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Army Reports Steady Gains On STINFO Effort Though Slowed by Controversies

Multifold actions to establish Army-wide scientific and technical information systems tailored to specific requirements of various disciplinary and professional groups are making steady progress despite interagency controversy slowing some procedures.

Army Director of Technical Information Col Andrew A. Aines reported on Jan. 20 that advances are being made in all major areas of STINFO effort. Included are reporting procedures for the Army Research Task Summary (ARTS), the Chemical Information Data System (CIDS), the Engineers Data Information System (EDIS), and the On-Site Survey of personnel and resources.

Publication of the ARTS in the form initiated in 1954 and continued with relatively minor changes in style and format until 1962, that is, six volumes (each with a classified insert) separated according to scientific disciplines, is still under consideration.

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ASA(R&D) Hawkins Appoints Army Research Council To Deal With Army In-House Laboratories Problems

Establishment of a 9-member Army Research Council to deal with problems of Army in-house laboratories as related to long-range planning, personnel management and optimum use of funds and facilities has been effected.

Assistant Secretary of the Army (R&D) Willis M. Hawkins announced the organization of the Council (TARC) early in January, following closely upon advice of a select, high-level group of scientists, industrialists and educational leaders.

Findings of the committee after several months of study of the needs of Army in-house laboratories served to support conclusions Mr. Hawkins had reached by personal review of the Army R&D program since he became ASA (R&D) in September 1963.

After consulting with Chief of Research and Development Lt Gen William W. Dick, Jr., Mr. Hawkins approved appointment of a 9-member council empowered to assist them in formulating policy, plans and programs for Army research and exploratory development.

Director of Army Research Brig Gen Walter E. Lotz, Jr., is coordinator of TARC and Dr. Ralph G. H. Siu, scientific director of the Research Division, U.S. Army Materiel Command, is chairman.

Members of TARC also will wear a second hat as Army representatives on the newly organized Joint Advisory

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Army Slates National JSHS Under Sponsorship of OCRD In Washington, April 22-24

Plans for the Second National Junior Science and Humanities Symposium sponsored by the Army call for 150 outstanding science students and 50 administrators and teachers to convene in Washington, D.C., Apr. 22-24.

The Military District of Washington will be host for the Symposium. Sessions will be conducted at the Industrial College of the Armed Forces at Fort McNair, a landmark along the Potomac River of historic significance comparable to that of the U.S. Military Academy at West Point on the Hudson River, where the 1963 National JSHS was held.

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ASA(R&D) Hawkins Briefed on Operations of AROD

Assistant Secretary of the Army (R&D) Willis M. Hawkins (center) confers with Col Nils M. Bengtson, CO, Army Research Office, Durham, and Dr. Douglas M. Knight, president of Duke University, during Jan. 16 visit to the facility for overall briefing on operations. (See story on page 17).

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Army R&D Newsmagazine

Vol. 5, No. 2 February 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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Army Electronics Command: Mission and Philosophy

By Major General Frank W. Moorman

Commanding General, U.S. Army Electronics Command

Maj Gen Frank W. Moorman

Electronics has become the magic word of our century. From unheralded beginnings in the application of primitive electron tubes for early wire and wireless communications systems almost 60 years ago, this concept has evolved to the predominent technology of our age. It has entered into practically every corner of our life—professional as well as private, civilian as well as military.

This rapidly expanding technology has superimposed itself forcefully upon almost all other previously existing fields of technology. Many of their benefits would be insignificant today without their close association with electronics, which continues to establish similar dependency for newly unfolding technologies at their very inception. Nuclear energy technology and space technology are significant examples.

Without electronics we never could have opened the door to outer space, nor could we hope to accomplish the ambitious goals which have been set for the exploration of the universe. *The importance of electronics for military applications has been manifested in the new Army organization through the establishment of the Electronics Command.*

As to the term Electronics Command, a matter of semantics needs clarification. It would be rather preposterous to assume that a command could be established which would be all-inclusively responsible for all electronics the Army uses anywhere. The Missile Command is, for instance, so highly dependent on electronics which are thoroughly specialized and tailored to its commodities that it could hardly be expected to function without being in control of these application phases.

Similar situations prevail—in varying degrees—for the Munitions, Weapons, Mobility, and Test and Evaluation Commands, or if we go beyond the AMC framework, even for the Army Medical Service.

Why then do we need an Electronics Command at all? We need it for the vital and most original electronics commodities of our Army: *Communications, Combat Surveillance and Target Acquisition, Automatic Data Processing, Electronic Warfare* and associated ground-based and manned or unmanned airborne techniques.

The habit of setting the term "electronics" equal to these initial military application areas of electronics is probably the reason for the designation given to our command. Possibly another name could have been coined, like Information Equipments Command, since we deal primarily in commodities involved in the communication, gathering and processing of information. However, even this designation would not be sufficiently descriptive. There is another very good reason for using the name Electronics Command.

The electronics R&D facilities and the associated human talents and resources which comprise this command represent not only the cradle of U.S. military electronics in the past, but also a tremendous capability to drive ahead in the future in the electronics technologies at large. As in the past, these serve as a basis for the specialized applications needed in any Army commodity command.

In this respect, Army reorganization would not have been worthwhile if the traditions of previous organizations—regardless of how proud we are of them—were to hamper capabilities. Today we should be able to perform any of the Army's tasks within the organization and at the location which, all factors considered, promises the best overall solution to the problem. If this favorable condition happens to coincide with tradition, the situation is particularly fortunate, as is the case within the Electronics Command with regard to many aspects of R&D in electronics technology.

This, then, is how I see our mission today: Our most important responsibility is *Military Communications* and all associated electronics aspects. Our second field calls for the electronic means of gathering the information required for effective operation in the combat area—the various aspects of *surveillance*, including the collection of environmental data. Since much of Army

(Continued on page 26)

Vance Succeeds Gilpatric As Deputy Defense Chief; Ailes Steps Into Vacancy

Elevation of Cyrus R. Vance to Deputy Secretary of Defense when Roswell L. Gilpatric vacated that office Jan. 20 was followed closely by the swearing in of Stephen Ailes as the new Secretary of the Army.

As Secretary of the Army since July 1962, Mr. Vance enhanced the reputation he had acquired for hard-driving competence as general counsel for the Department of Defense from January 1961 until he stepped up to Cabinet rank.

A *New York Times* editorial on Jan. 11 described Mr. Vance as a "personable and able official, long, well and favorably known to both Mr. McNamara and President Johnson. He is an excellent choice, a frank and capable man of youth and vigor."

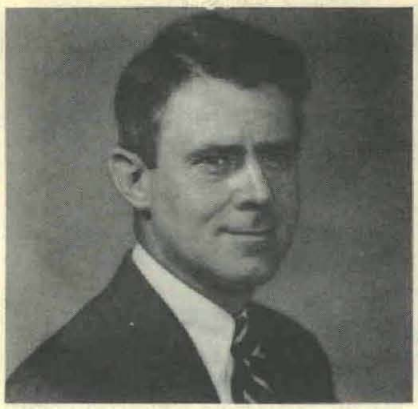
In a similar commendatory vein, a *Washington Post* editorial paid tribute to Roswell Gilpatric for "ably filling this post in one of the most eventful periods in the history of the Department of Defense. . . . The country is indebted to him. The Defense Department is indebted to him." Mr. Gilpatric will return to his New York law practice.

Service for the past three years as Under Secretary of the Army has groomed Mr. Ailes for his new responsibilities. Credited with having demonstrated a detailed knowledge of Army lore and weaponry, he was born in West Virginia. He received a B.A. degree from Princeton in 1933 and a B.L. degree from West Virginia in 1936.

After a short period of law practice in Martinsburg, W.Va., he returned to the University of West Virginia as assistant professor of law (1937-1940). From 1942 to 1946 he was on the legal staff of the Office of Price Administration and was assistant general counsel, Consumer Goods Price Division.

In 1947 he took leave of absence to go to Greece as counsel to the American Economic Mission. Recommendations from this unit were embodied in President Truman's program for aid to Greece and Turkey.

Upon his return to the United States, he joined the law firm of Steptoe & Johnson in Washington, D.C., and remained until 1961, except for a short while in 1951 when he was legal consultant to the Director of the Office of Price Stabilization.



Cyrus R. Vance
Deputy Secretary of Defense

Stephen Ailes
Secretary of Army

Army Slates National JSHS Under OCRD Sponsorship

(Continued from page 1)

Six winners from each of 18 regional Junior Science and Humanities Symposia conducted under Army auspices, with support from industry and educational institutions, have been selected to take part.

The U.S. Department of Health, Education and Welfare will be represented by 21 award-winning high school students and 14 teachers or administrators. They will be selected from winners in seven symposia conducted under the HEW Youth Congress Program in Texas, Georgia, Oregon, Massachusetts, Ohio, Minnesota and Indiana.

Assistant Secretary of the Army (R&D) Willis M. Hawkins will be one of the principal speakers and he has invited a nationally famous scientist to make the keynote address. A letter of acceptance had not been received at press time. Dr. Edward Teller, internationally renowned nuclear scientist, was the principal speaker in 1963.

Dr. Polykarp Kusch, 1955 Nobel Prize winner and noted chairman of the Columbia University Physics Department, will give a major address. Chief of Research and Development Lt Gen William W. Dick, Jr., and Director of Army Research Walter E. Lotz, Jr., are expected to take part.

Other leading speakers will include distinguished scientists from several major universities and from Army research and development activities. Subjects selected will cover recent progress in some of the newer areas of science, including notable advances in Army research and development.

In 1963, more than 30 prominent scientists and educators made presentations or served on panels for the several concurrent career guidance "Curbstone Clinics" that are a feature of every Army JSH Symposium. Small groups of students are thus provided an opportunity to discuss their interests as related to current research accomplishments and future trends.

Tentative plans call for the students to visit a number of the foremost research centers in the Washington area, including the U.S. Bureau of Standards, National Institutes of Health, Beltsville Laboratories of the Agricultural Department, and U.S. Food and Drug Administration Laboratories.

The Symposium is being sponsored by the Chief of Research and Development. Arrangements are being made by the U.S. Army Research Office, Durham, N.C., in conjunction with the Scientific and Technical Information Division at USARO Headquarters in Arlington, Va.

Planning for the Symposium is being coordinated with Dr. M. S. Reichley, senior educational adviser and director of instruction, Industrial College of the Armed Forces; Dr. Sherwood Githens, Jr., Department of Education, Duke University; and Col Jess P. Unger, associate dean, U.S. Military Academy.

The JSHS Program was originated six years ago by the U.S. Army Research Office with the support of Duke University, North Carolina State, and the University of North Carolina. Each of the past three years 15 or more regional symposia have been held in accordance with the format originally developed.

The JSHS Program became a nationwide Army effort sponsored with the support of industry and educational institutions following Secretary of the Army approval, in 1961, of a plan submitted by the Chief of Research and Development.

Army STINFO Program Advances Despite Impeding Problems

(Continued from page 1)

Reporting procedures for the ARTS have been revised substantially in recent months, in consonance with plans for full automatic data processing methods. When fully implemented, the new system will permit very rapid response to any request for specific information about Army research, development, testing and evaluation activities.

Consequently, a strong question is being raised about the continuing need for publication of bound volumes of the ARTS. An ADP print-out of information desired by a requester, including narrative, can be prepared in a few hours to show the status of any project task or sub-task combinations.

Col Aines said that expressions of opinion from the field relative to the merit of continuing to publish the ARTS in volume format will be welcomed by his staff as a guide to what action is necessary. The question is: In view of the cost of publishing bound volumes, can the expense be justified by the value of information that is largely historical rather than current?

Steps to utilize the new automated 1309–R reporting form instead of the DD Form 613 that has been standard for many years have been discussed at a series of interagency meetings. Defense Director of Research and Engineering Dr. Harold Brown, in a memorandum dated Dec. 11, 1963, authorized Army agencies optional use of either the DD 613 or 1309–R form. The Office of the Surgeon General recently was permitted to substiute use of the 1309–R form instead of the DD 613 form. The Air Force and the Navy are expected to report soon on their evaluation studies.

The 1309–R form is considered generally to be a long step forward in providing "improved visibility" of the overall research, development, testing and evaluation information needed by management as well as by technical personnel for better control, coordination and integration of effort.

AUTOPROBE is an acronym for another major information effort within the Policy Division of the Office of the Chief of Research and Development to provide top echelons with the type of management information needed for decisions. Since that effort involves certain overlapping of STINFO requirements in reporting procedures, Col Aines said action will be taken in the near future to resolve unnecessary duplications.

Chemical Information Data System. The CIDS was separated into five phases, and each phase assigned to a major Army R&D installation for implementation. Activity has been intense since the plan was announced early last spring, and several joint working meetings have been held to review progress.

Army STINFO leaders have convened with representatives of the Chemical Abstract Service at Columbus, Ohio, and in Washington to discuss arrangements for coordinated effort with chemical and pharmaceutical firms. Industrial representatives have been brought into many meetings. Conferences also have been held with officials of the National Science Foundation, National Bureau of Standards, U. S. Patent Office, Food & Drug Administration, and other Federal agencies to determine how to conduct mutual programs.

The President's Committe on Scientific Information has brought together representatives of Federal agencies and the American Chemical Society to study, on a parallel basis, the requirements for a national chemical information network, particularly efforts requiring research. A subcommittee from the National Academy of Sciences, headed by Dr. Robert Hart, will convene leaders of Federal agencies in the near future to aid in making recommendations to COSI.

Meanwhile, a panel of recognized experts in various phases of CIDS operations, headed by Dr. George Hager of the University of Minnesota, has been meeting to consider problems of establishing an information network. Other members are:

Dr. I. Moyer Hunsberger, dean of the College of Liberal Arts, University of Massachusetts; Dr. Walter Hoffman, Computing and Data Processing Center, Wayne State University, Detroit, Mich.; Dr. Calvin N. Mooers, Rockford Institute, Inc., Cambridge, Mass.; Kenneth H. Zabriskie, Jr., director of research, Chemical Abstracts Service, Columbus, Ohio; Edward Sussenguth, Jr., Harvard University; and Dr. Frank A. Landee, Dow Chemical Co., Carlsbad, Calif.

Engineer Data Information System. Since a feature article in the September 1963 issue of this publication explained in detail the Army STINFO effort to establish an Engineer Data Information System (EDIS), a work-

Army Chief of R&D Lt Gen William W. Dick, Jr., reviews auxiliary propulsion kit of XM–124, 105 mm. towed howitzer during recent orientation visit to Army Weapons Command Headquarters and Rock Island (Ill.) Arsenal (RIA). Accompanying him on the tour were (l. to r.) Col Allan Pixton, director of Developments, OCRD; Col J. J. Schmidt, Jr., chief, Mobility Branch, Army Materiel Command (background); Brig Gen W. C. Gribble, chief, Developments Division, Army Materiel Command; Col Paul A. Nilsson, CO, RIA; General Dick; and C. D. Dalton, chief, RIA Prototype Branch.

ing group chaired by Stanley Goldberg of Edgewood Arsenal, Md., has been making progress.

A preliminary report of the group, following a series of meetings to develop detailed plans, has won assurance of support from the Engineers Joint Council. The EJC has agreed to participate as requested by the group. Other engineering groups, such as International Electrical and Electronics Engineers, have expressed interest and a desire to participate.

Defense Director of Technical Information Walter M. Carlson and Albert L. Jackson, Jr., staff assistant in the Office of the Assistant Director (Engineering Management), ODDRE, are cooperating to coordinate the work of the Army group with ODDRE interest in overall requirements of the national EDIS network.

Assistant Secretary of Defense (Installations and Logistics) Paul R. Ignatius has indicated an interest in improving certain engineer information activities involved in his responsibilities.

On-Site Survey of Resources. Preliminary phases of the Army contract with CEIR, Inc., for an on-site survey of Army information sources, facilities and personnel qualifications and training requirements are going ahead on schedule.

Selected Army installations have been visited, and it is expected that the training of personnel to begin the survey in depth will be initiated within two months. Army personnel will be trained to work with the contractor in compiling detailed data.

Meanwhile, the Advanced Research Projects Agency has contracted with the Auerbach Corp. for a User Need Study sponsored by the Defense Director of Technical Information. The contract calls for between 1,200 and 1,850 interviews, and is to be completed by November 1964.

The two surveys are being integrated by the Director of Defense Technical Information.

Information Evaluation Centers. A draft of a Department of Defense Instruction on Evaluation Centers for Scientific and Technical Information was being coordinated at press time.

The Instruction would prescribe procedures to be followed by all DoD components for creating, funding, operating, administering and using Information Evaluation Centers within the framework of the DoD Scientific and Technical Information Program.

Technical Interest Profiles (TIPS). As part of the STINFO effort to use available resources more effectively, a file on technical interest profiles is being instituted. The file will provide within the Army a ready reference of technical information requirements for various programs. In addition to maintaining a system for primary distribution of documents, TIPS will keep a current inventory of technical competence, the basis for selective dissemination of information, and a working file for identification of new descriptors for thesaurus usage.

Library Automated Service Systems (LASS). Exploratory development projects are underway to evaluate the application of selected streamlined techniques to library use and service systems. Under study are uniform automated procedures that may be applicable to functional areas of acquisition, cataloging, circulation, loan, and accounting and security control.

Information and Data Exchanges System (IDES). Timely and comprehensive exchange of information within the Army, Department of Defense, other Federal agencies, industry and the scientific community at large is the goal of the IDES project.

Pilot tests or feasibility studies are under way or scheduled on such techniques as the selective distribution of abstracts of significant technical reports prior to actual publication (ADABS). Other objectives of IDES include:

- Development of data and format categorizations to facilitate the assembly and timely issuance of state-of-the-art summaries and past project summaries from automated "stores."
- Development of standards for technical reporting, and the tapping of foreign technical information through publication in American journals or other scientific outlets, and related means of accessioning foreign technology information within the Army system.

ASA (R&D) Establishes Army Research Council

(Continued from page 2)

Forums, created by the Office of the Defense Director of Research and Engineering to supplant the Joint Advisory Council on Science. The Air Force and the Navy will furnish similar representation.

TARC is equally representative of management and Army laboratories, one member for each in the Physical and Mathematical Sciences, Engineering Sciences, Environmental Sciences, and Life Sciences.

