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Top R&D Leaders Slated Among 500 Army Science Conferees

DoD Creates Tech Data Control Council

Formation of a Department of Defense Council on Technical Data and Information, with broad powers to coordinate and control expenditures estimated at about $2 billion annually, was announced in a Mar. 9 memorandum.

Deputy Director of Defense Cyrus R. Vance directed the memorandum to Secretaries of the Army, Navy and Air Force, the Assistant Secretaries of Defense, and the Directors of Defense Research and Engineering and the Defense Supply Agency.

Department of Defense Directive 5100.36, dated Dec. 31, 1962 and titled "DoD Technical Information," provided for the establishment of Scientific and Technical Information (STINFO) programs throughout the DoD. Growing interest among many agencies has resulted in development of a variety of effort and a rapid increase in STINFO groups.

The Council's task is to unify and integrate the overall DoD effort, that is, 1) to approve all principal projects; 2) to initiate or terminate projects; 3) to review the progress and results of this work; 4) to recommend manpowers and financial requirements in accordance with procedures pre-

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CSigO Title Phased Out As STRATCOM Expands

Chief of Communications-Electronics displaced the 104-year-old title of Chief Signal Officer in March, simultaneously with elevation of the U.S. Army Strategic Communications Command to major stature commensurate with a new global role in Army requirements.

Maj Gen David P. Gibbs, Chief Signal Officer since July 1963, took over broadened responsibilities in his new capacity as Chief of Communications-Electronics. Under the Deputy Chief of Staff for Military Operations, he will concentrate on General Staff activities involved in tactical and strategic C-E activities, functioning as a focal point for advice on programs.

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Assurance of participation of the Special Assistant to the President for Science and Technology, Dr. Donald F. Hornig, and other top ranking Defense and Army R&D leaders has firmed plans for the fourth biennial Army Science Conference. For the fourth time, it is set at the U.S. Military Academy, West Point, N.Y., June 16-19.

Dr. Hornig, recent successor to Dr. Jerome B. Wiesner as the No. 1 Federal science leader, accepted an invitation extended by Assistant Secretary of the Army (R&D) Willis M. Hawkins, the conference keynote speaker.

Secretary of the Army Stephen Ailes has been invited and it is hoped he will be able to take part in at least one session, possibly the opening session or the awards presentation ceremony on the closing day. Chief of Research and Development Lt Gen William W. Dick, Jr., is scheduled to introduce the keynote speaker.

Approximately 500 invitees, the maximum that can be accommodated

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Scheduled as Principals in Army Science Conference

Willis M. Hawkins

Stephen Ailes

Dr. Donald Hornig

Dr. Ralph G. H. Siu

Lt Gen W. W. Dick

Dr. Harold Weber

Featured in This Issue . . .

Army R&D Newsmagazine

Vol. 5, No. 4 April 1964

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

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COMPUTERS, COMMUNICATIONS & DEFENSE

David Sarnoff

Brig Gen David Sarnoff (USA, Ret.), Chairman of the Board, Radio Corporation of America, was a featured speaker at the U.S. Army's second 5-day Data Processing Seminar for General Officers in March at Fort Monmouth, N. J., home of the Army Electronics Research and Development Laboratories. The subject he discussed is considered of broad interest to R&D elements, and the major portion of his address is as follows:

* * *

I am happy to be back among my old friends and associates of the Signal Corps. My relationship with the Corps, both as an officer and as a civilian, extends over half a century, and membership in this branch of the service is a distinction of which I have always been deeply proud.

It was particularly pleasing to be presented to you by our Chief, Maj Gen David Gibbs, who is the son of my old friend, General George Gibbs, the Chief Signal Officer of the U.S. Army 35 years ago.

There have been some changes, I notice, in titles and in organizational responsibilities, but the purpose of the old Signal Corps is still the same. Regardless of designation, the task is the one for which the Corps was formed over a century ago—to get the message through. Where the real change has occurred, as this seminar clearly indicates, is in the techniques of transmitting the message as well as in the information it contains.

Over the years, it has been my privilege to speak to various organizations of the armed services and to venture some observations on the future of science and technology, particularly as they might affect our military posture around the world.

For example, on Feb. 20, 1926, in an address before the Army Industrial College, I said:

"Future great wars may well be fought and won on the basis of brains and scientific devices rather than numerical preponderance. . . . The various forms of destructive radiation have not yet been worked out thoroughly. . . An investigation of these and perhaps as yet unknown rays, as well as other incendiary or disintegrating agencies, may well lead to the development of extremely powerful methods of warfare. . . . A future great war may last five minutes and yet be infinitely more destructive and decisive than the last World War . . . ."

A year later, on Jan. 31, 1927, appearing before the Army War College, I said:

"We may foresee the day when a fleet of aircraft, with no human occupants and loaded with bombs may be sent against the enemy's lines, with all controlling operations performed by radio. . . . It is conceivable that a radio television transmitter installed in an airplane might be useful in transmitting a direct image of the enemy's terrain. . . ."

Since I made these forecasts over 37 years ago, enormous changes have taken place, not only in the arts of war but in the means of communication. These changes, of course, are still continuing, and today they are more fundamental in their nature and more far-reaching in their effects than any that have occurred since the first use of the telegraph in the Civil War.

Our present communications must meet conditions and service military needs which, as you are well aware, are vastly different from anything ever described in a military manual.

In this era of telescoped space and time, our power is deployed across the face of the globe, from the Arctic tundras to the rain forests of Southeast Asia, and now into the realm of space. We must measure reaction time in minutes, be prepared to rush strike forces to any point on earth within hours, and take only a little longer to move units of division and army size across oceans. In the field, our forces are further dispersed by the threat of atomic strikes, and the terrain and methods of guerrilla warfare.

Our worldwide commitments of men and machines, and the need for instant reflex, require the timely accumulation of masses of intelligence from many parts of the globe, quickly evaluated for command decisions. This in turn re-

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Top R&D Leaders Slated at Army Science Conference

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at the Academy, will attend on the basis of quotas established for each of the Army R&D activities and other Government agencies. Great Britain, Canada and Australia, as Quadripartite Agreement Nations, have been invited to send top officials of Defense R&D agencies.

Presiding chairman of the conference will be Dr. Harold C. Weber, U.S. Army Chief Scientific Adviser, and the call to order will come from Dr. I. R. Hershner, Scientific Director of Army Research. Welcome news to those who have attended previous Army Science Conference is that Dr. Ralph G. H. Siu, widely renowned for his wit, again will be the banquet toastmaster. Dr. Siu is scientific director, Research Division, Army Materiel Command, and currently is chairman of the Army Research Council.

Three invited presentations are scheduled among the 99 technical papers programed for the conference. Ninety-six of the presentations will be by Army in-house scientists and engineers, reflecting significant aspects of Army research as selected from nearly 400 proposals from those desirous of reporting on their work.

Billy M. Horton, technical director of the Harry Diamond Laboratories in Washington, D.C., will make one of the guest presentations on "Fluid Devices." In 1962 he and two of his HDL colleagues, Dr. R. E. Bowles and Raymond W. Warren, received an Army R&D Achievement Award for discoveries in this field, which has since attracted worldwide attention. Mr. Horton also received the Arnold O. Beckman Award in 1960, the highest honor of the Instrument Society of America, for fluid amplification R&D.

The second invited presentation by Lt Col Timothy G. Barila, chief of the Department of Resuscitation and director of the year-long Walter Reed Army Institute of Research course in Military Medicine and Allied Sciences, will report on the Army's artificial heart pump.

Based on the principle of fluid amplification controls, without moving parts except for artificial ventricles and tricuspid heart valves, the pump was invented by Kenneth Woodward of the Harry Diamond Laboratories and developed in cooperation with a WRAIR team headed by Lt Col Barila.

"SYNCOM Satellite" is the title of the third invited presentation to be made by Brig Gen J. W. Johnston, commanding general, U.S. Army Satellite Communications Agency. The report will deal with the advances in and significance of communication satellites, resulting from pioneering efforts of the U.S. Army Electronics R/D Laboratories, Ft. Monmouth, N.J.

The conference will be conducted in four concurrent sessions, and an effort is being made to arrange for concentration of the classified presentations in one or two sessions. This would permit press representatives to attend the other sessions.

Session chairmen are Dr. Marion B. Sulzberger, technical director of research, Office of the Surgeon General, Dr. Craig M. Crenshaw, chief scientist, and Charles H. Zimmerman, chief engineer, U.S. Army Materiel Command; and Dr. Gilford G. Quarles, chief scientific adviser to the Chief of Engineers.

Technical papers presented by Army in-house scientists have been carefully selected to indicate the overall depth and diversity of research in Army laboratories and the professional capabilities of personnel. In response to a call for submission of synopses of proposed papers, nearly 400 scientists and engineers offered proposals last October.

Since then the 96 papers that will be presented have been selected and are currently being evaluated for honorariums and Certificates of Merit. In 1962 four $500 and seven $300 awards were made through the joint support of the Association of the United States Army and the Army Incentives Awards Program. Sixty Certificates of Merit signed by the Assistant Secretary of the Army (R&D) and the Chief of Research and Development were presented.

Dr. Harold C. Weber heads the panel of judges that will meet early in June to select top award winners. The remaining six members likewise are members of the Army Scientific Advisory Panel, namely:

Donald G. Fink, general manager, Institute of Electric and Electronics Engineers; Ernest H. Volweiler, consultant and former chairman of the board, Abbot Laboratories; Charles C. Lauritsen, professor of physics, California Institute of Technology; Dr. Walter G. Nungester, chairman, Department of Physics, University of Michigan Medical School; Dr. John E. Vance, professor of chemistry, New York University; and Dr. Edward C. Stevenson, professor of electrical engineering, University of Virginia.

Among the distinguished scientific leaders who have been invited to attend the conference, along with selected members of their organizations, are: Dr. Allen V. Astin, director, National Bureau of Standards; Dr. J. Barkley Rosser, director designate, Mathematics Research Center, U.S. Army; James E. Webb, administrator, National Aeronautics and Space Administration; Dr. Robert L. Sproull, director, Advanced Research Projects Agency;

Dr. Frederick Seitz, president, National Academy of Sciences; Dr. James A. Shannon, director, National Institutes of Health; Dr. Leland G. Haworth, director, National Science Foundation; Dr. Glenn T. Seaborg, chairman, Atomic Energy Commission;

Frank E. Parker, president, Research Analysis Corp.; Dr. Meredith P. Crawford, director, Human Resources Research Office, George Washington University; Dr. Theodore R. Vallance, director, Special Operations Research Office, American University; Lt Gen H. C. Donnelly, director, Defense Support Agency.

Representatives have been invited also from the U.S. Navy, U.S. Air Force and the U.S Marine Corps.

Sponsored by the Chief of Research and Development, the conference will be hosted by U.S. Military Academy Superintendent, Maj Gen James B. Lampert. Col Steven Silvasy and Lt Col B. F. Hood are in charge of arrangements for the Academy. The U.S. Army Research Office arrangements committee, headed by Dr. I. R. Hershner as general chairman, includes Lt Col Wendell Van Auken, chief, Special Activities Branch, and Jack B. Fenn, project officer.

Surplus Property Policy

The Installation and Services Office of the U.S. Army Missile Command, Redstone Arsenal, Ala., held a conference Mar. 17 on new concepts of property disposal.

William A. DiNardo of the Supply and Maintenance Command, Washington, D.C., explained new regulations governing what the Army can do with surplus property.

Represented were the Anniston Ordnance Depot, the Army Support Command, the Birmingham Procurement District, Watertown Arsenal and Army Weapons Command.

DoD Draws Tentative Schedule on Industrial Briefing Series

Seven industrial briefings to inform present and potential Defense contractors of long-range development plans of the Department of Defense have been scheduled tentatively from May 25 through the end of June. A total of 13 briefings is planned by the close of the calendar year.

New to the first series, originally limited to six briefings, is one on Command and Control, hosted by the Defense Director of Research and Engineering in Washington, the fourth week in May or in June.

The Command and Control briefing, it was explained, has been organized separated from the Electronics briefing. The purpose is to permit better coverage of the areas of Strategic Communications, Information Processing, Display Systems, and other Electronics type industry segments involved primarily in Command and Control.

Involved in the first series will be the following industries: Aircraft, Arms and Ammunition, Chemicals and Biologicals, Electronics, Missiles and Nuclear Products. The second series will cover Clothing and Textiles, Internal Combustion Power, Mechanical Products, Research, Shipbuilding and Transportation (for ground forces).

The tentative schedule for the other six briefings in the first series and the sponsors are: Aircraft (Air Force), May 25; Missiles (Air Force), May 26; Electronics (Navy), May 27; Arms and Ammunition (Army), second week of June; Chemical and Biological (Army), June 15; Nuclear Products (Navy), fourth week of June.

With the possible exception of the briefing on Arms and Ammunition, which may be held in Chicago, Ill., all of the first series of briefings probably will be conducted in Washington.

In applying for representation, a company should furnish the briefing host (see addressee given below) with the names, titles and security clearances of persons nominated to attend the particular briefing. A separate request should be made for each briefing, 30 to 60 days in advance.

Attendance at each briefing will be limited to not more than three persons from each organization, space permitting, and will be further restricted to individuals serving as chief executive officer, board chairman, president, or general manager; senior officer responsible for research planning, director of research, or director of corporate planning. Divisions of large diversified corporations will be considered as separate organizational entities for purposes of the briefings.

Because space limitations may require restriction of attendance, submission of an application will not guarantee that a company can be invited. The Department of Defense plans to disseminate appropriate briefing information to qualified companies regardless of attendance. The manner of accomplishing this objective has not yet been determined.

Officials to whom applications or requests for information may be submitted are:

ARMY—Lt Col Ernest H. Trussell, Technical and Industrial Liaison Office, Army Materiel Command, Room 2748, Gravelly Point, Washington, D.C. Zip Code 20315. Telephone Area Code 202-OXford 7-4948.

NAVY—Capt William W. Jones, Office of Naval Material (MAT 32), Room 2020, Main Navy Building, Washington, D.C. Telephone Area code 202-OXford 6-5125.

AIR FORCE—Col Robert F. Todd, Office of Deputy Chief of Staff (Plans), Air Force Systems Command, Andrews Air Force Base, Md. Telephone Area Code 301-981-9111, Extension 5309.

DDR&E—Maj John Delistraty, USA, Office of the Director of Defense Research and Engineering, Plans and Policy, Room 3E1082, The Pentagon, Washington, D.C. Zip code 20301. Telephone Area Code 202-OXford 7-8251.

Redeye System Placed Under Project Manager

The Redeye Air Defense Guided Missile System joined six other project-managed systems under Army Missile Command Control at Redstone Arsenal, Ala., Apr. 1 when it was changed from Commodity Office management.

E. K. Charlton has been named acting project manager for the Redeye system, a man-portable, shoulder-fired weapon under development to provide combat troops with the capability to destroy low-flying aircraft.

Criteria for placement of a weapon system under the project manager concept include mission criticality of the system to the defense of the United States, urgency of expediting troop delivery, interest in the weapon, and high dollar unit or total cost.

The project manager is delegated full authority and is responsible for all development and planning of his program. Responsibility includes all phases of research, development, procurement, production, distribution and logistical support to provide a balanced economical and effectve system.

General Dynamics of Pomona, Calif., is the prime contractor for the Redeye system, expected to go into production in the near future.

DISCUSSING REDEYE are Maj Gen John G. Zierdt (right) CG, Army Missile Command and Redstone Arsenal visitor Brig Gen Lewis W. Walt, director, Marine Corps Landing Force Development Center, Quantico, Va.

Ides of March . . .

Fail to Deter Dr. Adams

Caesar's fatal mistake was to ignore the warning to "Beware the Ides of March," but Dr. T. S. Adams of the U.S. Army Research Office professional staff seized that period as a time of golden opportunity.

Simultaneously with the publication of a long article on the Army Research Planning Process in the March issue of this periodical, Dr. Adams had two other feature articles published.

One, titled "The Social Scientist and the Soldier," appeared in *ARMY*, the official publication of the Association of the U.S. Army.

Viewpoints, published by American Friends of the Middle East, carried "Violent, Virulent, Divided Cyprus," based on Dr. Adam's historical perspective of that island, where he lived while preparing his doctoral thesis on Cyprus.

Scheduled for publication in the spring issue of *Orbis*, the journal of the University of Pennsylvana Foreign Policy Research Institute, is an article on Cyprus that will be coauthored by Dr. Albin J. Cottrell, a professor at the National War College, and Dr. Adams.

CSigO Title Phased Out As STRATCOM Expands

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The realignment resulted from a study board directed by the Army Chief of Staff to assess and redefine the C-E roles and missions in the light of modern Army needs, and particularly with respect to Army-operated elements of the Defense Communications System.

Col Wallace M. Lauterbach is retained tentatively as commander of the Strategic Communications Command in its expanded role as a major command on the level of the Army Materiel Command, Continental Army Command and Combat Developments Command. His position calls for general officer (probably 2-star) rank.

Formerly functional as a field agency of the Office of the Chief Signal Officer, STRATCOM now will incorporate elements that have been commanded by the CSigO. STRATCOM will keep its headquarters in the Washington area and will be the Army point of contact for Defense Communications Agency on all strategic communications operations.

STRATCOM assumption of its increased responsibilities is separated into two phases. Beginning this month it will incorporate the Joint Communications Agency at Fort Ritchie, Md., the Army Signal Communications Security Agency at Arlington Hall Station, Va., the Army Radio Propagation Agency, Fort Monmouth, N.J., and the Flight Information and Navigational Aids Office, Arlington, Va.

Starting about July, the second phase of the STRATCOM expansion will absorb Army strategic communications organizations worldwide. The consolidated command will provide better integration of effort, control and response to both Army requirements and the Defense Communications System.

The Chief of Communications-Electronics will retain command of the Army Photographic Agency, located in the Pentagon in Washington, D.C., and the Army Pictorial Center, Astoria, L.I., will be transferred to control of the Army Materiel Command. STRATCOM will be under the staff supervision of the Chief of C-E.

Signal officers at lower echelons will retain that title and their primary role will be the traditional function of signal communications.

In a formal ceremony in the New State Department Building in Washington on Mar. 9, the general orders and assumption of command orders were read, implementing the change.

General Gibbs explained the change, saying that it "constituted official recognition of the growing need and importance for having a Departmental focal point for all staff aspects of monitoring and advising on the growing complex of Army CE matters. . . .

"The new status of the U.S. Army Strategic Communications Command is indicative of the vital importance of the strategic communications aspects of military communications-electronics. This greatly expanded command now has responsibility for global direction of all Army-operated elements of the Defense Communications System and Army non-tactical and special communications for strategic missions. . . .

"The activation [STRATCOM] in 1962 was a logical result of the growing requirement for a global communications capability that would satisfy modern needs for fast, dependable service, and for a capability which could handle a tremendously increased volume of traffic.

"The need to engineer, install and operate such a system has presented a real challenge to Signal Corps personnel over the past years. The critical importance of the strategic communications mission today presents a greater challenge for the future."

Maj Gen David P. Gibbs

Maj Gen David P. Gibbs, Chief of Communications-Electronics, served as assistant and as deputy to the Chief Signal Officer before he was elevated to CSigO in July 1963.

In following closely the career pattern of his father (the late Maj Gen George S. Gibbs, CSigO from 1928-31), the new C-E chief has served in the Signal Corps since graduating from the U.S. Military Academy in 1933.

During WW II, he was Signal Officer, 5th Infantry Division in Iceland and the European Theater of Operations (ETO), later was CO of the Division's Special Troops, and Signal Officer of the XXII Corps in the ETO.

Returned to the States in 1945, he became Deputy Signal Officer, Hq., 2nd Army in Memphis, Tenn., then commanded the 1st Signal Service Group at Camp Polk, La., and the 51st Signal Operations Battalion at Fort Meade, Md. After attending the Air War College, he was a staff officer in the Operations and Training Division at the Pentagon for two years until 1948. Then he served in Washington, part of the time as assistant secretary of the General Staff and was graduated from the National War College in 1953.

Other assignments: Signal Officer, Hq., IX Corps in Korea; Signal Officer, Hq., Korean Communications Zone, and chief, Communications Branch, J-3 Division, Far East Command in Japan (1953-55), CSigO, Hq., CONARC, Ft. Monroe, Va.; CO, USA Signal Training Center, Ft. Gordon, Ga.; and Deputy Chief of Staff, Communications and Electronics, Hq., North American Defense Command, Ent AFB, Colo. (1955-62).

Col Wallace M. Lauterbach

Col Wallace M. Lauterbach, leader of the U.S. Army Strategic Communications Command since July 1963, was formerly Signal Officer, 8th Army in Korea. From 1958-62, he was executive officer to the Chief Signal Officer (CSigO), Department of the Army. Career highlights:

U.S. Military Academy graduate (1941) . . . served with 125th Radio and Intelligence Company, Ft. Lewis, Wash., and then the 115th Signal Radio and Intelligence Company, Presidio of San Francisco . . . was executive officer for CSigO . . . assigned to Hq., Western Defense Command, Presidio of San Francisco . . . Signal Intelligence Officer, Hq., 10th Army for Okinawan campaign . . . .

Chief of Organization and Training, Army Security Agency, Arlington Hall (Va.) Station (1945) . . . attended University of Illinois for M.A., electrical engineering . . . assigned as chief, Training Division for Armed Forces Special Weapons Project, Sandia Base, N.Mex. . . .

