended the Advanced Infantry Course, Intelligence School, Command and General Staff College and the Airborne School.

Most of his assignments have been as an S-2 and S-4 in Infantry battle groups, and he has been awarded numerous medals.

Fellenz Succeeds Stubbs as CBR Operations Chief

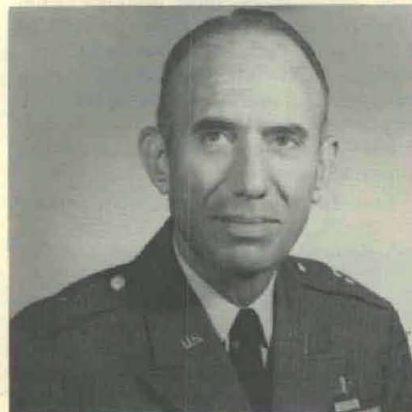
Brig Gen Lloyd E. Fellenz is newly assigned as Director of Chemical-Biological-Radiological Operations in the Office of the Chief of Staff, Department of the Army.

When Maj Gen Marshall Stubbs retired Oct. 31, after more than 30 years in the Army, General Fellenz became his successor, after serving as commander of the Deseret Test Center, Fort Douglas, Utah, since June 1962.

Following his graduation from the United States Military Academy in 1934, General Fellenz served with the Infantry until 1940. Then he transferred to the Chemical Corps and was assigned to Edgewood Arsenal, Md., with the Industrial Engineering Division and Chemical Warfare Board.

Leaving the Arsenal in the spring of 1943, he participated in the Sicilian Campaign in the Mediterranean Theatre of Operations. Upon returning to the States, he was assigned to the War Department General Staff until 1946 when he became the post commander of Camp Detrick, Md. After completing the National War College course, he was assigned to the Office of the Joint Chiefs of Staff.

In January 1952 General Fellenz was assigned to Fort Bragg, N.C., as commander of the 81st Chemical



Brig Gen L. E. Fellenz

Group and the Chemical Officer, 18th Airborne Corps. After a year at Fort Bragg, he was assigned to Fort Monroe, Va., as Chemical Officer of the Continental Army Command.

In 1956 he was assigned to the Army Chemical Center, Md., as deputy commander and later as commander of the Chemical Warfare Laboratories. Appointed Assistant Chief Chemical Officer for Planning and Doctrine in 1959, he later served as Director for Military Operations in the Office of the Chief Chemical Officer until he became CG of the Army Chemical Center in 1961.

SWIFT Strike III Findings Discussed at ECOM Meeting

Tactical communications experience gained during the U.S. STRIKE Command's 1963 SWIFT Strike III exercise was discussed at a recent 2-day evaluation conference at the Signal School, U.S. Army Electronics Command (ECOM), Fort Monmouth, New Jersey.

More than 100 representatives of STRICOM, the U.S. Army Materiel Command, Combat Developments Command, Office of the Chief Signal Officer, and the Army Division, Corps and Logistics Command attended.

ECOM commander Maj Gen Frank W. Moorman welcomed the attendees as host and outlined the conference agenda. Col James M. Kimbrough, commander of the Army Electronics R&D Laboratories, was co-host, and Col Bob H. Glover, director of R&D for ECOM, was conference chairman.

Users of military communications equipment presented problems encountered in the field, and made recommendations for modifying and developing equipment and systems to support advancing battle techniques being employed by the Army.

Proposals included further employment of airborne command posts and airborne radio relays at Corps and Division levels, the simplification of electronic equipment operation to reduce operator training time, reduction in the size and weight of communications equipment, and that a $\frac{1}{4}$ -ton truck should be the largest vehicle utilized for communications purposes at Division and Corps level.

Frequency Control Report On Symposium Distributed

Proceedings of the 17th Annual Frequency Control Symposium, sponsored by the U.S. Army Electronics Research and Development Laboratory, are scheduled for distribution this month.

More than 30 technical papers presented at the conference will be covered in the proceedings, including frequency control studies, quartz crystal development and engineering, atomic and molecular frequency control, and circuits and measurements.

The Symposium attracted more than 600 scientists and engineers from education institutions, Government agencies and industry, including delegates from nine foreign countries.

Requests for copies of proceedings should be addressed to: Director, Solid State and Frequency Control Division, Attention SELRA/PF, Fort Monmouth, N.J.

AFFCI Move to Natick Labs Broadens Food Research, Packaging Program

Exotic foodstuffs for out-of-this-world travel, such as seaweed noodles and simulated meats of compressed vegetable fibers, are among accomplishments of the U.S. Army Natick (Mass.) Laboratories, Army Materiel Command.

Space feeding, however, is but one of the challenges being met at the Labs by a team of military-civilian scientists. Absorption of all operations and personnel of the Armed Forces Food and Container Institute, deactivated at Chicago Aug. 31, expanded their overall mission.

Initial plans to concentrate food and container research in Natick were announced by the Army in 1959, and Congressional approval was completed in January 1962. Studies by the Department of Defense, Department of the Army, and Bureau of Budget had revealed substantial operational advantages in the move, increased efficiency and elimination of unnecessary overhead.

Light, concentrated, compressed and highly nutritious rations, easily eaten with the aid of specially designed containers, already have been developed for space explorers. Algae, converted into cookies, cereals, soups and other foods still in development, offers a research avenue of good potential.

For the future long-duration space flights, investigations are under way to develop closed-cycle food production systems which will maintain within the space capsule the critical environmental balance of the earth.



Albert V. Grundy



Dr. F. P. Mehrlich



Dr. Dale H. Sieling

"Nothing gained, nothing lost" food systems are intended to sustain a life cycle. For example, the astronaut's bodily functions, releasing perspiration and breath, will contribute moisture and carbon dioxide to algae or other plant life.

Later, in their growing and food-producing processes, algae will return moisture and oxygen to the capsule environment. The difficult R&D trick is to achieve techniques that will maintain the critical life-cycle balance.

Less glamorous aspects of R&D related to military food and container research are in the daily routine of U.S. Army Natick Laboratories operations. Worldwide scope of Army, Navy and Air Force operations demands new food products for combat forces—new methods or preservation and packaging.

Food for frontline troops in remote

areas often must be processed and packed to retain purity, texture, taste and appearance after months of storage, often under adverse conditions.

To meet the challenge, the Natick Laboratories military food and container research has produced quick-serve meals of precooked dehydrated foods, ready to eat hot or cold after rehydration. Increased nutrition has been achieved as well as foods which defy spoilage in all climatic areas.

Food preserved by the gamma rays of cobalt 60 at the Natick Laboratories permits years of on-the-shelf unrefrigerated storage without spoilage. That simplifies military supply and offers encouraging possibilities for under-privileged nations plagued by food shortages. (See June-July issue, page 36.)

Nutritious and flavorful synthetic meats are being made experimentally from soybean fibers impregnated with proteins, vitamins and other additives. The gleam in Natick scientists' eyes is directed toward the potential for development of many other palatable foods.

Research results presently assure that food may be stored, transported and delivered to the fighting man so he may carry it and then use it with equal facility. Containers have contributed to irradiated food retaining its fresh taste and nutrition even after two years of unrefrigerated storage.

The Food and Container Divisions at Natick are housed in a new one-story building. Next door is the U.S. Army Radiation Laboratory with the world's largest concentration of cobalt 60 (1.3 million curies) and a 24 million electron volt, 18 kilowatt linear accelerator used for food preservation and related container research.

Overseer of all scientific activity at



Hot or cold, quick-serve meals of precooked dehydrated foods developed at the U.S. Army Natick Laboratories are sampled by troops in the field.

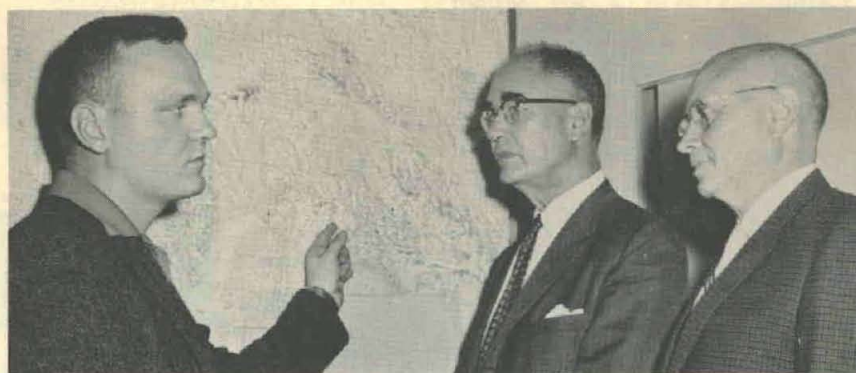
the 100-acre military research complex for food, clothing and equipment is Dr. Dale H. Sieling, scientific director. Before his appointment in 1959, he was Dean of the University of Massachusetts College of Agriculture and director of the Massachusetts Agricultural Experiment Station.

Dr. Ferdinand P. Mehrlich, a noted educator, Government and industrial food research consultant, is director of the Food Division. Formerly scientific director of Armed Forces Food and Container Institute, he directs scientific and technological programs in food chemistry, biochemistry, microbiology, psychophysiology, physics, nutrition, radiation, engineering and technology.

A native of Cincinnati, Ohio, Dr. Mehrlich received his A.B. (magna cum laude) from Butler University, Indianapolis, Inc. An M.S. in chemistry and physiology was earned at the University of California, Berkeley, and a Ph. D. in plant physiology and plant pathology at the University of Wisconsin. His post-doctoral studies in mycology were conducted at Cornell University.

Albert V. Grundy, chief, Container Division, has been active in Army packing and packaging research and development since 1942. Before entering Government service, he was packaging engineer for Colgate-Palmolive Peet Co. in New Jersey, and works manager for Lever Bros. in the Belgian Congo, West Africa. A native of Liverpool, England, he studied chemical engineering at Liverpool University.

Civilian-Military Team Studies Weather in Yukon



Marine Sgt David Eero Saarela, Dr. Peveril Meigs, U.S. Army Natick Laboratories Earth Sciences Division, and Dr. J. Fred Oesterling, Natick deputy scientific director for research (l. to r.) discuss Alaska and Yukon mountain ranges, where meteorologists Saarela and James M. Havens (not shown) manned a Yukon mountain research station all summer.

Two meteorologists manning an isolated Yukon mountain special weather station recently concluded what might be termed a "new peak" in military-civilian cooperative scientific research.