In performance of studies referred by General Lotz after approval by Mr. Hawkins and General Dick, TARC is authorized by its charter to "guide and review the preparation of an Army Research Plan which:

- "Designates those scientific areas of research effort which show promise for providing technology that will enable the Army to accomplish its mission as stated in approved Army strategic plans.
- "Projects the allocation of Army research fiscal resources among scientific fields for a period of five years.
- "Provides a basis for the allocation of the Army's research mission among Army commands and activities to assure the most effective accomplishment of the Army's research objectives.
- "Provides a basis for the development of an Army Long-Range Research Facilities Plan which allocated Army research plant and personnel resources among Army commands and activities so as to most effectively accomplish Army research objectives."

The TARC Charter authorizes members to visit any Army or other research and development establishment, upon the approval of General Lotz and Dr. Siu, to make observations pertinent to problems under consideration. TARC will be concerned with matters of organization and facilities as they influence the productivity of Army in-house laboratory elements, and has responsibility to recommend changes as necessary for effective accomplishment and management of the Army research program.

Council members, listed in each case with the management representative first and the laboratory representative second, are:

Physical and Mathematical Sciences: Dr. J. V. R. Kaufman, chief scientist, Munitions Command, Army Materiel Command; Dr. C. W. Lampson, technical director, Ballistic Research Laboratories, Army Materiel Command.

Engineering Sciences: Dr. Gilford Quarles, chief scientific adviser, Office of the Chief of Engineers; Dr. S. B. Levin, deputy director, Institute for Exploratory Research, Army Electronics Research and Development Laboratories.

Environmental Sciences: Dr. Leonard S. Wilson, chief, Environmental Sciences Division, Army Research Office; Dr. Donald M. Swingle, Senior Scientist, Meteorological Division, Army Electronics R&D Labs.

Life Sciences: Col Tyron Huber, chief, Life Sciences Division, Army Research Office; Col William D. Tiggert, director, Walter Reed Army Institute of Research.

In-House Labs Independent Research Holds $10 Million Level

Acceleration of the Army In-House Laboratories Independent Research Program through FY 1963 funding of $10 million has been sufficiently successful to retain that funding level for FY 1964.

Deputy Assistant Secretary of the Army (R&D) Charles L. Poor commented on Program reports from 26 Army installations by saying:

"The Annual Review Committee was very well pleased with results of the first year. It is gratifying to note the wide scope and high quality of the projects undertaken by the laboratory directors.

"The Program has been successful. Many excellent new projects were sponsored and at least 400 professional personnel participated. I hope this number can be increased in FY 1964, during which I expect even more significant results."

Objective of the Program, as set forth in Army Regulation 705–55, is to provide individual Army scientists and engineers an additional opportunity to maintain and increase their competence by doing original work in areas of their special talents—"to promote a vigorous internal research program of the highest technical caliber."

The Program is intended "to promote the effective utilization of available resources and to foster an increased awareness of management policies and principles necessary for accomplishing the R&D mission."

Emphasis of the In-House Laboratories Independent Research Program is directed to "new and challenging tasks," usually not within the scope of regular activities of the installation where the work is performed.

The Army Regulation stipulates that the special investigative effort may be correlative to approved projects and tasks in the regular R&D program. Funds specifically cannot be used to compensate for deficiencies in regular funded programs or to support outside work, except where such outside or contract work is deemed necessary to support tasks of in-house personnel.

The Chief of Research and Development (CRD) has Army staff responsibility for establishing and assuring implementation of policies for the management and control of research and development laboratories or activities.

The Commanding General of the U.S. Army Materiel Command, The Surgeon General, and the Chief of Engineres have the responsibility within the policy guidance of the Chief of Research and Development for implementation of policies.

AR 705–55 requires that selection of tasks he based on "some definite promise of yielding results beneficial to the Army. Projects of only marginal return will be eliminated. While it is recognized that some overlapping of effort may result, each laboratory or activity is instructed to "try to concentrate, lead and excel in an objective area."

Freedom of action is implicit in the Program. Scientists and engineers are responsible for designing their work plan in proposing projects, the resources required, and the necessary authority to accomplish their plan. The laboratory director, however, is responsible for holding them to account for results, for evaluating their competency, and for program planning.

The Regulation prescribes six major policies for commanding officers to ensure that objectives of the Program are served by more efficient utilization of personnel, adequate compensation rates, training courses, recognition programs (awards, etc.), technical education of officers, uninterrupted tours of officers, and the best available staffing.

A "positive manpower management program," as delineated in the Regulation, calls for "exploiting every possible means of attracting and retaining creative, energetic, efficient and conscientious scientific and technical personel; for using them productively; and for advancing professional development."

One product of an in-house lab project at the U.S. Army Medical Equipment R&D Laboratory at Fort Totten, N.Y., has already made an impact in the outside world.

A hand-operated, foot-powered jet injector, invented by Aaron Ismach, chief of the Mechanical Engineering Branch at the Fort Totten lab, was used following the devastating earthquake last summer at Skopje, Yugoslavia, to immunize victims.

The device was later used in Morocco to protect flood victims against the threat of typhoid. The foot-powered jet injector has been accepted for broad use by the U.S. Public Health Service as well as the military. Its potential application has been recognized by schools, health clinics, U.S. Forestry Service, American Red Cross and the Office of Emergency Planning.

The Fort Totten laboratory personnel also are trying to reduce the weight of a portable field X-ray unit, using funds from the special research program.

Scientists at the U.S. Army Medical Research Laboratory, Fort Knox, Ky., are studying snake venoms in the hope of producing an antivenin universally effective against all poisonous snakebites. The study is to continue for three years under present programing.

Army Research Office-Duke Names New Executive

Maj Lawrence P. Monahan, Jr., is the new executive officer at the Army Research Office—Durham, N.C. He succeeds Lt Col Leslie G. Callahan, Jr., now assigned to the Industrial College of the Armed Forces, Fort McNair, Washington, D.C.

Maj Monahan attended Harvard College for one year before being inducted into the Army in 1943, and after two years as an enlisted man was selected to attend the U.S. Military Academy where he received a B.S. degree in 1949. He received an M.S.E. degree in electrical engineering at the University of Michigan (1955), and was graduated from the Army's Command and General Staff College in 1963. From 1955-58 he was an instructor in the Department of Electrical Engineering at West Point and later served as an assistant professor in that department.

From 1960-1963 Maj Monahan was research and development coordinator and deputy commanding officer, U.S. Army Research and Development Group, Far East.

Maj Lawrence P. Monahan

Active immunization of man against certain families of poisonous snakes has been demonstrated, and the development of an immunization schedule that could be used to protect combat troops against certain snake venoms is already a reality, the laboratory report stated.

Studies in the in-house lab program at the U.S. Army Research Institute of Environmental Medicine (ARIEM), Natick, Mass., yielded a more accurate evaluation of the effects of semi-permeable uniforms (chemical-biological protective) on performance of soldiers in a hot climate.

Maneuvers were conducted in the Panama Canal Zone in 1963 with scientists and medical technicians standing by to determine how long it would take soldiers on tactical maneuvers to become heat or exhaustion casualties in open and closed suits. The open suits definitely made a difference in time limit endurable. Tests also helped determine the maximum safe rectal temperature for a soldier during work in the heat.

The ARIEM lab group also is working on the problems of tropical acne, protection of the head in cold environments and facial protection against wind.

Preliminary conclusions indicated that excessive heat loss from the face in cold, windy weather remains a serious problem. The laboratory report said the parka hood with fur ruff is far from adequate but best at the moment from a combined protection-visibility viewpoint.

An ARIEM in-house study determined that two relatively air-permeable windbreak layers of fabric with a fixed-air space of about one-half inch between them could be more effective than a single layer of the best windbreak fabric available of a much tighter weave. The lab report concluded that the use of spaced windbreak layers would result in more rugged clothing which could also provide an increased measure of protection against thermal radiation.

Several in-house independent research studies are in progress at the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL), Hanover, N.H. One investigation involves use of aerial and ground level photography to observe and later determine the effects of radioactive contamination on plant growth, and to what extent contamination can be detected with aerial sensors.

Data will be correlated with that available at the Brookhaven National Laboratory on the effect of dosage exposure time and radiation level on various vegetation patterns. Completion of the project is scheduled for June 1964.

Another study was undertaken to develop suitable techniques and processes to facilitate cutting holes in frozen ground by means of highspeed jet burners.

A Russian paper on the subject was translated and reviewed. A compressed air-fuel oil jet burner was designed, fabricated and field tested in both frozen soil and a block of manufactured ice.

Field tests conducted in three feet of frozen silt soil showed that 6- to 8-inch holes could be cut at a rate of one foot per minute. A short-duration test on a block of manufactured ice resulted in a drilling rate of three feet per minute for holes the same size.

The prototype and drilling technique proved satisfactory, the laboratory report stated, and this study will be incorporated in the regularly funded research program in FY 1964.

Field work was conducted in Greenland to evaluate the feasibility of using a nuclear depth-density probe to establish snow density profiles. If proved feasible, the technique would enable measurement of the depth-density profile of a large snow-covered area in a short period of time.

Preliminary data reduction of the field measurements indicated a direct correlation between count rate and snow densities for uniform conditions.

Army Geographer to Speak at Naval War College

Dr. Lester Trueblood, chief of the U.S. Army Research Office Regional Branch, Environmental Sciences Division, will be guest speaker Feb. 28 at the Naval War College, Newport, R.I.

As a top Army scientist in the geographical field, Dr. Trueblood was invited by Vice Adm B. L. Austin, president of the Naval War College, to discuss the role geographical features play in the development of military strategy.

The lecture program, a part of the NWC academic mission, covers such subjects as the progress of science and military affairs and the interpretation and interrelation of facets of national strategy.

Members of the NWC staff give some of the lectures, but guest speakers outstanding in their professional fields make the majority of the presentations.

General Maxwell D. Taylor, Chairman of the Joint Chiefs of Staff, will discuss the United States' global military strategy for cold, limited and general war during the Mar. 5 session.

Question and answer periods follow each address. Post-lecture conferences are scheduled folowing selected lectures. Speakers give their frank responce to specific questions asked by the staff and students, ranging from 150 to 400 officers of the Armed Forces in the ranks of lieutenant commander (major) through captain (colonel).

Dr. Trueblood has been with the Environmental Sciences Division, Office of the Chief of Research and Development, since October 1959. He holds a B.S. degree from Indiana State Teachers College and M.A. and Ph.D. degrees in geography and international affairs from Clark University, Worcester, Mass.

From 1936-1941, Dr. Trueblood served as lecturer in geography and head of the department, Judson College, University of Rangoon, Burma.

In 1942 he was selected as a geography consultant to the Secretary of War, followed by nearly eight years as research specialist for S.E. Asia, Geographic Branch, G-2. In 1950 he was appointed chief, Military Geography Branch of the Engineering Strategic Intelligence Division, Army Map Service, Corps of Engineers. He progressed to assistant chief of the Division (1951-1953), and then served as chief until 1959.

Dr. Trueblood is a member of the Association of American Geographers, the American Geographical Society of New York, Royal Geographical Society of London.

Dr. Lester W. Trueblood

R&D Impact on Civil Service

Chairman John W. Macy of the U.S. Civil Service Commission said in a recent speech that research and development emphasis has had an impact on the ratio of Federal employees to the extent that: There are more scientists than stenographers, more technicians than typists, and more individuals in research than in mail/file operations.

President's Science Adviser Discusses Tech Info Problems

Dr. Jerome B. Wiesner, Science Adviser to the President, gave his views on information problems linked to Federal Government scientific and engineering activities when he talked to Defense "stinfologists" Jan. 10.

A stinfologist is an evolving creature, it perhaps should be explained, a rather rare bird whose wing structure and ability to fly to the achievement pinnacles envisioned for him are still in the imaginative stage.

Just about anyone who has a practicable knowledge of how to accomplish more effective retrieval, processing, storage and dissemination of scientific and technical information may be termed, rather loosely, a stinfologist. In response to a national need that is stirring up a prodigious amount of effort, stinfologists are expected to proliferate amazingly.

About 75 of the leading STINFO officials in the Department of Defense turned out to hear Dr. Wiesner initiate a new series of review meetings programmed by Defense Director of Technical Information Walter M. Carlson.

The purpose of the bi-weekly sessions is to work toward improved coordination and integration of Federal Government technical information programs. The massiveness of problems obstructing that objective is recognized and is receiving energetic response from all Federal agencies concerned.

"How can we improve the status of stinfologists?" Dr. Wiesner was asked. His answer was prompt and vigorous: "Raise their pay! A few hundred well-paid stinfologists may be the best investment the country can make."

Since it is generally recognized that top-level stinfologists preferably should have professional qualifications in the scientific and engineering fields, as a basis for attacking the vexing problems involved, Dr. Wiesner's statement was hailed with ill-concealed glee by STINFO administrators confronted with staffing difficulties, as related to attractive salaries.

Dr. Wiesner was unequivocal also about his views concerning a monolithic national center for scientific and technical information, centrally located in the Nation, as opposed to the concept of decentralized activities tailored to specific needs—the latter being the plan now under implementation within the Department of Defense.

The national STINFO concept was likened by Dr. Wiesner to a "Brunswicke stew—you toss everything into one big pot and then let it boil." Still he conceded that advances in technology "might carry us to the point where more centralization is desirable."

Emphasis should be on more quality and less quantity in technical and scientific reports, the speaker said. Despite the tremendous increase in the volume of reports in recent years, he contended that "much important information meriting widespread dissemination is not being published, particularly in the scientific journals."

Many of the reports are repetitious on subjects of little importance, he contended—"written merely to claim credit for a technical report." Measures to control quality of reports—"holding the noise level down by being very critical"—were advocated.

Concern also was expressed over what he termed the "square law" of STINFO—costs of making information available, when and in the form desired, "rising even more rapidly than the volume of information to be processed."

STINFO leaders at Department of Defense and the Military Services levels must learn to draw on groups of experts wherever available, it was contended. More exploration of what has been done to provide a sound basis for what should be done was cited as another primary need—"half the problem has been solved hundreds of times."

In support of his criticism of repetitious research and development attributable inadequacies in the processing and use of available scientific and technical knowledge, Dr. Wiesner said: "I have seen electronic flip-flop circuits made in 500 different places. Each outfit has re-invented it. Some designs were actually more rudimentary than earlier designs, especially regarding reliability of subsystems.

One of the questions posed to Dr. Wiesner was: "As part of their education process, could scientists and engineers be taught how to use technical libraries properly?" The answer was that some of the STINFO effort should be directed toward encouraging some scientists to spend more of their own time in libraries to keep abreast of information they need.

Among the examples of information deficiencies requiring particularly strong action which Dr. Wiesner mentioned were "the drug field . . . and technical manpower." Dissemination of information required by medics was called "almost as bad a bottleneck as dissemination of information to engineers."

Distribution of research and development contracts and grants in response to pressures for more equitable allotments to the various states was discussed. The speaker contended that "research and development proposals, regardless of geographical considerations, must be evaluated on the basis of quality and competence to do the job." Efforts to increase the capabilities in areas now at a competitive disadvantage merit aid, he said.

The problem of information referral service varies widely in different areas, and merits consideration of separate storage systems for management, engineering, medics, and specific areas of science, Dr. Wiesner said.

Publication of certain classified journals to establish a closer continuing link between Department of Defense and contracting agencies working for the DoD is another possibility of improving the communication process which perhaps should be explored more fully, Dr. Wiesner stated. Some duplication of the information effort may be necessary and desirable, he said, but how much must be considered with respect to the overall problem.

Other needs of the STINFO program mentioned by the speaker included the training of stinfologists in standard operating procedures of programming, coding, abstracting, use of a common language, and other operations.

Encouraging progress has been made during the past year but it is "only a beginning," Dr. Wiesner said. He cited the work of the Federal Council Committee on Scientific Information (COSI), the Defense Director of Technical Information, the Army and various other agencies for coordinated effort.

New Data System Operating

Management information needed for a more effective control system at Springfield (Mass.) Armory is being provided by a recently installed Stromberg Transactor Data Collection System.

A network of 29 transmitting units distributed at strategic points of the pilot-line fabrication area became fully operational early in January. Transmitting units are linked by cable to a centrally located tape-punch receiving unit in format for instantaneous data processing. Significant cost reduction as well as time-saving advantages are envisioned.

Civil Service Commission Sponsors New Program Titled 'Ideas & Authors — Science & Government'

In furtherance of Federal Service career development objectives, the U.S. Civil Service Commission is sponsoring a new program titled "Ideas and Authors—Science and Government," beginning February 26 as a monthly series.

Initiated by the CSC Office of Career Development, the program is intended for Federal scientists, administrators and managers with significant responsibility for accomplishment of Federal science programs or the formulation of agency policy in respect to scientific programs. Nominations for the program are limited to those at GS-15 and above or comparable PL-313 level.

Authors of significant recent books dealing with key issues of Federal Government and science relations will be brought to Washington, D.C., to discuss their ideas with participants who have read the books four to six weeks in advance.

Participants will have an opportunity to present questions directly to the author. An expert in the field or subject under consideration will be invited to present his reactions as a "guest critic" of the book. The author also will have a chance for rebuttal.

The discussions are expected to broaden understanding of the views or information presented in each of the five books that will be considered, particularly as relevant to resolving existing and emerging problems of Government and science activities.

The Commission is encouraging all agencies concerned with science to make the fullest possible use of the program. Substitutes may be designated to attend individual meetings, provided they meet nomination requirements.

Authors and books selected for the meetings include: Derek J. Price, *Little Science, Big Science*, Feb. 26; Don K. Price, *Government and Science*, Mar. 25; Robert Gilpin, *American Scientists and Nuclear Weapons Policy*, Apr. 22; James L. McCamy, *Science and Public Administration*, May 27.

Sir Charles P. Snow, author of *Science and Government* and *The Two Cultures and The Scientific Revolution*, will be the final author and speaker of the series, at a date yet unannounced.

CSC Pamphlet Gives Facts For Scientists, Engineers

The U.S. Civil Service Commission is distributing a new pamphlet designed to narrow the "communications gap" between personnel management and research and development administrators, scientists and engineers.

Titled *Scientists and Engineers in the Federal Personnel System*, it presents a brief resume of the many special features and flexibilities in the Federal personnel system that should be of interest to scientists and engineers in key management positions.