Chief, Communications Liaison Branch, OSigO (1949) . . . military assistant to telecommunications adviser to the President . . . director, Communications Electronics, Armed Forces Staff College . . . attended Army War College, then served a tour in Japan as chief, Army's Communications Division.

DoD Creates Technical Data Control Council

(Continued from page 1)

scribed by the Assistant Secretary of Defense (Manpower) and the ASD (Comptroller), respectively; 5) to recommend organizational structure changes; and 6) to formulate policies for promulgation through DoD directives and instructions, and revisions to the Armed Services Procurement Regulation (ASPR).

Cochaired by Dr. Eugene F. Fubini, Assistant Secretary of Defense (Deputy Director, Research and Engineering), and Thomas D. Morris, Assistant Secretary of Defense (Deputy Director, Research and Engineering), the Council consists of the Departmental Assistant Secretaries for R&D and of Installations and Logistics.

Appointed by the cochairman, the vice chairman devotes his primary time to the work of the Council. James W. Roach, Assistant Director for Engineering Management in the Office of the Director of Defense Research and Engineering, has been selected for this assignment.

Among responsibilities of Mr. Roach are to coordinate activities of the following DoD offices with respect to matters subject to review and approval of the Council:

- The Director of Technical Information, DDR&E, Walter M. Carlson, in respect to all present functions.
- The Director of Technical Logisctis Data and Information, John Riordan, in respect to all present functions.
- The Deputy Assistant Secretary of Defense for Procurement, Graeme C. Bannerman, in respect to all matters of acquisition of and rights in data and procurement regulations relating thereto.
- Executive Director, Logistics Services, Defense Supply Agency, Maj Gen Francis C. Gideon, in respect to the administration of the Defense standardization program, planning for item entry control, and future improvements in the cataloging of Defense materiel.

Deputy Secretary of Defense Vance instructed regular monthly reports of the progress being made in each area by the Council. The first report is due on Apr. 15.

Further explaining the necessity of the Council, the memorandum stated that it has become apparent that much greater progress is essential in order to assure:

- "That we develop or acquire only that data which is needed to support well-defined research, development, procurement, production, operation and maintenance requirements.
- "That we acquire such data in the most economic, usable form.
- "That we devise automated retrieval and dissemination techniques which will make readily available to DoD agencies—as well as to authorized members of industry and the public—all information acquired at Government expense which will enhance future development and logistic support of military weapon systems."

Deputy Secretary Vance stated further that significant progress has been made in improving DoD practices in acquiring, utilizing and disseminating scientific reports, development and test reports, drawings, standards, specifications, manuals and other technical information.

In view of the $2 billion annual investment of the DoD in technical information and data, he said that "These are matters of immediate and daily concern to research and engineering and to logistics agencies of the Military Departments. Numerous projects to improve data management are in process, and many more are planned for initiation."

Missile Command Names New Lance Project Manager

The Army-industry team developing the high priority Lance missile system at the U.S. Army Missile Command, Redstone Arsenal, Ala.. is now headed by Lt Col Walter E. Mehlinger.

The new project manager succeeded Col W. W. Holmes when he retired from active duty Mar. 31, the opening date of the Second Lance Quarterly Status Review at Missile Command Headquarters. Lt Col Mehlinger, backed by 12 years in Army missile work, will report directly to Brig Gen Charles W. Eifler, deputy CG for Land Combat Systems.

Attending the Lance review were officials from the Department of the Army, the Combat Developments Command and several elements of the Army Materiel Command. Officials from the weapon system's prime contractor, Ling-Temco-Vought, and subcontractors also attended.

The Lance, first Army missile system to use a prepackaged storable liquid propellant, is being designed to provide greater fire support to Army divisions and to replace the Lacrosse, Honest John and possibly the Little John.

Lt Col Walter E. Mehlinger

Lt Col Mehlinger formerly served with General Eifler in the Office, Chief of Ordnance, Washington, D.C., and was a member of the Project 80 committee responsible for the Army-wide reorganization in 1962, when the Army Materiel Command was created.

Graduated in 1942 with a B.S. degree in civil engineering from the Citadel, Charleston, S.C., he received an M.S. degree in nuclear physics from the University of Chicago in 1948.

Battelle Institute Publishes Technical Challenge

Army research planners concerned with the problem of how to recognize technological opportunities presented in proposals may obtain a folder that presents the views of top management at Battelle Memorial Institute.

Offered free to Government, industry and other interested agencies, the folder has a question as its title: Can a Corporation Recognize all Technological Opportunities and Challenges?

The printed discussion of this topic deals with planning and management of research and development integrated with corporate objectives and overall objectives. Incidentally, this happens to be the subject under intensive consideration by a specially established Army Research Council in recent weeks. The Council is scheduled to file its report in the near future.

The Battelle document touches upon critical factors in decisions on corporate activity, the flow of ideas, and funding considerations. Copies of the folder may be obtained from Battelle Memorial Institute, 505 King Ave., Columbus, Ohio 43201.

60 Top Leaders View Chemical Information Problem

Modern methods of handling chemical information, including the U.S. Army Chemical Information System (CIDS), provided the interest that drew more than 60 leaders in Federal Government, professional societies and industry to a Mar. 5-8 conference.

Sponsored by the National Academy of Sciences-National Research Council, Division of Chemistry and Chemical Technology, the meeting was held at the Airlie House, Warrenton, Va. Arrangements were made by the Committee on Modern Methods of Handling Chemical Information.

Committee Chairman Dr. George P. Hager, dean of the College of Pharmacy, University of Minnesota, presented one of the major addresses on "The Chemical Information Problem." Defense Director of Technical Information Walter M. Carlson spoke as the top representative of Government.

Background information on the role of professional societies in dealing with the chemical information problem was presented by Dr. Robert V. Cairns, who presided at the opening session. He is chairman of the Division of Chemistry and Chemical Technology, NAS-NRC.

Industry's interest in chemical information as a commodity was discussed by Byron Riegel, director, Chemical Research, G. D. Searle & Co. Other industrial speakers included Frank Landee of Dow Chemical Co., Dr. Edward H. Sussenguth, Jr., and Edward N. Adams, International Business Machines, Thomas J. Watson Research Center; and Paul Horowitz, Eastman Kodak Research Laboratory.

"Information Needs of the Chemist" was the topic of a major presentation by Kenneth H. Zabriskie, director of research, Chemical Abstracts Service. Edward Dossum, Ohio State University, Fred Tate and Dr. Michael J. Lynch spoke also as CAS representatives.

The Chemical Notations Systems Project at the University of Massachusetts was discussed by Dr. I. M. Hunsberger, and the Army Chemical Information Data System was explained by Peppino N. Vlannes, deputy to the Director of Army Technical Information, Col Andrew A. Aines. Dr. David Jacobus, Walter Reed Army Institute of Research, spoke on the Army Chemical Typewriter (ACT), developed under his leadership at WRAIR.

The U.S. Department of Commerce was represented on the speaker's list by Herbert Koller of the Patent Office. He participated with Fred Tate, CAS assistant director and acting editor, Dr. Hunsberger and Mr. Vlannes in reviewing the current status of plans to develop modern methods of handling chemical information.

Dr. Stephen Tauber of the Data Processing Systems Division of the National Bureau of Standards discussed the work and interests of his agency in improving chemical information data processing techniques.

"Recent estimates made by the Chemical Abstracts Service," stated Dr. Hager in discussing the chemical information problem, "indicate that the annual output of chemical literature is now doubling every 7.8 years. The cumulative bank is doubling every 11 to 12 years.

"In 1975, the total knowledge of chemistry and chemical engineering will be twice what it is today. At that time, the chemical information system problem will be at least twice as great unless some radical changes are made in the chemical information transfer chain."

All of the major speeches were crammed into the opening day agenda. The remaining three days of the conference were devoted to intensive working sessions to discuss how coordinated effort between Federal Government, professional societies, educational institutions and industry can be achieved to advance chemical information techniques.

Dr. Edward Wichers, executive secretary, Division of Chemistry and Chemical Technology, National Academy of Sciences National Research Council, was in charge of arrangements for the conference.

Asked if the NAS-NRC has plans for a series of similar high-level conferences, he said that the Airlie House discussions were an exploratory effort to clarify the magnitude of the overall problem and to establish a basis for closer cooperation between all groups interested in seeking progressive action.

AROD Cites Scientific Aide for Meritorious Service

More than a decade of dedicated, efficient service has earned Mrs. Grace C. Boddie, U.S. Army Research Office, Durham, N.C., the Meritorious Civilian Service Award, the Army's second highest civilian award.

Employed as chief of the Scientific Services Office at AROD, she was cited for "exceedingly meritorious service" with the Office of Ordnance Research, U.S. Army, and its successor, the U.S. Army Research Office—Durham from Aug. 3, 1953 to Jan. 7, 1964.

Lt Gen Albert Watson, CG of the Third Army, signed the citation and the award was announced by Col Nils M. Bengtson, AROD commander.

The citation recognized her service as executive secretary of the Army Mathematics Steering Committee, Senior Scientists Steering Group, Junior Science and Humanities Symposia Advisory Council, and as comptroller and chief, Scientific Services Office, stating:

". . . Mrs. Boddie has displayed unlimited technical ability, an inexhaustible capacity for work, the professional acumen and competence necessary to guide her associates in their varied research and development programs, and a most sincere willingness to assist. Her outstanding performance of duty reflects great credit upon herself and the Department of the Army."

Mrs. Boddie is an accredited college teacher in the State of Virginia and a certified member of both the North Carolina Bar Association and the American Bar Association. From 1935 to 1943, she served as a teacher and principal in the Virginia public school system. Five years later she retired from active duty, U.S. Navy, with rank of lieutenant commander.

Grace C. Boddie

Graduated from Farmville (Va.) State Teachers College in 1943 with a B.S. degree in education and social sciences, she was awarded an LL.B. degree from Duke University Law School in 1951.

Prior to joining the Office of Ordnance Research in 1953, she was a practicing staff attorney in the Duke University Legal Aid Clinic. She has received three Outstanding Performance Ratings and two cash awards for Sustained Superior Performance.

DDC Passes Document Dissemination Role to OTS

Dissemination of all unclassified scientific and technical documents generated by the Department of Defense is being transferred to the office of Technical Services, Department of Commerce, from May 1 to July 1.

Terms of the important agreement between the Departments of Defense and Commerce were announced Mar. 12 at a press conference moderated by Walter M. Carlson, Defense Director of Technical Information.

Savings in cost under the new system are in accordance with the President's economy program, it was stated.

Complexities of the transfer of functions currently divided between the Defense Documentation Center and the OTS are being considered by an OTS-DDC working group that is meeting almost daily. Full-scale operation by the target date of July 1 may be impractical, it was stated.

One of the problems is a suitable building for the expanded OTS function. OTS is located in the Providence Hospital Building in Souhteast Washington, and it has been suggested that a site nearer Cameron Station, where the DDC is situated, would be better.

The recommendation responsible for the change was made by Armen Gregory Abdian as a consultant before he recently became deputy director of the DDC. The plan provides that OTS will process for the DDC all Defense unclassified technical reports which have no limitations on their distribution.

OTS functions as a unit of the National Bureau of Standards' Institute for Applied Technology. U nder the agreement, OTS will catalog the Defense reports, program them for retrieval through DDC's automated data processing system, and provide them on request, without charge, to Defense users. OTS will be reimbursed at cost by the Defense Department. OTS customers will pay as at present.

Both DDC and OTS retrieval data collections will be stored in the new system. Initially, this total will represent more than 300,000 reports, a figure expected to grow at the rate of about 50,000 annually.

The thousands of engineers and scientists whose organizations are authorized recipients of DDC services will continue to request both classified and unclassified documents directly from the DDC, using the same machine forms they have used under the old system, the announcement said.

DDC Administrator Dr. Robert B. Stegmaier, Jr., stressed that point, saying: "The working agreement in no way changes the missions and functions of DDC. By transferring a large workload to OTS, we will have manpower available to speed up the announcement and dissemination of the increasing number of classified and limited distribution documents.

"For both our customers and contributors, there will be no change in procedures—only better service."

Bernard M. Fry, director of the OTS Technical Information Center, said: "This joint venture is the initial approach toward a more unified Federal document distribution system—one which promises substantial economies as well as improvements in service."

In that OTS will make use of the new computer system just installed by the DDC, the system will assure speedier service to customers, it was stressed.

Discussions leading to the agreement involved Walter M. Carlson, Dr. Donald A. Schon, head of the Institute for Applied Technology, National Bureau of Standards, Dr. Stegmaier and Mr. Fry. Signatories were Rear Adm Joseph M. Lyle, USN, Deputy Director of the Defense Supply Agency, and Dr. Schon.

Army-Industry Exhibit Shows VTOL Aircraft Trends

Army aviation's trend towards gas-turbine power and VTOL aircraft was emphasized in a joint Army-industry exhibit Mar. 2-5 at the Ninth Annual Gas Turbine Conference and Products Show, Houston, Tex.

For the third successive year, the Army Aviation and Surface Materiel Command (AVSCOM), St. Louis, Mo., teamed with major manufacturers on exhibits. An estimated 1,200 persons from the United States and foreign nations attended the show, sponsored by the Gas Turbine Power Division, American Society of Mechanical Engineers.

AVSCOM was originally invited to participate by R. Tom Sawyer, editor of *Gas Turbine Magazine*, and treasurer-exhibit director of ASME's Gas Turbine Division. This year the Army-industry exhibit filled an area some 90 feet long and included:

A full-scale model of the T-63 engine developed for the LOH program by Allison Division, General Motors Corp.; a full-scale lift fan from General Electric and a model of the Army flight research vehicle with lift fans; a full-scale working cutaway model of the Lycoming T-53 aircraft turbine; a full-scale model of Solar's Titan auxiliary gas-turbine power unit; a 12-foot-long model of the XV4A Humming Bird VTOL; and a 6 by 8-foot rigid rotor display by Lockheed.

Among other exhibits were a 5-foot model in the S-64 Skycrane helicopter in Army colors, complete with personnel, fuel cell carriers and other equipment by Sikorsky; a 5-foot-long animated CH-47A Chinook aircraft model and plastic rotor blade from Vertol Division, Boeing Aircraft; a hot-cycle-unit T-63 by Aircraft Division, Hughes Tool Co.; and a 4-foot model of the Bell UH-1B Iroquois, and the T-65, built by Continental Aviation and Engineering Co. as the back-up engine for the LOH program.

VISITORS VIEW AVSCOM display at joint Army-industrial Ninth Annual Gas Turbine Conference and Products Show held in March at Houston, Tex.

DoD, Industry Officials Attend ADP Seminar

Department of Defense key officials and industry leaders participated in the second automatic data processing (ADP) seminar for general and flag officers at the U.S. Army Electronics R&D Laboratories (USAELRDL) at Fort Monmouth, N.J., Mar. 2-6.

The seminar was designed to acquaint the officers with capabilities, trends, implications and use of modern data processing techniques and equipment. It was cosponsored by the chief of Communications-Electronics, Maj Gen David P. Gibbs, and the commanding general of the U.S. Army Signal Center and School, Brig Gen John C. Monahan.

Presentations stressed the future needs and interests of military personnel who may have top management, command or staff responsibility for military functions and agencies which are now, or will be, automated. Specific instructions to provide "hands-on-the-computer" familiarization with ADP were provided.

Assistant Secretary of the Army for Financial Management E. T. Pratt, Jr., gave the keynote address. Assistant Secretary of Defense (Installations and Logistics) Thomas D. Morris moderated an industry panel on "The Impact of Electronic Computers on Industry."

Industry panelists included William C. Norris, president of the Control Data Corp., Minneapolis, Minn.; Robert Pfenning, comptroller of the General Electric Co.; and Isaac L. Auerbach, president of the Auerback Corp., Philadelphia, Pa.

Economic, managerial and defense implications of electronic computers and associated communications were discussed by Brig Gen David Sarnoff (USA, Ret.). During World War II, General Sarnoff, now chairman of the Board of the Radio Corp. of America, served in the Office of the Chief Signal Officer until 1944. He then served as special consultant on communications to General Eisenhower at Supreme Headquarters Allied Expeditionary Forces, Europe.

Other program participants included Maj Gen Frank W. Moorman, CG, USAELRDL; Brig Gen James E. Landrum, Jr., special assistant for Army Information and Data Systems, OCofS; Maj Gen Kenneth G. Wickham, CG, U.S. Army Data Services and Administrative Command; and Brig Gen Louis B. Grossmith, Jr., director, Data Automation, Department of the Air Force.

A command and control discussion, moderated by General Bruce C. Clarke (USA, Ret.), former Commander-in-Chief, U.S. Army, Europe, and a critique and summary of the seminar by General Gibbs and General Barksdale Hamlett, Vice Chief of Staff, highlighted the closing day.

Other Army participants included Lt Gens William J. Ely, Russel L. Vittrup and James L. Richardson, Jr.; Maj Gens George W. Power, Dwight B. Johnson, Richard J. Meyer, Walter A. Jensen, Arthur W. Oberbeck and Edward L. Rowny;

Brig Gens Walter E. Lotz, Jr., Bruce E. Kendall, Patrick H. Devine, Henry K. Benson, Jr., William M. Connor, Lawrence B. Markey, Richard P. Scott, Elias C. Townsend, Robert L. Ashworth and Col (Brig Gen selectee) Howard F. Schlitz.

Navy participants included Rear Adms Walter H. Baumberger and Robert H. Weeks. Air Force and Marine Corps representatives were Brig Gen Olbert F. Lassiter and Col (Brig Gen selectee) John W. Antonelli, respectively.

Lt Gen James L. Richardson, Jr., Deputy Chief of Staff for Personnel, one of 24 general officer students at recent ADP Seminar, reviews computer program at USAELRDL. The instructor is Lt Frederick C. Cowburn, assigned to the ADPS team at the U.S. Army Signal Center and School.

ARO Working Group Discusses Computer Technology

Computer technology advances and applications to Army requirements in terms of equipment and supporting research were discussed at the recent second annual meeting of the Army Research Office Working Group on Computers in Washington, D.C.

Sponsored by the Army Mathematics Steering Committee (AMSC), the meeting was attended by about 140 representatives of Government and the computer industry. It was conducted at the Harry Diamond Laboratories and the National Bureau of Standards.

The purpose of the working group is to exchange information among users of other-than-business computers and to inform the AMSC of computer, numerical analysis, and other mathematical requirements.

In addition to speakers from various Army installations, experts who presented papers included R. W. Hamming, Bell Telephone Laboratories; S. N. Alexander, J. H. Wegstein, and C. Witzgall from the National Bureau of Standards; H. K. Skramstad, Naval Ordnance Laboratory, Corona; and B. Noble and L. B. Rall from the Army Mathematics Research Center.

COMMITTEE MEMBERS who planned and conducted Army Research Office (ARO) Working Group on Computers Symposium include (l. to r.) George Reitwiesner, National Bureau of Standards; Dr. Badrig Kurkjian, Harry Diamond Laboratories (HDL); Dr. Francis Dressel, ARO-Durham; and Dr. John Giese, Ballistic Research Laboratories, Aberdeen Proving Ground, Md. Richard Butler (not shown), HDL, also served on the program committee.

CRD Directs Intensification of Reserve R&D Units Program

Intensification of effort to capitalize on the full potential of highly trained scientific and engineering talent in Army R&D Reserve Units is being directed by Chief of Research and Development Lt Gen William Dick, Jr.

"A recent survey of the members of the U.S. Army Reserve Research and Development Program," General Dick stated early in March, "disclosed that the exceptional scientific and engineering background of these individuals merits close scrutiny to ensure greatest utilization of their skills.

"Use of these officers and enlisted men in appropriate R&D agencies during their two weeks Active Duty for Training, and assignments as mobilization designees, where possible, is strongly recommended.

"I have directed my staff to study the USAR R&D Program as it exists today, to review the relationship of the program to the Army's Reserve and mobilization plans and, in consideration of the unique potential of these Reservists, to make recommendations that will ensure their most effective use to accomplish the Army's objectives."

The survey revealed that the Army R&D Reserve Units have an overall high educational level. About 97 percent of the members have at least a bachelor of science degree. Roughly 20 percent have Ph. D. degrees, 33 percent have an M.S. degree, and 14 percent have taken graduate courses toward doctorates. About 45 percent have taken or are currently enrolled in courses for M.S. or M.E. degrees.

Forty percent are qualified or are actively engaged in the engineering fields, 21 percent are skilled in the physical sciences or architecture, and 22 percent have degrees in the medical sciences, agriculture, forestry and biological sciences. Seventeen percent fall into the categories of social sciences, business, law and the arts.

Further analysis shows that of 22 veterinarians, 16 have master's degrees in such fields as pathology or genetics. Many of the engineering administrators have advanced business or economics degrees in addition to engineering degrees.

The 38 specialized fields represented among members of the R&D Reserve Units Program include astronomy, agronomy, biochemistry, dentistry, engineering, geology, linguistics, mathematics, metallurgy, operations research, pathology, physics, psychology and statistics.

Recognized by Army leaders over the years as the "strength in depth" of the research and development program, R&D Reservists presently number nearly 1,200 members in 70 units active in 33 states. Chiefly officers, they represent a cross-section of talent in the science and engineering fields.

Many Unit members hold top responsibility in industry as managers or administrators. Others are University department heads, professors, project engineers, key scientists or engineers in laboratories, and leaders in commercial enterprises.