As members of a geophysical expedition administered by the Arctic Institute of North America, James M. Havens and Marine Sgt David Eero Saarela conducted climatology operations in the St. Elias Mountains (Canada), third largest glacial area in the world.

Living in an Army tent at an elevation of 8,652 feet, from June through August, 40 miles from base camp, the solitary pair maintained a 24-hour observation of 30 pieces of equipment. Records were made of

radiation, temperature and wind profiles, and standard surface studies.

Reports provided valuable information on mountain climatology for Natick's library of climatic data. The Army's Natick research center compiles worldwide environmental data.

For Sgt Saarela, a career Marine, the project was also part of an overall educational program to prepare him for future assignments. The first will be Marine Officers Candidate School when he graduates from Massachusetts Institute of Technology where he is enrolled under the U.S. Navy enlisted scientific education program.

Natick meteorologist Havens is now working in Greenland with the Air Force in another joint study.

Contract Calls for Research In Turbo-Compressor Program

Primary experimental work in development of closed cycle gas turbo-compressors is the basis of a \$286,370 contract awarded recently by the Army Nuclear Power Program through its field office at Fort Belvoir, Va.

Research will be in compressors rated in the 600 hp. class utilizing nitrogen and air as the working fluid. Some units will employ gas-lubricated bearings and be coupled with direct drive alternators employing frequency conversion.

Through the comprehensive experimental program, the Army is planning to generate that basic essential information necessary for the future development of mobile compact nuclear power plants.

The contract was awarded to Burns and Roe, Inc., a New York firm.



FAR EAST PRESS representatives and escort view samples of fish and meat products preserved by cobalt-60 irradiation at the U.S. Army Natick (Mass.) Laboratories. Representing Australia, Cambodia, China, Hong Kong, Indonesia, Japan, Korea, Laos, Malaya, New Zealand, Philippines, Singapore and Thailand, 15 journalists are receiving a comprehensive view of the United States under auspices of the Department of State, Department of Defense, and the U.S. Information Agency. Morris Simon (second from left), assistant for food radiation at the Laboratories, briefs the visitors.

Vance Selects 3 for Deputy Under Secretary Posts

Secretary of the Army Cyrus R. Vance announced Oct. 31 the appointment of three Deputy Under Secretaries of the Army, namely:

Col Arthur W. Allen, Jr., (USA-Ret.), 48, of Washington, Ind., DUSA for Manpower and Reserve Forces; Roy K. Davenport, 54, of Oakland, Calif., DUSA for Personnel Management; and Harry C. McPherson, 34, of Tyler, Tex., DUSA for International Affairs.

Col Allen was special assistant to Secretary Vance prior to his appointment. He is a 1939 graduate of the United States Military Academy and retired from the Army in 1963 for physical disability. A World War II combat veteran, he fought in Europe with the 102nd Infantry Division.

Included among his numerous assignments in the personnel field was a tour in the Military Personnel Management Division of the Army staff which is responsible for formulating and developing Army-wide plans, policies and programs for personnel management.

USAELRDL Testing 24-Ounce Radio Intercom Unit

Squad leaders in forward battle areas may communicate with their men as well as with platoon leaders by using a test model miniature pocket/helmet radio receiver and hand-held transmitter developed by the U.S. Army.

Intended to supplant existing radio receiver-transmitter units which permit communication only as far down as the squad leader, who has to rely on hand or voice signals to his men, the new unit has 25 transistors and 7 diodes mounted on printed wiring.

The receiver weighs 8½ ounces, the transmitter about 15 ounces, and the power is supplied by dry cell batteries smaller than those used in pen-size flashlights. Still, they are powered for 24 hours of continuous operation and can be replaced in seconds. A 12-inch antenna is made of steel tape.

Extremely rugged, weatherproof and designed to operate dependably in any kind of climate, the unit gives the soldier full use of his hands for firing weapons since the receiver can be attached to a helmet and the transmitter stowed in a pocket.

Designed by the U.S. Army Electronics Research and Development Laboratories, Fort Monmouth, N.J., a subordinate agency of the U.S. Army Materiel Command, the miniature radio is expected to replace the 7-pound

Mr. Davenport was formerly special assistant for Personnel to the Under Secretary of the Army. He will be responsible for advising the Under Secretary on policies and programs pertaining to training, utilization, personnel research and morale of military and civilian forces. He will also be the principal adviser to the Secretary of the Army and the Under Secretary on policy matters in connection with civil rights.

A former teacher and administrator at Oklahoma A&M University, and South Carolina State College, he entered Government service in 1942 with the Department of Agriculture. A graduate of Fisk University in Nashville, Tenn., he received his master's degree from Columbia University in New York City, where he specialized in applied sociology.

Mr. McPherson, former legislative counsel for Senate Majority Leader Mike Mansfield, succeeds Howard E. Haugerud, who resigned in mid-July to become deputy inspector general of Foreign Assistance for the State Department.

"Handie-Talkie" transmitter-receiver AN/PRC-6.

The receiver, including horn and battery, is about 6x3x1¼ inches. Channel 1 operation of the transmitter provides up to one mile of range. Channel 2, using lower power, allows communication up to 500 yards.

A contract with Delco Radio Division of General Motors calls for a small quantity of the units for Army service testing.

His new responsibilities will include policy in connection with the Panama Canal Co. and the Canal Zone government, the Ryukyu Islands, and international organizations as they affect the Army; also, policy reference Civil Affairs and Military Government, special warfare to include civic action, and civil defense with particular emphasis on military support of civil defense.

In 1956 he joined the staff of the Senate Democratic Policy Committee on graduation from the University of Texas Law School. He also served concurrently as counsel of the Legislative Review Committee. He became general counsel of the Policy Committee in 1961, a position he held until joining the Army Secretariat. A former Air Force officer, he served in the U.S. and overseas.

USAERDL Employees Attend Defense Procurement Course

Two employees of the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., are attending the Defense Basic Procurement Course at the U.S. Army Logistics Management Center, Fort Lee, Va.

Boyd P. Schultz and James E. LeViner are taking the 5-week course, one of 14 offered at the Logistics Management Center. Schultz is a contract specialist and LeViner is a contract assistant in the R&D Procurement Office at the Laboratories.

The Army Logistics Management Center, a field activity of the U.S. Army Materiel Command, is the only Department of the Army activity devoted to post-graduate level logistics management education.



Squad leader demonstrates miniature transmitter and helmet-type receiver worn by squad leaders and key squad members during tactical maneuvers.

Army \$10,555,650 Contract Orders 125 Larc XVs for U. S., West Germany

Agreement of the United States and West Germany on the merits of the U.S. Army-developed Larc-XV amphibious lighter is backed by a recent order for production of 125 of the 15-ton vehicles at a cost of \$10,555,650.

The contract is spread over a 2-year period, in line with a new policy pioneered by the U.S. Army Mobility Command, Warren, Mich., to increase competition, aid industry in longer range scheduling, and reduce administrative costs of the annual contracts system for the Army.

Under terms of the contract, awarded by the U.S. Army Aviation and Surface Materiel Command (AVSCOM), St. Louis, Mo., a major element of MOCOM, 78 of the Larc-XVs will be delivered to U.S. Army units. Forty-seven will go to West Germany, AVSCOM CG Brig Gen David B. Parker announced.

The Larc-XV is the middleweight in a family of three amphibious cargo craft which the Army has been developing over a period of years. Others are the Larc V, a 5-ton lighter, and the 60-ton BARC.

The eight bidders for the first Larc-XV production order were located in the coastal and Great Lakes areas because the amphibians must be moved by water from factory to destination. Freuhof Corp., Los Angeles, Calif., won the contract. Terms call for a pilot model to be produced by July 1964, with total production to be completed in October 1965.

Like its smaller sister, the Larc-XV is of welded, all-aluminum construction. It is powered with a pair of the same 300 hp. diesel engines used singly in the Larc-V. The larger Larc was designed for maximum interchangeability of parts with its smaller sister, to reduce the amount of spare parts the Army will need to support them.

Overall measurements are 45 feet long, 13 feet 8 inches high (to top of cab), and 14½-foot beam (width). The wheelbase is 20 feet 10½ inches, and the freeboard is 1 foot 3 inches. Cargo space measures 24 feet by 13 feet 6 inches by 3 feet 2¾ inches.

Fuel capacity is 360 gallons and net weight with fuel and crew is 45,200 pounds. A driver and one or two deckhands will crew each Larc.

Payload of the big lighter is 30,000 pounds with a maximum land speed of about 30 m.p.h. and 10 m.p.h. on water. It has 4-wheel drive and the operator has the option of 2-wheel

or 4-wheel oblique steering. Despite its size, it will climb a 40 percent grade. It is designed to operate in 25 below to 115 degrees above zero F.

The Larc-XV, in one respect, is unusual. It is probably the first Army vehicle to travel backwards to reach its land destination, while cruising in the bow-first manner on water.

The Larc-XV design was developed by the Army Transportation Research Command, Fort Eustis, Va. Three prototypes with 12-foot beams have been built for the Army by the

File Named to Serve AMC As Weapons Systems Chief



Lt Col Kenneth L. File

Lt Col Kenneth L. File recently joined the U.S. Army Foreign Service and Technology Center, U.S. Army Materiel Command, as chief of the Weapons Systems Group.

Located at Arlington Hall Station, Arlington, Va., the Center is responsible for evaluating and supplying information on all foreign equipment, sciences and technologies of interest to the United States Army.

Preparation and coordination of overall systems studies are included in Lt Col File's duties. Having served with the Ordnance Corps since January 1943, he brings to this position considerable knowledge of weapons development, employment and capabilities.

Previous assignments related to research and development include: Small Arms Ammunition Center, St. Louis, Mo., working with R&D on industrial ammunition specifications; Ordnance Ammunition Command, Field Service Division, working with the Industrial and Research and Development Divisions of the Command; and as a contracting officer's representative on industrial contracts.

Col File's last assignment was with the Military Assistance Advisory Group in West Germany.

Kalamazoo Division of Borg-Warner.

The family of amphibians was designed to fill the need for a means of offloading ships in areas lacking port facilities and then transporting cargoes to inland locations non-stop, rather than piling them on the beach as was done during World War II amphibious operations.

Two internationally known consultants have worked closely with Army planners and engineers on the amphibian program since its inception. They are Ron Stephens, naval architect, of Sparkman and Stephens, New York and Dr. Lester Goldsmith, industrial engineer, Philadelphia, Pa.