Special features and flexibilites in such personnel management areas as recruitment, appointment, qualification requirements, position classification, pay and training are discussed.

Copies of the pamphlet are being distributed to scientists and engineers in grades GS-16, 17 and 18, or their PL-313 equivalent, who appear on the Commission's Roster of Scientists and Engineers. A one-time distribution of five copies will also be made to each operating and staff personnel office.

Engineer Labs Develop Better Way to Impede Tanks

New explosive cratering techniques for blasting barrier obstacles to stop enemy vehicles, developed at the U.S. Army Engineer R&D Laboratories, Fort Belvoir, Va., have earned a $200 Special Act or Service Award.

James A. Dennis was commended by USAERDL commander, Col J. H. Kerkering, early in January for conceiving, planning and successfully executing a test plan for the new concept for blowing antitank craters. The citation stated, in part:

"Such service far exceeds the accomplishments expected of an engineering technician and reflects great credit on Mr. Dennis for his initiative, creativity, and dedication to the cause of increasing the combat effectiveness of the U.S. Army."

Tests conducted by the Demolitions and Fortifications Branch of the Laboratories, using both the M48 and M60 tanks, showed that Dennis' relieved-faced cratering method blasted more effective antitank obstacles than standard methods now in Army use.

The new technique requires less explosives and blasts a trapezoidal-shaped crater of lesser depth and with a wider bottom than the standard V-shaped crater, but with the steepest slope on the defensive side.

Analysis of the cratering tests showed that depth, followed by width and steepness of side slopes, is the most significant element in determining an antitank crater's effectiveness. Road craters angled at about 45 degrees to the roadway proved significantly more effective antitank obstacles than similar craters blown perpendicular to the roadway.

Tests conducted in both wet and dry soil established that it is not necessary to tamp the earth used to backfill the boreholes. No difference in crater dimensions resulted between tamped and untamped borehole stemming.

Engineers also evaluated four kinds of explosive and found that an aluminized paste explosive, hand blended in the field, produced the most effective antitank craters.

Relieved-faced cratering method of blasting barrier obstacles to stop enemy vehicles is demonstrated in tests at USAERDL, Fort Belvoir, Va.

Army Centers Inertial Guidance R&D at Redstone

U.S. Army inertial guidance R&D projects from all parts of the Nation will be consolidated in a $3.2 million laboratory scheduled for construction at Army Missile Command Headquarters, Redstone Arsenal, Ala.

A military construction bill signed recently by President Johnson includes funding for the new laboratory, which will be built as an addition to a $5.8 million R&D facility completed recently by the Missile Command. Work will begin early this year.

The Inertial Guidance and Control Laboratory at Redstone was designated last year as a national center for development of inertial systems for Army missiles, aircraft, drones, land navigation, inertial land surveying and for explosive fuzing. It is part of the Missile Command Directorate of R&D.

Among research tools in the new laboratory will be precision instruments, such as gyroscopes and accelerometers, which will permit scientists to work on delicate guidance systems unaffected by minute movements of the earth.

Inertial guidance and navigation systems placed in a vehicle such as a missile guide its movements by measurements made on board and compared to a preset "memory" placed in the control system prior to launching. Because no ground radio or radar control is required, the systems are invulnerable to any known form of jamming.

The new laboratory will perform exploratory research into highly sophisticated future guidance systems and their components which control the movement of a missile during free flight. Isolation pads will be at least 10 times as stable as those now being used to protect systems from outside vibrations during tests.

Some guidance systems are so delicate that nearby foot traffic can throw them off. Even microscopic particles of dust or small variations in temperature and humidity can impair the accuracy of some guidance system components.

The new lab will also have "ultra-clean" rooms that will keep the work area 100 times cleaner than the immaculate clean rooms now in use. Air conditioning certain parts of the laboratory will hold temperatures to within one degree of fluctuation.

When completed, the R&D complex will house in one building five laboratories now scattered over the 40,000-acre arsenal in facilities constructed during World War II. These laboratories are devoted to advanced development work in missile ground support equipment, structures and mechanics, guidance and control, electromagnetics and advanced systems.

The Army Corps of Engineers will be construction agent for the Missile Command.

Army Missile Command's Inertial Guidance and Control Laboratory wing to its new R&D building is shown in artist's concept. New wing is in foreground. The other two wings have been completed and are occupied.

U.S. Teams With CARDE in Nose Cone Studies

U.S. Army Missile Command scientists are learning about nose cones re-entering the atmosphere through a cooperative program which stretches across the Canadian border in Quebec to the Canadian Armament Research and Development Establishment (CARDE).

The point of interest is a gun system capable of firing missile-sized projectiles at speeds up to 25,000 feet per second, although hypervelocity is only part of the capability. Included as part of the range is a vacuum chamber 400 feet in length and 10 feet in diameter, which can simulate altitudes up to 250,000 feet.

Project engineer for the CARDE Support Program at the Missile Command is Andrew H. Jenkins, a research aerospace engineer with the Physical Science Laboratory in the Directorate of Research and Development. Costs and benefits of the CARDE program are shared by the Canadian Government and the Advanced Research Projects Agency (ARPA), an agency of the Department of Defense.

By firing projectiles of different shapes and sizes at hypervelocities, the experimenting scientist can study the shape of air flow around the projectile and determine characteristics of its wake. CARDE range is equipped to use guns with bore diameters from one-fourth inch to seven inches, with variable simulated altitudes in the vacuum tank. The "bullets" are powered by compressed hydrogen or helium, with a conventional-type gunpowder exploded at peak pressure. The gun is loaded by remote control.

The amount of money furnished the CARDE project by each government depends on what programs are being conducted, and has no fixed pattern. If U.S. missile scientists want an experiment run in which the Canadian Government has no interest, the U.S. pays the full cost of the experiment. In past years, Advanced Research Projects Agency has paid about one-third of the cooperative program's total annual cost since the joint effort began in 1959.

A project officer at CARDE plans and coordinates the Missile Command's activities conducted under the joint program. Lt Col Edmund W. Kreischer, who is responsible for a part of CARDE's concentration on the re-entry phenomena of ballistic nose cones, is assisted by two engineers from the Bendix Corp. The Systems Division of Bendix is prime contractor of the joint program.

The CARDE range is believed by Canadian officials to be the largest in the world because of the number of ranges and wide variations of gun calibers. Jenkins and his coworkers at the Physical Sciences Laboratory use information from CARDE experiments in conjunction with local experiments to broaden their knowledge of re-entry phenomena.

Army Selects APG for $2.9 Million Nuclear Pulse Reactor

Construction of a Nuclear Pulse Reactor Facility and a Radiation Applications Laboratory at Aberdeen Proving Ground, Md., to serve Army R&D activities along the East Coast is scheduled to begin early this spring. Plans call for operational capability early in 1966.

Congress approved $2.9 million for the two facilities in the FY 1964 Military Construction Appropriations Law signed by the President Dec. 21, 1963.

Experiments planned by the Army for the new Aberdeen facilities will be directed toward development of military materiel capable of operating more effectively in tactical nuclear warfare and anti-ballistic missile defense. Dr. Edward E. Minor, director of the Terminal Ballistics Laboratory at Aberdeen, has been prominent in planning the program and will have charge.

A pulse reactor is able to simulate most of the characteristics of the neutron and gamma radiation emitted by a nuclear detonation. Effects are accomplished by assembling a supercritical mass of enriched uranium for a pulse with a duration measured in tens of microseconds.

When a pulse reactor was dedicated in December 1961 at the Forest Glen, Md., section of the Walter Reed Army Medical Center, visitors who peered into the pool of the reactor core saw a signal that it had pulsed for 13 thousands of a second to the level of electrical power equal to that used by the city of Washington in that period.

Nuclear research with a pulse reactor has the advantage that the enriched assembly is not held in supercritical condition, such as in a nuclear weapon. The uranium components automatically disassemble and no blast or thermal effects result. The mechanism of shutdown is based on the inherent negative temperature coefficient of the assembly.

The core assembly proposed for the Aberdeen reactor would consist of two cores, each consisting of concentric annular cylinders of enriched uranium alloyed with molybdenum. Designers believe the resultant pulse will simulate more nearly in magnitude and time duration the pulse emitted by a nuclear detonation than any reactor now existent.

Studies on which the APG facility is to be used include: 1) response of electronic parts, components, and systems (such as missile guidance, communications and computers) to radiation; 2) development of nuclear radiation detectors; 3) effects of radiation on chemical and biological agents; 4) effects of radiation on fire control equipment and other military materiel.

The APG pulse reactor will be used mainly to serve research interests of the Army Electronics R&D Laboratories, Fort Monmouth, N.J.; the Nuclear Defense Laboratory, Edgewood Arsenal, Md.; Ballistics Research Laboratories at APG; and Frankford Arsenal, Philadelphia. This complex presently conducts more than $5 million worth of research annually on nuclear weapons effects to satisfy Army and Department of Defense requirements.

Col David T. Baker, chief of the Atomic Office, Office of the Chief of Research and Development, said impetus for development and procurement of pulse reactors was provided by nuclear tests of 1958 and the subsequent test moratorium until 1961. The 1958 tests indicated effect of transient radiation on electronics, and need of further research was recognized.

An Army study in 1960 resulted in the construction of the TRIGA water-moderated type pulse reactor now operated by the Harry Diamond Laboratories at the Forest Glen section of Walter Reed Army Medical Center. A bare critical assembly pulse reactor is being constructed at White Sands (N. Mex.) Missile Range.

The $900,000 Radiation Application Laboratory at APG will have about 15,000 square feet of laboratory space. Equipped to facilitate use of ionizing radiation sources to solve Army R&D problems, particularly in the areas of interior and terminal ballistics, it will provide an environment in which experiments can be conducted with optimum safety.

The pulse reactor will be housed in a 100-foot diameter building, with space for equipment in support of the reactor and offices of operational personnel.

The recent signing of the Limited Test Ban Treaty, Col Baker said, has emphasized the importance of the laboratory research made possible by the facilities to be constructed at the APG. The facilities support the implementation of Treaty Safeguard "B" as defined by the Joint Chiefs of Staff in their testimony before Congress:

"The maintenance of modern nuclear laboratory facilities and programs in theoretical and exploratory nuclear technology which will attract, retain and insure the continued application of our human scientific resources to these programs on which continued progress in nuclear technology depends."

PERT Orientation Course Scheduled in 17 Cities

An 8-hour special orientation program on PERT cost planned for 4,000 Defense procurement officials in 17 cities during FY 1964 was initiated Jan. 10 at the PERT Orientation and Training Center, Washington, D.C.

PERT (Program, Evaluation and Review Technique) is a modern management system used by eight Federal Government agencies, including the Office of the Secretary of Defense, the Army, Navy and Air Force.

The special orientation program is being made available to military and civilian procurement officials who have initial contact with industry in the acquisition process. Included are contract managers, contract negotiators and auditors.

Course material for the special orientation was developed by the Training Center at Bolling Air Force Base, which will present 19 such orientations by June 30 to 475 persons in the Washington, D.C. area. The course is offered in addition to the normal orientation and training program carried on at the Center.

Similar programs are in progress at six other cities across the country and others are scheduled to begin in 10 cities in the next three months. Each military department is contributing staff members to assist in the orientation presentations. Cities where the orientation will be presented, the number scheduled, and starting dates are as follows:

Chicago, Ill., 7 Apr. 27; Cleveland, Ohio, 3, Mar. 16; Detroit, Mich., 4, Apr. 6; Huntsville, Ala., 4, Feb. 17; St. Louis, Mo., 4, May 18; Philadelphia, Pa., 8, Feb. 24; New York, 20, Feb. 10; San Francisco, Calif., 8, Mar. 2; Boston, Mass., 20, Mar. 2; Washington, D.C., 19, Jan. 10; Los Angeles, Calif., 20, Jan. 13; Dayton, Ohio, 14, Feb. 10; Orlando, Fla., 4, Apr. 21; Dallas, Tex., 6, Mar. 9; Denver, Colo., 2, Mar. 4; Ogden, Utah, 1, Mar. 2; and Seattle, Wash., 10, Feb. 17.

Plans are being developed to provide a limited number of these orientation programs for procurement officials of industry at selected cities throughout the country.

U.S. Army Establishes Human Factors Research Unit in Korea

Research intended to enhance U.S. Army limited and cold war capabilities in Southeast Asia and foreign areas similar in population and geographical characteristics is the mission of a new scientific unit in Seoul, Korea.

The Korean Human Factors and Operations Research Unit, activated this month, consists initially of five scientists well known for their work in this highly specialized field. The staff is expected to double eventually.

Under direct monitorship of the U.S. Army Research Office, Office of the Chief of Research and Development, the unit will have broad authority to develop a program of experiments pertinent to many Korean Army as well as U.S. Army requirements for effective use of available manpower resources.

Dr. E. Kenneth Karcher, Jr., chief of the Psychology and Social Sciences Branch, Human Factors and Operations Research Division, Army Research Office, will direct the group during the period of program development.

Other members of the initial unit, all residents of Washington, D.C., are Dr. Dean Froelich and Dr. John McCrary of the Human Resources Research Office (HumRRO), George Washington University; Dr. Leo Kotula, U.S. Army Personnel Research Office (USAPRO); and Dr. Felix Moos, Special Operations Research Office (SORO), American University.

Since Maj Gen C. W. Clark proposed establishment of the unit in a June 1963 letter to the CG of the Eighth U.S. Army in Korea, Dr. Karcher has been spearheading the project. General Clark then was Director of Army Research and is now CG of the U.S. Army, Japan. Lt Gen Theodore J. Conway, now deputy CG of the Eighth U.S. Army in Korea, was the first Director of Army Research in 1958.

Within the broad program of experiments envisioned for the new unit will be studies of factors affecting the performance of U.S. military personnel in Korea, presently involving roughly five percent of total Army strength.

An area of special emphasis will be analysis of relations of U.S. military and civilian personnel to the Korean people as an aspect of the U.S. Army's cold war mission. The objective will be development of techniques and methodology to assist psychological operations, that is, to facilitate rapid change when desirable to serve political-military purposes.

Studies will be made on how to promote understanding of indigenous military forces and the impact of various U.S. programs on values, attitudes and aspirations of the native population. An example is the impact and problems of the U.S. Armed Forces Assistance Program in Korea, which is one of the oldest of the U.S. Army civic action efforts.

Analysis activities will include cultural or political factors which influence the degree of acceptance or rejection of the programs. Application of U.S. military skills to aid the economy of developing nations is another area of research interest related to promotion of harmonious relations.

Experiments related to improving the effectiveness of U.S. military forces as well as Korean Army military and civilan personnel with whom they work will deal with factors for predictability of performance in specific assignments. Consideration will be given to language and other training requirements and the methodology to be used, firmly based on proved scientific techniques.

The U.S. Army Natick (Mass.) Laboratories are expected to provide one or two more researchers for the unit during the summer to engage in anthropometric studies requested by the Assistant Chief of Staff for Force Development.

Research activities of the unit will be coordinated with Eighth U.S. Army and Korean military advisers. Many of the experiments are intended to produce findings sufficiently generalized for application to similar problems elsewhere in Asia and in areas as far removed as the Andean Highlands of South America.

Activities of the unit will be concerned primarily with long-range U.S. Army interests in dealing with human factors and operations problems, but specialists will be made available in direct support of the Eighth U.S. Army for quick-action research, evaluation and advisory service.

Seoul was selected for the location of the unit as a city of 2.7 million inhabitants presenting a variety of human factors research opportunities considered unusual if not unique.

The decision to establish the unit had its origin in a 5-week visit Dr. Karcher made to Korea in the fall of 1962. The purpose was to assess Republic of Korea Army human factors research needs and the support requirements for such research.

Subsequently, two of the ROKA leaders in psychological research spent 10 weeks in the United States, eight at the U.S. Army Personnel Research Office in Washington, D.C., to observe U.S. Army human factors and operations studies and the methods of applying scientific techniques to personnel measurement and utilization.

The scientists selected to staff the initial unit all have widely recognized capabilities in specific phases of the research programs projected.

U.S. Army Engineers Join AID in Liberian Mapping

The U.S. Army Corps of Engineers, in cooperation with the Agency for International Development, has agreed to assist the Republic of Liberia in a comprehensive geodetic and mapping program.

The Department of Defense announced Jan. 16 that the project, designed to accelerate economic developments in Liberia, will be under the operating supervision of the Chief of Engineers. The Army Map Service, the largest mapping organization in the Free World, will be the action agency as directed by its commander, Col Robert C. Miller. The project includes establishment of a national geodetic control system and preparation of topographic maps.

The initial American survey team, consisting of approximately 60 men, is now cooperating with the Liberian Cartographic Survey of the Bureau of Natural Resources and Survey.

Under the agreement, it is planned to establish a basic 1:250,000 scale topographic map for all of Liberia, and topographic maps at a scale of 1:50,000 for selected areas as mutually agreed upon by the two Governments. It is expected objectives of the survey and mapping program will take less than five years.

New precision aerial mapping photography will produce the topographic maps which will be jointly produced at the Army Map Service and the Liberian Cartographic Survey.

The 72nd Detachment (survey) of the 30th Engineer Battalion (Topo) at Fort Belvoir, Va., will provide on-the-job training to Liberian personnel working with the U.S. Army team.

The assistance being furnished by the United States will help in establishment of a permanent Liberian institution capable of meeting expanding needs for survey and map data to provide a basis for planned optimum use of resources for national growth.

WSMR Announces Directorate Changes

Two White Sands (N. Mex.) Missile Range agencies acquired new directors recently when Col John O'Connor was transferred to the Range Operations Directorate and Col Karl F. Eklund succeeded him at the Army Missile Test and Evaluation Directorate.

Considered one of the Army experts on nuclear weapons, Col Eklund was graduated from the University of Illinois (1932) and completed 30 years of military service in August 1963.

He received an M.S. degree in engineering from Cornell University in 1939, and has served six years as an instructor in nuclear weapons tactical employment at the Command and General Staff College, Fort Leavenworth, Kans. He also served as an instructor in the U.S. Army War College and as chief of the college's Advanced Study Group.