Only personnel qualified by education and experience to perform professional scientific and engineering work in specified fields may be assigned or attached to an Army Reserve R/D Unit. Final approval of applicants is determined at Department of the Army level.

Each Unit must have at least 10 men and, since no maximum has been set, one unit numbers 80. Twelve meetings annually are required, but some Units meet 20, 24, 36 or 48 times a year and, in addition, work on special projects.

Procedures for organization of USAR R&D Units, qualifications for members and other pertinent information are set forth in AR 140–305.

Purpose of the program, which is administered by the Office of the Chief of Research and Development, is to provide an organized means of training and developing a network of scientists and engineers who are knowledgeable about current developments in military technology, and who can enhance the Army's R&D mission in

LWL Chief Gets Army Exceptional Service Award

Edward K. Kaprelian, technical director of the U.S. Army Limited War Laboratory since it was established in June 1962, has won the U.S. Army Decoration for Exceptional Civilian Service, the highest honor that can be conferred on a civilian employee.

Chief of Research and Development Lt Gen William W. Dick, Jr., presented the award at a ceremony at Aberdeen Proving Ground, Md., where the Limited War Laboratory recently moved into modernized facilities.

The citation stated that his exceptional performance of duty was during the periods August 1946 to March 1952 and July 1957 to April 1962, as chief, Photo Branch, Signal Corps Engineering Laboratories, and later deputy director, Research, U.S. Army Signal Research and Development Laboratories, Fort Monmouth, N.J.

Credited by the award with "many significant and outstanding engineering and scientific contributions in the field of physics, optics and communications-electronics, Mr. Kaprelian enjoys an international reputation in his field with numerous technical publication and patents to his credit. His career reflects great credit upon himself and the United States Army."

From 1955 to 1957, Mr. Kaprelian was president of Kaprelian Research and Development Co., was director of Squier Laboratory, USAERDL, from 1946 to 1952 and Director of Research and Engineering of the Kalert Co. from 1952 to 1955.

A graduate of Stevens Institute of Technology, with a degree in mechanical engineering, he studied law and physics at George Washington University in Washington, D.C., and was a guest lecturer at Columbia University. He holds numerous patents for inventions plus a number of applications for patents pending in this country, Great Britain, Germany and Japan.

A former president and director of the Society of Photographic Scientists and Engineers, he is a Fellow of the Physical Society of London, the National Academy of Sciences, American Society of Mechanical Engineers, Optical Society of America, Society of Motion Picture and TV Engineers.

Edward K. Kaprelian, technical director of U.S. Army Limited War Lab, receives Decoration for Exceptional Civilian Service from Lt Gen W. W. Dick, Jr., Chief of Research and Development. Mrs. Kaprelian observes.

peacetime research and during a national emergency.

Generally, education and experience in physical, engineering, medical and biological sciences, including pertinent fields of psychology and mathematics, are needed to qualify.

General Dick's Assistant for Reserve Affairs, Lt Col William B. Murray, has been visiting each of the R&D Reserve Units during the past few months and compiling statistics on their manpower resources.

While the statistics cited earlier illustrate the unusual caliber of the R&D Reserve personnel, close scrutiny of records of individuals further clarifies their civilian importance and potential to Army R&D.

Attached to the 1332nd USAR R&D Unit, New York City, for example, is Brig Gen John E. Vance, Army Chief Scientist from October 1953 to August 1955, and presently head of the Department of Chemistry at New York University.

Dr. Vance is a veteran member of the Army Scientific Advisory Panel and has a mobilization designation as Assistant to the Chief of Research and Development. Released from Active Duty in 1946, his assignments with the Department of the Army in Reserve status have included Research and Development Coordinator and Staff Officer, Office Assistant Chief of Staff, G-4, and Assistant Chief for Guided Missiles, Special Weapons Branch.

Commanding officer of the 2396th Unit in Columbus, Ohio, is Col Harry B. Goodwin, assistant chief, Physics and Metallurgy Division at Battelle Institute in Columbus.

The 6157th Unit at Davis, Calif., is headed by Col Raymond A. Bankowski, professor of Veterinary Medicine, University of California at Davis. He has M.S. and Ph.D. degrees in comparative pathology.

Lt Col Wilfred G. Bassett, of the 5006th Reserve R&D Unit, Jackson, Mich., not only has his own law firm in Jackson but is a member of the Michigan State Legislature.

Examples of R&D Reserves personnel similar to those cited could be continued at considerable length, the OCRD survey has revealed. Because of this high level of competence, many Reserve Units have scientific and other special projects in progress based on proposals submitted to the Chief of Research and Development.

Numerous activities are arranged to keep members informed on R&D.

Dr. John E. Vance (Brig Gen, Army R&D Reserves) is head of the Chemistry Department, New York University and member of Army Scientific Advisory Panel. From 1953 to 1955, he was Chief Scientist, Dept. of Army.

The 3252nd Unit at Oak Ridge, Tenn., for example, is planning its fourth 2-week Seminar in Nuclear Sciences, Aug. 9-22, at Oak Ridge. Previous seminars have been held in 1960, 1962 and 1963. Arrangements are handled completely by Oak Ridge Reservists.

Approximately 80 will attend this year from other R&D Reserve Units, the regular Army, the Navy and Air Force.

The stated purpose of the Seminar in Nuclear Sciences is: "To provide Reserve officers having a scientific or technical background with up-to-date information in the field of nuclear science, with particular reference to nuclear power reactors and their technology and other military applications. Radiation and radiation effects will be emphasized."

Commanding officer of the Oak Ridge Unit is Col William Y. Gissel, a chemical engineer who has been in the R&D Reserve Unit Program since January 1949.

In Corvallis, Ore., the 6161st R/D Reserve Unit is engaged in a number of projects. One is the search for a method to preserve such biological tissue as pollen, cause of hay fever and asthma.

The Unit plans to employ the low-temperature pretreatment or dry-freeze method to prolong the life of pollen. This technique is common in the preservation of viruses, bacteria, blood plasma and enzymes, but has been used very little in germ plasm.

Prolonging the life of the pollen would enbale scientists to discover more easily why it causes hay fever and asthma. Unit members will utilize facilities of Oregon State University's Science Library, Cooperative Seed Laboratory and the Forest Research Laboratory for their research.

Another project of the 6161st Unit is measuring the thermal properties of specific soil types, that is, evaluating the heat obtainable from soil. In isolated Army installations, cheaper sources of heat are necessary to reduce costs of transportation of fuel, and members are investigating the possibility of a fireproof pump to extract heat from soil and air.

The Corvallis Unit also is making a mathematical analysis of heat and is working on a better bait for the housefly — a method not involving chemicals or insecticides that might contaminate food and harm humans or animals.

Within the broad guidelines estab-

(Continued on page 12)

Members of 3252nd USAR R&D Unit review literature in preparation for Army Nuclear Science Seminar, tentatively scheduled for Aug. 9-22, at Oak Ridge, Tenn. Pictured (l. to r.) are Lt Roy D. Bundy; Capt William J. Martin; Col William Y. Gissel, CO; and Capt Victor C. A. Vaughen.

Luevano Follows Ignatius as ASA (I&L)

Daniel M. Luevano has succeeded Paul R. Ignatius as Assistant Secretary of the Army for Installations and Logistics, following nomination Feb. 29 by President Lyndon B. Johnson.

Mr. Ignatius became Under Secretary of the Army when former Under Secretary Stephen Ailes was elevated to Secretary of the Army, succeeding Cyrus R. Vance, now Deputy Secretary of Defense. (See page 3 of the February 1964 and page 7 of the March 1964 issues.)

A 40-year-old native of Los Angeles, Calif., Mr. Luevano comes to Federal service from 3½ years as chief deputy director, with general administrative responsibility, Department of Finance, State of California, in Sacramento.

In this capacity, he exercised general supervision and direction of California's State Development Plan Program, which charts the State government's long-range economic development and physical planning activities.

Daniel M. Luevano

Credited with a major role in activities of the California Economic Development Agency, he served also as chairman of the State Allocation Board, which is concerned with public works projects, primarily school construction.

Other major positions he has held include: chairman, State Board of Control, which acts on claims against the state; member, World Trade Center Authority, which promotes domestic and international trade; member, State Wild Life Conservation Board; member, Teachers' Retirement System; and member, Governor's Coordinating Council on Urban Policy.

Mr. Luevano holds a B.A. degree in Political Science from the University of California at Los Angeles (1948), and LL. B. degree from the San Francisco Law School (1959), and is a member of the State Bar of California. From 1948 to April 1950 he worked as a technical instructor for the Department of Commerce, and as an elections examiner for the National Labor Relations Board until May 1951.

After serving a year on the magazine staff of *Labor-Management Forum*, a publication of the CIO-California Industrial Union Council in Los Angeles, he was an editorial consultant for industrial clients. During this period, he covered the Republican and Democratic National Conventions of 1952 for 14 California weekly newspapers.

In June 1954 he began a period of about five years service with the University of California in Berkeley as an administrative analyst, first in the chancellor's office, then in the office of the president. He also was associated with the project to develop International House, a comprehensive program for foreign students at UCLA.

From June 1959 to August 1960, he was consultant to the Assembly Interim Committee on Ways and Means, California State Legislature.

CS Commission Sponsors Institute on Management

An Executive Institute on Management of Scientific and Engineering Organizations, sponsored by the Office of Career Development, U.S. Civil Service Commission, was held Apr. 6-10 for a selected group in Washington, D.C.

The stated purpose of the Institute, limited to about 30 civilian and military science and engineering executives in grades GS-15 and above (or equivalents), was "to increase awareness of management responsibility and to suggest ways the executive may more effectively perform as manager and administrator."

The program was developed with assistance of Federal science and engineering executives, academicians, and management experts in private enterprise. Resource lecturers and discussion leaders included leading authorities from Government, universities and industry.

Topics included: management planning for science and engineering programs; formulating and administering science and engineering budgets; direction and development of human resources; communications requirements of modern science and technology; management of in-house resources and contract programs; behaviorial science research and its implications for managers of research.

R&D Chief Directs Intensification of Reserve Program

(Continued from page 11)

lished by the Office of the Chief of Research and Development (OCRD), each Unit develops its own Reserve duty training program, based upon its size, qualifications, interests, experience of members, and the available facilities. R&D Film Reports, the Army Research and Development Newsmagazine and other information materials apprise members of current R&D programs and related interests.

Project assignments have a two-fold purpose: to develop technical knowledge of participants, and to contribute to the Army R&D mission. Retirement credits for work performed on assigned projects are prorated on the same hourly basis as credits for attendance at training assemblies.

While many Unit members are volunteers in that they have satisfied Reserve requirements, others with an obligation to fulfill also may join an Army R&D Reserve Unit. Other Service branches (Air Force, Navy) are welcome and all are represented in the nationwide program.

One of the problems now confronting the OCRD staff guiding the program is that not enough of the Reservists are designated for immediate mobilization in laboratories and other vital facilities in event of a national emergency. Mobilization designation requests must come from the Unit members or from laboratories or facilities which would need their professional experience.

The OCRD staff is encouraging these facilities to make use of skilled professionals in the local R&D Reserve Unit in their labs during the Reservists' 2-week tours of Active Duty (ACDUTRA). If the individuals are already mob des, they are assured a spot in such a laboratory.

Queries and requests may be addressed to Assistant for Reserve Affairs, Office of the Chief of Research and Development, Department of the Army, Washington, D.C. 20310.

Army Begins Testing on V/STOL Jet In California to Prove Lift Fan Concept

Characteristics of the lift-fan concept for vertical flight are being demonstrated in a series of tests of the U.S. Army's XV-5A Lift Fan Jet/STOL aircraft started last month at Edwards Air Force Base, Calif.

(In the July 1961 issue of this publication, Maj Joseph J. Muter, U.S. Army Transportation Corps, wrote an article on the potential of exhaust-driven lift fans to give jet aircraft V/STOL capability. He predicted that this type of aircraft might be produced within a decade.)

The XV-5A is currently labeled a research aircraft. It is one of several jet vertical and short takeoff and landing airplanes being considered by the Army for potential application to observation for target acquisition and for combat surveillance requirements.

U.S. Army XV-5A (V/STOL) Jet Research Aircraft

Designed to "live with the troops" in forward areas devoid of prepared landing strips, this type aircraft would combine relatively high speed (over 500 m.p.h.) with the VTOL versatility of a helicopter.

Two XV-5A research aircraft were built by Ryan Aeronautical Co. under a subcontract to General Electric Co. A contract awarded by the U.S. Army Mobility Command's Transportatoin Research Command (USATRECOM), Fort Eustis, Va., calls for the design and development of a research aircraft lift-fan propulsion system.

General Electric and Ryan have been studying the fan-in-wing concept for V/STOL aircraft since 1955. First tests of the full-scale fan were conducted in 1959. Since then, extensive tests at NASA and General Electric facilities have proven the reliability of the lift-fan propulsion system.

Major contributions to the development of the complete lift-fan system have been made by the U.S. Air Force and NASA through their support of basic fan techniques and testing, and the diverter valve development.

Under operating conditions for vertical flight, turbo jet exhaust will be directed to tip turbines that drive the counter-rotating fans "submerged" in the wings. These 5-foot diameter fans create columns of relatively cool low speed air for lift.

A smaller fan in the nose of the plane provides trim and pitch control. "Butterfly-type" doors are mounted on the upper wing surfaces to cover the fans during conventional flight.

Over 600 hours of wind tunnel tests with five different scale models, including more than 340 hours with a full-scale model, have proved the effectiveness of the basic design. Many of these tests were conducted at the Langley Research Center/NASA facilities in Langley, Va.

Support of the actual flight test program at Edwards is being provided by Republic Aviation Corp. under an agreement with Ryan. During the past decade, Republic, like Ryan and G.E., has devoted considerable technical attention to the development of vertical rising aircraft concepts involving many different configurations.

The XV-5A research program is one of more than half a dozen V/STOL research projects currently underway in the Army. TRECOM is the Army field agency concerned with the three tri-service programs and is conducting several other V/STOL research programs similar to the XV-5A.

OCRD Names Col Geery as Programs, Budget Chief

Col Billy B. Geery, backed by more than 10 years of major assignments in Army R&D, was promoted recently to chief, Programs and Budget Division, Office, Chief of Research and Development, Department of the Army.

Simultaneously with promotion Mar. 2 to his new rank, Brig Gen Victor W. Hobson, Jr., was reassigned as Deputy CG, U.S. Army Training Center (Infantry) at Fort Dix, N.J., setting the stage for Col Geery to become his successor. CRD Lt Gen William W. Dick, Jr., conferred General Hobson's new insignia of rank.

Col Billy B. Geery

Col Geery was assistant chief of the Programs and Budget Division from April 1963 to February 1964 and assistant chief of the Plans Division, OCRD, from August 1962 to April 1963. Following graduation from the Army War College, Carlisle, Pa., in 1960, he was engineer in charge of military assistance sites in Sarab, Iran.

Col Geery established the European U.S. Army Reserve Office in Frankfurt, Germany, in 1956 and served as its deputy chief from 1956 to 1959. From 1952 to 1956, he was chief, Research Branch and assistant chief of the Research Division, OCRD, forerunner of the Army Research Office.

During World War II, he served with the Corps of Engineers in Panama, and from 1945-47 was assistant operations officer at Los Alamos Laboratory, N. Mex. He also assisted in the first test of the atomic bomb.

Born Dec. 22, 1917 at Casey, Ill., Col Geery holds a B.S. degree in civil engineering from Kansas State University (1941) and an M.A. in international affairs from George Washington University, Washington, D.C.

U.S. Department of Defense Military Assistance Program

The Department of Defense Military Assistance Program is supporting and encouraging civic action projects in more than 25 countries throughout the world.

Civic action projects are those in which the military forces of a nation undertake activities which contribute to the economic and social development and strengthen the ties between the military and civilian communties.

The Military Assistance Program began formally to provide support for civic action through technical and material assistance in 1961. In countries such as the Philippines, Malaya and Greece, there had been prior indications of both the military and civilian benefits which closer civil-military relations provided.

The late President Kennedy, in a special message to the Congress on Mar. 22, 1962, stated: ". . . military assistance will in the future more actively emphasize internal security, civil works and economic growth of the nations thus aided."

The Military Assistance Program supported civic action projects in nine countries in fiscal year 1962, in 24 countries in FY 1963 and is assisting with projects in more than 25 countries in FY 1964.

Results of these programs are being continually evaluated and have provided numerous examples of benefits to the developing countries. These nations are facing serious problems in seeking economic and social progress despite subversive insurgency and in many cases without enough resources to meet even the most basic national needs.

The Department of Defense said that the example of United States military and civilian personnel as they work together to assist their foreign counterparts is not lost on the peoples of these countries.

Similar assistance, the Department of Defense pointed out, is urgently required from other developed countries if the stark gap between the rich and the poor nations of the world is to be prevented from widening. Together with the Agency for International Development, the Department of Defense will continue efforts to increase the civic action capability of local military forces throughout the Free World to perform well-conceived projects and increasingly meet their own needs as a result of initial U.S. assistance.

In several countries initial equipping of military engineer units has been sufficient to permit a continuation of useful public works without further U.S. assistance. Where there is an absolute requirement for U.S. assistance in order to launch a project, U.S. financing is divided between MAP and AID. MAP financing takes a form of equipment and training support and AID helps finance such costs as supplies.

Some of the major U.S.-aided civic action programs or projects under way in various countries include:

LATIN AMERICA—*Brazil:* Construction material and equipment for troops building 147 kilometers of highway. *Chile:* 100 foot medical launch. *Colombia:* 21 health centers/dispensaries in remote areas. *Ecuador:* Repair and construction of 200 kilometers of roads in eight locations; dam and water line for town of St. Helena; colonization Project Putamayo.

Guatemala: Road construction in Petan (approximately one-third of the land area of Guatemala); joint Ministry of Defense and Ministry of Education literacy campaign; joint Ministry of Defense and Ministry of Health well-drilling project.

Paraguay: Emergency repair to international airport at Asuncion; navigational markings in the Parana and Paraguay Rivers. *Peru:* Six road projects: Bagua-Rio Maranon, Ingenio-Rio Imaza, Ollantaytambo-Urubamba, Amparaes-Colca, Sandis-Tambopata, Atalaya-Manu.

FAR EAST—*Korea:* The 1964 program includes construction of 286 classrooms in addition to the 3,745 built since 1954, materials to aid in construction of 27 school kitchens, 10 sewer systems, additions to 12 hospitals in predominantly rural areas, equipment and supplies for six mobile clinics and assistance to public safety and welfare institutions.

Thailand: MAP and AID programs

USAELRDL's Dr. Weickmann Gains NAS Recognition

Dr. Helmut K. Weickmann

Dr. Helmut K. Weickmann, U.S. Army Electronics R&D Laboratory, Fort Monmouth, N.J., has accepted an invitation to participate in the National Academy of Sciences Panel on Weather and Climate Control.

Dr. Weickmann, chief of the Atmospheric Physics Branch, Meteorological Division, will participate not as a representative of the Army or USAELRDL. The invitation is an indication of the high esteem in which he is held by his professional peers and his well-established stature in the scientific community.

The National Academy of Sciences is a private organization of scientists and engineers dedicated to the furtherance of science and its use for the general welfare. Established by a Congressional Act of Incorporation 101 years ago last month, signed by President Lincoln, the Academy has maintained its private character but enjoyed a close and cordial relationship with the Federal Government.

Membership, originally limited to 50, has grown to over 650 and up to 35 new members are eleeted each year on the basis of distinguished and continued achievement in original research.

Under terms of the original charter, the Academy acts as an official adviser to the Federal Government. The NAS over the years has played an importnat role in the evolution of the Government's scientific agencies and development of scientific public policy.

Dr. Weickmann's work in climate control at USAELRDL has led to expansion of that facet of the Army's meteorological program. Son of an internationally-known German meteorologist, Ludwig Franz Weickmann, Helmut came to the United States in 1949 under the Paper Clip agreement which enabled German scientists to continue their work in the U.S.

Employed continuously with the Meteorological Division at USAELRDL since 1949, he became a U.S. citizen on March 3, 1958. In 1961, he received the Laboratories' first Laboratory Achievement Award. Formerly chairman of the Cloud Physics Committee of the American Geophysical Union, he is presently a member of the Committee on Cloud Modification of the American Meteorological Society. He received his Ph.D. degree summa cum laude in 1939 from the University of Frankfurt, Germany.

include: (a) Providing heavy equipment for military-civilian Mobile Development Units operating in the Northeast, north, and southern areas doing such things as building roads, operating health centers, drilling wells, repairing schools, surveying for reservoirs, aiding agriculture, distributing clothing, erecting radio and television towers and developing model villages;

(b) U.S. Naval Mobile Construction Battalion and four Seabee Technical Assistance Teams providing such assistance as grading roads and playing fields, building tables and benches for schools and playgrounds, distributing clothing and holding language classes in addition to their primary duties of airfield, dam and road construction.

Viet Nam: Projects at the hamlet and village level have been most successful, including such things as construction and equipping of schools, provision of medical treatment, drilling wells and increasing agricultural production. These projects are designed to meet the immediate needs of the people and day-to-day progress can be observed.

Joint U.S.-Viet Namese projects include MEDCAP (Medical Civic Action Programs) by U.S. medics and their Viet Namese counterparts treating civilians throughout the country; STAT (Seabee Technical Assistance Team), two 13-man teams each equipped with heavy construction machinery carrying out projects while training Viet Namese personnel; ECAD (Engineer Construction Advisory Detachment), a U.S. Army team working with local labor in underdeveloped communities; and CAMTT (Civic Affairs Mobile Training Team), a unit attached to U.S. Special Forces working with civilian irregular defense groups in building roads, schools, and other public improvements.