The German order was their third for amphibians. Prior orders were for seven BARCs and 191 Larc-Vs. England and Australia are each testing three of the small Larc-Vs and two other allied nations have expressed an interest. BARCs have been used in Formosa.

The U.S. Coast Guard has three Larc-Vs and prototypes of both the Larc-V and XV are used at Cape Canaveral for recovery of missile capsules and nose cones.

SCIENTIFIC CALENDAR

6th Pan American Congress of Pharmacy and Biochemistry, Mexico, D.F., Dec. 1-7.

21st Navy Symposium on Underwater Acoustics, sponsored by ONR and several Navy bureaus and laboratories, Washington, D.C., Dec. 2-3.

33rd Symposium on Shock, Vibration and Associated Environments, sponsored by DoD and NASA, Washington, Dec. 3-5.

12th Annual Wire and Cable Symposium, Asbury Park, N.J., Dec. 4-6.

10th Central American Medical Congress, San Salvador, El Salvador, Dec. 4-8.

International Symposium on the Thermal Stability of Polymer, Columbus, Ohio, Dec. 5-6.

International Symposium on Problems of Electrochemical Corrosion and Passivity, Dresden, Germany, Dec. 5-7.

Symposium on Isotope Mass Effects in Chemistry and Biology, Vienna, Austria, Dec. 9-13.

World Health Organization, Geneva, Switzerland, Dec. 10-16.

International Union of Biological Sciences, Edinburgh, Scotland or Rome, Italy, Dec. (date undetermined).

International Union of Pure and Applied Physics, Jaipur, India, Dec. (date undetermined).

International Advisory Committee for Humid Tropics Research, Paris, France, Dec. (date undetermined).

Regional Meeting of National Research Organizations, Canberra, Australia, Dec. (date undetermined).

International Symposium on Radioactive Isotopes in Clinical Medicine and Research, Bad Gastein, Austria, Jan. 8-11.

3rd Meeting of World Meteorological Organization, Paris, France, Jan. 20.

International Conference on Semiconductor Applications, London, England, Jan. 20-23.

Scintillation and Semiconductor Counter Symposium, sponsored by IEEE, Washington, D.C., Jan. 26-28.

Record Missile Contract on Nike X Ups Total to \$390 Million

Award of a \$213,385,000 missile contract, the largest of its kind ever announced by the Department of the Army, swelled the total of R&D and procurement expenditures disclosed in recent weeks to \$390 million.

The record award went to Western Electric Co., New York, for continued development and testing of the Nike X antimissile missile system.

Nike X subcontractors sharing in the funding will include: Avco Corp., Everett, Mass., and Cornell Aeronautical Laboratories, Buffalo, N.Y., discrimination studies; Douglas Aircraft Co., Santa Monica, Calif., Nike Zeus missiles, equipment and engineering services; General Electric Co., Syracuse, N.Y., radar techniques and signal processing equipment;

Martin Co., Orlando, Fla., SPRINT missiles, equipment and engineering services; Raytheon Co., Wayland, Mass., advanced radar components; Sperry Rand Corp., Great Neck, N.Y., radars; Sperry Rand Corp., Univac Division, St. Paul, Minn., data processing equipment; and Sylvania Electronic Products Co., Waltham, Mass., radar.

Four contracts totaling \$45,520,171, covering production and services for the Pershing ballistic missile system, were awarded to: Martin-Marietta Corp., Orlando, Fla., \$27,739,662

for industrial engineering services. Eclipse Pioneer Division of Bendix Corp., Teterboro, N.J., \$17,780,509 for the production of guidance and control systems, industrial engineering, and research and development services.

Hughes Aircraft Co., Culver City, Calif., received a \$15,432,059 contract for continued research and development on the TOW system. TOW (Tube-launched, automatically Optically-tracked, Wire-guided missile) is a new heavy antitank assault weapon designed for use by the combat infantryman against heavily armored tanks and similar targets.

General Dynamics, Pomona, Calif., won a \$13,117,000 contract amendment for continued research and development on the Mauler weapons system. GD was also awarded a \$1,100,000 letter contract for research and development on the Redeye missile system.

Two contracts totaling \$12,409,826 for work on the Hawk missile system were awarded to the Raytheon Co., Andover, Mass. A \$11,025,018 award will cover engineering services, and \$1,384,808 is for supplies required for the modification and checkout of assemblies, subassemblies and components.

A \$7,354,845 contract for 155 milli-

meter shell components was awarded to Day and Zimmerman, Inc., Philadelphia, Pa. Harvey Aluminum Sales, Inc., Torrance, Calif., was granted a \$5,900,977 contract for ammunition components.

A \$5,250,000 contract for vehicular radio sets was let to the General Dynamics Electronics Division of General Dynamics Corp., Rochester, N.Y.

The Aeronautical Division of the Philco Corp., Newport Beach, Calif., will be paid \$2,035,289 for advanced production engineering on the Shillelagh missile system. A \$1,898,709 Nike Hercules missile system contract was granted to the Western Electric Co., Winston-Salem, N.C. The Instrument Corp. of Florida, Melbourne, Fla., won a \$1,000,000 contract for electronic equipment.

Teenage Scientists Featured On 13-Week Television Series

Science Service, sponsor of the National Science Fair-International for high school science students, announced Oct. 28 that "Science All Stars" will begin a 13-week run on the ABC television network Jan. 12.

Produced by MGM and sponsored by Minneapolis-Honeywell Co. in cooperation with the NSF-I, the show will feature science fair participants and their projects along with leading figures from the world of science. It will be seen Sunday from 4:30 to 5:00 p.m. EST.

Most of the 65 students selected for the series are regional science fair award winners, representative of the "cream of the crop" from more than a million entrants last year.

Dr. Glenn T. Seaborg, Nobel Prize winner and chairman of the U.S. Atomic Energy Commission, attended a press preview of the first show in New York Oct. 28. He told newsmen of the urgency of increasing emphasis on scientific education and encouraging scientific interest among the Nation's teenage population.

The introductory show will feature 16-year-old Norman Ahlquist of Seattle, Wash., 13-year-old Michael Schatzlein of Knightstown, Ind., 11-year-old Antoinette Losavio of Coney Island, Brooklyn, N.Y., and 14-year-old Mark Berman of Chicago.

One of the later shows will include 16-year-old Kenneth Ritthaler, whose visit to Redstone Arsenal for aid in "beefing up" his operational homemade Laser is the subject of a feature article elsewhere in this issue.

4 Army Packaging, Storage Units Moved to Tobyhanna

The U.S. Army Supply and Maintenance Command has announced the consolidation of four packaging, storage and materials handling activities at a newly established Packaging and Storage Center at the Tobyhanna (Pa.) Army Depot.

Headed by Lt Col Victor Winebrenner, the Center will perform technical functions pertaining to packaging, care and preservation for the Command and other elements.

Investigative and developmental research and testing of methods, techniques and equipment in the field of storage and materials handling are included in the mission of the Center.

Consolidation involved the Ordnance Packaging Agency at Rossford Army Depot, Toledo, Ohio; the Engineer Packaging Office at Granite City Army Depot, Ill.; the U.S. Army Storage and Materials Handling Development Group at Utah Army Depot, Ogden; and Tobyhanna Army Depot Packaging Standards Office.

Because of the geographical dispersion of these packaging activities,

they were organized into a complex to control and coordinate their joint efforts, and to achieve more unified results from their operations.

Personnel of Tobyhanna and Rossford are providing the principal staff of the Center, which is expected to reach 90 with a yearly payroll of \$775,000 when fully manned.



Lt Col Victor Winebrenner

Picatinny Arsenal Employs 400 Handicapped?

Ability—not disability — is what counts at Picatinny Arsenal, N. J., where employment of some 400 handicapped persons has shown the way to other Army installations and industrial firms.

With that many disabled men and women on its payroll, Picatinny has had a broad-scale opportunity to observe and test their work capacity and efficiency and, based on results, has continued to hire them.

During the past year, Picatinny has hired an additional 14 disabled men and women whose infirmities range from natural deformities and partial paralysis to defective hearing and vision as well as amputations.

When national "Employ the Handicapped Week" began Oct. 6, Col Henry Wishart, Picatinny commander, urged other employers to support the President's Committee on Employment of the Handicapped by seri-



Mary Murray

ously considering hiring more handicapped Americans, saying:

"We at Picatinny are very well pleased with our handicapped employees. They have performed credit-

ably in all types of jobs ranging from clerical to those highly technical in nature. These people have proved themselves to be industrious, conscientious and loyal."

Mrs. Mary Murray, a clerk in the Engineering Documentation Branch of the Administrative Services Office, is one of the employees who has helped to demonstrate the ability of the disabled.

Born without a right hand, she works the swing shift at the Arsenal, logging in mechanical drawings and filing technical data, much of it classified secret.

Using the stub of her right wrist with dexterity, she rolls up large drawings and secures them with rubber bands. At times, she uses a typewriter, fingering with her left hand and using the stub for the space bar.

Happily married, she also manages to raise two young children, drive a car, cook, wash and perform a long list of other household chores. She also finds time for two hobbies: reading and knitting.

Ralph T. Fancher of the Civilian Personnel Office, who supervises the "hire the handicapped" program at Picatinny, points out that these people are above average as dependable workers, with a very low absentee record—"indeed an asset."

Second Retirement Ends 40 Years for 'Old Sarge'

Richard F. (Dick) Carver, the "Old Sarge," has retired a second time, following a 40-year military-civilian career.

After 30 years of service in the Army, he retired Apr. 30, 1953. His most recent retirement was at the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., where he had been employed 10 years as a civilian.

When he entered the Army in 1922, he served first at Fort Belvoir, then Camp Humphreys, where his company commander was Lt Lucius Clay, who later became General Clay. Later, Carver helped "break-in" such young officers as Lt (now Lt Gen) Frank S. Besson, Jr., commanding general of the U.S. Army Materiel Command, and Lt (now Maj Gen) Alden K. Sibley, who currently heads the U.S. Army Mobility Command.

"Old Sarge" served at Schofield Barracks, Hawaii, from 1932 to 1936, and with the 241st Engineer Combat Battalion, Sixth Army, in the Philippines during World War II. He later served with the Engineer Board, forerunner of the present Engineer R&D Laboratories.

"Old Sarge" made a name for himself in sports in the thirties at Belvoir, winning the Post Golf Championship three times, and as a regular pitcher on the Post baseball team.