From 1954 to 1956, while directing an Advanced Weapons Division, he was chief atomic planner for the U.S. Army in Europe and the Central Army Group, North Atlantic Treaty Organization (NATO). Later he was a nuclear weapons adviser at NATO Headquarters.

COL O'CONNOR had been chief of AMTED (formerly titled Ordnance Mission) since July 1960, when he transferred from the Industrial College of the Armed Forces, Washington, D.C.

Born in Fort Francis Warren, Wyo., he graduated from the University of California with a B.S. degree in 1935 and in 1948 received a Ph.D. in physical chemistry from Stanford Univ.

During World War II, he served as commanding officer of the Alabama Ordnance Works and later in the office of the Chief of Ordnance. After the war, he was at Picatinny Arsenal for two years, followed by a tour of duty at Anchorage, Alaska.

Col Karl F. Eklund

Col John O'Connor

He also has been assigned to the Atomic Energy Commission's Division of Military Applications and for three years was chief of the Supporting Research Branch at Redstone Arsenal.

USAELRDL to Entertain Frequency Control Parley

The Eighteenth Annual Frequency Control Symposium, sponsored by the U.S. Army Electronics Research and Development Laboratories, Fort Monmouth, N.J., will be held at Atlantic City, N.J., May 4, 5 and 6.

Unclassified and open to the general public, the symposium is the world's top annual meeting on frequency control. About 30 technical papers concerned with frequency control research and development and related matters will be presented. A general discussion period is programmed.

Subjects of technical papers include quartz crystal units, atomic and molecular resonance devices, piezoelectric resonators, Masers, and the fundamental properties of quartz.

Dr. Walter G. Cady, Providence, R.I., a foremost pioneer in piezoelectricity, will be guest of honor and his years of work will be recounted at the opening session by early workers in the field.

More than 600 representatives of Government, industry and educational institutions from throughout the Free World are expected.

Grote Relieves Van Wert as S&M Directorate Head

Col Robert W. Grote replaced Col R. W. Van Wert Feb. 1 as director of the Supply and Maintenance Directorate, U.S. Army Missile Command, Redstone Arsenal, Ala.

Col Van Wert reassigned to Okinawa, came to Redstone in November 1960, and has served also as deputy director of the S&M Directorate and Director of Field Service Operations of the Army Rocket and Guided Missile Agency.

Col Grote, a native of Rochester, N.Y., was previously assigned to the Defense Supply Agency in Washington D.C., as chief of the Storage and Distribution Div., Supply Operations.

Following graduation from the University of California in 1933 with a B.S. degree in civil engineering, he was employed in construction jobs on transmountain water diversion, including dams, canals and tunnels.

He began his military career in 1939 at Fort Sill, Okla., and in 1942, he was assigned to the New York Port of Embarkation as chief of maintenance.

In 1945 he was assigned to the Philippine Islands and later that year became Ordnance Officer at Kobe, Japan. Other assignments have included Office, Chief of Ordnance in Washington (1948), chief, Field Service Division, Ordnance Tank-Automotive Command, Detroit, Mich. (1953-57), director of Logistics, Chief of Staff and later deputy commander, Base Section, Communication Zone, U.S. Army, France (1957-60), and commander of the Pueblo (Colo.) Ordnance Depot (1960-62).

Col Grote has attended the Command and General Staff College, Fort Leavenworth, Kans., the Armed Forces Staff College, Norfolk, Va., the Army War College, Carlisle, Pa., and the Army Logistics Management Center at Fort Lee, Va.

Col Robert W. Grote

Fort Huachuca Constructing Information Control Center

An 8,000-square-foot command control information center will be added to the already mammoth Greely Hall nerve center at the U.S. Army Electronic Proving Ground, Fort Huachuca, Ariz.

A $407,500 contract has been awarded to the Jen-Mar Construction Co., of San Diego, Calif. The new addition, planned for the south wing of Greely Hall, will house computers and automatic data processing equipment presently located in the basement of Greely.

Part of the Field Test Facilities Department, headed by Maj Doris E. McAlear, the center is expected to be completed by October 1964.

Nike X Researchers Seek Computer With 'Human' Discrimination

Army scientists seeking a better defense against ICBM's at Redstone Arsenal, Ala., are investigating a computer that performs its logic in much the same way as the human brain. The work is being carried on as part of the Nike X antimissile system project.

Under study is an adaptive computer in which thousands—or perhaps hundreds of thousands—of identical building blocks would be modeled after the brain's cells, called neurons. The cells would be electronic items such as resistors, capacitors and transistors.

Although scientists have known for almost a century that the brain was a complex electrical mechanism, only in recent years have they tried to duplicate it by using electronic components and technology.

Extremely simple forms of the adaptive computer have been built as laboratory curiosities. Now the Nike X project engineers want to know if one can be built as a working part of the system. Its main function would be discrimination. In missile defense terminology, that is picking out a warhead from any decoys that might be flown with it as a sort of smokescreen.

The brain discriminates, in a sense, when it allows you to pick a familiar face out of a crowd, and it is extremely adaptive. Whenever you meet a person for the first time, the brain adapts itself to recognize the thousands of features that make up the pattern of his face. This pattern is "etched" in your brain, and you don't forget an old face every time you learn a new one.

Basically, that is the way the adaptive computer works. It constantly "learns" new faces. In missile terminology the "face" of an ICBM in flight is called its signature.

How does an adaptive computer differ from a digital computer? Both utilize vast "memory" units to store inf rmation. The difference is basically in programming.

A digital computer follows a written program that tells it, step by step, everything it must do to solve a problem. When a new situation comes up that is not covered by the program, the machine balks.

The adaptive computer does not operate in this way. In effect, it is self-programming because it can draw on its wide range of experience in solving other problems. Once the adaptive computer solves a problem, it "learns" something; like the brain, it stores that knowledge for use another time.

The adaptive computer would probably get its practice in solving problems by "looking" at "friendly" missile flights and decoy flights and being asked to discriminate between them. Each time it was wrong, the computer would be corrected by making various electrical adjustments.

Theoretically, such a computer could be built which would "learn" everything there is to know and would never have to be programmed—or told —how to solve a problem.

Scientists are quick to point out, however, that a machine such as this one— which would surpass the human brain because it would never forget anything or make a mistake in judgment—is still a figment of fiction.

Nike X researchers feel that even an elementary form of the adaptive computer could be much faster than the present digital equipment used in the system, in that it would be able to recognize the warhead like your brain enables you to scan a crowd and pick out a familiar face.

From its previous experience, one pattern—or signature—would ring a bell. Just as you don't have to run through every face you know in order to pick out one that matches a face in the crowd, the adaptive computer doesn't have to run through a set of programmed signatures to recognize a lethal warhead.

Of course, there are problems. One is the size an adaptive computer would have to be in order to perform its task. Engineering through the art of microcircuitry has been able to reduce electronic components until a radio receiver can be built in a pencil eraser.

But the state-of-the-art has yet to approach nature, which packs 10 billion neurons—each one in an electronic circuit—in a 3-pound human brain. While such a computer would not have to be as comprehensive as the human brain, the space it would require to house equipment for the necessary functions might be formidable.

This is one area that Stanford University and Adaptronics Inc. of Alexandria, Va., are studying under the guidance of the Nike X Project Office. First Lt Philip Monson, a young physicist who is heading up the study for the project, says the adaptive computer for the Nike X is feasible in the sense that one has faith it will work. However, there are some hardware problems involved.

One of the biggest problems facing the builders of the adaptive computer is how to wire the circuits together. While great strides have been made in brain research, scientists have not yet found it possible to untangle its neurons and trace the "wires."

Neurons are, in effect, control points and junctions for nerve fibers. From one to dozens or hundreds of nerves may lead into and out of one neuron. One of the amazing capabilities of the human brain that the adaptive computer will have is the ability to heal itself. Laboratory models of the computer have already shown this ability. Destroy part of the computer and it quickly builds around the damaged part, laying new patterns just as the brain compensates for partial damage.

Draw a schematic of how the brain is wired and you have a blueprint for building a working adaptive computer. From research now going on, that schematic is on the drafting board.

USAERDAA Chief Scientist Attends Executive Institute Sponsored by CS Commission

James J. Lamb, chief scientist of the U.S. Army Electronics R&D Activity, Fort Huachuca, Ariz. (USAERDAA), was among 40 Government employees who attended the Institute for Executives in Scientific Programs, Jan. 6–10, Washington, D.C.

Designed for executives employed in scientific programs, the Institute focused on problems, goals and prospects confronting the Federal Government in research and development activities.

Sponsored by the U.S. Civil Service Commission, the Institute was highlighted by an address by the CSC Chairman John W. Macy.

A pioneer in the field of electronic engineering and radio communications, Mr. Lamb is chairman of the Fort Huachuca U.S. Civil Service Board of Examiners, and also is chairman of the Fort Huachuca Chapter of the IEEE Professional Technical Group on Military Electronics.

He is a Fellow of the Institute of Radio Engineers and Radio Club of America, a member of the American Association for the Advancement of Science, a member of the Armed Forces Communications Electronics Association, and the Association of the U.S. Army.

Army Wins Bell Award

The Grover E. Bell Award, made annually for helicopter R&D, was presented Jan. 21 at the Aerospace Sciences Banquet in New York to the U.S. Army's 11th Air Assault Division, Fort Benning, Ga. Receiving the medallion and scroll from Marvey Gaylord, president, Bell Aerospace, Buffalo, N.Y., is Maj Gen Harry W. O. Kinnard (right), CG of the 11th AA Division. The Bell Award is sponsored by the American Institute of Aeronautics and Astronautics, the American Helicopter Society and Vertical Lift Aircraft Council of Aerospace Industries Association.

Maj Gen Pochyla Honored With Joint Service Medal

Maj Gen Benjamin H. Pochyla, commanding general, U.S. Army Electronics Proving Ground at Fort Huachuca, Ariz., recently received the Joint Service Commendation Medal.

The presentation was made during a recent 2-day visit to Aberdeen Proving Ground (APG), Md. Maj Gen James W. Sutherland, Jr., CG, U.S. Army Test and Evaluation Command, commended General Pochyla for meritorious achievement as deputy director, Communications-Electronics Directorate of the Joint Staff from June 1961 to May 1963.

The citation accompanying the award stated: "His keen perception of communications-electronics capabilities and his determination to integrate many facets provided imaginative approaches resulting in timely solutions to urgent worldwide communications-electronics problems."

General Pochyla's stay at APG included visits to the Development and Proof Services complex, the U.S. Army Ballistic Research Laboratories, and the U.S. Army Limited War Laboratory.

Brig Gen Anderson to Head Army Weapons Command

Brig Gen Roland B. Anderson will succeed retiring Maj Gen Nelson M. Lynde, Jr., as commanding general, U.S. Army Weapons Command, Mar. 1.

Since August 1962, he has served as AWC deputy CG. Immediately prior to his assignement to the Weapons Command, General Anderson was assistant chief of staff, G–4, Army Communications Zone, Europe.

Announcement of his selection was made by Lt Gen Frank S. Besson, Jr., CG of the Army Materiel Command in Washington, D.C.

A graduate of the United States Military Academy (1938), General Anderson has served assignments in all areas of the Ordnance field, including procurement, industrial management, supply, technical analysis, and various major staff positions.

One of the Army Materiel Command's three "shooting commands," the Weapons Command is headquartered at Rock Island Arsenal, Ill. Its mission is to develop, produce and service weapons, combat vehicles and tools for the Armed Forces and Military Security Pact Nations.

Sheridan/Shillelagh System Passes Air Drop Test

A successful experimental drop by parachute of the Sheridan/Shillelagh weapons system was made Jan. 14 at Yuma Proving Ground, Ariz., by the Air Test Branch of Test and Evaluation Division. The system consists of a new U.S. Army Armored Reconnaissance Airborne Assault Vehicle, the General Sheridan, mounting the Shillelagh weapon.

The air drop was from an Air Force C–130 aircraft flying at 2,500 feet altitude and an air speed of 150 knots. The vehicle was extracted from the aft end of the aircraft by two 28-foot diameter parachutes and lowered safely to earth by eight 100-foot diameter cargo parachutes.

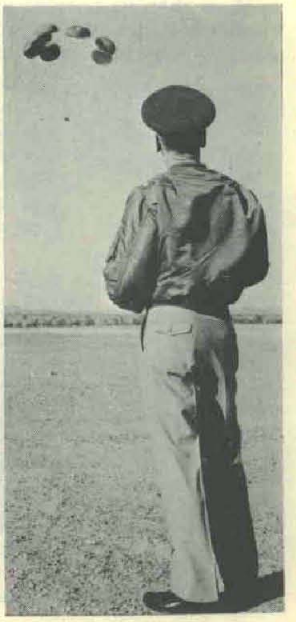
The test program was a joint effort of the Air Test Branch at Yuma P.G. and U.S. Air Force 6511th Test Group (Parachute) located at the Naval Air Facility in El Centro, Calif.

A select group of observers representing the Armed Forces witnessed this "first of its kind" delivery of a vehicle that dwarfs all other air dropable U.S. Army heavy equipment.

It was reported that rigged drop weight of the system tops the previous largest vehicle drop by more than 13,000 pounds and its overall dimensions allow but a few inches clearance between aircraft and vehicle.

The Sheridan/Shillelagh system, still in the development stage, is under a project manager located at U.S. Army Weapons Command, Rock Island, Ill. The Cadillac Division of General Motors, developer of the General Sheridan vehicle, and the Aeronutronic Division of Philco Corp., developer of the Shillelagh missile system, are the principal contractors for the system.

BIG DROP. Col James C. Taylor, CO, Yuma PG watches Sheridan/Shillelagh Weapons System, dwarfed by eight 100-foot diameter cargo parachutes, drift toward Drop Zone Red. ON IMPACT (below), electronics technicians, ammunition experts and Air Test Branch personnel swarm over the System to check test results. Weighing in at 35,000 lbs, the vehicle was the largest dropped at YPG and was operable on impact.



Army Weapons Command Innovates User Reaction Survey of M-60 Machinegun

The U.S. Army Weapons Command "market analysis" findings on the Army's M-60 machinegun were announced Jan. 16, marking what the AWC believes is an innovation.

AWC officials regard the study initiated during the summer of 1963 as the "first attempt by an Army developmental agency to get the user reaction to its commodities." A report of findings is being distributed to agencies that had a part in M-60 development.

From original concept through design and development stages, and service tests preliminary to troop issue, the M-60 looked good. But rather than wait for EIRs (Equipment Improvement Recommendation, DA Form 2407), the AWC decided to resort to the market analysis method of evaluating data relating to all facets of the reaction of users, within and outside the Army.

The AWC was as interested in reactions of maintenance personnel as in those of the men who fired the M-60, a general purpose, fully automatic weapon. To get this range of information, the Materiel Management Division of the Comptroller and Director of Programs Directorate drew up a questionnaire and addressed it to every combat division and to maintenance personnel at posts in the U.S. and overseas.

More than 500 replies were received to the 800 questionnaires. Respondees averaged 19.3 months experience with the M-60 and 71 percent of them were assigned to Infantry, Armor, Combat Engineer or Artillery units. Eighteen percent were assigned to Ordnance support units in the combat divisions.

More than 88 percent of respondees considered the M-60's accuracy was good, very good or excellent; 64.2 percent liked the quick-change barrel, only three percent more than were appreciative of the M-60's light weight. Members of the Infantry, Armored Infantry and Airborne units particularly liked these features.

Years of research, development, testing and production were riding on answers such as those. Particularly welcome was a letter from a private in the 24th Infantry Division which said: "Everyday firing of this weapon for six months has proven to me that the M-60 machinegun has the tactical flexibility that we have so long sought . . . in a machinegun."

An example of AWC's open-minded attitude on the market analysis was the leading question, "Is the M-60 easy to clean and maintain in the field." The response was a 79.1 percent "yes."

One general criticism of the weapon was that some of the components were too fragile, causing excessive breakages. Sensing this in its continuous review and evaluation of the M-60, AWC already had redesigned a number of the parts that were mentioned, including a sturdier bipod, operating rod and a new feed cover assembly that permits the cover plate to be closed with the bolt forward.

In the estimation of AWC leaders, the questionnaire paid for itself by confirming the need for new or improved parts, including numerous suggestions that the relatively high fixed front sight might break off during handling. A folding front sight had been considered during the early development stages and rejected during troop tests; the rigid sight is designed to withstand much more than normal wear from handling.

Troops also were asked if they were getting enough copies of the M-60 manuals and whether they were written in clear language. Answers were as much of concern to AWC leaders as those which supported accuracy of the weapon.

The M-60 market analysis was the pilot study for a series of queries the AWC is scheduling for some of its other weapon systems. Answers from users in the combat units will enable AWC scientists and engineers to modify present weapons or to incorporate suggested improvements in future weapons.

Robert Schertz of AWC materiel management survey monitors Sgt Edward Riker during "market analysis" of user reaction to Army's M–60 machinegun.

Engineer R&D Labs Modify Gas Turbine Engine Order

A $1,247,686 contract modification has assured continuing development, testing and delivery of a 300 hp. gas turbine engine to the Army Mobility Command's Engineer Research and Development Laboratories, Fort Belvoir, Va.

The engine is one of a family of gas turbines being developed for Army applications, and is being designed by AiResearch Manufacturing Co., of Arizona, to operate on a variety of military fuels and lubricants.

Rated at a continuous 300 hp. for a wide range of environmental temperatures and altitudes, the engine is designed for resizing to a 200 hp. and 400 hp. rating and is suitable for adding a recuperator for minimum fuel consumption.

With an output shaft speed of 40,000 r.p.m. for driving ultra-high speed generators, the engine also provides for reducing the speed to a conventional 6,000 to 12,000 r.p.m. speed.

Weight of the engine, including all accessories, is 200 pounds, and it will have a service life of 1,500 hours between overhauls.

Delivery of the first engine will be made to the Laboratories in December 1964. The original contract for the engine, let in June 1962, provided for a 30-month development program, but was funded only for a design phase.

Lt Gen Dick Briefs Wives Club About Research, Development

Orientation on Army research and development has been carried to the wives of the men who direct and plan the program at OCRD Headquarters.

Chief of Research and Development Lt Gen William W. Dick, Jr., took an hour out of his busy schedule on Feb. 6 to address the Army R&D Wives Club on "Your Husband's Role in Research and Development."