MIDDLE EAST, SOUTH ASIA—
Iran: Aided in providing vocational training schools, medical services, special civic action equipment including a water barge and locust control apparatus. In addition, the United States provided emergency grain which has been distributed with assistance of the Iranian Armed Forces transportation.

Jordan: Projects in Jordan are devoted to the Central Authority and East Ghor water developments, tourism and other programs. The key to economic development of Jordan is water and a majority of MAP-financed projects are directed toward this area. Projects include construction of earth dams across wadies, village water cisterns, lateral canals and access roads.

Pakistan: Quetta Area water supply project including two dams, access roads and underground conduits; Indus Valley road to connect Gilgit and Swat, and such miscellaneous projects as preventive medicine measures, antilocust campaigns, antiwild boar campaigns, education programs, oceanographic survey, support of civil aviation, and emergency evacuation, supply and rescue work.

Army Special Warfare Center Conducts 7th Guerrilla Exercise

Exercise Cherokee Trail II, the seventh in a series of guerrilla warfare exercises was conducted by the Army's Special Warfare Center at Fort Bragg, N.C., Mar. 23 to Apr. 2.

The exercise in the Uwharrie National Forest Area south of Asheboro, N.C., involved roughly 2,500 soldiers from the Special Warfare Center, the Special Warfare School, the 82nd Airborne Division, the XVIII Airborne Corps, the 5th Logistical Command, and the Seventh Special Forces Group.

Special Warfare School foreign students participating in the exercise included: Republic of Korea, 8; Republic of China, 4; India, 4; Iran, 10; Laos, 4; Republic of Philippines, 6; and Republic of Viet Nam, 17.

Civic Action Helping to Improve Image of U.S. Abroad

The image of the United States in the minds of hundreds of millions of citizens in foreign lands, as enhanced by aid programs that have been nurtured at the cost of $4 to $5 billion a year for more than a decade, is of continuing concern. Currently, U.S. Army Human Factors and Operations Research organizations are engaged in in-depth studies of how to improve that image. (See U.S. Army Establishes Human Factors Research Unit in Korea, February 1964 issue.) The Department of Defense Military Assistance Program is therefore considered of broad interest to the Army R&D community.

CSC Joins State Department in Sponsoring Seminar

Senior officials of Government agencies engaged in foreign affairs programs and educational institution leaders will attend the Third Seminar on International Operations, May 18-22, in Washington, D.C.

Sponsored jointly by the U.S. Civil Service Commission and the Foreign Service Institute of the Department of State, the Seminar seeks to provide a broad interagency perspective and exposure to critical problems and relationships which confront the Federal Government in international functions.

In addition to its stimulatory role, the Seminar is designed to serve as a means for creating a greater understanding of common interests and developing better teamwork among all Washington agencies engaged in foreign affairs programs and operations, information assessment, and national security affairs.

Civilians in grade GS-14 to GS-18, PL-313 appointees, military officers (rank of colonel/captain USN to general/admiral) and Foreign Service/FSR officers FSO/FSR 3 and above are eligible. Agency nominees must have operative line or staff responsibilities involving direction or preparation of various phases of programs in international affairs or operations.

Members of the scientific community with responsibilities for direction of international programs of their agencies are eligible for nomination.

The Seminar is intended primarily for executives based in Washington or the continental United States and is not necessarily for preparation of executives bound for oversea posts.

Among the issues, trends and problems which will be considered during the course of the Seminar will be:

- Approaches to the development of policy, plans and programs related to overseas projects.
- Government-wide effects of agency actions associated with contemporary and proposed programs, and the conceptual design of these projects with a focus on the national interest.
- The scope of foreign affairs and the national security affairs responsibilities of the interagency community and the management agency operations at Washington, national and overseas level.
- Issues related to policy making and program management at the national level, and an examination of techniques and problems of interagency coordination.
- A fuller comprehension of national policy direction in the foreign affairs field—role of the Department of State and Defense, the agencies, the Congress and the Executive Offices of the President.

Satellite Links Geodetic Control to Worldwide Network

Geodetic information that permits pinpoint locating of continents, islands and other landmarks separated by large bodies of water is being provided by a 40-pound satellite developed by the U.S. Army Corps of Engineers.

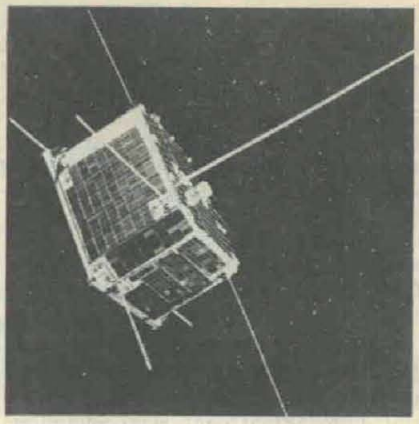
In orbit since January (announcement was delayed until last month), the rectangular-shaped satellite measures only 9 x 11 x 14 inches. It contains part of a system called SECOR (Sequential Collation of Range).

SECOR is being developed by the Corps of Engineers for its Geodesy, Intelligence and Mapping Research and Development Agency (GIMRADA), Fort Belvoir, Va. The system accurately fixes a ground position by radio measurements of distance from ground stations to the satellite, linking existing geodetic control to a single worldwide network.

System tests being conducted in the U.S. by GIMRADA provide an example of cooperative effort. The ITT Federal Laboratories, Nutley, N.J. a division of International Telephone and Telegraph Corp., fabricated the satellite.

It was lofted into orbit by the U.S. Air Force Space Systems Division. NASA, through its Goddard Space Flight Center Network Engineer and Operations Division at Greenbelt, Md., is furnishing orbital data and telemetry support to the GIMRADA test manager.

Orbital data enables the ground stations to acquire the ranging data (measured distances) for use in an automatic data reduction process by personnel of Army Map Service (AMS), Washington, D.C., to determine station positions.



IN ORBIT, ARMY SECOR satellite with system transponder, antenna, solar cells, batteries and telemetry, weighs approximately 40 pounds.

Engineered and fabricated by the Cubic Corp., San Diego, Calif., the ground stations are located at Fort Carson, Colo., Las Cruces, N. Mex., Stillwater, Okla., Austin, Tex., and Grand Forks, N. Dak. A British ground station team is also receiving training during this test phase and will join in the operational program.

Four or more of the identical ground stations make distance measurements by sending and receiving signals through the satellite transponder. With three of the ground stations located at accurately surveyed points, the precise position of the fourth can be located by mathematical computation.

Each ground station simultaneously determines its distance from the satellite by first transmitting a frequency-modulated, continuous—wave signal which is received and rebroadcast by the transponder. To permit compensation for errors introduced by ionospheric refraction of the SECOR signals, the transponder replies on two different frequencies.

Upon successful completion of current tests, SECOR ground stations will be deployed overseas by Army Map Service personnel to give Department of Defense geodesists more accurate data for use by military map makers. SECOR studies are also expected to yield precise facts on the earth's shape and gravitational field.

Missilemen Discuss Hybrid Propulsion at Redstone

More than 100 missile and rocket experts from Department of Defense agencies and industry discussed progress in hybrid propulsion technology Feb. 18 at Headquarters, Army Missile Command, Redstone Arsenal, Ala.

The conference was sponsored by the Defense Department's Advanced Research Projects Agency. Brig Gen H. P. Persons, Jr., Missile Command deputy CG for Air Defense Systems, gave the address of welcome.

ARPA officials, personnel of the Army, Navy and Air Force, the National Aeronautics and Space Administration and representatives of contractor firms engaged in hybrid propulsion programs funded by ARPA through the military services attended.

Participating dignitaries included Dr. Robert J. Heaston, ARPA, and William E. Sheehan, Office of the Director of Defense Research and Engineering, Washington, D.C.; Dr. Vincent J. Keenan, Institute of Defense Analysis; Robert W. Ziem, NASA; Harold E. S. Jersin and James A. Chalmers, Army Materiel Command; Dr. Bruce A. Reese, Purdue University; Dr. O. H. Johnson, Bureau of Naval Weapons.

Dr. Marvin J. Hall of the Missile Command's Directorate of Research and Development was chairman.

SECOR GROUND STATION units are rugged for field operations and are air-transportable. Antenna is mounted on radio frequency shelter; digitizing of the ranging and timing data is accomplished in the shelter shown in center; equipment storage and radio communications links are contained in the shelter on the left. Each station is self-sufficient with portable power, air conditioning.

Army Contract Awards Exceed $267 Million

Army R&D contracts awarded recently totaled $267 million, highest 4-week figure since the November issue of this publication reported a $390 million total.

FMC Corp., San Jose, Calif., received two contracts totaling $80,868,-318 for production of 1,682 M113A1 armored personnel carriers, 640 XM-106E1 mortar carriers, 265 armored flame throwers and 1,225 armored command posts.

Western Electric Co. was awarded a $70,607,900 contract for research and development efforts in support of the Nike X program. Prime contractor for Nike X, the company received a record $213 million award in October 1963.

Remington Arms Co., Inc., Bridgeport, Conn., received three contracts totaling $19,054,814 for production of various types of small arms ammunition. Four contracts totaling $18,434,-574 went to Olin Mathieson Chemical Corp., East Alton, Ill., for small arms cartridges.

A $12,926,407 contract to Day and Zimmerman, Inc., Philadelphia, Pa., modifies an existing contract for loading, assembly and packing of fuzes, boosters, primers, detonators, shells and rockets.

International Business Machines Corp., received a $13,819,484 contract for purchase of formerly leased punch card machines and card type computers. Sperry Rand Corp. won two contracts totaling $10,697,511. One was $4,959,230 to the Sperry Gyroscope Division, Great Neck, N.Y., for production of classified electronic equipment, and the other for $5,738,-281 to the Univac Division for purchase of formerly leased automatic data processing equipment.

RCA Electronics Data Processing Division will receive $5,585,191 for the purchase of formerly leased automatic data processing equipment. Saco-Lowell, New England Division of Maremont Corp., Saco, Maine, was awarded a $5,377,468 contract to produce 7.62 mm. M60 and M60C machineguns and components.

The Technical Materiel Corp., Mamaroneck, N.Y., will produce single sideband communications equipment for the Navy under an Army Electronics Materiel Agency contract for $4,820,130. General Motors Corp. received contract modifications totaling $4,293,313 to produce XTG-411-2A transfer assemblies and transmissions, and for continuation of engineering services for armored M114A1 vehicles and the self-propelled howitzer 155 mm. M109.

Thiokol Chemical Corp., Bristol, Pa., will continue to load, assemble and pack flares and Sergent missile motors for $4,056,082. Westclox Division, General Time Corp., LaSalle, Ill., will produce 196,200 ammunition fuzes for $3,211,402. General Dynamics will continue research and development on the Mauler and Red-eye weapon systems under contract modifications totalng $2,475,000.

Molded Insulation Co., Philadelphia, Pa., will produce 107,160 AN/AMP-4D Sonde Radio sets for $1,889,230. Collins Radio Co., Cedar Rapids, Iowa, was awarded a $1,444,-127 initial increment in a 3-year purchase of airborne weather avoidance radar.

Chrysler Motors Corp. will get $1,349,578 contract for production of 1,635 T-245A engines with containers for the ¾-ton M37 trucks. Kaiser Aerospace and Electronics Corp., San Leandro, Calif., was awarded a $1,300,190 contract for production of XM105 and XM106 missile motor nozzles and integral parts of first and second stages of the Pershing missile.

The Army will purchase formerly leased automatic data processing equipment from Minneapolis Honeywell Regulator Co. for $1,085,547. Amron Corp., Waukesha, Wis., will produce M103 cartridge cases under a $1,063,350 contract modification.

Aircraft Armaments, Inc., Cockeysville, Md., received a $1,042,878 contract modification for engineering services for the Nike Hercules guided missile system. Douglas Aircraft Co., Charlotte, N.C., was awarded a $1,011,805 modification for production of Nike Hercules. AVCO Corp., Richmond, Ind., will produce ammunition under a $1,006,668 classified contract.

CH-47A Chinook airlifts 12,500-pound howitzer, for what is believed the first time, during service tests conducted by Service Test Division of Airborne, Electronics & Special Warfare Board.

AMRA Scientist Authors Solid State Physics Book

Solid State Physics for Metallurgists, a book written by one of the Army's top scientists while attending the Imperial College of the University of London on a Secretary of the Army Fellowship for Research and Study, came off the press recently.

Dr. Richard J. Weiss, the author, joined the professional staff at Watertown (Mass.) Arsenal 13 years ago and is assigned to the new Army Materials Research Agency as a solid state physicist. Internationally known as an authority in his field, he has had articles published in several of the world's leading scientific journals.

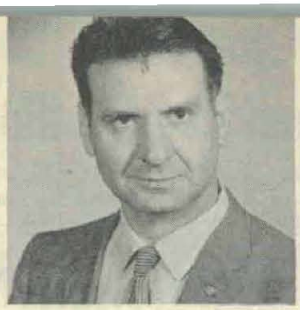
Dr. Weiss was a 1956 recipient of a Rockefeller Public Service Award in recognition of outstanding contributions to the advancement of science. The award enabled him to spend a year of study at the Cavendish Laboratory of the University of Cambridge in England.

Dr. Morris Cohen, professor of materials sciences at Massachusetts Institute of Technology, has written a foreword to Dr. Weiss' latest book, explaining that it is intended to help students to learn how qualitative and quantitative information concerning the electronic structure of matter is obtained from important classes of experiments.

Maj Gen F. H. Britton, director of R&D, U.S. Army Materiel Command, holds copy of new book *Solid State Physics for Metallurgists* presented to him by author, Dr. Richard J. Weiss.

William H. Baer

Dr. J. Thomas Cox



Solomon Goldfein

Gerald J. King

Jack R. Hildreth

ERDL Nominates 13 for CO's Medals

Thirteen nominees for the Commanding Officer's Medals for achievement in science, in technology and in leadership have been announced at the U.S. Army Mobility Command's Engineer Research and Development Laboratories, Fort Belvoir, Va.

Col J. H. Kerkering, commanding, announced that a medal for scientific achievement will be presented this year in addition to the technology and leadership medals awarded each year since the program began in 1957.

All 13 nominees will receive a $50 cash award. Three are eligible for the scientific achievement medal and five each for the others. Winners will be announced and the medals presented at the annual awards banquet, May 18, at Fort Belvoir.

Nominees for the Scientific Medal are Dr. J. Thomas Cox, Electrical Department; Gerard J. King, Military Department; and Solomon Goldfein, Technical Service Department.

Technological Medal nominees include Howard H. Mullins, project officer, Mobile Floating Assault Bridge-Ferry (MFAB–F); Jack T. Stevenson, Engineering Department; William H. Baer, Technical Services Department; Chandler Stewart, Electrical Department; and James E. Montgomery, Mechanical Department.

Leadership Medal nominees are George M. Strawn, R&D Procurement Office; Taylor H. Jefferson, Mechanical Department; Jack R. Hildreth, Electrical Department; Charles H. Hickman, comptroller and director of programs, and Ralph E. Armbruster, Engineering Department.

In selecting the scientific and technological award winner, emphasis is placed on individual accomplishment in science and engineering. Achievement in leadership is based on individual accomplishment in organizing or directing an activity or a group with efficiency and dispatch, while maintaining high group morale. Selections are made by the commanding officer and his directorate from nominations made by department chiefs and staff officers.

SCIENCE NOMINEES: Dr. Cox, employed in the Physics Research Laboratory, was nominated on the basis of his outstanding work in new measurement methods for optical properties of various new film materials, and for developing techniques for using these films as protective coatings for mirrors, antireflection films, interference filters and coatings for space applications. He also developed a very efficient Maser coating.

Employed in the Basic Research Laboratory, Gerard King was nominated for recognizing the importance of solid-state phenomena and structure defects in the behavior of solid explosives, and for suggesting and initiating a program in electron spin resonance. This technique has been applied for the first time to the study of metastable compounds.

Mr. Goldfine was nominated for work in the Materials Laboratory, developing a mechanical chemical equation of state through which it has been found possible to predict the expected life of plastic, plastic ceramic mixtures and metals at elevated temperatures.

TECHNOLOGY NOMINEES: As chief of the Bridge and Marine Group during most of 1963 and now project officer, MFAB–F, Mr. Mullins was nominated for his work on the MFAB–F. This extremely complex amphibian vehicle incorporates in its design a high degree of refinement of structural, mechanical, hydraulic and electrical systems and components.

Stevenson conducted in the Mechanical Engineering Branch an extensive study of all hydraulic components and systems used on commercial equipment, including evaluation of test procedures employed in determining acceptability of systems and components. He designed a hydraulic system considered suitable for a new family of tractors and scrapers and, after evaluating all test results, was able to establish a minimum standard

Jack T. Stevenson

Howard H. Mullins

Jack E. Montgomery

Chandler Stewart

Ralph E. Armbruster

George M. Strawn

Taylor H. Jefferson

Charles H. Hickman

of performance for the entire hydraulic system.

Baer was nominated for his work in the Materials Laboratory on metallurgy, especially in casting procedures, welding and in setting up quality control measures and standards for specifying procedures.

Stewart, a research electronics engineer in the Barrier and Intrusion Detection Branch, was cited as inventor of a new intrusion detector for antiguerrilla warfare, and for his contributions to the development of the microwave mine detector, and the small-metals mine detector.

Montgomery's achievement is in the development of an advanced 300 h.p. gas-turbine engine, featuring improved thermal efficiency and reliability, as part of a family of military engines. He also successfully investigated critical operating problems in gas turbines, including high noise level, leaded gasoline operation, and dust ingestion.

LEADERSHIP NOMINEES were selected for work in management or in the direction of subordinates on various projects.

Strawn is assistant chief of the R&D Procurement Office, Jefferson is chief of the Marine Terminals Section in the Petroleum Equipment Branch and Hildreth is chief of the Evaluation Section in the Warfare Vision Branch. Hickman is chief of the Fiscal Branch and Armbruster is chief of the Producibility Section in the Engineering Department.

Army Secretary's Aides Hold 10th Conference in Washington

The 10th National Conference of Civilian Aides to the Secretary of the Army brought 66 aides and commanding generals of several major commands to Washington, D.C., Mar. 5-6, for a briefing on recent noteworthy developments and plans for the future.

Secretary of the Army Stephen Ailes opened the conference with welcoming remarks at the National War College at Fort McNair, and Army Chief of Staff General Earle F. Wheeler presented a major address.

Civilian Aides interpret Army policies and objectives for civilian communities in their areas of interest, and advise the Secretary of the Army and the Chief of Staff on matters of mutual interest to the public and the Army. Appointed for 2-year terms, they serve without pay, and are chosen for every state and Puerto Rico.

Army R&D Chief Tells AUSA Unit of New Materiel

"Army Research and Development: A Constructive Force" was the title of an address by Chief of R&D Lt Gen William W. Dick, Jr., which told the Minuteman Chapter, Association of the U. S. Army, about the latest in Army R&D.

Speaking to the Worchester (Mass.) chapter on Mar. 19, he illustrated his presentation with movie slides to show what is new in Army materiel, including protective clothing and footwear for the soldier, greatly improved rations, and advanced weapon systerms in development or production.

Among the firepower improvements he discussed are the M-14 rifle, the Special Purpose Individual Weapon, the Redeye one-man, shoulder-fired air defense weapon, the TOW developmental system for destroying tanks, vehicles and other targets with pinpoint accuracy, and the new family of self-propelled howitzers.

General Dick talked also about the Pershing missile system as a replacement for Redstone, the first operational field army missile; Sergeant as the replacement for the first-generation Corporal; and Lance, the developmental division support weapon intended to replace the Honest John and, possibly, the Little John systems.

Other materiel items he discussed included the Nike X as a second-generation of the "very successful Nike Zeus program"; the Gamma Goat high-mobility 1¼-ton truck; the General Sheridan armored reconnaissance airborne assault vehicle; the projected Main Battle Tank being developed under agreement with West Germany; the Chinook transport helicopter, along with the Canadian-developed fixed-wing STOL Caribou; three new helicopters being developed jointly with the Air Force and the Navy; and the Hummingbird surveillance aircraft, which made its first transition flights in November 1963.

The Chief of R&D also outlined the program called the Command Control Information System (CCIS-70), the use of mobile computers such as MOBIDIC, the Random Access Discrete Address (RADA) communications system, and the terrain analysis program at the U.S. Waterways Experiment Station, Vicksburg, Miss.

SCIENTIFIC CALENDAR

3rd International Measurements and Instruments Conference, sponsored by the Royal Swedish Academy of Engineering Science, Stockholm, Sweden, Apr. 19-24.

International Conference and Exhibition on Aerospace Electro-Technology, Phoenix, Ariz., Apr. 19-25.

Meeting of Association of State Geologists, Norman, Okla., Apr. 20-21.

Seminar on Nonlinear Partial Differential Equations in Mathematical Physics, sponsored by ARO, AFOSR and American Mathematical Society, N.Y.C., Apr. 20-23.

International Symposium of Mineral Industry, sponsored by the Colorado School of Mines, Golden, Colo., Apr. 20-24.

Annual Meeting of American Society of Tool and Manufacturing Engineers, Detroit, Mich., Apr. 20-24.

Symposium on Medical Radioisotope Scanning, sponsored by the International Atomic Energy Agency, Apr. 20-24.