A camouflage specialist, Carver was employed by the Camouflage Branch of the Laboratories, and was

instrumental in the designing of simple, yet rugged camouflage equipment. His immediate supervisor, branch chief A. H. Humphreys, was one of his students as an Army recruit. Carver also acted as consultant to service test agencies and to Laboratory branches, particularly those involving minefields and field fortifications.

Friends and coworkers honored him at a luncheon at the Laboratories' Cafeteria, where Col J. H. Kerker, commanding officer, presented him with a Certificate of Achievement and a plaque bearing the insignia of the Laboratories. His friends presented him with a golf bag.



Col J. H. Kerker, USAERDL, commanding officer, presents Richard Carver with Department of the Army Certificate of Achievement and Laboratories plaque upon retiring after 40 years of military-civilian service.

Redstone Plans to Hire 575 Additional Personnel

The U.S. Army Missile Command at Redstone Arsenal, Ala., will add approximately 575 Federal service employees prior to June 30, 1964.

Brig Gen H. P. Person, Jr., CG of the Command, said approximately 500 of the new employees would fill jobs in organizations at Redstone. The remainder will serve at missile test sites and operational missile units at widely scattered locations throughout the U.S. and overseas.

Authorization for the additional personnel was given recently by the U.S. Army Materiel Command, Washington, D. C.

Some of the new positions will be filled through normal Army in-service merit promotion and career development programs. To the extent that outside recruitment is required, priority consideration will be given to employees of other Army and Defense installations undergoing reduction in force.

Government civilian personnel strength of Missile Command organizations at Redstone Arsenal is currently about 8,400 and the authorized increase is to 8,986.

Theme of the Month: The Science of Mobility

(Continued from page 14)

(Mobility, Weapons, Munitions, Missile, and Electronics Commands, supported by the Supply and Maintenance Command and the Test and Evaluation Command), has been, of course, to vest in single agencies, organized along functional lines, the responsibility for management of the complete spectrum of development and procurement of selected categories of equipment and supplies.

Streamlining of our organizational structure, particularly in research and development, has as its main objective the reduction of lead time from the concept of a new idea to distribution of new hardware to troops in the field.

This means that our in-house scientists and engineers must, as never before, combine the vision and imagination of innovators in the science of mobility equipment with the practical view of the production engineer who is fully aware of current technological and production capabilities of American industry. He must be able to evaluate his equipment concept not only from its tactical advantages in the field—its simplicity, ruggedness and reliability—but also evaluate his brainchild in the cold, grey light of fiscal policy, by cost analysis and careful comparison with alternative means and other types of equipment.

One of the main advantages of the organization of the Mobility Command is evident in the consolidation in one Command of the separate mobility research and development programs of the former Technical Services. This, in itself, is insurance against persistence of traditional devotion to particular modes of Army mobility. Healthy competition is welcomed among the various types of ground, air, amphibious vehicles, or the composites, in meeting the requirements of tactical doctrine established by the Combat Developments Command.

For the first time, we have brought together under one R&D roof, so to speak, specialists in all modes of land, sea and air mobility. I am convinced that this rich cross-fertilization of ideas will produce significant rewards. Other advantages of the new Command structure include the ability (a) to avoid duplication of research and development programs; (b) to marshal and concentrate rapidly our R&D effort in any phase of research to exploit new knowl-

edge; (c) to more easily attain standardization, and (d) to facilitate rapid exchange of scientific and engineering data among commands.

Studies in depth are still continuing to realign and weld each of MO-COM's field installations more closely into a tightly knit, closely integrated and responsive organization, capable of meeting with confidence any demand that may be placed upon it. We must continue to build and strengthen our in-house capabilities in science and technology, while at the same time urging and guiding industry to join with us in providing our troops in the field with the finest equipment and vehicles we are capable of developing and producing.

A strong in-house capability will grow ever more important, however, because our need for attaining a significant mobility differential in all arenas of war—land, sea and air—is becoming increasingly more stringent. This differential is increasingly less available in the mainstream of

domestic industrial production. The Army will find itself less able to use "off the shelf" equipment, or to take advantage of what we might call "free engineering" or engineering "fallout" from private industry.

Attainment of greater mobility for the conduct of land warfare rests squarely upon our efforts in scientific research and development. Bold new ideas and innovations in all areas of Army mobility are paramount to the successful design and production of rugged and economic ground and air vehicles capable of living with the combat soldier on the battlefield. Logistical support elements must also be given mobility equal to that of the combat forces they serve.

The Army's need for mobility must be met by the best possible effort of our military-industry team, both in strong in-house laboratories such as ERDL, TRECOM and ATAC, and in our efforts to draw the best possible R&D support from universities, private institutions, and industry.

We must have tactical mobility on land, water, and in the swamps, rice paddies, and jungles of Southeast

Pershing Missile System Project Manager Retires

Col O. M. Hirsch, project manager for the Pershing ballistic missile system since the Army began operating under the project manager concept, retired from active duty Oct. 31.

His successor is Col Edwin I. Donley, who for the past two months has been special assistant to Brig Gen Charles W. Eifler, deputy commanding general, Land Combat Systems, U.S. Army Missile Command.

Under Col Hirsch's leadership and direction, the highly mobile 2-stage Pershing chalked up the most successful record ever achieved by any missile fired down the Atlantic Missile Range.



Col O. M. Hirsch

Assigned to Redstone Arsenal in 1955, his first position in the Army's missile program was as executive officer and chief of staff to the commanding general of Redstone Arsenal.

In 1957, he was assigned to the Ordnance Executive Development Program and attended the Graduate School at the University of Chicago where he received a master's degree in business administration. Concurrently he studied industrial management of the General American Transport Corp., International Harvester Co., Sears Roebuck & Co., Motorola Corp., Inland Steel Corp., Argonne Laboratories and Armor Research Foundation.

Reassigned in 1959 to the Army Ballistic Missile Agency at Redstone as director of Industrial Operations, he remained in this position until 1962 when he was assigned as the Pershing project manager.

During the Korean War, Col Hirsch commanded a separate Army Battalion in support of the U.S. X-Corps and the Republic of Korea I Corps, later transferred to Japan where he commanded the Ikego Insular Ammunition Depot Complex, then to Redstone Arsenal.

Col Hirsch's decorations include the Legion of Merit, the Bronze Star Medal, the Army Commendation Medal, and other Service Medals.

Asia, the deserts of the Middle East and the arctic ice and tundra, the developed areas of Western Europe, in all conceivable types of terrain and climate. All types of equipment that show promise of adding significantly to the Army's ability to move must be developed and tested in the field.

This is particularly true of developmental vehicles incorporating new technological techniques, such as new types of propulsion in rotary and fixed-wing aircraft capable of vertical and short takeoff and landing, hydrofoil craft and GEM vehicles for use in rapid ship-to-shore landing of troops and supplies, the paragliders now under development that open new vistas in the technique of aerial delivery, the "rocket belt" for the individual soldier, and in vehicles combining both ground and air capability.

In the field of cross-country and off-road mobility, the Mobility Command has under development the exceptionally mobile XM-561 1½-ton truck. It is a unique wheeled vehicle, deriving its mobility from two lightweight units working in combination—a 4-wheeled tractor and 2-wheeled carrier linked to provide power to all six wheels and articulated to provide greater flexibility of movement.

Recent technological advances in

helicopters, short-takeoff-and landing (STOL) and vertical-takeoff-and-landing (VTOL) aircraft show great promise of adding a completely new dimension to Army mobility. The special study of air mobility made by the Tactical Mobility Requirements Board, headed by Lt Gen Hamilton Howze, is a welcome and bold new look at land warfare mobility.

The recommendations of this board are now under continued study and field test at Fort Benning, Ga., where the new 11th Air Assault Division is being formed and equipped. These completely air-mobile combat units will include air cavalry combat brigades and a number of such special purpose air units as air transport brigades and corps aviation brigades to provide additional reconnaissance and lift capability.

These tests will make full use of experience gained in the use of Army aircraft in Vietnam, and new concepts of air-mobility tactics, equipment and weapons will be tested thoroughly before a commitment is made to greater implementation. Air-mobility seems destined, however, to

play a far more important role in the future conduct of land warfare.

In our efforts to gain greater mobility we cannot sit back and relax in confidence that the Army-industry team of scientists and engineers will suddenly produce revolutionary breakthroughs in ground and air mobility. It is far more likely that greater mobility, on-road, off-road, over the nap of the earth, over water and in the air, will not be by quantum jumps, but will increase by those short evolutionary steps that have characterized such development.

One of the primary goals of the Mobility Command is, therefore, to provide the resources to our own research personnel and guidance to industry that will insure the rapid evolution of such equipment. The Army and industry together must continue to exploit, with all the strength and imagination at our command, every new scientific and technological advance in the field of mobility. Through this close partnership, I am confident that the United States will continue to field the most versatile and mobile Army in the world.

Pentagon Secretaries Report Confusion About 3 Generals

When you send an invitation, make a telephone call, address a letter or ask for a conference with General Richardson at Department of the Army Headquarters in the Pentagon, Washington, D.C., you better make certain which one is intended.

Secretaries can regale you, if you can arrange for a mutually satisfactory free hour or two, with no end of amusing incidents about the confusion resulting from having a trio of General Richardsons performing duties in close proximity.

Lt Gen James L. Richardson is Deputy Chief of Staff for Personnel, Maj Gen James A. Richardson, III, is Director of Procurement in the Office of the Assistant Secretary of the Army (Installations and Logistics), and Brig Gen Walter B. Richardson is Director of Materiel, Office of the Assistant Chief of Staff for Force Development (ACS/4).

Lance Missile Mock-Up Displayed at AUSA Meeting

A futuristic glance at the Lance missile system was offered by display of a full-scale engineering mock-up in Washington, D.C., Oct. 21-23, during the annual convention of the Association of the United States Army.

Under management by the U.S. Army Missile Command at Redstone Arsenal, Ala., a U.S. Army Materiel Command element, the Lance system is being developed to meet combat division requirements for increased fire-power support. Developmental work is underway at the Michigan Ordnance plant near Detroit.

A production decision for the missile is being withheld pending demonstration of its predicted performance during the development program. Designers planned it to replace the Lacrosse, Honest John and possibly the Little John systems.

The Lance mock-up was exhibited with a lightweight launcher which rides inside a self-propelled launcher in the ground mobile mode of missile transportation. The lightweight launcher and the missile can be carried into the battlezone by helicopter.