Army Weapons Command CG Announces Retirement

Maj Gen Nelson M. Lynde, Jr., commanding general of the U.S. Army Weapons Command since it was established at Rock Island (Ill.) Arsenal in August 1962, will retire Feb. 29.

A graduate of the U.S. Military Academy (class of '29), he served with distinction during World War II throughout Europe with the Seventh, First and Fifteenth Armies, taking part in the North Africa, Sicily and Normandy landings.

As Ordnance Officer of the First Army in its sweep across Europe into Germany, he was responsible for the daily operational readiness of 2,000 armored vehicles, 1,200 artillery weapons and 100,000 motor vehicles.

Among other decorations for service in World War II, he received the Legion of Merit and Bronze Star, both with Oak Leaf Cluster. From France, he received the Legion of Honor and the Croix de Guerre.

After World War II, General Lynde transferred to the Ordnance Corps and served at Fort Knox, Ky., until reassigned as Ordnance officer of Army Field Forces.

From 1953 to 1955, as commander of Ordnance base depots for Army Forces in the Far East, he was responsible for the disassembly, inspection and rebuild of 300,000 armored vehicles, trucks and artillery weapons for use in Korea and Southeast Asia.

In addition to a second OLC to the Legion of Merit, he received the Korean Ulchi Medal with Gold Star for his services.

Maj Gen Nelson M. Lynde

Upon return to the U.S. in 1955, he served as CG of the Ordnance Tank-Automotive Command in Detroit until 1959. Appointed assistant chief of Ordnance for Field Service in 1960, he served until he assumed command of the former Ordnance Weapons Command at Rock Island Arsenal.

The General and Mrs. Lynde will establish their residence in Falls Church, Va.

ASA(R&D) Hawkins Goes To AROD for Briefing

Assistant Secretary of the Army (R&D) Willis M. Hawkins visited the Army Research Office at Durham, N.C., Jan. 16 for an overall briefing of AROD operations by Col Nils M. Bengtson, commanding officer.

Secretary Hawkins was accompanied by Col K. C. Emerson and Lt Col John B. Bond, of his immediate staff, and Dr. Ivan R. Hershner, Jr., scientific director, Army Research Office.

Dr. John W. Dawson, AROD chief scientist, explained procedures used by AROD in coordinating its research support program within the Army and with other Government offices, including comparative analysis of research proposals and award of grants and contracts.

Dr. Robert Lontz, Dr. H. M. Davis and Dr. Sudhir Kumar described AROD military projects concerning Lasers, ceramics and aeronautics.

Secretary Hawkins also conferred briefly with Dr. Douglas M. Knight, president of Duke University.

Brig Gen Pickett Assumes Job as CDC Chief of Staff

Brig Gen George B. Pickett, Jr., was recently named Chief of Staff of the U.S. Army Combat Developments Command (USACDC), Fort Belvoir, Va., succeeding Brig Gen W. L. Calhoun who retired Dec. 31.

A 1941 graduate of the United States Military Academy, General Pickett commanded the 2nd Armored Cavalry Regiment in Germany (1961-63), and came to USACDC in October 1963 from the Office of the Deputy Chief of Staff for Military Operations, Department of the Army. Promoted to brigadier general in November, he has been the assistant deputy CG for Materiel Requirements.

In-grade Change Affects Few

Predictions that the stiffer in-grade pay raise provisions of the 1962 Federal Salary Reform Act would be used by supervisors to force higher competence and efficiency standards are not supported by statistics showing about 99 percent of employees have been hiked.

USAEIRDL Scientist Wins IEEE Fellowship

W. L. Doxey

W. L. Doxey, acting technical director of the U.S. Army Electronics Research and Development Laboratories, Fort Monmouth, N.J., was recently elected a Fellow in the Institute of Electrical and Electronics Engineers (IEEE).

The selection was announced by Dr. Ernst Weber, IEEE president, head of Polytechnique Institute of Brooklyn, N.Y., and chairman of the U.S. Army Junior Science and Humanities Symposium Program.

Mr. Doxey won recognition as one of the country's leaders in directing microelectronics research while serving as head of the USAELRDL Electronics Components Department, a position he held until assigned to his present job. He also has served as director of the Frequency Control Division and as director of the Power Sources Division.

Among scientific achievements for which he is credited are improved primary and storage batteries for Army field use, and special fuel cell or other missile batteries that release large bursts of energy for brief periods. His technical leadership spearheaded development of extremely high-power electron tubes for radar, and he has contributed to advances in Maser and Laser techniques as well as other devices for communications and electronic range-finding.

Federal career service started for him in 1942, when he was a physicist in the Office of the Chief Signal Officer in Washington, D.C., and was resumed at the Electronics R&D Laboratories upon his return from World War II service.

A senior member of the IEEE since 1953, he has served as National chairman of its Professional Group on Military Electronics. He is known also for his service on numerous other professional and Federal Government panels concerned with electronics.

Born in Montgomery, Ala, he received a B.S. degree in physics and mathematics at Northwestern State College in Louisiana and earned his M.S. degree by studies at Louisiana State University while he was a public school teacher.

3 Missile Command Scientists Vie for Goddard Award

Three U.S. Army Missile Command scientists have been nominated for the first Goddard Award to be presented by the American Institute of Aeronautics and Astronautics (AIAA) at its first annual meeting in June.

Named in honor of rocket pioneer Robert H. Goddard, the award will be presented annually by the AIAA and will carry a prize of $10,000 donated by United Aircraft Corp.

Army nominees are Frank W. James, director, Propulsion Laboratory; Dr. Walter W. Wharton, chief, Chemistry Branch, Physical Science Laboratory; and Niles C. White, chief, Propellant Chemistry Branch, Propulsion Laboratory. All are from the Directorate of Research and Development at Redstone Arsenal, Ala.

Navy and Air Force nominations have also been made and forwarded to Secretary of Defense Robert S. McNamara.

The award will recognize an aerospace engineer or scientist who has made an outstanding discovery, or a series of outstanding technical contributions, in the fields of propulsion or energy conversion. It may also be presented for accomplishments outside the fields of propulsion and energy research for outstanding scientific or engineering creativity.

In announcing the award, Dr. Pickering, president of AIAA, said, "This new award will be the highest honor bestowed by the Institute. It will give proper recognition to those who follow in the pioneering tradition of Dr. Goddard. It is fitting that this award should bear the name of the man who overcame financial restrictions, frustration and public skepticism to build the foundation for our present space flight program."

Selection of the recipient will be made by an awards committee headed by Dr. C. Richard Soderberg, Professor Emeritus at M.I.T. and former dean of the M.I.T. School of Engineering. Vice chairman of the committee will be Dr. Arthur E. Raymond, consultant to the Rand Corp.

A gold medal, financed by the AIAA Goddard fund donated by the rocket pioneer's widow, Esther Goddard, will accompany the cash award.

Dr. Goddard was the first to develop and fly a rocket motor using liquid fuels, anticipating the German V-2's by about 15 years; was the first to develop and fly a liquid fuel rocket faster than the speed of sound; first to develop gyro steering apparatus for rockets; first to patent the idea of a multi-stage rocket; and first to explore mathematically the practicality of rocket power to reach the moon.

Frank W. James

Dr. Walter W. Wharton

Niles C. White

FRANK W. JAMES was nominated for his individual contributions and creative management to the formation of a nationally oriented R&D laboratory complex that has generated a large number of advanced liquid and solid fuels and propulsion systems.

He is credited with organizing the national scientific complement that has led to the unlimited acceptance of the Pershing motor, and for providing the engineering and scientific leadership for predicting the Arctic capability of solid-propellant rocket motors, generating redesigns and creating the handling procedures that assured reliable operation of Hawk motors used under Arctic conditions.

Mr. James led the team that discovered a new class of high-energy composite propellants that met the unique performance requirements of the Mauler rocket system, requiring higher burning rates with higher specific impulse than previously known.

He instituted the research program which resolved the national safety problem of preignition resulting from stray radio frequency (RF) energy. His discoveries in this field have been applied to current missile systems.

Graduated with an M.A. degree in chemistry from Columbia University, he is the recipient of numerous honors during his 24 years service with the Federal Government.

DR. WALTER W. WHARTON's nomination is based on his individual contributions and guidance in the development of new and novel high-energy chemical propellants that have advanced the state-of-the-art in packaged liquid technology.

Recognized for his development of the only known hypergol for nitrogen fluorine propellants and discovery of a general desensitizer for the same composition, he is cited in the nomination for generating studies which produced successful evaluation of a nitrogen fluorine compound. His studies in energy conversion of mixed oxidizer systems have established for the Army a high level of confidence in packaged liquid propulsion technology.

Studies in variable thrust injection concepts, generated by Dr. Wharton, have provided invaluable specific data for the Army Lance Project. The data is also now being used by NASA and the Air Force. The Lance Development Program has been expedited as a result of his study data on liquid gas generators, positive expulsion techniques and nozzle erosion rates.

Dr. Wharton also has provided the national propulsion industrial complex with physical property data on nitrogen fluorine propellants for synthesis and production.

As a 1962 winner of the Army R&D Achievement Award, he was honored as one of a group of six scientists for achievements that resulted in discovery of a new monopropellant combination that has a higher specific and density impulse than existing bi-propellant packageable liquids.

Dr. Wharton received his Ph.D. degree from the University of Kentucky (1955). A magna cum laude graduate, he is listed in the 10th edition of *American Men of Science*, has filed various patent applications, and has had significant technical papers published by the U.S. Government and through open literature.

NILES C. WHITE was nominated for his individual contributions and for directing the efforts of others in the research of composite propellants, ignition devices, ballistic-physical-stability properties of propellants and application to rockets and missiles.

As leader of the Propellant Chemistry Branch of the Propulsion Laboratory, he planned, established and directed research and development programs that resulted in the development of a new class of composite solid propellants based upon nitrocellulose. It was necessary to solve many problems to obtain the outstanding ballistic, physical and stability properties

that have made the new propellant useful in missiles now under development.

The nomination says he was the first to recognize the significance of polymer crystallization, under long-term low-temperature storage and its effect upon the military usefulness of solid propellant rockets. The research and development program that he established and directed resulted in new tests of propellants that provided data required for the predication of the low-temperature usefulness of current and future missile systems.

Under his technical supervision of research and development in the field of rocket motor ignition, a series of new electric firing squibs possessing improved safety and reliability have been developed to meet unique Army requirements. The M–3 squib resulting from this work is in use in Honest John, Little John and Nike Hercules booster rocket motors.

Along with H. S. Williams of Redstone, he was a 1961 Army R&D Achievement Award winner, credited with formulation of a new propellant rocket fuel with inexpensive production techniques suitable for use in Army facilities.

Mr. White is a 1950 graduate of the Universtiy of Alabama with a B.S. in chemical engineering and has published many significant technical papers that relate to solid propellants.

Defense Orders Procurement Policy Consolidation

Exactly a month after President Johnson wrote to 7,500 defense contractors, asking them to "establish an affirmative program of cost reduction," the Department of Defense moved to consolidate all procurement instructions.

Announced early in January, the action is linked to Secretary of Defense Robert S. McNamara's cost reduction and management improvement program. It seeks to incorporate the separate procurement instructions of the Defense Supply Agency, the Military Departments and subordinate elements into the Armed Services Procurement Regulation (ASPR).

Minimizing the confusion experienced by DoD personnel and contractors in attempting to comply with the various instructions is a prime objective. At the same time, eliminating the multiplicity of instructions would reduce the expenditure of manhours and funds.

When completed, the DoD stated, the consolidation project is expected to result in savings to contractors as well as to the Federal Government.

Representatives of the Office of the Secretary of Defense, the Departments of the Army, Navy and Air Force, and the Defense Supply Agency are working through the ASPR Committee, which has established two new panels and assigned them specific tasks in the following areas:

- Reduce departmental and subordinate procurement directives, regulations, instructions and procedures to purely internal management instructions, such as delegations of authority, assignments of responsibilities, interim procedures needed for operations, and similar provisions; incorporate in the ASPR all material necessitated by these actions.
- Develop uniform contract administration procedures for use throughout the Department of Defense, with consequent reduction of existing separate departmental and Defense Supply Agency issuances.

Agencies involved are responsible for screening existing procurement regulations, directives, instructions, policies and procedures and any other material considered to be implementations of ASPR for the purpose of elimination, continuation if within an authorized exeception, or submission of recommendations for inclusion in the ASPR. Target date for completion of screening is Apr. 1.

While the consolidation work is under way, the agencies are halting issuance of new procurement instructions contrary to the objectives of the project. A Defense Procurement Circular is to be established to issue new or changed policy or procedure expeditiously when necessary prior to publication in an ASPR revision. The Circular also will be used for non-directive type material of an informational or policy explanation nature.

The tenth anniversary of the U.S. Army Electronics Proving Ground made history when Arizona Governor Paul J. Fannin, for the first time in the state's history, issued a proclamation honoring a military installation. USAEPG Commander Maj Gen Benjamin H. Pochyla is shown receiving the proclamation from Governor Fannin urging all Arizonans to join during Feb. 10-15 in honoring the Proving Ground for its social and economic benefit."

Frankford Arsenal Names New R&D Group Director

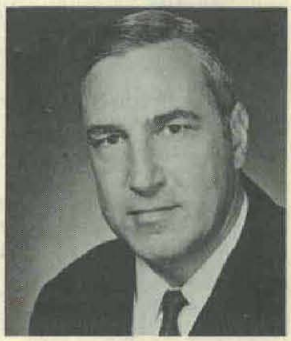
Dr. David B. Rosenblatt has been named director of the Pitman-Dunn Institute for Research, Research and Development Group, Frankford Arsenal, Philadelphia, Pa.

Assigned for the past five years to the Brookhaven National Laboratory of the AEC on Long Island, he has been engaged in studies of irradiation effects on solids.

Dr. Rosenblatt became an employee of Frankford Arsenal in 1952 in the Physics Research Laboratory. After a brief period, he was assigned to the Brookhaven Laboratory, being the first of several Frankford Arsenal scientists assigned there. Two years later he returned to the Arsenal as head of the Solid State Physics Section. In 1958 he was again assigned to Brookhaven.

A native of New York City, where he was born Apr. 25, 1918, he is a graduate of New York University with a B.A. degree in 1942 and an M.S. in 1946. He received his doctor's degree from the Israel Institute of Technology, Haifa, Israel, in 1954. He did graduate work in physics at Princeton University and at the University of Tennessee.

Professional affiliations include membership in the American Physical Society, American Nuclear Society, American Ordnance Association, Research Society of America, Phi Beta Kappa, Sigma Pi Sigma and Sigma Xi. He is author or coauthor of a number of scientific papers relating to nuclear irradiation effects and allied subjects.



Dr. David Rosenblatt

DoD Briefing Industry on Long-Range Procurement

Classified briefings to provide industrial leadership with a long-range insight into Department of Defense development and procurement needs have been scheduled in response to a May 1963 proposal by the Defense Industry Advisory Council (DIAC).

In a memorandum to the Military Departments and to the heads of Defense agencies engaged in development activities, Deputy Secretary of Defense Roswell L. Gilpatric directed that a series of 12 briefings be arranged during 1964. The action on Jan. 20 came three days before his resignation to return to his private law practice.

Each of the Military Departments will host two of the briefings slated for the first half of the year, and they will work jointly in development of material to be presented.

The Army has been assigned to serve as host for the briefings of the Arms and Ammunition Industry and the Chemical and Biologicals Industry; the Navy for the Electronics Industry and the Nuclear Products Industry; the Air Force for the Aircraft Industry and the missile Industry.

Assignments for the second half of 1964 will be made at later date, covering Clothing, Internal Combustion Power, Mechanical Products, Research, Shipbuilding, Ground Transportation.

Emphasis will be placed on projected shifts in development and procurement plans to meet the changing requirements of the United States military program over a 5-year period. The focus will be on trends rather than technical details, and the classified nature of the meetings will permit a frank discussion of major factors influencing military goals.

Defense Director of Research and Engineering Dr. Harold Brown will make a policy statement at each session. The joint briefings, eliminating the industrial briefings given separately by each of the services, reflect the recent agreement between Army, Navy and Air Force leaders to coordinate and integrate research and development activities closely.

Invitations to industrial firms, because of the high-level approach being taken, will permit attendance of no more than three persons from among the top corporate offices engaged in management research and planning.

Participation by individual firms will not be limited by the size of the firm or whether the firm holds an R&D contract with the Department of Defense. Ability to obtain a security clearance through the host department is the prime criterion.

Rock Island Associate Director Wins SA Fellowship

James O. Jensen, associate director of the U.S. Army Management Engineering Training Agency at Rock Island (Ill.) Arsenal, is starting a study this month under a Secretary of the Army Research and Study Fellowship.

The Fellowship is enabling him to work at the State University of Iowa for one year to complete a master's degree research study on the weapon system acquisition process.

In announcing the award, Deputy Under Secretary of the Army (Manpower) Alfred B. Fitt stated: "This Fellowship is an outstanding mark of distinction, not only for past achievement, but for having proposed a plan of study and research sufficiently creative that intensive review by competent authority has led to a decision to make this additional investment in Mr. Jensen's career."

The Fellowship is particularly noteworthy because it is the first such award in the history of Rock Island Arsenal and, according to State University of Iowa officials, it is the largest scholarship in the history of the State University—estimated at $20,000 for salary, tuition, books and materials, travel and other incidentals.

James O. Jensen

During the past two years, Jensen has assisted in the development and implementation of the Army's project management organizational concept and the design of this control system for major weapons systems. He has also served as the chairman of the Army implementation team that supervised the testing of the PERT/COST techniques on the Mauler and Lance weapon systems.

DoD Winding Up Orders For Caribou I Aircraft

Plans to conclude procurement of the Caribou I (CV–2B in the Army's aircraft inventory) with utilization of funds made available in FY 1963 were announced Jan. 17.

The Department of Defense reported that analysis of the role of Caribou I in the overall inventory of logistics aircraft shows that the currently funded program is sufficient to meet Army requirements, despite earlier plans for additional procurement.

The Caribou I has proved a rugged tactical transport with good off-runway performance and exceptional short takeoff and landing characteristics, as demonstrated in field exercises and service in South Viet Nam.