Spring Joint Computer Conference, sponsored by the American Federation of Information Processing Society, Washington, D.C., Apr. 21-23.

Joint Spring Meeting of American Geophysical Union and American Meteorological Society, Washington, D.C., Apr. 21-24.

45th American Geophysical Union Meeting, Washington, D.C., Apr. 21-24.

4th Rare-Earth Research Conference, sponsored by AFOSR, Phoenix, Ariz., Apr. 22-25.

International Conference of Society of Photographic Scientists and Engineers, N.Y.C., Apr. 26-May 1.

Spring Conference of Association of Iron and Steel Engineers, Cincinnati, Ohio, Apr. 27-29.

Meeting of American Physical Society, Washington, D.C., Apr. 27-30.

Meeting of Society of Automotive Engineers, Inc., N.Y.C., Apr. 27-30.

18th Annual Meeting of Food and Container Institute, Inc., San Francisco, Calif., Apr. 28-30.

12th Annual National Conference of Relay, Stillwater, Okla., Apr. 28-30.

Meeting of the American Chemical Society, Detroit, Mich., Apr. 28-May 1.

Meeting of Cellular Plastics Division, N.Y.C., Apr. 29-30.

Meeting of American Association for History of Medicine, Inc., Washington, D.C., Apr. 30-May 2.

Annual Meeting of Chemical Institute of Canada, Niagara Falls, Ontario, Canada, May 1.

19th Annual Convention of Society of Biological Psychiatry, Los Angeles, Calif., May 1-3.

4th International Symposium on Food Microbiology, Goteborg, Sweden, May 2.

Meeting of American Society for Microbiology, Washington, D.C., May 3-7.

Spring Meeting of Electrochemical Society, Toronto, Ontario, Canada, May 3-7.

Meeting of American Institute of Mining Engineers & Society of Petroleum Engineers, Wichita Falls, Tex., May 4-5.

Aerospace Propulsion Conference, sponsored by AIAA, Cleveland, Ohio, May 4-6.

Metals Engineering Conference, sponsored by the American Society of Mechanical Engineers, Detroit, Mich., May 4-8.

3rd International Strata Control Conference, sponsored by Columbia University, N.Y.C., May 4-8.

5th National Symposium on Human Factors in Electronics, sponsored by IEEE, San Diego, Calif., May 5-6.

Conference of American Society for Quality Control on Electronic Components, sponsored by IEEE, Washington, D.C., May 5-7.

1st World Conference on Electron and Ion Beam Technology, Toronto, Ontario, Canada, May 5-7.

Spring Meeting of Institute of Electrical and Electronics Engineers, sponsored by IEEE, Atlanta, Ga., May 7-8.

Meeting of Lake Superior Geological Institute, Ishpeming, Mich., May 7-10.

16th National Aerospace Electronics Conference, sponsored by IEEE, Dayton, Ohio, May 11-13.

Conference on the Measurement of High Temperatures, sponsored by the Institute of Physics and the Physical Society, London, England, May 11-13.

Symposium on Applied Mathematics and Mechanics, sponsored by AFOSR and the Society for Industrial and Applied Mathematics, Washington, D.C., May 11-14.

2nd Environmental Engineering Conference, Salt Lake City, Utah, May 11-15.

Army Missile Command Dedicates $4.4 Million Labs

Possibilities for advanced developments in the Army Missile Command's new Francis J. McMorrow Missile Laboratories, a $4.4 million ultramodern facility, are, in the opinion of Lt Gen Frank S. Besson, Jr., "staggering . . . limitless."

More than 400 invited guests heard General Besson, CG of the U.S. Army Materiel Command, make the major address at Mar. 12 dedicatory ceremonies. Alabama Governor George C. Wallace and members of the State Legislature were in the group of visiting dignitaries.

Work underway by the Army at Redstone Arsenal assures that requirements for advanced missile technology will be satisfied for any emergency, General Besson stated, adding: "The new facility will provide a place for Army scientists and engineers to flex mental muscles."

Maj Gen Francis J. McMorrow was CG of the Missile Command at the time of his death Aug. 24, 1963. A monument to his memory, located in the foyer of the new building, was unveiled by his widow as one of the highlights of the dedicatory ceremonies. General Besson presented her with the Army's Distinguished Service Medal, the Nation's highest military peacetime decoration.

Maj Gen John G. Zierdt, who succeeded General McMorrow as CG of the Missile Command, was master of ceremonies at the dedication. He stated:

"It is altogether fitting that these modern missiles and rocket development facilities bear General McMorrow's name. His tireless effort and devotion to the mission of the U.S. Army Missile Command helped assure this important research facility."

AT DEDICATION CEREMONIES, Lt Gen Frank S. Besson, Jr., CG, U.S. Army Materiel Command, presents Distinguished Service Medal to Mrs. McMorrow, who accepted the award for her late husband, Maj Gen Francis J. McMorrow, CG of Army Missile Command when he died in 1963.

Funds were approved recently for construction of a $3.2 million companion building to the McMorrow Laboratories. The new building will house the Research and Development Directorate's Inertial Guidance Laboratory.

During the dedication several exhibits demonstrating the range of R&D activity planned for the McMorrow Laboratories were shown to visitors by the Directorate of Research and Development, which operates the complex.

General McMorrow died of a heart attack three days before his 53rd birthday when he elected to continue his duties after being warned by his physician that a less strenuous course of action was deemed advisable.

USAERDL Seeks Better Conventional Explosives

Demolitions experts at the U.S. Army Mobility Command's Engineer Research and Development Laboratories, Fort Belvoir, Va., are seeking better "old-fashioned" or conventional explosives.

Emphasis on nuclear devices has tended to obscure conventional explosives, but research scientists are striving for the breakthrough that will multiply their effectiveness. One approach is the use of high-energy chemical reactions to add energy to the detonation of military explosives.

Dr. Fritz Zwicky, an astro-physicist at California Institute of Technology, originated this approach. He suggests that certain chemical reactions, such as combination of carbon and titanium to form titanium-carbide, have potential for producing as much as six times the energy of an equivalent volume of TNT.

Attempts at the R&D Labs to utilize these powerful chemical reactions have not yet achieved their theoretical promise. If they should, impressive advances could be made in military demolition techniques, particularly as applied to limited warfare.

VIOLENT REACTION is produced by chemical combination of titanium powder and carbon triggered by conventional explosive. Heat energy, indicated by streaks in above photo, was measured by pressure gauges and high-speed photography at USAERDL in research on conversion of resultant heat to mechanical energy.

DoD Sets Pilot Test Phase Of Project 60 on Contracts

Secretary of Defense Project 60, aimed at consolidating field contract administration offices, will enter the pilot test phase in the Philadelphia Region beginning Apr. 20.

Deputy Secretary of Defense Cyrus R. Vance announced that the Defense Materiel Council had approved planning and preparations for the experimental phase. The Council has overall project review responsibility.

Approved also by the Council are delegations of authority for dealing with contractors which are uniform for all of the Military Services. These delegations from the buying offices are the key to uniform relationships by Government representatives with Defense contractors.

The purpose of the pilot test is to determine the feasibility of consolidating existing organizations of the Army, Navy, Air Force and Defense Supply Agency which perform post-award contract administration and related functions for the Department of Defense and the National Aeronautics and Space Administration.

The test will be conducted under the direction of Brig Gen Allen T. Stanwix-Hay, with headquarters at Philadelphia. The area under test includes the states of Delaware, Maryland, Pennsylvania (except Erie, Mercer and Crawford Counties), Virginia, West Virginia and the District of Columbia.

Presently there are more than 2,000 persons working in 14 separate offices in the test region.

DoD Begins Computer Institute for Top Executives

Department of Defense Directive 5160.49 establishes a DoD Computer Institute, it was announced Mar. 16, to provide orientation and understanding of computers to the highest level military and civilian executives of DoD and the Military Departments.

Under the policy guidance of the Office of Director of Defense Research and Engineering, the Institute is located at the Navy Yard Annex in Washington, D.C., and is headed by Capt Horace S. Foote, commander of the Naval Command Systems Support Activity, O/C of Naval Operations.

Initially, the classes will be limited to generals, admirals and their civilian counterparts. The first class will begin this month, and the first series of one-week courses will be conducted by selected consultants. Later this year, a longer course is planned for colonels, Navy captains and equivalent rank civilian executives.

The Institute was established as a result of a study made by a DoD-Service group. It recognizes that the new complicated technology of computers, now widely used in the military, has arisen since most senior executives completed their formal education and that training is needed.

Most of the younger military and civilian personnel receive familiarization with computer work in the Service academies, postgraduate schools and industrial courses.

Officers, Civilians Complete Operations Research Course

Twenty Army officers and civilians of junior and senior management level were graduated from an Operations Research Appreciation Course held in the U.S. Army Research Office (USARO), Arlington, Va., Feb. 24-28.

Col William G. Sullivan, chief of the Human Factors and Operations Research Division, presented certificates to the participants, representative of Army General Staff and other elements in Washington, D.C.

Administered by the Army Management Engineering Training Agency, Rock Island, Ill., the course is presented several times annually, as needed, in various locations throughout the country. The USARO sessions were conducted by mathematician Richard O'Brien, AMETA instructor.

Purpose of the course is to provide Army management personnel with an appreciation of potentials and limitations of administrative capabilities and support for successful management operations. Emphasis is upon practical applications of methods rather than discussion of abstract theory. Operations research is a scientific investigation of operational problems, to provide the largest amount of timely, appropriate information economically justifiable to management to facilitate successful decision making.

Enrollment in the course is generally limited to civilian employees in grade GS-12 or higher and Army officers in rank of major or above.

Army R&D Student Wins AIAA Contest

A student working under a U.S. Army research contract at Mississippi State University recently won first place in the graduate division of the National Student Award technical paper competition of the American Institute of Aeronautics and Astronautics.

Gordon L. Harris, who received a B.S. degree in physics from McGill University in Canada and is now studying for a master's in aerospace engineering, took top honors. His paper was titled, "Effects of Transpiration Through Angled Slots on the Development of the Turbulent Boundary Layer."

A commemorative plaque will be presented to him at the AIAA annual meeting Honors Night Dinner in Washington, D.C., July 1. His Research Report No. 43 at Mississippi State originally was awarded first place in the Southwest Conference AIAA Graduate Division competition at Dallas, Tex., in 1963. The Army contract under which he is working in low-speed aerodynamics research began several years ago.

Leslie Hester, professor in the Aerospace Engineering Department of the University, said, "It is a once-in-a-lifetime thing for a student to win such an important honor, especially when he has to compete against students from such schools as Princeton, New York University, Massachusetts Institute of Technology and Notre Dame." Students from 92 colleges and universities competed.

Harris was born in 1940 in Montreal, Canada. In addition to his undergraduate work at McGill University, he was a von Karman Fellow studying at the Training Center for Experimental Aerodynamics in Brussels, Belguim, before he came to the U.S. for graduate work at Mississippi State.

Picatinny Scientists Speak To 1,500 Plastics Industry Technicians About Machines

More than 1,500 plastics technicians heard two Picatinny Arsenal scientists report on "Commercially Available Filament Winding Machines" at the recent 19th annual conference of the Reinforced Plastics Divisions, Society of the Plastics Industry.

Subject material presented by Allen Shibley and Merrill Eig at the Chicago meeting will be incorporated in a forthcoming report published by the Plastics Technical Evaluation Center at Picatinny Arsenal. PLASTEC is the Department of Defense information center on plastics.

Shibley's contribution to the conference paper was based on a nationwide study of commercial winding machines. Eig discussed an advanced machine being developed on contract for Picatinny Arsenal's Plastic Laboratory, an element of the U.S. Army Munitions Command.

PLASTEC's first report on filament winding, published in 1962, was acclaimed by Government agencies and industrial scientists for its advancement of the state-of-the-art. It was authored by Shibley, Eig and Harvey Peritt, another Picatinny employee.

Filament winding of glass fibers and a plastic resin, which provides the highest strength-to-weight ratio of any currently available material, is the process used in manufacture of both stages of the Polaris A-3 missile and in the third stage of the Minuteman missile.

The process is being evaluated for several Army motor cases.

Engineer Labs Call for Data

Firms having research and development capabilities to analyze systems showing potential for markedly improving ammonia production rate utilizing a nuclear reactor as the energy source are being asked for information.

Proposals to perform the work are not desired—merely information on the capability to do so. Interested firms should write to the R&D Procurement Office, U.S. Army Engineer R&D Laboratories, Fort Belvoir, Va., making reference to SMOFBPO-64-2600-B.

Electronics Command Puts 3 in Key Personnel Posts

J. Peter Hoffman

Leonard Rokaw

William D. Roberts

Three top civilian appointments in the U.S. Army Electronics Command were announced Mar. 12 by Maj Gen F. W. Moorman, commanding.

J. Peter Hoffman, information officer for the Command 19 months and public information officer for Fort Monmouth from 1946 to 1962, was named to the new post of special assistant to the commanding general for Congressional Affairs.

Appointed to succeed Mr. Hoffman as information officer was Leonard Rokaw, previously chief of the Technical Information Division, U.S. Army Electronics Research and Development Laboratories. His duties include direction of public information as well as scientific and technical information.

In a significant appointment of a senior civilian to a key management position, William D. Roberts was promoted from Civilian Personnel Officer to director, Personnel and Training. A 20-year Federal employee, he succeeded Col W. B. Bess, who has been nominated for brigadier general and will serve an interim appointment as special assistant to Gen Moorman.

Brig Gen Anderson Succeeds Retiring Weapons Chief

Maj Gen Nelson M. Lynde ended 36 years of Army service when he retired Feb. 28 as commanding general, U.S. Army Weapons Command, Rock Island, Ill. Brig Gen Roland B. Anderson, his deputy, was elevated as his successor.

In a formal retirement ceremony, General Lynde was presented with the Distinguished Service Medal by Lt Gen Frank S. Besson, Jr., commanding general, U.S. Army Materiel Command. The Presidential Award cited him for meritorious service in positions of great responsibility from August 1955 to February 1964.

During this period, he served consecutively as commanding general, Ordnance Tank Automotive Command; chief, Field Service Division, Office, Chief of Ordnance; and commanding general, U.S. Army Weapons Command.

Leadership in the field of Ordnance during both World War II and the Korean conflict brought him numerous honors and decorations, including a second Oak Leaf Cluster to the Legion of Merit. (General Lynde's biography and picture appeared in the February 1964 issue.)

Brig Gen Roland B. Anderson, has been deputy commander of the Weapons Command since August 1962, following two years as Assistant Chief of Staff (G-4), Headquarters, U.S. Army Communications Zone, Europe. From 1957 to 1960 he served as Deputy Chief, Industrial Division, Office, Chief of Ordnance, Washington, D.C. Following graduation from the Army War College in August 1954, he commanded the Boston Ordnance District, Boston, Mass, until January 1957.

Born October 23, 1913 in Duncan, Okla., he attended the University of Oklahoma for 3½ years, studying petroleum engineering before entering the U.S. Military Academy in 1934. Graduated in 1938, he was commissioned as a lieutenant in Artillery.

Following completion of courses in 1940 at the Massachusetts Institute of Technology, the Ordnance School, Sperry Gyroscope and Kueffel and Esser, he commanded the 63rd Ordnance Maintenance Company in Hawaii.

In 1942 he became the Ordnance Officer, Hawaiian Antiaircraft Command and from 1943 to 1946 served with the Office, Chief of Ordnance in Washington, D.C. Asigned in 1947 as Ordnance Technical Adviser, U.S. Military Mission, Lima, Peru, he returned to the U.S. in 1950 and was assigned to the Office of the Secretary of the Army as Chief of Procurement Branch until July 1953.

Brig Gen Roland B. Anderson

Limited War Lab Viewed By Employees' Families

The U.S. Army Limited War Laboratory, Aberdeen Proving Ground, Md., recently "opened the house" to families of its scientists and engineers.

Project engineers of various branches demonstrated items already developed or in the process of development in the laboratory. Guests also took part in some simple demonstrations of scientific principles.

One working tool which intrigued youngsters was the computer in the Evaluation and Analysis Branch. Another was the "Echo Chamber." In the Mobility Branch they found a simple foot-powered generator which provided power for light bulbs when they pedaled energetically.

In the Chemical and Explosives Branch, a marking device which showed up under ultraviolet light was demonstrated. In the Munitions Branch a neat little survival gun was on display, along with smoke grenades used for marking purposes and orange life jackets to keep them afloat.

The Environment and Survival Branch Laboratory resembled a jungle, complete with Viet Namese dummies, survival equipment, bamboo, jungle hammock and a large number of unusual objects. On the head of one of the dummies was a listening device with a station in the Applied Physics Branch which made it possible to hear in one room everything that was said in the E&S Branch Lab, and to tell what part of the room it was coming from.

The Biological Sciences Branch demonstrated a filter pump device which completely purified thoroughly muddy water to make it potable.

Precision Glider Passes Thailand Tests

Field research tests of the Precision Drop Glider (PDG) conducted as a method of delivery of cargo in the jungle environment of Thailand have stimulated interest in development of increased payload capability.

The results were announced in February by the U.S. Army Transportation Research Command and the experiments were made jointly with the Department of Defense Advanced Research Projects Agency (ARPA).

"Successful tests in that environment," a 5-man team reported, "lead us to believe that the system could work anywhere." The tests were made by technical personnel from Ryan Aeronautical Co., under contract to the Army Transportation Research Command.

The PDG tests indicated that the system has the possibility of aerial delivery of cargo into "areas and under conditions which up until now were considered impossible." Bags of rice weighing 220 pounds were delivered into the jungle to Thai personnel in some tests, although the usual "payload" was bags of sand.

The PDG system consists of a delta wing shape fabricated from lightweight, flexible material to provide a large aerodynamic lifting surface, and a control platform housing the required electronic and control equipment to accomplish maneuvers under manual and/or automatic homing modes of operation.

The system is designed to permit delivery of cargo from an aircraft; the glide capability of the wing allows it to be dropped from an aircraft some distance away from the drop zone. The payload can be guided automatically to a predetermined landing position, even in total darkness or under zero visibility conditions.

During the field tests tactical resupply problems were duplicated in the hot, humid semi-jungle environment along the west coast of the Gulf of Siam. Base facilities were provided by the International Civil Aviation Organization, supported by the Police Aerial Reinforcement Unit, a branch of the Thai Border Patrol Police.

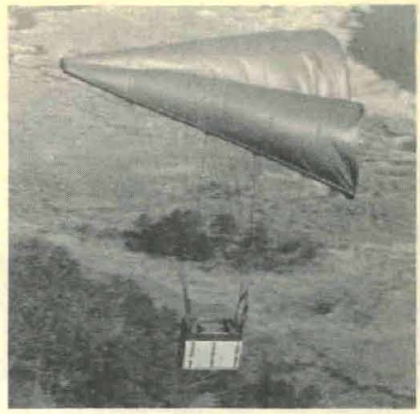
The Thailand experiments concluded the first research phase of the PDG test program. Information gained there, from tests at Fort Eustis and from more than 150 drops at Yuma, Ariz., is expected to lead to the design and development of a prototype 500-pound payload wing.

USATRECOM researchers emphasize, however, that actual use of the PDG system for resupplying troops in a tactical situation is "still some time away." Other programs being conducted by the ARPA and the Army involving the flexible wing concept are the Fleep and the Air Cargo Glider (ACG).

The Fleep is a power utility type aircraft and the ACG is a means of increasing the payload of Army aircraft by having them tow the glider by a steel cable.

TRECOM is conducting an in-house study of the Individual Drop Glider, a one-man drop device which would allow airborne soldiers to guide themselves to predetermined landing positions.

Under a forthcoming reorganization, TRECOM will, in effect, become an R/D Directorate of the present Aviation and Surface Materiel Command (AVSCOM) at St. Louis, Mo., which will be redesignated. TRECOM will conduct the research and AVSCOM will conduct the development programs for Army aviation as elements of the Army Mobility Command, headquartered at Warren, Mich.



Precision Drop Glider completes controlled aerial drop deliveries of cargo during research phase of test program.

Howitzer Simulation Tests at Watervliet Save $240,000

A Springfield rifle and its .30 caliber cartridge are simulating the explosive force of a 155 mm. howitzer within the proof house at Watervliet (N.Y.) Arsenal to minimize the need for expensive proving ground tests.

The simulated test program, developed by the Arsenal's industrial engineering and experimental mechanics laboratories, will cost $30,000 compared to the $275,000 required for equivalent proving ground firings.

The proof house firings are testing a redesigned valve on the weapon's bore evacuator which prevents noxious gases from entering the vehicle by dispelling them from the gun tube at the moment of firing.

Watervliet Arsenal proof house technician Frank Mastan (left) and John Giesey examine test rig which employs a Springfield rifle to simulate firing action of a 155 mm. howitzer.

Redesign of the valve proved necessary when original test firings of the 155 mm. at Erie Proving Ground, Port Clinton, Ohio, revealed the component did not have the required life expectancy.

Rather than incur the expense of firing the entire weapon system to test the valve through each of 11 design modifications, the artillery design unit headed by Fred Schneider decided to simulate the firing on a smaller scale. Data thus accumulated could then be translated into the stresses and pressures registered by proving ground tests.

John Giesey, who heads the test program, devised an adapter which connects the valve to a standard Springfield rifle. An orifice controls the pressure applied to the valve so that the Springfield's .30 caliber blank cartridge exerts the same amount of pressure as that registered by firing the 155 mm. in the field.