Fixed-wing aircraft would be used to carry the self-propelled launcher and the missiles for air drop by parachute into combat zones. The entire system is self-contained and self-sustaining on two tracked vehicles, one

designated as a transporter-loader which was not placed on exhibit.

Lance will utilize a simplified inertial guidance and control concept, and is the first Army missile selected to use prepackaged storable liquid propellants. It is intended to complement division tube artillery and would extend the division commander's capability for nuclear and non-nuclear supporting firepower.

Ling-Temco-Vought's Michigan Division is the system prime contractor.



Mock-up of Lance missile system is demonstrated during annual convention of the AUSA in Washington, D.C.

Congressional Record Statement Cites STINFO Need

(Continued from page 5)

reporting procedures are also used, depending upon urgency, size of program, number of services affected, etc.

LITTLE INTERSERVICE "POOLING." Meanwhile, none of the three Armed Services yet has a modern, internal system of technical information system of its own. None, as yet, has fully effective access to output from the others' information systems. None provides effective input to the others' systems.

Fortunately, the respective services are moving ahead to place their individual information "houses" in better order.

First, Army: In January 1963 the Department of the Army submitted a plan for an internal scientific and technical information program. This program was the result of an Army-wide conference held in the fall of 1962, which it was my pleasure to greet in the form of a specially recorded message.

The Army requested and received \$800,000 of emergency funds to initiate the program during the 1963 fiscal year.

Second, Air Force: This Department is holding a similar Department-wide conference in Dayton, Ohio, during the week of September 30, 1963. Results, similar to those of the Army meeting, are anticipated.

Third, Navy: The Navy which pioneered in the great PERT research planning system is now, I understand, in the process of reviewing its scientific and technical information activities. On an overall basis, science information-wise, it is not as far advanced as the Army and the Air Force, I understand.

ENORMOUS STATISTICS INVOLVED. The full dimensions of the Services' information problems can only be understood in terms of the enormous number of papers and reports which are involved in an over \$7 billion research, development, testing, and evaluation program.

For example, it is estimated that around 1½ million documents will be requested from the Defense Documentation Center in the current fiscal year. And this is still "only a drop in the bucket," in terms of contractor information needs.

As one reads statistics such as this, he gains a better understanding of why this committee and subcommittee have insisted on central indexing

and abstracting of all projects and reports and on thorough decentralized use of such abstracting and indexing.

The incontrovertible fact is that without such systems, it is virtually impossible for an Army, Navy, or Air Force source to know whether or not he is unintentionally duplicating, first, his own service; second, another service, in present and/or canceled or completed work.

In my judgment, the Defense Department and the Office of Technical Services have hardly "tapped the surface" of transmitting information to the nondefense community.

A sustained, well-coordinated, well-planned effort must be made by both DoD and NASA to convert military and space scientific and technical findings into civilian technology.

We know that the rosy preliminary speculations about automatic fallout from military-space fields into the civilian economy were largely over-optimistic.

There is a vast amount of information in Department of Defense specialized information centers, in particular, which will have to be painstakingly converted into civilian use. This will require comprehensive effort by the agency, by the Nation's universities, particularly its college of engineering, in cooperation with the business, labor and agricultural communities at the grassroots of America.

IDENTIFYING USER NEEDS.

Engineer Labs Pick Dr. Bryant for Academy Award

Dr. James I. Bryant, 34, has been nominated by the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., for the Washington Academy of Sciences 1964 physical sciences award.

Five awards will be made by the Academy at its meeting in January. Others will be for achievement in the biological sciences, the engineering sciences, mathematics and in the teaching of science.

Nominees for the various awards are being made by other Government agencies and private firms. Winners will be chosen by the committee on awards for scientific achievement.

Dr. Bryant was nominated in recognition of his work in investigating the infrared spectra of the azide ion in alkali halide matrices.

Results of his research have been reported at various symposiums and

Meanwhile, DoD's top priority must continue to be the needs of its own in-house and extramural community. Unfortunately, no programs, in DoD or elsewhere, have successfully and fully identified the specific technical information needs of various categories of scientists and engineers performing different functions.

In recognition of this, DoD is, I understand, about to sign a contract for a study that will involve interviewing 1,200 to 1,800 in-house technical people engaged in RDT&E work to find out what information is used, how they use it, and where they get it. The study will run more than one year and will cost in excess of \$250,000. Its results, however, can help determine the whole future planning for better information systems.

I do want to stress that neither this nor any other user study should be allowed to drag and/or proliferate, so that we end up "studying studies," instead of serving customers.

I believe in research and, as necessary, in research on research. However, there is a point beyond which science's habit of studying science becomes almost an end in itself, instead of a means to an end.

Mr. Carlson who previously performed outstandingly in the Engineers' Joint Council—on behalf of the Nation's engineers—is, I am glad to say, customer-oriented. That is how DoD information sciences must remain—geared to serve the man on the bench, in the arsenal, or the testing ground.

INFORMATION A NATIONAL RESOURCE. I want to emphasize

published in the *Journal of Chemical Physics*, presenting new insight into the "quantitative" nature of potential function (relative stability or explosive nature) in the solid azides.

In cooperation with Hyman Rosenwasser of the Basic Research Group at the Laboratories, Dr. Bryant successfully developed an ion exchange technique for the preparation of hydrazoic acid which avoids essentially all of the dangers of explosives common to the former methods used.

Dr. Bryant has received two Special Act or Service Awards from the Laboratories, and a Scientific Achievement Award from the Laboratories' Branch of the Scientific Research Society of America.

A native of Kentucky, Dr. Bryant received a B.S. degree from Kentucky State College and his M.S. and Ph. D. from Howard University.

that information is indeed a national resource. It requires national goals for maximum use — and national plans, programs and budgeting.

It requires genuine—not token cooperation—between report media and professional journals, between so-called primary and secondary publications, as well as among “secondary”—for example, abstracting and indexing publications. And it requires bold, imaginative vigor to meet tomorrow’s increasing information needs.

Modern science and technology offer interservice, interagency, interdisciplinary, international challenges. We have no alternative but to respond accordingly.

NO ONE SOURCE CAN CLAIM CREDIT. Let this point be clear. In

recent years, there has been somewhat of a “snowball” effect as regards information advances. No one source—our own committee or subcommittee—claims more credit than is rightly any one source’s due. The fact is that many sources have aided in the process; many sources share credit.

What counts is that progress be continued without letup; for there is no reason for complacency; the road ahead is long and hard. A functioning national and international information network is still to be established.

A FEW TASKS AHEAD. A functioning Government-wide index of all research and development reports is still but a hopeful gleam in our eyes.

There is still only one joint NASA-

DoD Information Center, at Huntsville, Ala. Information service at the grassroots of America is still only in its embryonic stage, through 12 regional technical report centers and a hodgepodge of separate agency centers. Compatibility or convertibility between agency information systems is still only a goal, not a reality.

The Office of Technical Services of the U.S. Department of Commerce is still by and large only a sales agency; it is not a comprehensive service agency; and it functions by relatively primitive means in an age of high-speed computers and printers.

Literally dozens of other needs, as recognized by our committee and subcommittee, could be cited, to illustrate the Nation’s “unfinished information business.” It will always be “unfinished.” But it had best be greatly improved, and soon.

POSSIBLE SCIENCE COMMISSION. I should like to refer to one final phase in this connection.

It has been the repeated judgment of the Senate Committee on Government Operations, as a whole, that this Nation could greatly benefit from the establishment of a Hoover-type Commission on Science and Technology.

Such a commission would, ideally, in our judgment, consist of a “balanced mix” of representatives of the executive and legislative branches, as well as the national science and engineering community.

Senate-approved legislation for such a commission is now, once more, pending before the House Committee on Science and Astronautics.

As many observers have pointed out, a group which would have representation from the executive agencies and from the private scientific community, working side by side with legislators, might be in a somewhat stronger position than a group of busy legislators who are necessarily already heavily committed to other duties.

Perhaps, an arrangement could be worked out in which a commission, if approved, could be designated to study such specific topics as the House select committee might choose not to review—partly because of the limited time the select committee has available.

In any event, irrespective of whether any further action is taken on the commission bill, I know that each of the committees and subcommittees of the Senate and House which have jurisdiction over scientific activities will continue their individual efforts to strengthen the Nation’s scientific and engineering program.

Missile Command Tech Director Gets AMCS Award

Technical Director John L. McDaniel of the Army Missile Command’s Directorate of Research and Development, Redstone Arsenal, Ala., recently received the Army Meritorious Civilian Service Award.

Brig Gen John G. Zierdt, commanding general of the Missile Command, presented the award in the name of Lt Gen Frank S. Besson, CG of the U.S. Army Materiel Command, as Mrs. McDaniel and their four children observed.

McDaniel was cited for “His achievements in scientific and engineering leadership in research and development of rocket and missile weapon systems . . .” which have brought credit to the Army Missile

Command and the Army Materiel Command.

McDaniel has received five awards for his contributions to the Army’s missile programs, dating back to 1955. In August 1961, he received the Research and Development Achievement Award for scientific and engineering leadership. Except for a 2-year tour of duty with the Navy during World War II, he has worked at Redstone Arsenal since 1942.

The majority of his Redstone career has been in research. He was an aeronautical research engineer before being named deputy director for R&D Operations of the Army Ballistic Missile Agency. He was appointed to his present position with creation of the Missile Command.



MUTUAL ADMIRATION SOCIETY, composed of Mrs. John L. McDaniel, Connie, Mark, William, and John, Jr., look over Meritorious Civilian Service Award presented to Mr. McDaniel by Brig Gen John G. Zierdt, commanding general of the U.S. Army Missile Command at Redstone Arsenal, Ala.

Redstone Experts Amazed by 16-Year-Old's Laser

Teenage rocket buffs are frequent visitors to the home of Army missiles at Redstone Arsenal, Ala., but 16-year-old Kenneth Ritthaler of Upton, Wyo., is the first of a new breed. Ken showed up recently with his own Laser, one that he had built himself—and it worked.

A Laser—the letters stand for light amplification by stimulated emission of radiation—is a device usually found only in closely guarded research laboratories of Government and industry. The possibilities of the devices, if they can be made practical, are almost limitless; among them, new communications techniques.

Since Lasers are not something the average do-it-yourselfer turns out in his basement, Ken Ritthaler found himself the center of attention when he walked into the Army Missile Command's Directorate of Research and Development with his Laser under his arm.