A joint U.S.-Canadian program to develop a follow-up model Caribou II will continue with Department of Defense support. Caribou II promises to have considerably improved capabilities, particularly in cargo carrying capacity, over the CV–2B.

Designated the CV–7A, it has a high content of U.S.-produced materials and equipment. The T–64 turbine engines manufactured by General Electric Co., Lynn, Mass., and Hamilton Standard propellers manufactured at Windsor Locks, Conn., will be used in CV–7A.

The current development program provides for construction of four prototype aircraft for field tests by the U.S. Army. If a decision is made to procure the aircraft, the development agreement provides for follow-on production in the United States or in Canada. This is an essential developmental program to ensure that there is continuing progress in that type of requirement now being met by the Caribou I.

The Caribou procurement and development has been carried on under the U.S.-Canada Defense Production Sharing Program, under which there has been a substantial balance of reciprocal procurement.

7,000 Expected at Parley

About 7,000 persons, including 4,000 professional members, are expected to hear discussion on the computer's problem-solving role in a changing world at a conference in Washington, D.C., April 21-23.

The parley, sponsored by the American Federation of Information Processing Societies, Institute of Electrical and Electronics Engineers, and Association for Computing Machinery.

Field trips will include the NASA Goddard Space Flight Center, Greenbelt, Md., Defense Documentation Center, Arlington, Va., National Library of Medicine, Bethesda, Md., and U.S. Weather Bureau, Washington.

Project HIBEX Tops Army Contracts Totaling $165 Million

Department of the Army contracts for R&D products or services totaling more than $170 million in recent weeks were topped by a $15,599,775 contract for Project HIBEX (Hi G Booster Experiment).

The contract calls for an experiment investigation of high performance missile boosters, an Advanced Research Projects Agency program in booster and control technology.

Sperry Rand Corp. was granted $10,725,000 for Sergeant Missile System components.

W. S. Bellows Construction Corp. and Peter Kiewit Sons Co., Houston, Tex., will construct the Mission Simulation and Training Facility and Center Support Facility at the Manned Space Center, Houston, Tex., for $4,211,377.

Western Electric Co., New York City, received $1,170,751 for work in support of Project Sleighride, a reentry vehicle vulnerability test program.

AVCO Corp., Stratford, Conn., was awarded a contract for $10,549,416 for production of T55-L-7 shaft turbine engines and related equipment for Army CH-47A (Chinook) aircraft.

Day & Zimmerman, Inc., Philadelphia, Pa., was the recipient of a $9,623,854 contract for ammunition components. Remington Arms Co., Bridgeport, Conn., was awarded a $5,249,729 and Mason & Hanger, Silas Mason Co., New York, N.Y., $4,603,020 contract for ammunition.

Magnavox Co., Fort Wayne, Ind., received two contracts totaling $8,540,896 for 3,776 receiver-transmitter radios and 1,112 receivers. Collins Radio Co., Dallas, Tex., will produce 853 air-to-ground communications sets for $3,771,454.

Frank Hough Co., Libertyville, Ill., won a $7,236,847 contract for 427 scope-type loaders.

Hiller Aircraft Co., Palo Alto, Calif., contracted to produce OH-23G observation helicopters for $6,029,100. Bell Helicopter Co., Fort Worth, Tex., received a $3,731,750 contract for OH-13S observation helicopters.

Allis Chalmers Manufacturing Co., Milwaukee, Wis., received a $8,859,714 contract for 376 tractors.

Chamberlain Corp., Waterloo, Iowa, won a $4,950,780 modification to an existing contract for production of 175 mm. high explosive shells.

Sperry Farragut Co., division of Sperry Rand Corp., Bristol, Conn., will produce fuzes under a $4,559,514 bid.

Scoville Manufacturing Co., Waterbury, Conn., will perform a $4,460,943 contract for metal parts of bombs. Thiokol Chemical Corp., Bristol, Pa., received a $4,022,449 contract for Pershing missile motors. FMC Corp., New York, N.Y., won approval to continue operation of the Newport Chemical Plant, Ind., for $4,020,717.

Dynalectron Corp., Washington, D.C., was awarded a $5,966,791 contract to install, operate and maintain data collecting facilities at White Sands Missile Range, N. Mex.

Raytheon Co., Lexington, Mass., won a $3,473,116 contract for guidance and control systems for Hawk guided missiles. Esso Research & Engineering Co., Linden, N.J., was the recipient of a $1,979,400 contract for research on a solid propellant program.

Control Data Corp., Minneapolis, Minn., received two contracts totaling $4,000,000 for research and development work. Collins Radio Co., Richardson, Tex., was awarded a $2,135,343 contract for services and material required for changes in the Down Island Microwave System.

International Harvester Co., Washington, D.C., was awarded a $1,921,419 contract for production of trucks.

Other contracts were: Rohm & Hass Co., Huntsville, Ala., $1,918,000 for continued research and development in the field of solid propellant rocketry; Consolidated Welding and Engineering Co., Chicago, Ill., $1,823,305 for 417 semitrailers;

Radio Corporation of America, RCA Service Division, Camden, N.J., $1,744,558 for technical and engineer service and mechanical electronics equipment for White Sands Missile Range testing;

Telecomputing Services, Inc., Panama City, Calif., $1,888,486 for reduction of missiles in flight and other test vehicle data; Emerson Electronic Manufacturing Co., St. Louis, Mo., $1,567,210 for Honest John rocket parts;

Firestone Tire and Rubber Co., Akron, Ohio, $1,557,345 for 53,010 rubber track assemblies for combat vehicles; Minneapolis Honeywell Regulator Co., North Hopkins, Minn., $1,481,400 for work on classified project in New Brighton, Minn.;

Dynalectron Corp., Washington, D.C., $1,380,463 for research and development on range implementation equipment in field of optical recording, electronic projectory measuring, telemetry systems, range timing, data collection and reduction at White Sands.

Col Saxe Becomes USAELRDL Deputy Commander

Col Robert K. Saxe, a professional scientist with a Ph.D. in electrical engineering, has been appointed acting deputy commander of the U.S. Army Electronics Research and Development Laboratories at Fort Monmouth, N.J.

As successor to Col Thomas K. Trigg, reassigned to the Office of the Joint Chiefs of Staff in Washington, Col Saxe comes to the Laboratories from his former post as chief, Research Commodity Office, U.S. Army Electronics Command.

Born in Medford, Mass., in 1914, he was graduated from Northeastern University with a B.S. in electrical engineering in 1936. Until 1942 he worked as a civilian electronics engineer, then entered the Army as a second lieutenant with the Electronics Training Group and was assigned to England. After V-E Day he was assigned to the Air Force Training Command.

In 1948 he accepted a regular commission with the U.S. Army Signal Corps. For the next three years he attended the University of Illinois, receiving an M.S. degree in 1950 and Ph. D. in electrical engineering in 1951. Assigned to the Electronics R&D Laboratories for the first time in 1951, he remained until 1954 when he went to Viet Nam for a year.

Col Robert K. Saxe

During the past eight years he has served with the Office of the Chief of Research and Development in Washington, D.C., the Army Research Office-Europe in Germany, and the Electronics R&D Command. He is a graduate of the Signal Corps Advanced Officers' Course and the Command and General Staff College Associate Course.

USAELRDL Scientist Moves Up to DDRE Post

An Army scientist of 13 years standing took a long step up the Federal Service career ladder early in January when he became deputy assistant director (Research), Office of the Director of Defense Research and Engineering in Washington, D.C.

Dr. Edward M. Reilley, since 1959 the director of the Institute for Exploratory Research (IER) at the U.S. Army Electronics Research and Development Laboratories, Fort Monmouth, N.J., is now an assistant to Dr. Nathan Marcuvitz. Dr. S. Benedict Levin, the IER deputy director, became acting director when Dr. Reilley moved to Washington.

Employed at USAELRDL since 1951, Dr. Reilley held various key posts preliminary to his promotion to IER director when it was given full departmental status in February 1959. The IER is concerned with basic research in electronics and related branches of the physical sciences.

He received a bachelor of science degree in 1940 from Carnegie Institute of Technology, Pittsburgh, and his doctorate in physics from the University of Pittsburgh in 1951.

After working as a research assistant with the Mellon Institute of Industrial Research for two years, he

Dr. Edward M. Reilley

entered active military service as a Signal Corps officer in 1942. He was awarded the Bronze Star during his service in Europe and left active duty as a major in 1946.

Subsequently, he was a research engineer and instructor at the University of Pittsburgh and consultant for the Department of Defense.

Last June Dr. Reilley was awarded the Army Meritorious Civilian Service Award, second highest honor given civilians by the Department of Defense, for his contributions to military electronics, advanced scientific research and mathematics.

He is a member of the Joint Services Advisory Committee (electronics), the Ionospheric Research Committee of the Advisory Group for Aeronautical R&D, principal area specialist (solid state physics) on the Department of Defense Coordinating Committee on Science, and other Federal Government groups.

Core Like Spool of Thread Produces Million Gauss

A superconducting coil about the size of a spool of sewing machine thread has produced a pulsed magnetic field of one million gauss, believed a record for an electromagnetic coil, at the U.S. Army Engineer R&D Laboratories.

Scientists at the Fort Belvoir, Va., installation reported early in January that the coil was operated at liquid helium temperatures, that it remained unchanged during tests, and can be pulsed repeatedly at intervals of about one minute.

Devised by USAERDL engineer Edward Halas, the coil was fabricated by Materials Research Corp. using its new niobium tin (patent pending) at laboratories in Orangeburg, N.Y. It is about an inch long, has an opening of ¾ inch through its 1¾ inch diameter, and can be pulsed repeatedly at intervals of about one minute.

Development of the coil was a part of USAERDL's continuing investigation of magnetic field behavior, aimed at improving production efficiency of electric power sources designed for use by military field forces.

Further experimentation is directed toward the goal of advances that will lead to magnetohydrodynamic (MHD) generators, using the interaction of a hot conducting gas on an applied magnetic field, such as that produced by the new coil, to generate power.

The USAERDL electric power conversion program seeks to develop lightweight, efficient, portable plants.

Col J. H. Kerkering, CO, USAERDL, examines superconducting electromagnetic coil through which a pulsed magnetic field of one million gauss was achieved. Edward Halas, left, devised the coil, indicated by white tape near the center of picture.

SPA Journal Puts Stress On Management Problems

Subjects of major concern to Army research and development executives and laboratory supervisors, dealing with manpower use and productivity, are treated in depth in the January-February issue of *Personnel Administration.*

The journal of the Society for Personnel Administration features articles by leading authorities on management, including Frederick Herzberg, Jack R. Gibb, Norman R. F. Maier, Allen R. Solem, Walter R. Mahler and Cecil E. Goode.

Dr. Maier, University of Michigan, discusses "Maximizing Personnel Creativity Through Better Problem Solving." Dr. Solem, University of Minnesota, writes on "Group Methods in Management." Mr. Goode, a management analyst of the U.S. Bureau of the Budget, considers the gap between scientific management and behavioral science approaches in "Greater Productivity Through the Organization of Work."

Other subjects are: "Communication and Productivity," Dr. Gibb, National Training Laboratories associate; "Motivation — Hygiene Concepts and Problems of Manpower," Prof. Herzberg, chairman, Department of Psychology, Western Reserve University; "Improving Coaching Skills," Dr. Mahler, president of Mahler and Associates, New York City.

Ervin Assigned to OCRD Staff

Lt Col John W. Ervin has been assigned as deputy chief, Chemical-Biological Office, Office of the Chief of Research and Development, replacing Lt Col James H. Watts, who has been reassigned to Hq, U.S. Army Materiel Command.

Lt Col Ervin holds a B.S. degree in chemistry from Rutgers University and a B.S. in aeronautical engineering from the University of Maryland. His most recent assignments have been battalion commander, Fourth U.S. Army Missile Command in Korea and, before that, test officer (guided missiles), U.S. Army Artillery Board.

Redstone Physicist Patents RF Hazard Detector

An invention patented by an Army Missile Command Directorate of Research and Development employee at Redstone Arsenal, Ala., reduces the possibility of an accidental missile firing because of stray electrical radiation.

William L. Strickland, a research physicist in the Propulsion Laboratory, recently invented a radio frequency hazard detector which warns missilemen of radiated electrical energy long before the danger level is reached.

Radiated electrical energy from nearby radio transmitters or radar sets can fire a missile accidentally—with possible disastrous results—and missilemen have always been cautious about radio transmitters and other sources of radiated energy. Even the static electricity in a person's clothing conceivably might touch off the firing squib in some missiles.

One handicap Strickland had to overcome was determining when a hazard was present. The skin of a missile might shield out a large portion of radiated electrical energy so that it would never reach the squib. Thus, a reading taken anywhere except inside the squib itself would give a false indication of the danger involved.

To eliminate false readings, Strickland shielded the circuitry and components of his RF hazard detector. Then he used a well-known fact that when current flows through a small wire it begins to heat. The sensing element of his detector is a tiny temperature sensitive device placed directly on the bridge wire.

William L. Strickland

The detector is so sensitive that it will measure the temperature rise caused by as little as .0004 of an amp of electricity, regardless of its source. The most sensitive squib requires 1,250 times that much current before it will explode.

Squib wire temperature rise may be read from a dial, or the detector may be hooked up to a recorder which traces continuous temperature curves on graph paper. When a dangerous level of energy is detected, the missile crew can disconnect the igniter cabling and attach shorting plugs until the source of the danger is found and corrected.

The detector also acts as a direction finder when used with an antenna which receives the strongest signal when directly facing the radiated energy. With such a device, dangerous signals may be ferreted out within a matter of minutes.

In addition to missile sites, the detector is valuable for laboratory personnel who handle explosive squibs. Static electricity in clothing can reach a point where it might ignite a squib. Most squibs have enough explosive force to maim or kill.

The detector weighs two pounds, is contained in a palm-sized metal box, and takes little from a missile's payload capabilities. With flashlight batteries for power, Strickland built one model in a Little John igniter to demonstrate that the warning circuitry can be modified to fit almost any space or shape. He believes it possible to make the device small enough to fit into the smallest rockets.

Strickland has been with the Propulsion Laboratory since 1954.

Picatinny Scientists Donate Time to Teach Math

Certain mathematically inclined Dover High School students and teachers are benefiting from knowledge of Picatinny Arsenal scientific personnel by doing what few students go for—voluntarily attending Saturday classes.

Picatinny's personnel reservoir of over 2,000 in scientific and technical work has supplied guest lecturers who donate their time for the 2-hour seminars given each Saturday morning on a trial basis to a class of about 15. A limited number of students from other schools may be permitted to join the class at a later date.

Subject matter and the presentation of the series are organized so that a student need not attend all lectures to maintain continuity—only those of individual interest.

Instituted by Willard R. Benson, chief of Picatinny's Engineering Sciences Laboratory, the seminars expose the serious math students to advanced concepts in a way styled for easy understanding. "The series will reduce unfounded fear of advanced math courses and put the student in a better competitive position for college," he explained.

Among the offerings are linear algebra, linear programing, limits and the infinitesimal process, derivatives, integrals, series, statistics, probability, infinity, digital computer programing, number theory, set theory, and helpful hints in problem solving.

A special feature planned this spring is a class tour of Picatinny Arsenal's computing laboratories.

Among the instructors from Picatinny Arsenal are: Dr. Harold J. Kopp, a research scientist in applied mathematics, and Dr. Thomas Taylor, specialist in gas dynamics and shock theory, both of whom earned their doctorates at the University of California; Dr. Leonard F. Nichols, chief of the Math Analysis Unit, who has a Ph.D. from Stevens Institute; and James Pearson, applied research mathematician, who earned his B.S. degree from Massachusetts Institute of Technology and is a graduate student at New York University, where he received his M.S. degree.

Benson also is one of the lecturers and is backed by several years of advanced studies in the engineering sciences at Stevens Institute where he received a mechanical engineering degree. He also holds a master's degree in applied mechanics from the University of Virginia, and another master's degree in statistics from Stanford University.

Other guest lecturers include: Bruce Barnett of Picatinny's Computing and Analysis Section, who holds a bachelor's degree in mechanical engineering from Stevens and is studying there for his master's degree; Dr. Sylvan Ehrenfeld, associate professor of statistics, Columbia University, who has published extensively in the open literature and authored a statistics book to be published next fall;

John Nielsen, Hyattsville, Md., who does computing work with the National Aeronautics and Space Administration there and is a former Picatinny employee with a degree from Fairleigh Dickinson University.

Picatinny Arsenal Human Factors Unit Studies Load-Carrying Capabilities

How much weight can a man carry under combat conditions without losing his effectiveness?

That question has received a fresh look in recent months at Picatinny Arsenal, Dover, N.J. due to the Army's extended requirement for portability, the development of "lightweight" weapon systems, and the appearance of novel carrying devices.

Setting limits on combat load weights is not an easy task for the design engineer or the human factors specialist. Although research findings limit the soldier's load to 30 to 40 percent of body weight (about 40 to 50 pounds for the average man), necessarily some go into combat carrying over 80 pounds, weapons and gear.

In addition to "normal" combat loads, many close support weapon systems bear the requirement of man portability. The component loads of these systems often weigh as much as 100 pounds, sometimes more. Adding to the load problem is the lack of early crew selection. Physical strength or stature is usually the last variable considered in selecting close support weapon crews. It is, therefore, not unusual to find some soldiers carrying loads of 75 percent of their own body weight.

Most of the scientific work done in the area of portability has been concerned with the physiological stresses produced by load-carrying. Although measurements (breathing rate, heat rise, oxygen consumption, etc.) can be used to evaluate the effects of load-carrying upon man's body, they are not very successful in predicting his overall behavior.

PERFORMANCE TEST is conducted at Picatinny as soldier negotiates series of hurdles while carrying Davy Crockett gun tube as part of total carry load of 100 pounds.

How far a man can carry his load or how well he can perform his assigned tasks after he sets it down cannot be fixed reliably by available knowledge, especially for loads in excess of 60 pounds. Maximum load weights and comparisons of alternate methods of carrying heavy weights must be determined in the field.

As the Army's prime munitions developer, Picatinny Arsenal is constantly concerned with the problems of weight reduction and portability. A continual search is conducted for improvement of carrying techniques and customized equipment.

In support of these efforts, the Human Factors Unit at Picatinny has been engaged in field research with several "man-portable" but extremely heavy close support weapon systems. Recent work on heavy loads has provided the Arsenal's human factors specialists, Jack Carlock, Harold Weasner and Paul Strauss, with novel.