With data acquired through simulated testing of the valve as it underwent the 11 design modification stages, the Arsenal has been able to incorporate the required longer life expectancy into the component—and chalk up savings of $240,000.

Edward Lawson assisted Giesey in the test program and Ralph R. Lasselle was project engineer for instrumentation.

Lt Gen Schomburg Named Commandant of ICAF

Lt Gen August Schomberg, named commandant of the Industrial College of the Armed Forces in Washington, D.C., effective Apr. 1, has served in important research and development assignments in recent years.

From February 1960 to April 1962, he was head of the Army Ordnance Missile Command at Redstone Arsenal, Ala., and for the past two years he has been commanding general of the Supply and Maintenance Command. He was deputy chief of Ordnance from May 1958 to January 1960, and for two years prior to that was assistant chief, Ordnance R&D, Office, Chief of Ordnance.

Graduated from the U.S. Military Academy in 1931, he served as an Infantry officer until he transferred to Ordnance in 1937. Under the Army's advanced education program, he attended the Massachusetts Institute of Technology and was graduated in 1938 with a B.S. degree in mechanical engineering.

Assigned to the Ordnance School at Aberdeen Proving Ground, Md., as a student for one year, he remained there until March 1943, serving in administrative duties and as commander of the Small Arms Section, Ordnance R&D Command. He also commanded the Winter Detachment of APG at Manitoba, Canada.

In April 1944, General Schomberg was called to the War Department General Staff, where he was assigned to G-3 until February 1946. The following three years he spent at Ottawa, Canada, as Assistant Military attache, United States Embassy, and Liaison Officer with the Canadian Army.

Lt Gen August Schomburg

In September 1949 he was assigned to Watertown (Mass.) Arsenal, where he remained until 1952 as director of Research, Development and Engineering. The following year he spent as a student at the Industrial College of the Armed Forces, graduating in June 1953, and for the next three years was chief, Procurement Branch, G-4, Logistics, for the United States Army in Europe.

Army Concludes Pamphlets on Missiles, Space Progress

"Missiles and Ventures into Space Progress Report 1962-1963," the last of a series of Department of the Army pamphlets begun in 1958 at the request of the Office, Chief of Research and Development, was distributed last month.

The bibliography consists of abstracts of 750 unclassified books and magazine articles published between May 1962 and May 1963. Full texts of most of the entries are available at the Army Library, Adjutant General's Office, the Pentagon, Washington, D.C.

Army Library analysts who prepared the 123-page annotated document explain in an introduction that the large volume of material on missile and space technology necessitated a high degree of selectivity.

Selected items reflect a comprehensive cross-section of the significant U.S. and Soviet progress in missile science, rocket technology and space exploration.

Entries deal with national security, reports on all major U.S. missiles and satellites, missile efforts of other free nations, Soviet policy, strategy and technological advancements, space and lunar exploration, arms control and disarmament. A special appendix covers "The Politico-Military Aspects of Soviet Missiles in the Cuban Crisis."

A random sampling of the entries reveals such articles as: "Why It's Russia's Turn to Worry About a 'Missile Gap' "—*U.S. News and World Report;* "How Big Are the Russian Boosters?" — *Space/Aeronautics;* Army Helicopters to Get New Missile Capability"—*Missiles and Rockets;* "Pershing Weapon System"—*Ground Support Equipment;* and such books as *The Biology of Space Travel; The Atmosphere of Mars and Venus;* and *Navigation Systems for Aircraft and Space Vehicles.*

Copies of *Missiles and Ventures into Space Progress Report 1962-1963* are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, at 70 cents a copy.

WRAIR Reports Trial Period Near End for Reactor

Since the Walter Reed Army Institute of Research dedicated its 50,000 watt nuclear reactor in September 1962, biological researchers have logged more than 17,000 kilowatt-hours of operating time, WRAIR announced in March.

The announcement said much of this time has been used for training personnel and measuring reactor operational characteristics.

Necessarily, while the operational parameters were being determined, the biomedical research program utilizing the reactor has been somewhat limited. This is essentially complete and research work is increasing.

Projects currently utilizing the reactor encompass a wide range of interests. One involves the exposure of specific organs in dogs to mixed neutron-gamma radiation to determine the effects on organ function.

Another experiment is involved with producing short-lived radioisotopes for administration to test animals. A third involves determination of trace elements in biological specimens by activation analysis.

Army Dental Corps Evaluates New Tooth Decay Preventive

Initiation of a U.S. Army Dental Corps study to evaluate a new fluoride compound which gives promise of a major breakthrough in reducing tooth decay among adults, has been announced by Maj Gen Joseph L. Bernier.

The chief of the Army Dental Corps said that in the Army's emphasized program of preventing dental problems, rather than correcting them, early investigations of the compound are "very encouraging."

Sufficient data will be available within six months to a year, he believes, to determine effectiveness of the chemical for use by individuals of the young military age group.

The new agent was developed as the result of research headed by Dr. Joseph C. Muhler, professor of biochemistry at the School of Dentistry, Indiana University, and a consultant to the Army on Preventive Dentistry. It is added to a polishing agent which has potential in itself to also reduce dental calculus (tartar).

The discovery is one result of an extensive program of dental research supported in part by Army Medical research and development grants.

RAC Reorganization Stems From Recent Rapid Growth

Fred W. Wolcott

Dr. Hugh M. Cole

Rapid growth of the Research Analysis Corp, since it was established Sept. 1, 1961, as the successor to the former Army-supported Operations Research Office of Johns Hopkins University, recently necessitated major organizational realignment.

Frank A. Parker, RAC president, announced the appointment of two new vice presidents whose management responsibilities include the functions formerly assigned to three directorates. He said that RAC, which moved recently from five buildings in Bethesda, Md., to a modern headquarters at McLean, Va., has grown in staff and financial support by more than 50 percent in two years.

"This growth," he said, "coupled by the decision to strengthen the operations analysis activities through the development of a real capability in systems engineering and technology, has resulted in a modification of RAC's objectives, structure and responsibilities."

Fred W. Wolcott, formerly director of Systems Engineering, was promoted to vice president for Operations. Hugh M. Cole, now vice president for Operations Analysis, formerly headed the Logistics and Management Systems directorate. Dr. Cole will report directly to the president on policy matters and through Mr. Wolcott on operational matters.

Other changes included the creation of a Research Council to supplant the Advanced Research and Planning Staff and the establishment of an Office for Planning. Research into mathematics and decision processes, decision models, management processes, and the cybernetic sciences are centered in a new Advanced Research Division under Dr. Nicholas Smith.

Activities for which Mr. Wolcott will be directly responsible include the Computer Sciences Center headed by Robert G. Hendrickson, the Foreign Operations Office under Maj Gen Gerald J. Higgins (USA, Ret.), and the Advanced Research Division.

In addition he will be acting head of Systems Engineering which includes Electromagnetic Technology under George A. Martinez, Mobile Technology under Samuel A. LeMar, Tactical Systems Technology under Roderick C. Dennehy, and Advanced Technology, also under Mr. Martinez as acting chief.

Dr. Cole has responsibility for: Combat Analysis, Dr. Philip H. Lowry; Economics and Costing, Dr. Robert N. Grosse; Strategic Studies, Dr. John P. Hardt; Logistics Simulation, Martin W. Brossman; Military Gaming, Alfred H. Hausrath; Operational Logistics, Dr. Roland G. Ruppenthal; Support Systems, Conway J. Christianson; and Field Experiments, Dr. Kenneth L. Yudowitch.

Under contract with the U.S. Army and other Department of Defense elements, RAC maintains field offices in West Germany, Thailand, South Viet Nam and England. About half of RAC's 550 employees are scientists or engineers.

M.I.T. Scientist Accepts Assistant DDRE (C&E) Post

Thomas F. Rogers has taken leave from Massachusetts Institute of Technology Lincoln Laboratory for appointment as Assistant Director (Communications and Electronics), Defense Research and Engineering.

As head of the Communications Division at M.I.T., where he also has served as a member of the Lincoln Laboratory Steering Committee, and as a member of several Federal Government advisory groups, Mr. Rogers is well known in the field of electronics research.

Born in Providence, R.I., the 40-year-old scientist, engineer and research administrator received a B.S. degree in physics from Providence College in 1945 and an M.A. degree from Boston University in 1949.

Since 1945, when he started his professional career as a research associate in the Radio Research Laboratory at Harvard University, he has served in Government, industrial and other university research laboratories.

Mr. Rogers has been a member of the Communications Satellite Panel of the President's Scientific Advisory Committee. Recently he was a member of the U.S. delegation to the Geneva meeting on the Application of Science and Technology for the Benefit of Less Developed Areas.

Wheelbarrow Principle Aids LWL on Jungle Vehicle

The garden wheelbarrow principal has been applied by the U.S. Army's Limited War Laboratory at Aberdeen Proving Ground, Md., to design of a transport that can roll, float, or skid over difficult terrain, encountered in antiguerrilla operations.

Weighing 70 pounds empty, the 7-foot long, cucumber-shaped, fiberglass vehicle can transport up to 250 pounds of radios, ammunition, extra weapons, supplies or food normally back-carried by Special Forces.

Company A, 6th Special Forces Group (Airborne) troopers assist with tests of load-carrying vehicle developed by U.S. Army Limited War Lab.

With the top half of the vehicle cracked open to allow for air and shelter, it can be used as an emergency ambulance to roll a disabled man to safety. When opened, the carrier converts into a catamaran (twin hull boat), with the handles doubling as paddles.

The plowshare-type aluminum handles at each end allow for a 2-man push-and-pull operation that includes easy transport over fallen trees or rock obstacles. The device's streamlined contour permits snag-free movement through undergrowth and marsh lands.

Transported on a single low-ground-pressure wheel, about the size and shape of a medicine ball, the vehicle does not sink or dig into soft earth. Nylon bearings and puncture-proof foamed plastic construction assure trouble-free wheel operation.

Air Force Colonel Becomes ASPR Committee Head

Chairmanship of the Armed Services Procurement Regulation (ASPR) Committee passed from the Army to the Air Force when Col William W. Thybony retired and Col Roger H. Terzian, USAF, took over on Mar. 18.

Col Thybony had chaired the ASPR Committee since June 7, 1961, serving also during this period as assistant director, Procurement Policy, Office of the Assistant Secretary of Defense (Installations and Logistics).

The new chairman carries into his duties an extensive background of experience in military procurement. Col Terzian has been the Air Force Policy member of the ASPR Committee since July, 1963, and formerly was director, Procurement and Production, San Antonio Air Force Air Material Area, San Antonio, Tex.

The Armed Services Procurement Regulation Committee is composed of representatives of the Office of the Secretary of Defense, Army, Navy, Air Force and Defense Supply Agency. Responsible for developing and maintaining uniform policies and procedures for the procurement of all Defense supplies and services, it also prescribes standard contract forms and clauses used in military contracts.

Since July, 1963, Col Terzian has been the Air Force Policy member of the ASPR Committee. Prior to that time, he was the Director of Procurement and Production for the San Antonio Air Force Air Material Area, San Antonio, Tex.

Colonel Thybony leaves this assignment after having chaired the ASPR Committee since June 7, 1961. During this period he served also as Assistant Director of Procurement Policy in the Office of the Assistant Secretary of Defense (Installations and Logistics).

Other members of the ASPR Committee are: Louis A. Cox, Office of Assistant Secretary of Defense (Installations and Logistics), alternate chairman; Colonel R. F. Grabb, Army legal member; Edward C. Cox, Army policy member; LeRoy Haugh, Navy policy member; Albert Green, Navy legal member; R. T. Hanlon, Air Force legal member; Robert Lintner, Defense Supply Agency policy member; Maurice Paradis, DSA legal member; A. B. Carter, OASD(I&L), Executive Secretary. The Air Force policy member to succeed Colonel Terzian has not been selected.

USAELRDL Sponsoring Power Sources Meeting

The 18th Annual Power Sources Conference, sponsored by the U.S. Army Electronics Research and Development Laboratories, Fort Monmouth, N.J., is expected to attract more than 1,000 participants to Atlantic City, N.J., May 19-21.

Representatives from domestic and foreign governments, industries and universities will attend on an invitational basis. The conference will afford an opportunity to discuss and review advances in the fields of solar, nuclear and chemical power sources and devices.

The conference is unclassified but foreign nationals must be cleared through diplomatic channels. Representatives of seven NATO nations took part last year.

Persons who wish to attend may make the necessary arrangements by writing directly to the Power Sources Division, USAELRDL, Fort Monmouth, N.J.

Army Natick Labs Stitch Name in Sewing Hall of Fame

If you wanted to learn all about sewing, you might not think of turning to the U.S. Army Natick (Mass.) Laboratories as one of the world's most comprehensive sources of information.

Still a book compiled in 1959 and currently being revised is gaining the Army international recognition as an authoritative source of information of great value to industry, educational institutions, and others interested in sewing technology and standards.

Canada, Great Britain and Australia are using the publication as a common language guide for stitches, seams and stitchings in drafting specifications for sewn items. Other nations also are studying its methodology.

The 1959 book was an updating of a 25-year-old Army specification. Known as Federal Standard 751, its purpose was to eliminate confusion and ambiguity in sewing terminology. Similar stitches and seams were being described by different trade names, depending on geographical location of the manufacturer.

The first edition consisted of 144 pages and was illustrated with 46 types of stitches, 124 seams and two classes of stitchings. All were identified by an alphabetical-numerical code rather than by trade names.

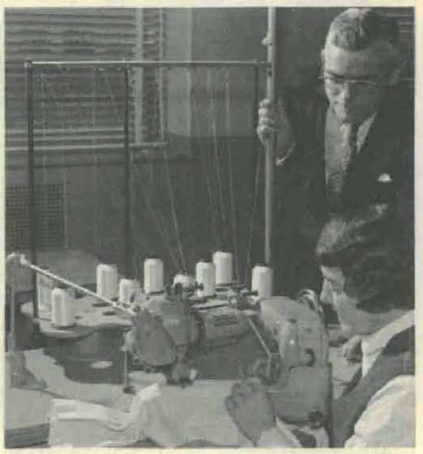
The revision now in preparation is being coordinated with industry and interested nations. The 264-page volume will add 13 new stitches and 95 new seams and stitching types. Illustrations will show the formation of simple stitches from one needle to more intricate ones formed by four needles and nine threads.

All Government purchases of sewn materials are made from specifications which cite, operation by operation, what stitch to use for each seam and the type of materials needed. An Army khaki shirt, for example, requires 5 different stitches and 15 different types of seams.

The specifications' terminology and illustrations are also widely used by sewing machine manufacturers to help describe their machines. Educational institutions use the book in teaching courses dealing with the design and tailoring of clothing.

Natick Laboratories textile technologist Mrs. Earline L. Brown was responsible for drafting the complicated drawings for each stitch and seam, plus the descriptive material appearing beneath each illustration. Work was performed under supervision of Edward B. Frederick, head of the Seams Engineering Laboratory, Clothing and Organic Materials Div.

Federal Standard 751 has been approved by the General Services Administration for use by Federal agencies. Copies are distributed by GSA.



TEXTILE TECHNOLOGISTS Earline L. Brown and Edward B. Frederick check intricate stitches, made with nine threads at once. The stitches are sewn into a sample fabric as a guide for one of 380 illustrations in a new 264-page U.S. Army sewing book.

U.S. Army Seeks to Control Infectious Hepatitis In Korea, South Viet Nam by Gamma Globulin Shot

Infectious hepatitis, which has seriously hampered U.S. Army operations in Korea for more than two years and has been subject to intensive research, is being combatted there and in Viet Nam by injection of gamma globulin. Newly arrived troops and non-military personnel are receiving injections for duty or residence exceeding 30 days.

The U.S. Army announced Mar. 13 that it is the first time it has used gamma globulin on a large-scale basis to help control the disease.

A joint Walter Reed Army Institute of Research-Armed Forces Institute of Pathology to Korea was established in September 1962. Later many of the patients were air transported to Walter Reed General Hospital, Washington, D.C., for study.

(For a detailed account of the WRAIR-AFIP research studies, please see the December-January 1964 issue of this publication, page 28.)

Infectious hepatitis, or epidemic jaundice, is a disease of military importance chiefly because of the time lost from duty—about two months per case. Although occurring worldwide, the disease had an unduly high incidence rate in Korea during 1963. Statistics set the rate there at nearly 10 times that of the entire Army, which was about one per 1,000 average troop strength per year.

Last December, the Army Surgeon General's Office submitted to the Armed Forces Epidemiological Board a proposal to use gamma globulin on a large scale, since troops were being continuously exposed to sources of the infection and no method of prevention had been found entirely satisfactory. With approval from the AFEB early this year, the Army Surgeon General's Office is now going ahead with the new technique.

In Korea and South Viet Nam gamma globulin is being administered intramuscularly in a dose of 0.05 ml. per pound of body weight during the first two months of duty. A second injection of gamma globulin in the same dose will be given five months later to those personnel still present in the area.

For a number of years it has been customary under certain circumstances to administer one dose of gamma globulin to persons who have had a known exposure to infectious hepatitis. This single dose provided a temporary passive immunity which prevented them from developing the clinical disease after this exposure.

Current procedure differs in that infectious exposure does not need to be identifiable, although it is assumed that it will occur under natural circumstances. The two doses of gamma globulin are of such size and so spaced to permit development of active permanent immunity from natural exposures while preventing occurrence of clinical disease.

Vance Orders Strong Intelligence Career Program

Deputy Secretary of Defense Cyrus Vance has taken positive steps to assure a permanent base of competent, professional career intelligence officers in the Department of Defense.

In DoD Directive 5010.10, he gave the various DoD intelligence components until June 1 to start career development programs for their military and civilian intelligence officers.

The Military Departments and other Defense components already have career development programs for intelligence personnel, but Mr. Vance wants to make sure they are standardized in regard to identification of requirements, recruiting, selection, education, classification or assignment.

The Director of the Defense Intelligence Agency is instructed to work closely with DoD components so that existing programs are adjusted to conform with Directive 5010.10. The DIA Director must submit to Mr. Vance by Aug. 1 a preliminary evaluation of the career programs established and implemented within the DoD components.

Under the directive, qualitative standards will be established for minimum qualifications, training procedures and specifically designated intelligence positions worldwide.

The Director of the DIA will periodically brief the Joint Chiefs of Staff, the Secretary of Defense and heads of DoD components concerned on effectiveness of the program.

In addition, each DoD component will retain full responsibility for establishing and administering its career intelligence development program under the general surveillance and direction of the Defense Intelligence Agency.

By Ralph G. H. Siu

QUADRUPED, GRAMINIVOROUS. Sitting through a briefing presented by a team of esteemed scientific colleagues to a high Washington dignitary several weeks ago, I was reminded of the following passage from Charles Dickens *'Hard Times:*

"Bitzer," said Thomas Gradgrind, "your definition of a horse."

"Quadruped, graminivorous. Forty teeth, namely, 24 grinders, 4 eyeteeth, and 12 incisives. Sheds coat in the spring; in marshy countries sheds hoofs too. Hoofs hard, but requiring to be shod with iron. Age known by marks in mouth." Thus (and much more) Bitzer.

"Now girl number 20," said Mr. Gradgrind, "you know what a horse is."

R&D BUDGETING, CAJUN-STYLE. The determination of relevancy is one of the most difficult aspects of the management of research and development. It is true that many of the most practical results have stemmed from "tossing bread upon the intellectual waters." But where does one draw the line?

One of my more conservative friends teased me the other day with the Bayou story of the two Cajuns caught without paddles in a canoe being drawn swiftly by the current. They became desperately frantic as they approached the top of a roaring high waterfall. One of them noticed an anchor near his companion in the other end of the canoe. "Throw the anchor overboard!" He yelled. "But there's no rope connected to it," came the reply. Whereupon the first Cajun hollered above the din of the falls, "Hell, throw it overboard anyway! It *might* help."

MORALE AND DELUSIONS. Talking about maintaining the morale of a laboratory, one of the most difficult problems facing the director concerns the dissemination of pessimistic rumors from Washington. The consequences are exemplified by the woman who went to the doctor about her husband's delusion about being a refrigerator.

The doctor assured her that it is a harmless affair.

"The delusion I don't mind, doctor," the lady replied, "But he sleeps with his mouth open, and the little light keeps me awake."

COMPUTERS, COMMUNICATIONS & DEFENSE

(Continued from page 2)

quires a communications capability that can fuse every element of this vast organization — from command headquarters to the most distant outpost—into a single swift responsive unit.

To accomplish this broad purpose—the acquisition, transmission and interpretation of intelligence, and the communication of commands—we must have an integrated system, completely automated in its routine processing, but always requiring human intervention where seasoned judgment is called into play.

This broad concept already is taking form and substance in our Defense establishment. Today, with equipment and techniques in being or just over the horizon, we can visualize a new generation of computers and communications systems transforming our military planning and operations.

As I envisage it—and I know that many of you are thinking along similar lines—a computer complex will be at the heart of a total system in which it is possible to achieve—from the Pentagon, the White House or a remote secret site—effective real-time command over any situation or combination of situations anywhere in the world.

When fully implemented, this system should make it possible to anticipate many developments before they actually happen and so gain vital time to take precautionary or preventive measures. It converts the army of tomorrow into a highly mobile, ultra-swift fighting force, unencumbered by the long supply tail that used to wag the military body.