Engineers in the Applied Physics Branch of the Directorate's Electromagnetics Laboratory were skeptical at first. They work with Lasers too, but in classified projects. It took Ken about two minutes to convince William B. McKnight, branch chief that he really knew what he was talking about.

The youngster wanted some technical advice. His homemade Laser wasn't quite up to snuff. He was looking for a way to increase its power output to the point where the coherent beam of light "fired" by the device would break a balloon.

McKnight and his Laser experts, James C. Nixon, George A. Emmons, Ralph W. Hawkins and Daniel W.

Riggs, were sure they could help him and they did.

The group had been alerted to expect Ken's visit after the Department of the Army had been asked to help him out. Ken, the son of a rancher, had first demonstrated his Laser at the National Science Fair in Albuquerque where he won top honors.

When MGM television decided to produce a television series on junior scientists, Ken was one of the first chosen to appear. The program will be aired beginning in January on the American Broadcasting Company TV network. ABC and MGM asked the Army's help in souping-up Ken's Laser so that it could burst balloons on the show.

"That's quite a boy," McKnight said. "He wanted to get his Laser working and he also wanted to learn something about the mathematics and physical principles involved in the devices. William F. Otto, one of

our research scientists, covered that with him and from what Bill told me later, he didn't have to explain anything twice. We'll talk shop with him anytime."

McKnight and his group have but one regret. They hope Ken will return some day with a security clearance so they can tell and show him some of the things that go on behind the closed doors in the Laser laboratory at the Arsenal.

Ken is president of his high school's student council, its chapter of the National Honor Society, the Forensic League. When he's not working on Lasers, he tends his own herd of registered Hereford cattle. An active member of his local 4-H club, Ken is almost as proud of his state champion Hereford bull as he is of his homemade Laser.

During his visit to Redstone, Ken was a guest of the Huntsville High School Student Council at one of their functions and a dinner of the Society of Personnel Administration.

Compact Survival Kit Carries Amazing Assortment

Survival for the field soldier separated from his unit may well depend upon a compact kit, weighing one pound and measuring 5x3½x2¼ inches, developed by the U.S. Army Limited War Laboratory at Aberdeen, Md., in cooperation with the Medical Equipment R&D Laboratory, Fort Totten, N.J.

Embodying the latest in packaging techniques, the kit will enable the soldier to treat himself against fever, infection and diarrhea as well as to provide him with such items as mosquito netting, fishhooks, a flare gun, lighter and saw.

The first container, called the operational kit, is comprised of a signal mirror, flexible saw, flare gun with two white flares, gauze, adhesive plaster, absorbent adhesive bandages, and bouillon cubes. Included are water purification, salt and antidiarrhea tablets; a solution to treat cuts, scratches and mosquito bites; antibiotic tablets and ointments; and other selected medical items.

The reserve component is comprised principally of the same items as the first kit but with additional features: fishing lines and hooks, sewing kit with magnetized needles to point north, chloroquine and primaquine tablets for malaria, headache capsules, and a fire starter.

Encased in a polyethylene plastic, the bottom sections of the containers

are slit at the corners so that the slides will fan out making all items which are secured to the sides by a nondrying adhesive easily accessible.

When closed, the containers are sealed with a waterproof pressure sensitive tape. The plastic cases are further contained in nylon bags which have been designed for attachment to the individual's belt or pack.

Contingent upon favorable test reports, similar packaging techniques, which will improve user utility, will be incorporated on other kits used in the Medical Services.



TEENAGE SCIENTIST Kenneth Ritthaler demonstrates homemade Laser to William Otto, Army Missile Command scientist at Redstone Arsenal.



SFC Michael Cannatella examines contents of new jungle-survival kit.

Pickett Persistently Picks Peak Performance Plumbs

Awards for superior performance of duties might be termed habit-forming in the case of Dr. Charles F. Pickett, technical director of the U.S. Army Coating and Chemical Laboratory, Aberdeen Proving Ground, Md.

Dr. Pickett recently received his sixth Sustained Superior Performance Award and his fourth Outstanding Performance Appraisal. One of his APG cohorts, Dr. John D. Weisz, technical director of the U.S. Army Human Engineering Labs, also received OPA and SSP awards.

Dr. Pickett was cited for "positive, dynamic guidance and leadership, combined with unusually outstanding technical competence," which has "substantially contributed to significant advances in research and development and to the most effective accomplishment of the overall Army Materiel Command mission."

Dr. Pickett received his B.S. degree from the University of New Hampshire, his Ph. D. from New York University in 1927. He worked as a research chemist for the duPont Co., and the Sherwin-Williams Co., until 1935, when he moved to Rohm and Haas, a chemical company.

He came to the Proving Ground in 1945 as chief of the Paint and Chemical Laboratory, Development and Proof Services. In 1956 the Laboratory became a separate mission activity and was redesignated the U.S. Army Coating and Chemical Laboratory with Dr. Pickett as director. In 1962 the Laboratory came under the Army Materiel Command with Dr. Pickett as technical director.



Col Charles D. Y. Ostrom, Jr., CO, U.S. Army HEL and USACCL, presents Outstanding Performance Appraisal and Sustained Superior Work Performance Awards to Dr. Charles Pickett (center), and Dr. John Weisz.

The citation to Dr. Weisz stated, in part: "Your remarkable initiative, unusual foresight, unique planning ability, dynamic leadership and energetic guidance combined with sound management practices have contributed substantially to the significant advances made in the application of human factors engineering to the development of Army materiel."

Dr. Weisz, who received a Ph. D. degree in 1953 from the University of Nebraska for his work in experimental psychology, physiology and pharmacology, served at the Proving Ground for more than a decade.

His career began as an experimental psychologist with HEL. In 1957 he became director of the Laboratories, and following the reorganization of the Army in 1962, he was appointed technical director.

Value Engineering Considered at USAERDL Seminar

A one-week Value Engineering Seminar was conducted recently at the U.S. Army Engineer Research and Development Laboratories (USAERDL), Fort Belvoir, Va.

Selected personnel from Government and industry heard presentations on value engineering concepts, principles and methodology as an effective means of discovering and eliminating unnecessary costs in parts, components, processes and end items of equipment.

Thirty-four persons completed the course and received certificates. They represented USAERDL, the Engineer Procurement Office in Chicago, the Tank Automotive Command in Detroit, the Aviation and Surface Materiel Command in St. Louis, Mo., the

Mobility Support Center in Columbus, Ohio, and the Nuclear Power Field Office, Fort Belvoir.

The attendees, divided into eight project teams, studied components, assemblies or end items and recommended changes and modifications which, if accepted by the project engineers, could result in estimated savings of approximately \$700,000 to the Government.

Guest speakers included Carlos Fallon, RCA; R. J. Gillespie, Sylva; Bernard J. Kerrigan and R. J. La Belle, General Electric Co.; Walter Price, Harry Diamond Laboratories in Washington, D.C.; R. Glenn Woodward of Value Engineering, Inc.; Don Redmon of the U.S. Army Materiel Command, and Allen Dilliard, U.S. Army Mobility Command.



By Ralph G. H. Siu

THE INBREEDING OF A FROG. The Euphoric inbreeding of many a research laboratory recalls Chuang Tzu's story of the well-frog's conversation with the giant turtle.

The giant turtle had lived for years in the Eastern Sea so large that: "Imagine a distance of a thousand leagues and you will have no idea of its size; imagine a height of a thousand times man's stature and you will still have no notion of its depth. In the time of the Great Yü, in ten years there were nine floods; but the Eastern Sea became no deeper. In the time of Tang there were seven years of drought in eight years, yet the sea did not retreat from its shores."

One day the giant turtle wandered over the hill near the seashore and came upon a dry abandoned well. As he peered over the small opening, the frog at the bottom of the well greeted him: "How you must envy my delightful experience! When I feel inclined I can come out and hop about on the railing; then I go back into the pit and rest where a tile has fallen out of the wall. When I go into the water, I can make it hold me up under the arm-pits and support my chin. When I jump into the mud, I can make it bury my feet and cover my ankles."

"As for the baby crabs and tadpoles, none of them can compete with me. To have the use of all waters of an entire pool, to have at one's command all the delights of a disused well, that surely is the most that life can give."

REASONS AND EXCUSES. "We have 40 million reasons for failure," said Rudyard Kipling, "but not a single excuse."

TEAMWORK. Some people's idea of teamwork has been well described by Joel Harris in *Uncle Remus*:

"You do de pullin', Sis Cow, en I'll do de gruntin'."

WATERMEN. In taking stock of competitors, executives need observe carefully. For some of them are, to use Plutark's expression, "like watermen who look astern while they row the boat ahead."

THE SECRET. I don't quite know what managerial lesson can be learned from Robert Frost's couplet entitled "The Secret." But it does sound titillating:

We dance round and round in a ring and suppose,

The secret sits in the middle and knows.

2 Engineer R&D Laboratories Employees Get 'Quality Salary Increases'

"Quality salary increases," for performance above the normal range of requirements, were awarded recently to two U.S. Army employees at the Engineer Research and Development Laboratories, Fort Belvoir.

Robert H. Bailey and Thomas H. Bern, Jr., became the first two employees of the Laboratories to receive this type award. It replaces the Sustained Superior Performance award, under the Classification Act of 1949 as amended in 1962.

Under the new program, quality increases may be granted to eligible employees in permanent Classification positions whose performance is of such high quality above that ordinarily found in the type of position concerned that pay recognition is warranted.

Bailey, an employee of the Facilities Planning and Maintenance Branch, received an increase for his high quality work during the period of July 1, 1962, to June 30, 1963. Specifically, he was cited for his work in providing permanent type minor and major construction for long-range expansion of the Laboratories.

Bern, an engineering technician in the Engineering Services Branch, received his increase for the period of June 1, 1962, to May 31, 1963, during which he assisted in re-engineering the Xenon searchlight.

Army Limited War Lab Plans Dedication Ceremony Nov. 15

Plans for formal dedication of the U.S. Army Limited War Laboratory (LWL) at Aberdeen Proving Ground, Md., on Nov. 15, are completed.