Effectiveness of a new type of carrying device for loads of 85 pounds was evaluated by having 16 volunteers carry this weight over 2½ miles of rough, wooded terrain, using both standard and new devices.

Before and after each trial, the men were required to complete an obstacle course (rail-walking, hurdle-jumping, sprinting, tire-walking) and a grenade-throwing contest. Experimenters recorded time to complete the course, errors or faults made, and the men's walking behavior.

The object was to see how the load-carrying task effected the ability of the subjects to perform combat-relevant tasks, and if the new carrying device made a noticeable difference.

Data provided surprising results. None of the performance scores was significantly lowered as a result of carrying either of the loaded packs. The men displayed the typical symptoms of fatigue, quickened pulse and breathing, and skin flushing; still they were able to perform their combat related tasks effectively. Walking time was about the same for both pack styles.

Results of a follow-up study conducted at Natick, Mass., proved of equal interest. Subjects walked the 2½-mile course at the same pace when carrying loads up to 110 pounds as they did without them. By taking short, frequent rest stops when carrying the loads they were able to maintain a fast, steady pace.

The findings, combined with results of other portability research at Picatinny and at the Quatermaster Research and Engineering Command, point to a new approach in the problem of setting weight-carrying limits. To date, portability researchers have been ineffective at devising tasks which accurately measure the effects of carrying heavy loads upon performance.

Efficiency in tasks like hurdle-jumping, rail-walking, serpentine-walking or grenade-throwing seems very little changed by the exertion required to tote heavy loads for medium distances. With military systems becoming more and more complex, Army leaders believe it is imperative that more is learned about load-carrying effects upon such skills as range estimation, decision making, fine manual manipulation and others. These are the tasks which will be studied next.

Army enlisted personnel currently receive less than one hour of load-carrying training during their basic training. Emphasis is placed upon familiarization with standard load-carrying equipment rather than techniques of walking or energy conservation. By further study of pacing effects and rest techniques, it may be possible to boost the soldiers' carrying potential or extend his range.

One of the most critical, but frequently overlooked factors in studying portability is motivation. Wartime tales of soldiers carrying wounded buddies many miles and performing other astounding feats are indicative of the potential of high motivation.

Human factors researchers say motivation is among the hardest variables to study, in that individuals may be affected by group pressures and standards. Motivation is difficult to measure because it undergoes constant changes in direction and strength; in portability research, especially, it is important for the Army to understand and control this variable factor.

The Army has no pat answers yet to the question of how much weight can a man carry. Research at Picatinny Arsenal and other installations, however, is unraveling the mystery of load-carrying and the soldier.

Army Drops Air Training Plan

Plans have been cancelled for the establishment of an Army fixed-wing aviation training facility at Olathe Naval Air Station, Olathe, Kans.

The Army has reviewed current aviation training requirements and has determined that its immediate needs could be met by accelerated, more efficient and economical use of existing facilities.

Army Experimental UH-1B 'Copter Claims Speed Mark

An Army experimental UH-1B helicopter, modified for high performance capability as part of a research program sponsored by the U.S. Army Transportation Research Command with Bell Helicopter Co., attained a speed of 210 m.p.h. in tests announced Jan. 22.

Using standard UH–1B components and two Continental J–69 turbojet engines installed on the sides for auxiliary propulsion, the test aircraft attained a true airspeed of 210 m.p.h. in level flight under overload conditions.

Minus the auxiliary jet engines, the plane was flown previously under normal gross weight at level flight speed in excess of 175 m.p.h. That exceeds the normal maximum speed of the basic UH–1B (138 m.p.h.) and the existing Class E–1d world record of 158 m.p.h.

Results of this program have led USATRECOM and Bell Engineers to predict that a helicopter can be built to operate at speeds of 250 m.p.h. Future flight testing with fixed wings and the auxiliary jet engines in combination on the research vehicle is planned.

USATRECOM, a field agency of the U.S. Army Mobility Command, Detroit, Mich., is responsible for conducting the Army's aeronautical research program. In the near future the Eustis agency will be integrated with the Aviation and Surface Materiel Command, St. Louis, Mo., thus combining the research activities of TRECOM with the development responsibilities of the St. Louis Command.

The objectives of the test program is to obtain high-speed flight data for design criteria of future high-performance rotary wing aircraft.

Gary N. Smith, USATRECOM project engineer, stated that "this significant speed achievement of 210 m.p.h. definitely establishes that rotary wing potential performance is well in excess of present-day operating speeds.

Other programs underway include high-speed, full-scale wind tunnel rotor tests by Bell and Sikorsky Aircraft Co. to be conducted at the NASA–AMES California wind tunnel; further work on the Lockheed Aircraft Co. XH–51A rigid rotor program, which demonstrated stability and control characteristics this past year heretofore unknown to helicopters; a high-speed program with Kaman Aircraft Co. utilizing a UH–2 helicopter with one auxiliary turbojet engine; and the design and construction of a Hot Cycle XV–9A research helicopter by Hughes Aircraft Co.

The wealth of information obtained from these and related tests programs will be used by the Army and by the contractors to design and construct more efficient and higher performing rotary wing aircraft. As helicopters become more widely used by civilian operators, all this information will benefit commercial applications as well as fulfill military objectives.

Army experimental UH–1B helicopter shown with wings and auxiliary turbojet engines. Wings were installed after recent 210 m.p.h. speed run.

By Ralph G. H. Siu

THE QUARTETTE. Krilov (1768-1844) must have been trying to say something to the reorganization experts of his day in his fable about the Quartette. The pertinent excerpt from one of his fables is given below:

The tricksy Monkey, the Goat, the Ass, and bandy-legged Mishka the Bear, determined to play a quartette. They provided themselves with the necessary pieces of music—with two fiddles, and with an alto and counter-bass. Then they sat down on a meadow under a limetree, prepared to enchant the world by their skill. They worked away at their fiddlesticks with a will; and they made lots of noise, but there was no music.

"Stop, brothers, stop!" cried the Monkey, "Wait a little! How can we get our music right? It's plain, you mustn't sit as you are. You, Mishka, with your counter-bass, face the alto. I will sit opposite the fiddle. Then a different sort of music will begin; we shall set the very hills and forests dancing.

So they changed places, and recommenced; but the music was just as discordant as ever.

"Stop a little!" explaimed the Ass; "I have found out the secret. We shall be sure to play in tune if we sit in a row."

They followed its advice, and formed an orderly line. But the quartette was as unmusical as ever....

REMEMBER THE EGGS. Be careful as to where advice is sought, for there is an old proverb which says: "Don't ask the guest if you should kill your hen."

WITHOUT REPENTANCE. A friend of mine told me last week that never has any request of his to his chiefs been refused during the past decade.

I asked him, "How come?"

He said, "I've learnt to follow Socrates' admonition to Theodote."

I inquired further, "What did the wise man say?"

He replied, "You must make demands of your well-wisher only if he can make them without repentance."

Army Electronics Command: Mission and Philosophy

(*Continued from page 2*)

surveillance and data collection must be accomplished by aircraft or drones, the electronics assistance to these vehicles is an associated vital mission field. Known as *Avionics*, this field also has vital application as several other areas of Army aviation.

Automatic Data Processing, our third mission area, endeavors to reduce and sift the maze of data and information to timely, meaningful material needed for the military decision-making process. Since considerations must include possible disturbances the enemy could employ against electronics operations, a strong capability has been developed in a fourth mission area, *Electronic Countermeasures and Electronic Warfare.*

Our ultimate commodity responsibility is to provide the Army with a reliable basis for *command and control* by combining systems in these four mission areas; also, to support other commodity commands in adapting and incorporating our concepts and products into their areas to achieve overall compatibility.

A fifth important mission responsibility of the Electronics Command is R&D of *electronics components* as a key to progress in years to come. The electron tube, as a single unique component, was the nucleus for the evolution of a century-dominating technology. The discovery of semiconductor affects hardly a decade ago, resulting in a revolution in componentry, again dramatically demonstrated this relationship. Electronics Command personnel are particularly proud of an outstanding components R&D capability to forge ahead in all broad technology areas of electronics which may later provide solutions for important Army requirements.

PHILOSOPHY OF MISSION. Great glamour has come to electronics from its successes in missile and space endeavors, and justifiably more of this will come. But have electronics experts given enough attention in the military application to the less glamorous and simple sounding urgent problems of the foot soldier in the battlefield—who, in spite of nuclear and missile warfare concepts, will always maintain a key position? Are we actually giving him the degree of support in communications, surveillance, and geographic orientation, which he needs and which technology and economy would permit? Are we possibly neglecting him in favor of the complex aspects of huge weapons systems?

The E-Command is committed to look closely at all the needs of the old-fashioned battlefield which probably will never become fully superseded. Army Aviation also must be assured of adequate avionics support. A number of questions need to be answered in the realm of the more sophisticated electronics commodities and systems. Are we consistently realistic and sober in our desires for using electronics? Are we perhaps forcing electronics into sophisticated applications where other simpler and less expensive techniques would satisfy the needs? Are we replacing windows by TV systems where windows would do the trick?

Technological creations, it seems, are often so complex that operating and maintenance crew requirements problably negate many other advantages. If we are to make strides which are truly significant to defense, we must be guided by a sober-minded appraisal of all the characteristics of a new equipment. Technical performance must be considered with respect to operational simplicity, maintenance, logistics and cost. More than ever before, the "user representative and market analyst" of our commodities—the Army Combat Developments Command—must be heeded.

The operational needs of the user must be continually correlated with whatever our technology can reasonably accomplish. Our commodity actions must not be based on either a technologically uncorrelated requirement, or a non-urgent requirement generated simply by technological capabilities. A continuous cycle of cooperation between user and commodity commands can and will produce this important condition. Not only will this benefit the accomplishment of the commodity goals, but it will serve to improve the interest, efficiency and morale of the R&D people. Improved relations among user, tester and developer, and between the military and the civilian, are a very important factor, in my point of view.

So far, the philosophy here expressed has been very much down to earth, and commodity-minded. But it must be realized that the existence of the command is justifiable only on the premise of the fulfillment of its commodity responsibilities. Practical results in our "cradle-to-grave" mission will be the yardstick by which performance will be measured. Still, without the "cradle" there will be no output in the future. Commodity production effort must be accompanied by a most forward-looking and imaginative R&D effort, promoted to the limit of present resources and expanded as necessary. This effort must include a good share of basic research, without which progress cannot be expected.

One more area of much concern to me is that between the R&D and the production phases. E-Command scientists and developers are immensely qualified to produce new ideas and concepts and to nurture them even through some practical feasibility stages. Often these worthwhile concepts become orphans and it takes undue time to reach production and introduction for field use. Often our troops read about fantastic electronics things to come—but they never come, or come too late.

In its "cradle-to-grave" R&D responsibility, the E-Command intends to make a real effort to close this gap more efficiently and make sure that design and procurement data will be available to introduce important technological advances more rapidly into procurement and supply.

Beyond improving this aspect of industry—Government relations, an effort will be made to enhance the information flow on the earlier phases of the R&D cycle. Industry can be effectivly responsive to Army needs only when well informed.

Pursuing E-Command missions and philosophy, as herein outlined, should achieve its objectives as established in the new Army organization—with the ultimate goal of helping to improve, through prudent and diligent application of electronics technology, the Army's and the Nation's overall defense posture. In the final analysis, this is the only result which counts.

CSC Planning 10th Anniversary Of Incentive Awards Program

Special national awards are being planned as a climax to the tenth anniversary of the Government-wide Incentive Awards Program, and agency nominations for the awards must be submitted to the U.S. Civil Service Commission by Oct. 1, 1964.

Nominees for the awards will be selected in such areas as cost reduction, increased productivity, manhour savings, methods improvement, and advancement of agency missions. Selected supervisors will be recognized for outstanding achievement in encouraging employees to make valuable improvements in operations.

Hochmuth Assumes Command of Harry Diamond Labs

Lt Col M. S. Hochmuth, who has been in the missle and ammunition field since 1944, has succeeded Lt Col Robert W. McEvoy as commanding officer of Harry Diamond Laboratories, Washington, D.C.

Military assignments gave the new CO many contacts with the Laboratories, dating back to the time when the Army Materiel Command research and development facility was part of the National Bureau of Standards, and was later designated the Diamond Ordnance Fuze Laboratories.

In post-World War II years, when Col Hochmuth was in charge of Project LOKI at White Sands Missile Range, N. Mex., his work involved meetings with the late Harry Diamond at NBS.

Educational qualifications of Col Hochmuth for his new assignment include a B.S. degree (1947) and M.S. degree in mechanical engineering from Massachusetts Institute of Technology (1954) and M.B.A. from George Washington University (1963).

Commissioned in the Ordnance Corps in 1944, he served in the European theater as a technical intelligence officer. After World War II, he was a U.S. technical adviser to the British in the assembly and firing of V–2's in Germany. When he returned to the United States, he supervised utilization of captured German equipment and Project Paper Clip personnel in assembly and test firing of the first V–2's tested at White Sands Missile Range.

Lt Col M. S. Hochmuth

Upon completion of his Project LOKI assignment, he served as director of the Electromechanical Laboratories at White Sands. Subsequent assignments took him to Korea, to Picatinny Arsenal, Dover, N.J., and then to Paris as U.S. representative to the NATO Hawk production organization. Prior to assignment to HDL he attended the Industrial College of the Armed Forces, Fort McNair, Washington, D.C.

AMRA Extends Range of Charpy Calibration Program

Benefits of the U.S. Army Materials Research Agency Charpy Machine Calibration program are being made more widely available, in response to the request of the American Society for Testing and Materials.

Until recently the program, conducted for a number of years at the Army's Watertown (Mass.) Arsenal, has been limited to activities outside the Army which have or are about to receive a Government contract, involving use of the Charpy impact test as part of the inspection requirement.

Under this program specimens of known energy levels provided by the U.S. Army Materials Research Agency are used to certify the accuracy of Charpy-type machines. AMRA's procedures for material purchase, heat treatment, machining and subsequent specimen standardization have reduced errors to tolerable levels.

In response to an increasing number of requests for extension of this service to industrial firms and educational or other enterprises not eligible to participate in the AMRA program, the American Society for Testing and Materials requested the Department of Defense to consider the problem.

A preliminary to that action was a study conducted by a special ASTM committee appointed to investigate the problem. The report substantiated the findings of the Department of Defense that standardized material specimens are necessary in the calibration or certification of Charpy-type machines. Dimensional requirements alone do not preclude certain known errors.

As a result of these actions, the Society announced recently that AMRA's standard material specimens are available for use in standardizing impact machines in accordance with ASTM Method E 23–63, Section 3.2.

A standard set consists of 15 specimens, five each of three energy levels, which check machine performance over a relatively wide range of its capacity. Charpy-type machines may produce accurate values at one energy level but not at either or both of the other two.

Energy levels used are approximately 15.0, 50.0, and 80.0 footpounds, respectively, at a testing temperature of —40° F. Accurate machines will produce at each energy level an average value for five specimens that is in agreement within five percent of the nominal values for the standardized specimens.

A company wishing to obtain a set of specimens may send a check for $100, payable to the Treasurer of the United States. Requests for specimens and checks should be sent to: Commanding Officer, U.S. Army Materials Research Agency, ATTN: AMXMR–TS, Watertown, Mass. 02172.

The Society has been notified that AMRA will also, at no additional fee, provide an evaluation of the test results. Facilities requesting this additional service are required to complete a questionnaire provided with the specimens.

After the specimens have been broken and the questionnaire filled out, both the broken specimens and the completed questionnaire are to be returned to AMRA. A report of the findings will then be returned to the originating facility.

PLASTEC Reports Average OTS Sales of 150 Monthly

A steady sale during 1963 of more than 150 copies a month of "Plastec Reports" was reported by PLASTEC, the Department of Defense Plastics Technical Evaluation Center at Picatinny Arsenal.

PLASTEC seeks out technological information on plastics, evaluates it, and, through the reports, disseminates it to the Department of Defense, other Government agencies, their contractors, universities and industry.

Technical assistance is provided to military contractors and suppliers on the use of plastic materials. PLASTEC also works actively for the standardization of processes, testing and quality control in the whole field of plastics.

The Department of Defense chose Picatinny as the site for PLASTEC largely because the Arsenal had for more than 15 years been the home of the Ordnance Corps' Plastics and Packaging Laboratory.

Plastec reports are sold to the public through the Office of Technical Services, U.S. Department of Commerce, Washington 25, D.C.

Key Personnel Recruited For Army Research Staff To Spur STINFO Effort

Army Research Office staffing requirements to conduct the Army-wide Scientific and Technical Information Program are more than half completed, but one GS–15, two GS–13 and two GS–12 positions are still unfilled.

Paul Duncan Olejar and Martin H. Weik, Jr., accepted GS–15 appointments as chiefs, respectively, of the Research and Analysis Branch and the Systems Branch. Still needed is a chief, Communications and Automation Branch, a GS–15 position.

Other vacancies are: Communications and Automations Branch, digital and computer systems specialist, GS–13; Systems Branch, information specialist in processing techniques, with a technical background, GS–13; Research Analysis Branch, information specialist (documentalist), GS–12 and management analyst, GS–12.

Except for 52 months of service with the U.S. Army Ordnance Department during World War II, from which he was discharged with the rank of a lieutenant colonel, Mr. Olejar has been in Federal Service since 1941. Until recently he was chief of the Technical Information Division at Edgewood Arsenal, Md., where he had been employed since June 1956.

Martin H. Weik, Jr.

Paul Duncan Olejar

Clayton Pierce,

Previous assignments included assistant to the director of the Information Division, Agricultural Research Service, U.S. Department of Agriculture (1951-56); technical editor, Bureau of Plant Industry, Soils and Agricutural Engineering, USDA (1948-51); head of the Press and Radio Section, Bureau of Reclamation, U.S. Department of Interior (1946-48).

Prior to entering Federal Service, Mr. Olejar was a reporter and editor on various newspapers for eight years following graduation in 1928 from Dickinson College, Carlisle, Pa., and from 1936 to 1941 was a director of education and information for state agencies in Charleston, W. Va.