In this system, tiny forward-sensing devices, some of them already in prototype, will automatically or upon interregation report a variety of digital data to a mobile computer close to the scene of action. This computer will swiftly assemble, sort and evaluate the information, and make it instantly available to the local commander to assist in arriving at decisions affecting his own area of responsibility.

At the same time, the computer will select other data of a broader nature and forward it, together with appraisals fed in by tactical officers on the scene, directly to the next computer echelon, whether it be corps, army or theater. Intelligence from many such computers stationed around the globe, including those operated by the other armed services and by related civilian agencies, will funnel into a command center in the United States.

In a vast war room at the command center, the Nation's top civilian and military leaders will see displayed a continuously changing, instantly updated computerized synthesis of pertinent events as they occur around the world, together with weighted appraisals of their significance.

Where action on a broader scale is indicated, the computers will suggest possible courses for such action. These would be based upon evaluations of all the significant factors—military, political and economic; current and historic. They will estimate the effects of various decisions which may be taken. Every possible combination will be considered, computed and rejected or recommended for top-level decision.

Beyond this, other computers will be programed to recognize potentially dangerous developments, and to sound the alert before they occur. . . . The computers of the future system will assume important intelligence and counterintelligence roles. For example, they will assess the enemy's intentions—taking into account all possible assumptions about his politico-military objectives, both strategic and tactical; his capabilities and limitations; what circumstances will stimulate what level of response and so on. By playing and replaying any number of conceivable enemy combinations, the computer ultimately reduces the possible to the plausible.

There are, of course, other configurations to the system. For example, computers attached to the field units will make unnecessary the vast storage depots and cumbersome supply lines that formerly slowed the army's pace. By keeping up-to-the-minute tallies of stock levels and requirements, they will instantly notify the rear echelons what is needed and where and when they are needed. By reducing the need for vast logistics support, our fighting forces on land, in the air, on and under the sea, could travel faster and lighter.

As incredible as all this might have seemed a decade ago, it is today, only the prelude to still other communications advances. We can, for example, foresee 2-way global sight, data and sound-communications with any person in the field, down to the individual GI if need be. The link-up will be

AVSCOM Presents Record Suggestion Award

A suggestion that will save the Government an estimated $237,000 a year has won an award of $1,000 for an employee of the U.S. Army Aviation and Surface Materiel Command, St. Louis, Mo.

The award, largest in AVSCOM history, was presented to Charles H. Black, section chief in the Directorate of Procurement and Production. Col Earl H. Hauschultz, AVSCOM commander, stated that the suggestion opens an entirely new field of operations in which his agency's automatic data processing system may be used.

Already put into operation, the suggestion calls for processing of contractual documents on the agencys' computer system. The method eliminates many hours of typing and other related clerical operations and assures greater accuracy and timeliness in preparing documents.

Initially installed in 1956 and twice replaced with newer equipment, the computer system has been employed since that time primarily for recording, maintaining, and processing a wide variety of data on more than 400,000 individual Army transportation items for which AVSCOM exercises logistical responsibility.

During recent years, the agency has had approximately 13,000 contracts under administration annually, all of which have been processed manually.

Further investigation of the new format indicates that its use will be extended to higher dollar value contracts and to other areas, virtually doubling the savings anticipated earlier. Col Hauschultz said printing the contracts opens the door to many other programs, such as computer-prepared letters to contractors advising them of delinquencies when delivery schedules have not been met.

Black has been employed by the Army Aviation and Surface Materiel Command since 1957.

Col Earl H. Hauschultz, AVSCOM commander, presents $1,000 suggestion award to Charles H. Black, section chief in the AVSCOM Directorate of Procurement and Production.

accomplished by a small portable transceiver connecting by radio through a ground terminal to a communications satellite. It will be possible to communicate directly simply by dialing the appropriate code number. In a similar way, computers will be able to contact other computers or surveillance devices anywhere in the world.

In addition to the satellite network, future communications systems will include high-capacity transistorized cables, Laser beams operating in space and through cables on the ground, and communications through rock strata under the surface of the earth.

Should many or most of these systems be made ineffective or destroyed by attack, we would still have emergency world communications by shooting missiles from hardened sites thousands of miles into space where for several hours they would broadcast pre-taped instructions or serve as active mesage repeaters to major areas of the globe.

Of course, tomorow's computers will be considerably smaller, more reliable, and vastly swifter than today's generation. They will use far less power, possess greater data capacity, and be infinitely more intelligent than anything in operation today. They will achieve results similar to those of the human brain, proceeding by a process of logic, learning by experience, never forgetting, and never repeating the same mistake.

We also will have sensing and identification devices that will function as an electronic equivalent to primitive animal sight and hearing. They will distinguish from among many objects, rejecting those which are unimportant to their mission, and reporting only the meaningful data—what types of enemy tanks, how many, moving in what direction, accompanied by what other vehicles and equipment. They will report directly to the computer, in digital code, in flashes of an instant.

These and masses of other data, assembled, sorted, evaluated, digested, and integrated, ultimately will feed out of a battery of computers in tomorrow's war room onto a huge cycloramic television screen showing a constantly updated sweep of events around the world.

The television cyclorama will be in color for clarity, differentiation and emphasis. It will be divided into segments, each section handling a different facet of the total display. For example, one such section might be a status map of the entire world, showing the global situation at a glance. Another would show one area in detail, perhaps in 3-dimensional relief. A third would present a live TV coverage of an event in process of happening.

On another segment of the screen, the computer will report, in written English, what and where the problems are. Another section will delineate the alternatives; still another will suggest appropriate actions, and a fourth will assess the probable and actual results. The visual information, incidentally, will be transmitted via satellite from TV cameras on the spot, operating from remote controlled planes, or inspection satellites.

Certain conclusions may be drawn from these developments and I will mention only three briefly.

First, for all its versatility and usefulness, I do not believe that any computer or combination of computers will replace personal judgment, intuition or inspiration, or ever conceive the heights to which the human spirit can soar. What, for example, would a computer have told Churchill in June 1940, after his army was shattered at Dunkirk and the Luftwaffe was droning over England? Certainly, the computer cannot be given final authority for the fate of the Nation. Man's future, for better or for worse, can never be surrendered to a machine.

Second, with computers in extensive use, there is bound to be a trend toward greater participation by headquarters in tactical operations. Although field decisions certainly will rest with the field commander, knowledge of how his actions will affect other theaters will offer opportunities for greater global coordination.

Finally, although human judgment will remain supreme, the military leaders of tomorrow must possess a broad working knowledge of computers, their uses and potentialities. Such indoctrination will be basic to every officer's training, and will be an integral part of the study courses in our Service academies and elsewhere. The presence of so many general officers at this 5-day seminar is one significant indication of the trend.

Progress in organization must keep pace with progress in technology, for to neglect one is to sacrifice the other. Certainly America, which historically has led in the development of new forms of communications, should also lead the way in providing for their most efficient use. Security and prosperity of our Nation demand no less.

General Gibbs, I congratulate you and your staff on your forward looking spirit and your initiative in constructing this seminar around a subject so vital to our future.

Former ARO Officer Places Another Kudo in Collection

Outstanding performance of duties while assigned to the Life Sciences Division, U.S. Army Research Office, Arlington, Va., has earned further laurels for Lt Col John C. McWhorter.

Col Ned T. Norris, chief of the International Division, Office of the Chief of Research and Development, recently presented to Lt Col McWhorter the First Oak Leaf Cluster to the Army Commendation Medal.

The ceremony was held in the office of the Senior Representative, U.S. Army Standardization Group, United Kingdom, where Lt Col McWhorter has been assigned as General Materiel (QM) Basic Research Representative, since June 1963.

The award recognized his service as a staff officer in the Medical and Biological Sciences Branch, USARO, Office of the Chief of Research and Development during the period July 17, 1961 to May 27, 1963.

While assigned to the Army Research Office, Lt Col McWhorter was awarded the General George C. Marshall Award in December 1963 as the outstanding graduate at the U.S. Army Command and General Staff College. He later was recommended for promotion ahead of others in his category.

Lt Col John McWhorter (right) receives First Oak Leaf Cluster to Army Commendation Medal from Col Ned T. Norris, chief, International Division, Office, Chief of Research and Development. Col Edward L. Smith, senior representative U.S. Army Standardization Group, U.K., observes.

Kudos

One of Picatinny Arsenal's most prolific contributors to the Civilian Suggestions Award Program, Irving L. Kintish, recently raised his grand total to 25 awards and commendations in 13 years at Picatinny.

One of the few non-Ph. D.'s listed in *American Men of Science*, and a member of the New York Academy of Sciences, Kintish is currently working in the Arsenal's Engineering Sciences Laboratory. He holds two patents on inventions and has 16 applications pending.

For his work on the Manhattan (atomic bomb) Project at the close of World War II with the Army Corps of Engineers, he received a silver medal and a plaque signed by former Secretary of War Henry L. Stimson.

ERNEST K. CHARLTON, Jr., a native of Nashville, Tenn., has been promoted to acting commodity manager for the Redeye missile system at the U.S. Army Missile Command, Redstone Arsenal, Ala., after serving as assistant to the chief of the Redeye Commodity Office. He holds a B.S. degree in mechanical engineering from Vanderbilt University and, since coming to Redstone, has been an engineer in the National Maintenance Point and deputy chief of the Control Office for ARGMA.

MAJ CHARLES R. ANGEL, Department of Radiobiology, Walter Reed Army Institute of Research (WRAIR), received the Army Commendation Medal late in February for exceptionally meritorious service from August 1960 to July 1963. He was cited for work as chief of the Chemistry Department and later chief of the Radio-Chemistry Division of the U.S. Army Tropical Research Medical Laboratory at WRAIR. Maj Angel holds B.S. and M.S. degrees from the University of Maine at Orono and a Ph.D. from the University of Rochester, Rochester, N.Y.

GEORGE E. BROWN, assistant chief of the Far Infrared Branch, U.S. Army Engineer R&D Laboratories (USAERDL), Fort Belvoir, Va., is one of the contributors to a chapter in Volume 3 of *Infrared Physics*. This international research journal is published by Pergamon Press of London, England.

GEORGE A. GARIEPY and Otis R. Parnell, also USAERDL, each received $25 cash awards for a patent application on a "magnetically operated mercury switch."

A. J. RUTHERFORD, chief of the Mechanical Equipment Branch, USAERDL, was recently honored by the Society of Automotive Engineers (SAE) with a Technical Board Certificate of Appreciation. He was honored for his work in spearheading the efforts of the SAE's Construction and Industrial Machinery Technical Committee's steering group during the past four years.

Both Outstanding Performance Rating and Quality Salary Increase (QSI) awards were presented recently to USAERDL employees Donald J. Looft and Joseph H. Sullivan. It was the fifth Outstanding award for Looft, chief of the Electrical Power Branch.

Harry L. Keller and Marcus B. Aylor received QSI awards for work in the Barrier and Intrusion Detection and Mechanical Engineering Branches.

Outstanding ratings were presented to five others at the Laboratories, Mrs. Dorothy J. Wilson, Mrs. Frances M. Dougherty, Harold Gillespie, Luther Little and Mrs. Bobbie J. Duke.

John S. Pace, Jr., employee of the U.S. Army Engineer R&D Lab's Military Engineering Branch, who recently received a $100 award and letters of patent for his invention of a "fluid lock," explains operating control to Col Philip G. Krueger, deputy commanding officer of the Labs at Fort Belvoir, Va. The fluid lock is capable of linear and rotary motion and operation by remote control. Its moving element is a combined splined and pistoned shaft operating within a cylinder tube and rotor tube. The lock can be used in gun laying, material handling, heavy gear shifting, and on assault bridge sections mounted on a float or ferry.

Edward Halas received a promotion certificate; Edwin F. Bohlayer and Mrs. Harriet E. Taylor received suggestion awards of $50 and $15 respectively; a Special Act and Service Award of $50 was made to Frederick F. Carlson and a similar award of $25 each to Gerard J. King and Brian S. Miller.

Mr. Carlson received $50 for coauthoring an article on "Paramagnetic Resonance Nitrogen Atoms in X-Ray Irradiated Sodium Azide" published in the September 1963 issue of the *Journal of Chemical Physics*. Mr. King and Mr. Miller received $25 each for coauthoring an article on "Crystal Structure Change of Sodium Azide at 19 C" published in the November 1963 issue of the same journal.

Article Reprints Offered On Animal Drug Screening

Scientists interested in obtaining reprints of "An Appraisal of Animal Drug Screening Techniques Used in Psychopharmacology," an article published in the *Journal of New Drugs*, may address requests to Dr. C. Jelleff Carr, the author, U.S. Army Research Office, Arlington, Va.

Dr. Carr is chief of the Scientific Analysis Branch, Life Sciences Division. His article reviews basic principles and developments in the field of animal behaviorial studies using behavior modifying drugs. One of the goals is development of a scientific basis for the use of psychotropic drugs in clinical practice.

The article states that four major objectives may be identified for animal behaviorial studies in psychopharmacology: 1) to provide an understanding of the mechanism of action of these drugs; 2) to discover new psychotropic drugs of potential value in the treatment of mental diseases; 3) to use behavior-modifying drugs as a means of better understanding behaviorial processes; and 4) to study drug toxicity, tolerance, addiction, absorption, distribution and metabolism.

Discussed in the article are aspects of research design, controlled variables, and problems of variable measurement, as well as the specific characteristics of the animal species that are of primary interest to the research investigator.

Dr. Carr describes the effects of various drugs in several categories of animal behavior tests—those involving unlearned behavior, learned behavior, animal responses to environmental stimuli, and normal animal behavior, as modified by drugs.

Flexible Explosive Called Demolition Expert's Dream

A new flexible explosive that resembles a giant adhesive bandage and can be stuck against practically any surface, has been developed jointly by the Army's Picatinny (N.J.) Arsenal and the Du Pont Co.

Described by its creators as a demolition expert's dream, the material is tough, safe, powerfully efficient, and greatly increases the speed of field operations. It adheres readily to railroad rails, structural steel, concrete or timber.

Test quantities of the new product have been manufactured in half-pound rectangular sheets ¼-inch thick and measuring 12 by 3 inches. A special adhesive coating is applied to one side of the sheet during manufacture, then covered by a protective paper easily peeled off for application to the surface of the target. The charge also can be stapled to many targets.

Relatively insensitive to shock, the explosive can be cut, hammered, or burned in an open fire. It has even withstood the impact of a .30 caliber bullet fired at close range. It detonates readily when used with blasting caps or a detonating cord.

Another advantage of flexible explosives is ability to perform regardless of temperature and weather extremes. At minus 40° F., they can be bent to follow the contour of irregular-shaped targets, and no ill-effects were noted after storage at 160° F.

For unusual conditions, a supplementary adhesive developed at Picatinny may be used to attach flexible explosives to cold, wet or underwater targets. Effective in temperature extremes of minus 40° to plus 125°F., furnished in metal squeeze tubes complete with wooden applicators, and requiring neither mixing nor pre-heating, the adhesive permits application of the explosive within 30 seconds.

Flexible explosives have passed desert environmental tests at Yuma, Ariz., supporting the belief they are predictably reliable and ideally suited to military applications. Arctic testing in Alaska is under way.

Picatinny project engineers for flexible explosives are Stanley J. Lowell, chemical engineer; Shepherd Levmore, mechanical engineer; and Robert T. Schimmel, technician. All are members of the Arsenal's Artillery Ammunition Laboratory.

Pridefully representative of enlisted technicians in Army R&D are members of meteorological team shown here. Assigned to the Army Ballistic Research Laboratories at Aberdeen Proving Ground, Md., they are one of the smallest of 12 metro teams from the Army Electronics R&D Activity at Fort Huachuca, Ariz., assigned to duty stations in the northern hemisphere. Their duty at the APG is to measure effects of weather on experiments related to the guidance of missiles, artillery, rockets and other U.S. Army weapons. While at Edgewood Arsenal in November 1963, the unit was rated first of the 12 teams.

AMRA Summer Work Sparks Scientific Career

Summer employment of science students at the U.S. Army Materials Research Agency, Watertown (Mass.) Arsenal, is directed toward the goal of interesting them in careers in Army science. In the case of Kevin C. O'Brien, as indicated in the following letter to the AMRA commander, the program is serving its purpose:

Dear Sir:

Now that I have been in graduate school at Brown University for awhile I believe that I can better assess the value of the two summers I spent at AMRA.

As I have reported before, I most probably should never have come here if it had not been for my opportunity to work at AMRA. Watching and working with such men as Dr. Eric Kula and Lt James Flowers gave me a much better idea of what research in physics was really like. It was at AMRA that I made the decision to attempt to get a doctorate in physics. Beyond that, I am sure that the paper I wrote my first summer and the experience I had greatly increased my chances of being accepted at a good graduate school.

I was fortunate enough to receive a research assistantship here at Brown and originally expected to continue working on my AMRA problem; that is, *Anisotropic Properties of Metals.* (Jim Flowers, Pat McEleney and I just submitted a paper to *Journal of Applied Physics* on the single-crystal elastic constants of titanium, based on work done at AMRA.) However, I was chosen by Prof. Gerald Heller, late of the Lincoln Laboratories, to work with him on antiferromagnetic resonance. Upon being told that I had worked with Eric and Jim at AMRA, his interest in me increased greatly. He is one of the top physicists at Brown and working with him should be a tremendous opportunity.

The above are just the principal manifestations of the innumerable benefits I derived from my two summers at AMRA. For the next few years I expect to be working down here summers, but when I get through here (with or without a doctorate), I will certainly seriously consider returning to AMRA on a permanent basis.

I am very grateful for the apportunities given me which have proved so valuable.

Capt Luther S. Lollar (right), Signal Corps, Electronics Directorate, U.S. Army Test Evaluation Command, Aberdeen Proving Ground, Md., is congratulated by Maj Gen James W. Sutherland, CG, USATECOM, after receiving Distinguished Flying Cross and First, Second and Third Oak Leaf Clusters to the Air Medal for heroism in April 1963 for helicopter support of a combat assault mission in Viet Nam. Mrs. Lollar shares husband's pride.

Contract Scientists Investigate Weaknesses of Virus

Microscopic viruses capable of destroying a living cell and reproducing themselves 1,000 times within a life span of 20 minutes are being studied under an Army contract with Philco Corp. Research Laboratories.

The "big look into the tiny world of the virus" has been in progress about two years and was extended recently under a contract initiated by the U.S. Army Biological Laboratories, Fort Detrick, Md. The BioLabs are the center of Army effort in this field.

Scientists at the Philco Labs are seeking a more knowledgeable understanding of the fundamental mechanisms which affect the ability of a virus to attach itself to a living cell and subsequently to destroy it. Of course, biochemists have known for some time what goes on—but only in a general way.

"We're basically interested in the virus' susceptibility to damage during its 'life cycle'," said Dr. E. Richard Walwick, the senior research scientist who is heading up the biochemistry project. "But to find out, we had to first take a close look at the individual steps of the life cycle—to find out what goes on when a cell is infected by a virus." He described the life cycle as follows:

A single virus attaches itself to a cell's outer covering, called the wall. Then through a still unknown process, it is able to invade through the cell wall and an underlying membrane and into a substance called cytoplasm. The cytoplasm surrounds the cell's nucleus which controls its life processes.

Once in the cytoplasm, the virus heads for the nucleus, and, once there, subverts it, ultimately destroying the cell itself. During the process, the virus and its increasing progeny feed on the cell until it collapses and the 1,000 new viruses head elsewhere to infect and to take over other cells.

Viruses have varying susceptibility to damage during the cycle, although this susceptibility hasn't been definitively determined, Dr. Walwick said, adding:

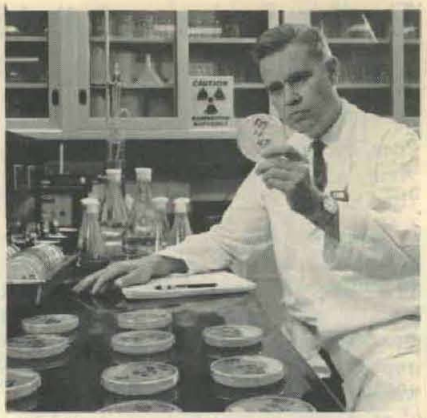
"We anticipate that we will be able to pin it down to some extent in this study. We are specifically interested in finding out at what points during their life cycle viruses are more easily damaged by drying and dispersing."

In the experiments, at a predetermined time in a 20-minute life cycle the process is interrupted and the viruses separated from the cell. The viruses are then dried and dispersed, and once again collected and studied.

"A quantitative look into the effect of environmental conditions on the individual 'life cycle' of the virus is necessary," Dr. Walwick said, "if we are to understand in detail just what goes on when a virus attacks a cell, why some cells do a better job of resisting a virus infection, why others don't, and why a virus may be more easily damaged at one point in the cycle than at another."

While the study's primary purpose is to give the U.S. Army a better understanding for defense against biological agents, the effort has strong humanitarian value.

"If we are to do a better job of preventing illnesses caused by viruses," Dr. Walwick said, "we must learn more about their fundamental behavior, particularly their weaknesses."



Dr. E. Richard Walwick, senior research scientist at Philco Corp.'s Research Labs, examines cultures for infectivity in a program to learn more about the weaknesses of viruses.

Ex-Beauty Queen Turns to Firepower at Arsenal

Among Picatinny Arsenal's 2,500 engineers, scientists and technicians, in Dover, N.J., only one holds the distinction of being a beauty contest winner.

Miss Joyce Haley, 22-year-old physicist in the Warheads and Special Projects Laboratory, was voted "Miss Hampton" during her senior year at Hampton Institute in Virginia.