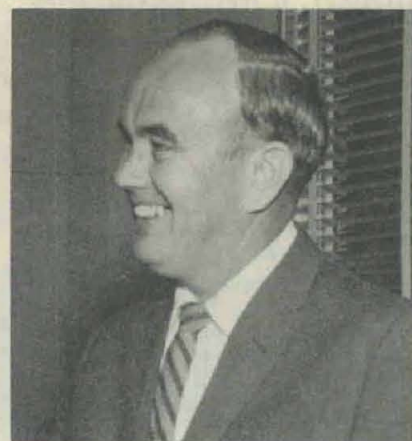
Chief of Research and Development Lt Gen William W. Dick will take part in designating the facilities as York Hall, in honor of Capt Don J. York, Asheville, N.C. Capt York was killed July 14, 1962, while serving as adviser to the Third Battalion, Vietnamese Airborne Brigade.

Ceremonies will include the unveiling of a portrait of Capt York donated by his Class of 1954 at the United States Military Academy. Guests of honor will be his widow, Mrs. Johanna York, their two children and his parents, Mr. and Mrs. Arthur York.

Revamped to meet LWL requirements, the offices and laboratories house 70 civilians and six officers working on research and development of items needed by the U.S. Armed Forces in limited war engagements.



Robert H. Bailey



Thomas H. Bern, Jr.

ERDL Tests Mobile Floating Assault Bridge Ferry

A versatile mobile-bridge-ferry capable of overland travel at 35 m.p.h. and of supporting loads up to 60 tons over inland water obstacles is undergoing tests at the U.S. Army Mobility Command Engineer Research and Development Laboratories (ERDL) at Fort Belvoir, Va.

Designated as the Mobile Floating Assault Bridge Ferry, the experimental vehicles are the design concept of ERDL and fabricated by Chrysler Corp. in Detroit, Mich.

To bridge a river, the amphibious units are driven into the water, lined up side-by-side. Bridge structures carried on the transporter-vehicles are turned to 90-degree angles with the vehicles and connected.

The 3-man crews of four vehicles can have a 4-unit ferry in operation in 15 minutes. A 400-foot bridge can

be formed in an hour by crews of 16 units. By way of contrast, it takes 250 men some five hours to erect a conventional ponton bridge of comparable capacity.

Troops or vehicles can be streaming across the mobile bridges within moments after completion. Sixty-ton tanks can travel 150 feet apart.

Upon entering the water, wheels of the transporter retract hydraulically upward into wheel wells which supplied with compressed air to prevent loss of displacement.

The transporter carries a bridge superstructure of an end bay 37 feet long or a 26-foot interior bay. Carried lengthwise during travel, they are rotated hydraulically for bridge construction. Each ferry and bridge will consist of two end bay units, plus the number of interior bay units required for a specific operation.



MOBILE FLOATING ASSAULT FERRY, designed by USAERDL, hauls a 47-ton tank across the Potomac River at a speed of 8½ miles per hour. The transporter can travel overland at speeds up to 35 miles per hour.

CDEC Uses Realistic Model to Plan Operations in 100,000 Acre 'Battle' Zone

Reproduced on a 1 to 1,000 scale model, 100,000 acres of battlefield are available to Army commanders for planning operations at the U.S. Army Combat Developments Command Experimentation Center, Fort Ord, Calif.

Sometimes called the "Army's Live Chessboard," the Center is a fully instrumented field laboratory used for testing current and future concepts in tactics and organization under various conditions for the Command's long-range planning groups.

The "instant terrain" battlefield model at the tactical situation center is made of styrofoam and fiber glass. The 178 jig-saw sections can be assembled on the floor to 90 by 80 feet, or as segments of the test terrain. All features, including vertical distances in the mountainous areas, are clearly and accurately reproduced.

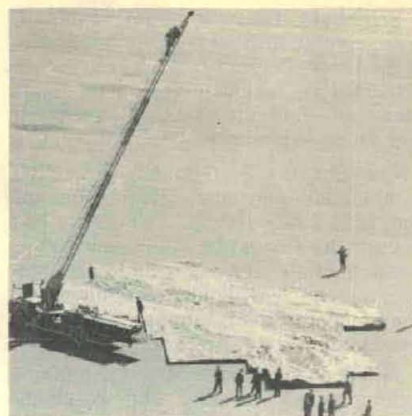
With the proper segments laid, the project teams can preplay and schedule the actual experiment, which will

produce data required by the Combat Developments Command to make its recommendations on how the Army may be organized, equipped and fight.

A closed-circuit television camera with a wide-angle lens can be used with the model to provide commanders of opposing forces a clear, enlarged view of the particular terrain involved in the situation on TV screens in nearby buildings.

A suspended motion picture camera also affords the opportunity to record all details of the posed situation for future references as it photographs the troop symbols and replicas of vehicles, guns and equipment spotted on the model.

Umpire-controller personnel, who monitor and record the actual phases of experimentation on the "chessboard," find the model a valuable asset by allowing them to plan where they may best place the "eyes and ears" on the ground. Every action



Ladder-borne camera photographs terrain model of 100,000 acres used in problem planning, preexperimentation and postplay critique at USACDC Fort Ord Experimentation Center.

can be reported immediately to the Experimentation Control Center, in the heart of the military reservation.

Although the primary purpose of the model is to reduce the preparation time of an experiment, it provides an ideal method for after-action critique and discussion and permits re-running problems under alternate conditions.

Commanders also consider the model battlefield invaluable for briefing the many U.S. and Allied observers who visit the Experimentation Center, recognizing it plays a vital role in the Combat Developments Command function as the Army's "Idea Proving-Ground."

CDEC Shows Electronic Target Hit-Kill Indicator

Simulation by electronics has now come to the point of determining hit-kill accuracy of firing at live targets without lethal impact.

The U.S. Army Combat Developments Command Experimentation Center at Fort Ord, Calif., displayed the "Hit-Kill Indicator" in Washington, D.C., during the Oct. 21-23 convention of the Association of the United States Army.

Designed for tanks and other modern weapons, the system uses electronics and infrared optics for the firing and recording. The ammunition is a paper round—a card bearing fuse and range marks inserted into the weapon's control unit.

When Hit-Kill Indicators are mounted on tanks, all targets (tanks) on the battlefield are on standby until one tank fires. Firing consists of an infrared flash directed at all targets on the field.

Only the object of fire has a matching identification code or pulse which is flashed back to the firing tank. A photo-electric telescope picks up the flash to close the circuit.

Instantly a firing simulator detonates, producing smoke and noise, while the target tank also detonates smoke. Before the tank's circuits are remotely turned off, a light signals the crew their tank is hit and disabled. The whole cycle—aiming,

locking on, firing and the kill—takes less than a half-second and is recycled by a simple key switch.

During the firing, a remote data-processor is automatically fed identity numbers of both the weapon and its target, results of the engagement (miss, hit or kill) and the range at which the target was engaged.

Automatic circuits analyze hit-probability versus range on the basis of the actual effective range of the weapon employed, as well as kill probability versus the type of target.



Gunner loads paper round of "ammunition" into 106 mm. recoilless rifle control unit to "ready" Hit-Kill Indicator for "firing" at the U.S. Army Combat Development Command's Experimentation Center, Fort Ord, California.

Foreign Scientists View Army Human Factors Research

Scientists from Belgium, Finland, Iran and South Africa visited the U.S. Army Personnel Research Office (USAPRO) recently for on-the-spot view of human factors research trends and projects.

Col Charles S. Gersoni, USAPRO commander and past commander of the U.S. R&D Group, Far East, has stated he regards the increasing number of foreign visitors as a reflection of the worldwide recognition of the importance of human factors research in an age of automation.

"Closer international relationships among scientists and the resulting exchange of information are essential for breakthroughs in every scientific field," he said.

Dr. Urgiste J. Bouvier, director of the Center for Social Studies at the Belgian Ministry of National Defense, spent three days at USAPRO. In discussing military psychological trends, he said, "There is no doubt that the United States is the most advanced."

As a former lieutenant colonel in the Belgian Army, he was especially interested in the USAPRO Officer Prediction Task, which is now collecting data at the Officer Evaluation Center at Fort McClellan, Ala., for the more effective matching of officers and assignments.

Dr. Bouvier plans to investigate the "will do" aspects of personality

as they relate to the "can do" aspects, which are customarily gauged by achievement and aptitude tests.

During his visit, he said that he also intends to send several psychologists from the Center for Social Studies to the United States next year for intensive indoctrination in human factors techniques.

The Center, which Dr. Bouvier heads, does research for the combined armed services of Belgium in biological as well as social and psychological research areas.

Lauri J. Pentti, a psychologist representing the Institute of Industrial Supervision, Helsinki, Finland, was briefed on the USAPRO experimental laboratories work in image interpretation and monitor performance.

Critical Situations Task personnel explained USAPRO plans for research into the perceptual, motor and cognitive behaviors of Special Forces personnel in emergency situations.

Other visitors to USAPRO included Dr. Iraj Ayman, director of the National Institute of Psychology at Teheran, Iran; Dr. David J. Gouws, director of the National Institute for Personnel Research; and Mr. A. O. Roberts, head of the National Institute's Psychometric Division.

Dr. Gouws and Mr. Roberts are members of the African Council for Scientific and Industrial Research, Johannesburg, South Africa.

Panama R&D Office Tests Special Forces Equipment

A Special Forces tropical hat, two new types of combat clothing, a lightweight rucksack and a spike-resistant jungle boot are among items undergoing field tests at the U.S. Army Research and Development Office, Panama.

Items being evaluated were furnished by the U.S. Army Infantry Board and the Field Evaluation Agency. Assistance for the tests was provided by troop units assigned to the U.S. Army Southern Command.

Adopted for Special Forces use, the tropical hat is being tested for general Army use in the tropics. Two packaging methods for long-range patrol rations and the rucksack made of lightweight metal tubing and nylon material were developed to reduce the burden of carrying rations and other equipment for several days.

Maj Max W. Noah, Test Division, was assigned as project officer for the tests. Principal contact at the Infantry Board is Lt Col David B. Price, and at the Field Evaluation Agency, John B. Murdock.

Results of a questionnaire filled out by participants are being correlated with component portions of the tests conducted at other locations and reports will be published shortly.

ECOM's Dr. Ziegler Talks On Infrared Research Aims

The 10th National Infrared Information Symposium (IRIS) was held in October at Fort Monmouth, N.J., under the auspices of the U.S. Army Electronics Command (ECOM), with attendance limited for security.

ECOM Chief Scientist Dr. Hans K. Ziegler welcomed conferees on behalf of Maj Gen Frank W. Moorman, ECOM CG. He stressed that Army infrared research "must be restricted to those combat capabilities for which we have been assigned mission responsibility. . . .