The title was based not only on personal appearance, but on popularity, leadership, extra-curricular activities, and her academic record. Miss Haley won outstanding honors for achieving a straight "A" average during her four years of physics courses at the Institute.

In fact, she chalked up such an outstanding academic record that she was one of four Hampton Institute students selected for a course in radioactive isotopes offered by the Oak Ridge Institute of Nuclear Studies.

Joyce Haley

Prior to graduation last June, Miss Haley served as the school's Homecoming Queen, and was selected "Miss United Negro College Fund" during that organization's annual meeting at the Statler-Hilton in New York.

Joyce also was elected Sophomore Class Sweetheart at Hampton, was first vice president of the Women's Senate, the school's governing body, and a member of Delta Sigma Theta Sorority. She is listed in *Who's Who Among Students in American Colleges and Universities*, and is a member of the American Institute of Physics.

Last spring, at the National Eastern Science Conference held in Boston, Miss Haley presented a paper on research on the "Distribution of P-32 in Kidney and Muscle Tissue of Mice."

Assigned to Picatinny's Ammunition Engineering Directorate, mathematics analytical section, Joyce applies her professional knowledge to the Arsenal's mission of creating nuclear munitions, warheads, bombs, mines, grenades, pyrotechnics, fuzes, artillery and mortar ammunition, and rockets.

Among Miss Haley's hobbies are oil painting and drawing architectural floor plans. Before she decided to major in physics at Hampton, she had given a great deal of thought to studying architecture.

DoD Directive Sets Program Definition Phase Policy

Policies pertinent to application and conduct of the Project Definition Phase (PDP) in Department of Defense methods for planning and initiating major projects are set forth in a new Directive No. 3200.9.

Announced by the Department of Defense early in March, the changes are expected to have a large impact on Defense contractors in all states.

The PDP, which has evolved as a management technique, is as the name implies a period of time—a phase—which is set aside for precise planning of engineering, management, schedules and cost factors, prior to commitment to a full-scale development project.

During this period, the proposed development project is subjected to detailed analysis which results in more realistic estimates of what will be developed, how it will be developed, and the cost and schedules.

The PDP concept will be applied to all proposed engineering or operational system development projects whose estimated development, test and evaluation costs amount to or exceed $25 million or whose estimated production costs amount to or exceed $100 million.

The PDP technique was first used on the TITAN III space booster and has since been applied to the Mobile Medium Range Ballistic Missile, the LANCE missile, the EX-10 torpedo and Military Communications Satellite program.

Some of the major benefits of PDP are expected to be reduction of technical changes during the development-production cycle, decreased total cost, improved operational effectiveness or early cancellation of projects which might have proceeded into full scale development, with later cancellation, after the expenditure of large sums of money.

The Directive, signed by Secretary of Defense Robert S. McNamara, will be available to industrial associations as part of a planned education and indoctrination program.

3 Engineer Labs Men Report On Work at ASCE Meeting

Three U.S. Army Engineer Research and Development Laboratories engineer-scientists will be among speakers at the annual dinner meeting of the National Capital Section, American Society of Engineers (ASCE), Apr. 14, at Fort Belvoir, Va.

Richard P. Schmitt, chief of the Sanitary Sciences Branch, will discuss "Transportable Seawater Distillation Equipment," featuring the Labs' trailer-mounted distillation unit, capable of producing 125 gallons of drinking water an hour. (See October 1963 issue, page 35.)

"Photoelastic Stress Analysis-New Application on M60 Armored Vehicle-Launched Bridge (AVLB)," will be discussed by John V. Kerr, engineer, Military Engineering Branch.

Howard H. Mullins, project manager for the mobile floating assault bridge-ferry, will discuss the top priority vehicle designed to surmount inland water obstacles in assault operations. (See March issue, page 17.)

Dr. George W. Howard, technical director of the Labs, is program chairman for the meeting.

HDL Publication Describes Labs' Scientific Innovations

An innovation at the Harry Diamond Laboratories to keep interested Government personnel and the public informed on essential features of certain technology conceived or developed by HDL personnel, or under HDL contracts, is the HDL Technical Disclosure Bulletin.

The disclosure consists of a single page showing a schematic drawing and a description of the principles of operation involved.

The first four Bulletins distributed this past month are titled: Induction-Triggered Two-Terminal Electronic Clock Driver, by John M. Shaull; 8-4-2-1 Binary to 9 Segment Numeric Readout Conversion Matrix, by Ira R. Marcus; Miniaturized Dielectric Loaded Waveguide Antenna, by Howard S. Jones, Jr.; Half Wavelength Loop Diode Limiter, by Robert V. Garver.

Requests for the Bulletins, which are planned for distribution at about the rate of two each month, may be made to the Harry Diamond Laboratories, U.S. Army Materiel Command, Washington, D.C., ATTN: Public Information Officer. Reproduction of the material, with credits, is permitted.

Army R&D Leaders Briefed On Soviet Polar Capability

Seventy of the Army leaders in cold regions research and development gathered at Hanover, N.H., Mar. 17-18, for a symposium highlighted by a classified briefing on Soviet capabilities in polar and arctic regions in the event of war.

The meeting was held at the recently opened headquarters of the Cold Regions Research and Development Laboratory, which gave many of the participants their first opportunity to view the ultramodern facilities the Army has established in consolidating its cold regions R&D.

All of the Army's major commands, Army laboratories concerned with polar and arctic R&D, and the Defense Intelligence Agency were represented in the symposium. General discussion covered requirements for cold regions R&D, military problems in Greenland and Alaska, and engineering aspects.

Among the technical papers presented were "Trafficability of Snow and Muskeg in Northern Areas," "Glacial Water Supply and Sewage Disposal Systems," "CRREL's Research Program on Visibility in the Cold Regions Environments," "Structural Control of the Physical Properties of Ice Sheets," "Multiband Sensing in Cold Regions Environments," and "Foundations in Permafrost."

Aberdeen Reports Savings by 65 Management Actions

The Aberdeen (Md.) Proving Ground Comptroller's Office has reported 65 management improvements were made by its various organizations for the first half of FY 1964, with 14 showing one-time benefits of $106,262.

Comptroller Walter P. Gibson said other improvements not measurable in monetary terms enhanced administration and operation of the Proving Ground.

Two improvements were designated outstanding. Both originated in the Transportation-Maintenance Division, whose acting chief is Henry H. Waters. Consolidation of vehicle and equipment administration, control and maintenance brought estimated benefits of $80,000.

Combining three maintenance facilities into one resulted in 13 less civilian spaces and two less military spaces. Salary overtime from the areas involved dropped from a previous high of $5,547 to $190 for a 6-month period.

A 77 x 240 foot building no longer is needed for maintenance activities and is available for other use; some $12,800 in shop tools and minor equipment were returned to supply channels; and improved rates for commercial transportation of explosives saved $5,500.

R&D Chiefs, Noted Educators Listed on National JSHA Program

High ranking Army research and development officials and noted educational leaders will address about 140 of the Nation's talented high school science students at the second National U.S. Army Junior Science and Humanities Symposium (JSHS), Apr. 22-24, in Washington, D.C.

Sponsored by the Chief of Research and Development, the symposium is being conducted by the U.S. Army Research Office—Durham (N.C.) with the cooperation of the U.S. Office of Education. Business sessions will be held at the Industrial College of the Armed Forces, Fort McNair.

"The Values and Limitations of Science in the Modern World," the opening address, will be presented by Dr. Polykarp Kusch, chairman, Department of Physics, Columbia University, who will be introduced by Dr. Ralph E. Gibson of the JSHS Advisory Council.

Assistant Secretary of the Army (R&D) Willis M. Hawkins is programed for the luncheon address Apr. 22 in the Pentagon auditorium. He will be introduced by Lt Gen William W. Dick, Jr., Chief of Research and Development.

Director of Army Research Brig Gen Walter E. Lotz, Jr., will discuss "Selection of a Career in Science" as the banquet speaker Apr. 22. Dr. Richard A. Weiss, on leave of absence as deputy and scientific director of Army Research while attending the National War College, will introduce him.

Dr. Mason W. Gross, president of Rutgers State University, is on the agenda as an Apr. 23 banquet speaker at the Skyline Inn. Dr. Ernst Weber, president of Polytechnique Institute of Brookyln and chairman of the JSHS Advisory Council, will make the introduction.

Among other leading speakers are Dr. William O. Baker, vice president of Bell Telephone Laboratories; Dr. Samuel D. Proctor, president of the Agricultural and Technical College, Greensboro, N.C.; Dr. Weston LaBarre, professor of anthropology at Princeton University; Dr. Robert S. Woodbury, professor of history and technology, Massachusetts Institute of Technology; and R. J. Gettens, head curator, Freer Gallery, Smithsonian Institution.

A message from President Lyndon B. Johnson will be read by Merriam H. Trytten, director of scientific personnel National Academy of Sciences and a member of the JSHS Advisory Council. Lt Gen August Schomburg, commandant of the Industrial College of the Armed Forces, U.S. Commissioner of Education Francis Keppel, and Maj Gen Philip C. Wehle, commanding general, Military District of Washington and host of the symposia, will convey greetings.

Based upon prize winning presentations of technical papers at 19 regional Junior Science and Humanities symposia sponsored by the Army during the current academic year, 120 selected students will be representative of some 4,000 who took part. An additional 21 students have been drawn from the seven symposia conducted in six states by the U.S. Department of Health, Education and Welfare under the HEW Youth Congress Program.

Accompanying the high school scientists will be a group of about 50 adults who are science teachers, representatives of state departments of public instruction, and directors of the regional JSHS activities.

The symposium program will include a wide variety of scientific clinics which will give students an opportunity to discuss their science career interests with a number of educational leaders representative of various fields of science and the opportunities each field presents.

The clinics will give the students an insight into "Living in the Computer Age"; "The Human Animal"; "History of Technology"; "Chinese Bronze Metallurgy"; "Translation by Computers"; "Severe Storms: What Can We Do About Them"; "Water Desalinization"; "Refractory Metals"; "Molecular Biology"; "Nutrition and Food Preservation"; "Coordination Chemistry"; "Spectroscopy"; and "Geology of Explosion Craters."

Field trips are scheduled to the Smithsonian Museum of History and Technology, the National Bureau of Standards, Walter Reed Army Institute of Research, and the Harry Diamond Laboratories.

Dr. Robert S. Huntoon, director, Institute for Basic Standards, will introduce the group to the NBS. The feature attraction at WRAIR will be the nuclear reactor for biological research, but small units will be taken on trips to each of the laboratories and given 14 demonstrations of modern research techniques. Billy M. Horton, technical director, will welcome the students to HDL where they will be shown research in fluid dynamics control systems, metallurgy, polymers and advanced instrumentation.

Dean H. L. Levy of City University of New York will make the concluding address, summarizing the results of the symposium.

The Army Junior Science and Humanities Symposia Program was established in 1961, following Secretary of the Army approval of a plan presented by the Chief of Research and Development through the Assistant Secretary of the Army (R&D). The program is now funded and supported jointly with about 50 major industrial firms, educational institutions, scientific organizations, and Army laboratories through the U.S. Army Research Office.

The groundwork for the program was laid in a series of regional symposia introduced in North Carolina by the Army Research Office—Durham in 1958. (AROD then was known as the Office of Ordnance Research.)

The first National JSHS was held in April 1963 at the United States Military Academy at West Point, N.Y.

MIT Scientist Gives Views On 'Think' Machine Problem

The miracle of man's nerve system cannot be mechanically copied in scientific hardware until after considerably more study, a lecturer from the Massachusetts Institute of Technology recently told scientists and engineers of the Army Missile Command.

Dr. Jerome Y. Lettvin, a neurophysiologist with MIT's Research Laboratory for Electronics, said the complicated network of the human nerve system must be understood much more thoroughly before scientists can even hope to build a "thinking" machine.

The Research Laboratory for Electronics at MIT has made many studies of biological phenomena for possible contributions to science and technology, but Dr. Lettvin said biological discoveries always come after man's inventions.

As an example, Dr. Lettvin said that scientists invented radar, and biologists found out afterwards that the bat uses a similar system of sound waves for a guidance system. He challenged his audience to name an example where a biological discovery was made before a similar invention was made by man.

Dr. Lettvin also discussed the subject in a top-level briefing before Maj Gen John G. Zierdt, CG of the Army Missile Command, Dr. W. W. Carter, chief scientists, and other military and scientific advisers.

Community Good Will Evidenced as USAEPG Celebrates 10th Anniversary

Greely Hall, nerve center of the U.S. Army Electronics Proving Ground, Fort Huachuca, Ariz.

When the U.S. Army Electronic Proving Ground at Fort Huachuca, Ariz., recently celebrated its 10th anniversary, the honorary proclamations signed by Arizona Governor Paul J. Fannin and numerous leading officials were soundly based in economic facts.

The monetary impact of Fort Huachuca is felt throughout the state, not only in the form of expenditures for military purposes but also in the rapidly swelling number of citizens who settle there when they retire from active military service.

Total military expenditures at Fort Huachuca in the past three years are reported at about $202 million. About $94.5 million went to Arizona businessmen and contractors in procurement actions.

Financial considerations, however, do not explain completely the cordiality of military-civilian relationships in the state, as was indicated by the anniversary fete participants. Personnel of the Electronics Proving Ground have, over the years, established enduring friendships with the citizenry.

That explains why many who have served there come back to live when they have concluded their military careers. They reside now from Tucson to Nogales and from Douglas to Show Low, not forgetting Tombstone.

The electronic nerve center that is Fort Huachuca today is a far cry from what is was in 1954 when it was reactivated as the sole remaining active Army post of an original 50 Arizona territorial military garrisons.

Visitors during the anniversary festivities saw a gleaming array of 1,385 modern homes for USAEPG personnel, and an assembly of military research and development facilities that reflects the importance of the installation. The headquarters is a multi-million dollar structure.

Maj Gen E. Lenzner (USA, Ret.)
First CG at Huachuca

Maj Gen B. H. Pochyla
Present Huachuca CG

In 1954 Fort Huachuca was an isolated former cavalry post. Buffalo roamed what is now the testing range. The dust of neglect lay thick on the 60-year-old buildings erected to house the troops of the 10th Cavalry.

Selection of the desert site for the Army Electronics Proving Ground was based on its freedom from electromagnetic interference and a variety of terrain and weather features best suited for testing of battlefield communications equipment.

Today the testing ranges hum with the buzz of surveillance drones. The buffalo have gone; computers have taken up residence.

Greely Hall, the center of the Proving Ground's many testing activities, was dedicated on Armed Forces Day, May 16, 1959 and is the headquarters for soldier-civilian scientist teams who work together to provide space-age electronic systems for the armies of the future.

During the week-long anniversary observance, highlighted by the launching of a surveillance drone, a flyover of aircraft, and a military review parade, Maj Gen Benjamin H. Pochyla summed up his command mission by saying:

"Our goal at Fort Huachuca is to test and evaluate electronic communications equipment and systems to insure that only the finest and most economical will be used to equip and support the ultimate weapon—the United States soldier."

SD-1 surveillance drone is lowered from truck for firing at USAEPG.

Sgt W. Jordan, Specialist J. Brown monitor the radio transmissions.

Army Joins With DoD, NASA in Arranging World's Fair Exhibit

Three U.S. Army exhibits are being arranged as part of the extensive Department of Defense-National Aeronautics and Space Administration joint participation in the New York World's Fair, starting Apr. 22. The Army displays will be in the Transportation and Travel Pavilion.

"Man on the Moon" is the title of the Army exhibit expected to attract considerable attention. Dioramas will depict the hostile environment the first moon explorers are expected to find and a sound movie will present concepts of the dangers and problems that may be encountered.

One scene from the film, for example, shows two American moon explorers witnessing an avalanche they cannot hear because, the narration explains, the moon has no atmosphere to carry sound waves. The exhibit will show how man, using knowledge gained in surmounting conditions of hostile environments on the earth, is able to cope successfully with lunar conditions.

For example, electric power will be generated by a nuclear source—by using the knowledge gained by the Army Corps of Engineers pioneering effort in setting up a nuclear power plant at Camp Century in Greenland. Knowledge gained by the Army Map Service through its lunar mapping program will also be demonstrated in the exhibit.

"Army Mobility Looks to the Future" is the theme of a second exhibit that will illustrate possible concepts of advanced mobility equipment, including the fantastic "Landwalker," a transport vehicle moving on mechanized stilts. Eight large-scale futuristic murals will comprise this exhibit.

The third section of the Army display will feature existing or prototype models of equipment designed to surmount difficult transportation problems. Plans for this exhibit were not firm at press time. Tentatively, they included a working model of GEM (ground effects machine), the M113 armored personnel carrier, a Chinook helicopter, and a 4-unit rolling liquid transporter.

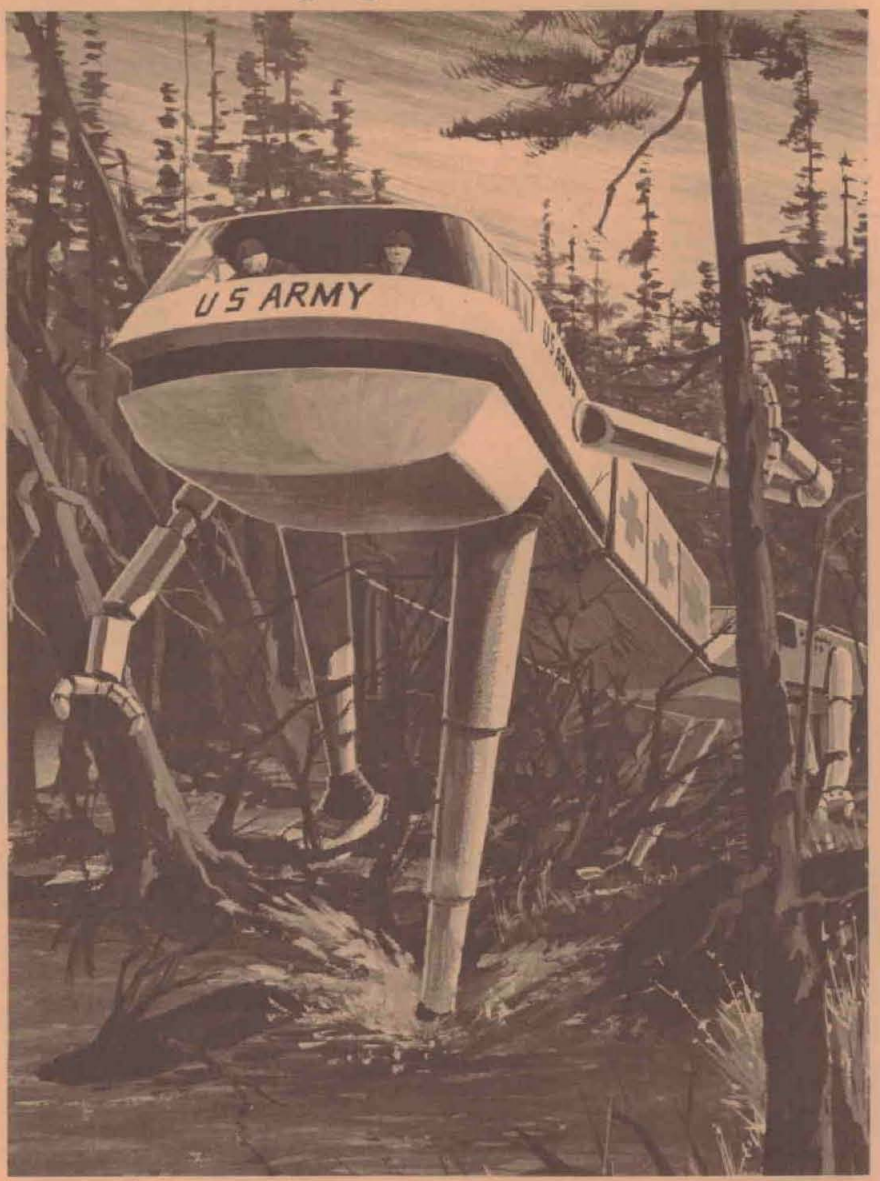
The Department of Defense and NASA will show what has been called the most imposing array of full-scale Air Force and NASA rockets and spacecraft ever assembled outside of Cape Kennedy, Fla. Known as the Space Park, it will be one of the major outdoor features of the Fair.

Included in the DoD-NASA exhibit will be a full-scale boat-tail section of the massive Saturn V rocket designed to carry American astronauts to the moon. The model will stand 85 feet tall and measure 33 feet in diameter.

Towering over the 2-acre Space Park exhibit will be a Titan II-Gemini launch vehicle and spacecraft. The 110-foot-high Titan booster will stand vertically, with the Gemini capsule mated on top in launching position.

Surrounding the Titan II—Gemini will be full-scale models of the Apollo spacecraft, Lunar Excursion Module, the actual Mercury capsule which carried Astronaut (Lt Cmdr) Scott Carpenter during the second U.S. manned orbital flight, Atlas-Mercury and Thor-Delta launch vehicles, and X-15 rocket-powered research aircraft, and the Agena space vehicle.

One of the DoD exhibits will feature a nuclear detection satellite, demonstrating a method for detecting nuclear explosions in space. This exhibit is being arranged by the Advanced Research Projects Agency (ARPA).



THE ARMY LANDWALKER is one of the eight futuristic murals that will appear in the Department of the Army's exhibit, "Army Mobility Looks to the Future," scheduled to open at the New York World's Fair Apr. 21.