"These missions have been formulated as follows: Exercise integrated commodity management of communications, communications security, electronic warfare, aviation electronics (avionics), combat surveillance, signal intelligence, air defense electronics, IFF (Identification—Friend or Foe) systems, automatic data processing, radar, meteorological and certain electronic radiological detection material, electronic power generation equipment, and electronic parts and materials common to electronic materiel throughout the Army."



HumRRO Unit and Division chiefs take time-out to pose for photographer during recent Annual Planning Conference held in Alexandria, Va. In the front row (l. to r.) are Lt Col Leo M. Blanchett, U.S. Army Air Defense Human Research Unit (HRU), Fort Bliss, Tex.; Col L. G. Jewett, chief, Research Division, USCONARC; Col W. G. Sullivan, chief, Human Factors and Operations Research Division (HFORD), Army Research Office (ARO); and Lt Col T. E. Lawrence, U.S. Army Infantry HRU, Fort Benning, Ga.

Rear row (l. to r.) are Lt Col R. H. McClay, U.S. Army Training Center HRU, Presidio of Monterey, Calif.; Maj D. J. Haid, U.S. Army Aviation HRU, Fort Rucker, Ala.; Lt Col H. J. Davies, incoming unit chief, U.S. Army Armor HRU, Fort Knox, Ky.; Maj K. H. Borcheller, Army Research Office, and Col G. H. Spires, Jr., outgoing unit chief, U.S. Army Armor HRU.



Army R&D 'Blueprints' Van Slated for Tour of U.S.

"U.S. Army Blueprints for the Future" is the title of a new mobile exhibit designed to tell the Army's research and development story to the public in a dramatic manner during a Nation-wide itinerary.

The van-mounted exhibit, presenting a preview of the latest thinking on weapons and equipment needed for the Army arsenal of the future, was shown for the first time during the Oct. 21-23 annual meeting of the Association of the United States Army in Washington, D.C.

Top defense officials were among the many who viewed the display of a wide variety of selected items representing the broad scope of research and development/combat developments programs and activities.

The latest presentation techniques are utilized throughout the van, built by the U.S. Army Exhibit Unit for the Chief of Research and Development. Polarized light enables the spectator to follow visually a tape-narrated explanation of how the R&D cycle works—starting with the concept (idea) to the finished product (tank) issued to field troops.

Individual telephones heard only by the listener give the latest information on new communication techniques and equipment, while the item under discussion is illuminated in sequence on a battlefield diorama.

An actual Laser demonstration is given periodically—a pencil beam of light punches through a steel plate to explode a photo flash bulb.

Film coverage in color and sound presents the Army air mobility program to include the latest aircraft.

If the visitor wants to be a push-button general, he can electronically build his own ROAD Division, using Infantry, Mechanized, Armor and Airborne Battalions to meet any possible tactical enemy threat. Or he can, by sequential lighting effects, dramatically intercept an incoming

ICBM with defensive missile Nike X.

Mural photographs of the Secretary of the Army and Chief of Staff are accompanied by statements highlighting the importance of Army R&D in support of the individual soldier. These items are representative of only a part of the van's many presentations.

A Nation-wide itinerary for the ex-

hibit van is now being prepared by the Office of the Chief of Research and Development and the Office of the Chief of Information.

Individuals and organizations interested in obtaining the "Blueprints" R&D van may address their requests to the Commanding Officer, U.S. Army, Exhibit Unit, Cameron Station, Alexandria, Va., 22314. Requests should be forwarded three to six months before date desired.

AMRA Scientists Get Fellowships for Study Abroad

Secretary of the Army Study (SARS) and Guggenheim Memorial Foundation fellowship awards are enabling three U.S. Army Materials Research Agency civilians to pursue research interests in Europe.

Joseph I. Bluhm, chief of AMRA's Materials Engineering Laboratory, is at the Institute de Recherches de la Siderurgie in St. Germain en Laye, France, where he is studying metal fatigue under a SARS fellowship. Working with him are two noted leaders in the field, Dr. R. Gazaud and Dr. C. Crussard.

After about 10 months at the Institute, Mr. Bluhm will visit many of the metallurgical and engineering laboratories in Belgium, Germany, Sweden, Scotland and England before returning to his duties with AMRA.

Dr. Ralph J. Harrison, physicist attached to the AMRA Materials Research Laboratory, is conducting research on the quantum mechanical-description of many-electron interactions in the solid-state physics field.

Primarily, his SARS fellowship calls for research in the Department of Mathematics at the Imperial College of Science and Technology, University of London. Later he will visit other centers of solid state physics research in Europe and in Israel.

Dr. Christopher B. Walker recently joined the Materials Research Laboratory of AMRA after several years at the Institute of Metals of the University of Chicago. He had previous-

ly applied for a fellowship from the John Simon Guggenheim Memorial Foundation and was selected for this award for the period of 12 months, commencing in September 1963.

Investigations of the "thermal vibrations in crystals" are being made at the British Atomic Energy Establishment, at Harwell, England. He has been provided a grant of \$6,500 to cover research expenses.

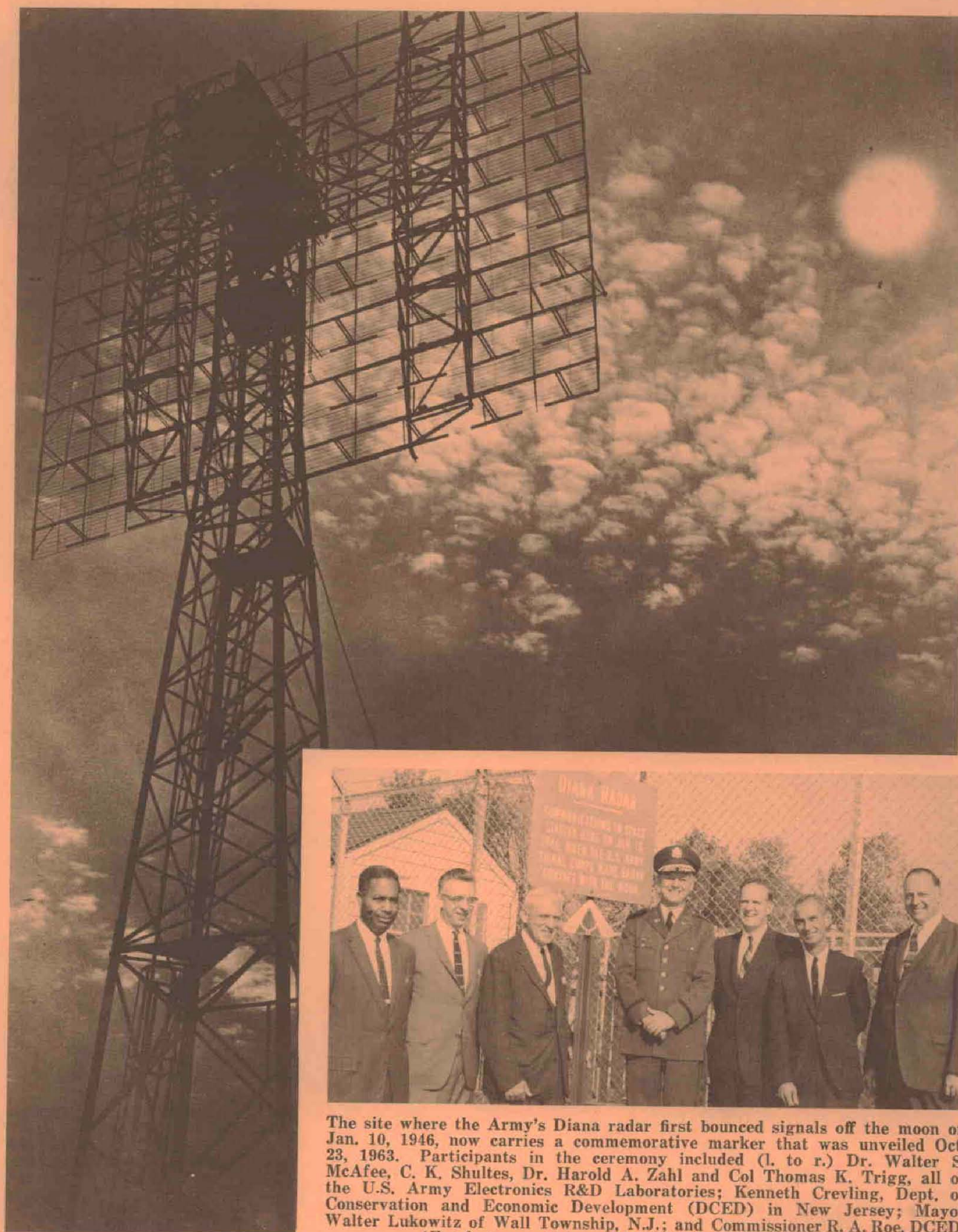
Chief Scientist Explains AMC's Research Efforts

Dr. Craig M. Crenshaw, chief scientist of the U.S. Army Materiel Command (AMC), recently discussed current AMC research efforts in addressing the Fort Detrick, Md., chapter of the Armed Forces Chemical Association.

Dr. Crenshaw represented Lt Gen Frank S. Besson, Jr., AMC commander, for the 2-day visit of the Chemical, Biological and Radiological Committee of the Armed Forces Chemical Association. The purpose of the visit was to acquaint the committee on current biological problems and to point out problem areas in which the committee could help.

Committee members present included chairman Dr. R. W. Richardson, ESSO Research and Engineering Co., and Drs. H. S. Rothrock, DuPont Co., M. T. Leffler, Abbott Laboratories, B. W. Carey, Lederle Laboratories, Davis Batson, Ethyl Corp., and William Lee, Pennsalt Chemical Co.

Army's First Moon Contact Radar Memorialized at USAELRDL



The site where the Army's Diana radar first bounced signals off the moon on Jan. 10, 1946, now carries a commemorative marker that was unveiled Oct. 23, 1963. Participants in the ceremony included (l. to r.) Dr. Walter S. McAfee, C. K. Shultes, Dr. Harold A. Zahl and Col Thomas K. Trigg, all of the U.S. Army Electronics R&D Laboratories; Kenneth Crevling, Dept. of Conservation and Economic Development (DCED) in New Jersey; Mayor Walter Lukowitz of Wall Township, N.J.; and Commissioner R. A. Roe, DCED.

(For feature article on DIANA, please turn to page 11.)