MARTIN H. WEIK, Jr., joined the Army Research Office STINFO staff in January after serving 11 years as an electronics engineer (data processing) with the computer laboratory at the Ballistics Research Laboratories at Aberdeen Proving Ground, Md.

Graduated from the College of the City of New York, School of Technology, and from the Columbia University School of Engineering (M.S. degree in electrical engineering, 1951), he is a Reserve lieutenant colonel.

During World War II he served five years overseas with Military Intelligence. He was an Infantry and later an Ordnance officer during two years of service in the Korean War.

OTHER ADDITIONS to the Army Research Office STINFO staff include Clayton Pierce, a systems specialist in the Communications and Automation Branch; John O. Weyforth, digital computer analyst, Systems Branch; and Henry Jeffers, management analyst (ADP), Research and Analysis.

Backed by nearly 15 years of Government service, Pierce studied industrial management and electrical engineering at the University of Vermont, and has a B.S. degree. He served in World War II with the Signal Corps.

Qualifications of Mr. Weyforth include a B.S. degree in economics from Johns Hopkins University (1941); five years with the Army Corps of Engineers (discharged as a major in 1946); and manager of methods and systems, Burroughs Corp., Paoli, Pa.

Mr. Jeffers is a Government employee of 18 years standing, 13 with the Office of the Comptroller of the Army as a management analyst, and 2½ years as an economic adviser in the Office of the Supreme Commander, Allied Powers, Tokyo, Japan. He was a corporation accountant and business manager with industry for 20 years.

Dugway Aerosol Sampler Uses Thermoelectric System

Dugway (Utah) Proving Ground scientists, after a year of testing and evaluation, have placed into operation a new type atmospheric sampler powered by a propane-fueled thermoelectric generator.

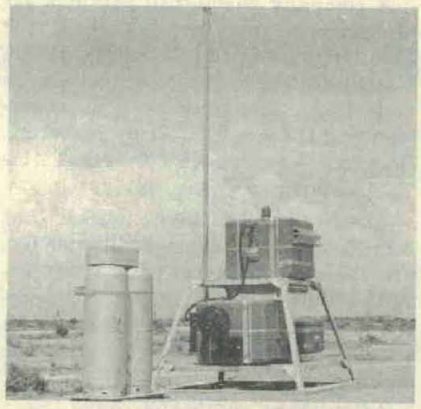
The system will collect aerosol particles for determination of chemical content in research experiments. Conceivably, the findings could be valuable to the military in defense against possible biological or chemical attack. Civilian application possibilities include measurement of air pollution content in industrial smog and automobile exhausts.

The principal military advantage of propane-generated electricity in such a device is silence. Other valuable features of the new sampler are: fuel supplies will last twice as long (six months); it has high reliability and requires little maintenance between refuelings, except sample collections; and it can be used in isolated, long-range tests up to 40 miles from point of release.

In addition, the sampler employs the principle of sequential sampling, which allows up to 10 sampling units per test and precise timing of collection.

Both a heating and cooling system are incorporated in the device to prevent destruction of collected samples during temperature extremes of from -10 to 90 degrees F. Extreme weather conditions have caused frequent destruction of the collected samples in previous years.

Equipped with a radio receiver for long-range operation, the system is designed to stay out in the open. Test personnel need to visit the station only to collect the samples, and to resupply the propane fuel.



Atmospheric sampler, designed to detect and collect airborne organisms at Dugway Proving Ground, is powered by propane-generated electricity. It needs minimal maintenance, runs silent and requires little refueling.

Civilian Incentive Awards at the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., hit a 5-year high in 1963.

The peak, however, is reflected in the number of awards rather than in the total cash presented to employees for suggestions, inventions and sustained superior performance.

The Quality Pay Increase plan effected in 1963 by the U.S. Civil Service Commission benefited 14 USAERDL employees. The salary increase is for work which exceeds in quality the standard normally required for the position, and is in addition to the normal step increase for time in grade.

Because of the quality pay awards, and the resultant decline in cash awards for Sustained Superior Performance (SSP) or Outstanding Performance ratings, the total cash paid out through the Incentive Awards Program was less in 1963 than in 1962 —$12,317 as compared to $20,750. In 1961 the total was $24,380.

Prior to initiation of the quality pay plan in 1963, SSP awards to employees totaled $8,350. In 1962, a total of 104 employees shared $18,050 in SSP awards. In 1961, a total of $21,600 went to 118 SSP winners. The "outstanding" rating was awarded to 77 USAERDL employees in 1963, as compared to 61 employees in 1962.

Special Act and Service Awards in 1963 were presented to 29 personnel, aggregating $2,725 as compared to seven awards and $975 in 1962.

Eight patent awards, involving an outlay of $362, were made last year. This compares with the 1959 record of 18 awards amounting to $1,500. Eight awards worth $420 were presented to inventors in 1962.

The number of suggestions adopted in 1963 was under that of the previous year, but more rewarding—15 good for $880 as compared to 22 awards totaling $505 in 1962. In 1961 36 persons received $810.

Seventeen Certificates of Achievement were issued in 1963, compared to seven in 1962 and three in 1961.

Lt Col Thurmond D. Boaz, Jr., was presented a Certificate of Achievement "for outstanding service to the U.S. Army while serving as chief, Preventive Medicine Division, Hq, 9th Hospital Center," U.S. Army Europe during award ceremonies Jan. 10 at Army Research Office, Arlington, Va.

Also cited with a Certificate of Achievement was Lt Col Robert Bennett "for outstanding service while assigned to the Quartermaster Section, Eighth U.S. Army." Awards were presented by Brig Gen Walter Lotz, Director of Army Research.

Receiving Outstanding Performance rating and Sustained Superior Performance awards were Mrs. Harriet B. Doyle, Mrs. Juanita S. Whitmire, James E. Williams, Dr. Ivan R. Hershner, Jr., and Jacob Barber, Jr.

Certificates for 20 years of Federal service were presented to Dr. Leonard S. Wilson, Dr. Lester W. Trueblood, Jack B. Fenn, Mrs. Beulah B. Tabor and Dr. Kenneth Karcher, and for 10 years to George J. Makuta, Mrs. Irene A. Dunn, Mrs. Lela A. DeTemple, Mrs. Charlotte A. Taylor and Mrs. Sally C. Kennedy.

Enlisted Technician Operates Fungi Research Lab

Army Sp/4 Dick Pakulski starts his work day at the Army Missile Command at Redstone Arsenal, Ala., by feeding boiled potatoes to his fungi spores; he's a mycologist.

As a general rule, the Army doesn't look kindly on anyone who damages equipment. But Pakulski holds a license to do a special job of attempted destruction on missile systems. He nurses fungi from their sub-microscopic infancy to the point where they look like a water-logged fur cape. By growing molds under laboratory conditions and setting them free on missiles, he can carefully study their deterioration of electric wires, metal and plastic components.

"The tests are a vital step in verifying that these missiles will work anywhere," he explains, "from the Arctic to the tropics, in a hurricane or a desert sandstorm."

Although scientists and engineers wearing enlisted Army green are liberally sprinkled throughout research and development projects at the Missile Command, Pakulski has a rather enviable duty. He runs a one-man laboratory under hospital-clean conditions. His instruments include sterilized test tubes, an amazing assortment of odd-shaped tongs, forks and the scientist's old standby, a powerful microscope.

Pakulski deals with relatively common molds, of the same general type a housewife is apt to find on a loaf of stale bread, or thriving on the top of a jam jar. His work lends itself to some good-natured joshing and a dozen titles — including "fungus feeder," "mold man" and "mold maker."

His fungi wax fat on a specially prepared diet, as sensitive as a baby's. It's a gelatin-like prepared food, to which Pakulski adds cooked potatoes, carrots or whatever food a particular fungus thrives upon.

"These hearty fungi can also subsist on the materials that Army missiles are made of," the soldier says. "My job is to determine if that material will or will not support fungi, or, in some instances, repel it. My biggest problem is keeping the fungi pure. Everything must be perfectly clean—else they'll become contaminated by other fungi."

The "fungi factor," as Pakulski is fond of calling it, conceivably could be a critical issue if no advance preparations were developed to deal with the destructive growths.

The 25-year-old soldier is a graduate of the University of Maine, where he received a bachelor of science degree in physics, and a native of Livermore Falls, Maine.

Even through Pakulski's work with invisible fungi gives some of his associates an instant itch, the soldier has no qualms about handling molds. He keeps his lunch in a refrigerator alongside his fungi cultures.

Sp/4 Dick Pakulski

McNamara Alert to Cost Cuts

Secretary of Defense Robert S. McNamara's keen and constant attention to cost-reduction news at military installations was indicated again late in January when he spotted a small item in the New York Times *about a sergeant at Redstone Arsenal, Ala., saving the Government $80,000. Immediately an aide was instructed to obtain a full report. Sgt/1C Leonard Jones was reported as saving that amount by spotting a large surplus of Sergeant missile parts during a visit to the Sperry-Utah Co. plant, and suggesting they be used as training aids at schools in the Army Missile Command.*

Hobby Leads to Science Job for Redstone Employee

The Army Missile Command at Redstone Arsenal, Ala., is the sort of place where a young man can carve a niche for himself by spending half of his time in pursuit of advanced science and the other half practicing one of the world's oldest arts.

The young man whose unusual hobby has made him an assistant to a number of Ph.D. scientists is Henry (Hank) Nappier, a scientific equipment glass blower who prefers to call himself a glass technician. About half of his time on the job, however, is spent as a physical sciences technician in vacuum techniques and spectroscopy.

Glass blowing ability is what makes Nappier sought after. Huntsville, a town loaded with unique talents, has only one other professional glass blower. Nappier turns molten glass into intricate pieces of laboratory equipment. Studded with valves, tubes, collars, bulbs and the like, his creations often assume wierd shapes.

In his 36 years, Nappier has never moved away from Brindlee Mountain, a rocky highland overlooking the broad Tennessee Valley and the winding Tennessee River which forms the south boundary of Redstone Arsenal.

As a boy growing up on the farm, Nappier was always interested in glass and especially the way a glass prism breaks light into its multicolored spectrum. This interest led him to toy with glass working in his spare time—an unusual hobby for a youth in the cotton country.

Nappier's break came in 1956 when he started working for the Army as a laboratory assistant to Dr. Henry McGhee, a researcher who was doing work in low-temperature chemistry. In those days, the science of cryogenics was new. Much of the Laboratory equipment used in studying super-cold gases, such as liquid oxygen and hydrogen, had to be hand-fashioned or custom-made at high cost.

Dr. McGhee and Nappier reasoned that since the latter was interested in glass blowing, maybe this hobby could be put to use in the Laboratory to save money. It could also save on the time it took to get a piece of custom-made equipment.

SEEMINGLY BOTTLED UP in his work as a glass technician, Henry Nappier peers through large bulb used as gas reservoir at Redstone.

Since that time Nappier has been sort of an ex-officio glass blower in residence. At one time and another he has produced intricate glass items for most of the Missile Command's laboratories. Most of his work goes into his own Physical Sciences Laboratory, a part of the Missile Command's Directorate of Research and Development.

Glass is used extensively in laboratory work because of its noncorrosive and noncontaminative properties. Researchers with a need for a specific piece of equipment lay out their ideas in words and sketches. Nappier's job is to translate these into glass. Many pieces turn out interesting enough and pretty enough so that if they weren't for use in the lab they could grace the centerpiece of a dining table.

In his off time, he also makes more fanciful pieces of glass, including etched glass vases and decorator items. A practical joker, he is now planning an elaborate drinking glass with a garland of flowers just under the lip. Unfortunately the petals of the flowers will cover minute holes in the glass that dribble on the drinker when he hoists the glass to his lips.

Every 4th of July, Nappier happily turns up at Brindlee Mountain's Union Hill High School with his glass-blowing equipment to make novelties for sale. For example, he spins a graceful, 3-inch-long bright colored swan in about two minutes. Money he gets goes to a fund to buy equipment for the school.

What does the father of three do for a past time when he's not blowing glass? He makes use of another property of the substance, its transparency. He's an avid photographer.

Model Plane Flying Method Saves Money on Drones

U.S. Army Combat Surveillance School teams at Fort Huachuca, Ariz., are using techniques developed by model airplane enthusiasts to launch surveillance drones saving taxpayers money on each practice flight.

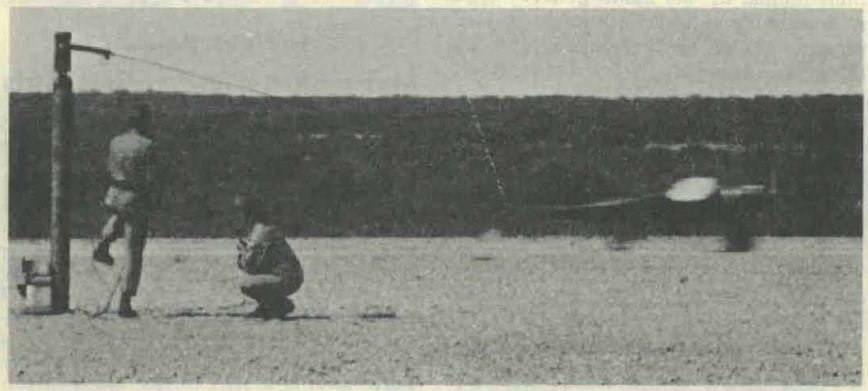
Until the "old but new" technique was employed, the drones were launched with JATO (Jet Assistance Take Off) bottles, each of which cost $76 and could be used only once.

Now the men of the USACSS use the model airplaner's control line and a circular track, permitting the 8-foot wing span drones ("birds") to reach launch speed using only their 72-horsepower engines.

The RCAT (Radio Controlled Aerial Target) craft employed in the training program are the same as used for target practice by Army missilemen at Fort Bliss, Tex.

To launch an RCAT, its 4-man crew place it on a 3-wheel pipe frame launching cradle. After the propeller is spun by the gasoline engine starter, a countdown procedure is followed. When all is in readiness, the launch chief signals to "let 'er go" from his station in the center of the 300-foot diameter circle.

After four laps around the track, the RCAT achieves its 80-mile-per-hour launch speed, and the chief actuates the release hook, permitting the "bird" to soar into the sky.



Attached to model airplaner's control line, Radio Controlled Aerial Target zooms around circular track, building up to 80 m.p.h. takeoff speed.

Some Picatinny Arsenal Men Get Paid to 'See Red'

Several men at the Army's Picatinny Arsenal, Dover N.J., are paid to see red—the red colored fumes which are given off by a propellant shortly before it fires spontaneously

The fumes are oxides of nitrogen, a characteristic gaseous by-product of the chemical breakdown of such highly nitrated materials as propellants.

Usually the red fumes are the only visable sign that a propellant is approaching a hazardous condition; that it should be destroyed before it triggers a holocaust in some storage area, resulting in possible loss of life and extensive property damage.

Under the direction of Dr. Jean P. Picard, a group of scientists daily examines about 12,000 propellant samples to detect the first appearance of the telltale red fumes. Representing millions of pounds of propellants stored throughout the United States, the small specimens are maintained at a temperature of 150° F. This is about 15 degrees above the highest recorded surface storage temperature anywhere in the world.

Because this heat ages the propellant faster than the lower, more normal temperatures, there is a considerable safe-time margin between the appearance of fumes in the hot sample and the possible breakdown of the propellant in field storage. Ample time is allowed for the suspect lot to be located and subjected to more exhaustive tests.

This aggressive safety procedure is called the Propellant Surveillance Program. Propellant surveillance bottles were being checked for red fumes during World War I, making this program the longest continuing technical effort at the Arsenal.

Each time a new lot of propellant is manfactured, a sample is sent to Picatinny, where it is stored in a surface magazine under normal temperature conditions. From this master sample, several ounces are bottled and this sample is placed under surveillance at the elevated temperature.

Norris S. Garman, chief of Picatinny Arsenal's Stability Testing and Evaluation Unit, examines bottle of explosives for evidence of fuming.

Depending on the amount of nitroglycerin or other nitrated material which is combined with the basic nitrocellulose of which most solid propellants are composed, the time to red fumes may vary from five years to five months. When the red fumes appear, the specimen is withdrawn and destroyed and a fresh sample put in its place.

The years of surveillance have established what can be expected of the many propellant compositions, concerning time-to-fumes. When a particular lot of propellant starts giving definitely shorter fume-time test results, the lot is watched even more closely.

If a specimen fumes in less than 20 days from the time it was placed in the hot chamber, the surveillance team goes into action. It immediately notifies the Ammunition Procurement and Supply Agency at Joliet, Ill., which is responsible for storing all artillery ammunition propellants for the Army.

APSA transmits orders to their storage facilities throughout the United States, directing the immediate special testing or destruction of the potentially hazardous propellant before it deflagrates of its own accord.

As the only United States organization which conducts such a propellant safety program, Picatinny Arsenal receives numerous visits from foreign national who are interested in establishing a similar system. Such visits are apparently impressive.

One member of the surveillance team, recently, on Government business in Canada, was introduced as being from Picatinny Arsenal.

"Oh, yes," said the Canadian. "That's where the bottles are."

Enlisted Man Seeks Rocket Fuel With Light Beam

Sp/4 Miles Turner is an Army enlisted man who goes looking for new rocket fuels with a light beam.

The atoms in a molecule of good rocket fuel are bonded together in a certain way. Turner's business is to study the invisible molecules of a substance and determine if it is tailored right to be a good fuel.

In the Army Missile Command's Directorate of Research and Development at Redstone Arsenal, Ala., he is a chemist in the Physical Sciences Laboratory. There the "beam of light" is produced by a spectrograph, a 17-foot-long piece of complicated laboratory equipment. It makes pictures of invisible molecules.

Turner begins by placing a microscopic specimen into a glass vacuum cell in which the material tends to "fly apart." Molecules boil off and fill the cell. Then he bombards the specimen with a high-intensity light beam. Similar to the light given off by a neon bulb, it is produced by sending an electrical discharge through some gas like hydrogen of xenon.

The sample of the compound he is studying absorbs certain parts of the light beam, depending on how the molecule of the substance is made up. The light that is not absorbed is reflected onto a piece of photographic film and allowed to take its own picture.

A study of the patterns of light on the photographic plate tells the researchers exactly how the atoms are arranged in the molecule.

Turner is a member of the outstanding Army team at Redstone Arsenal called scientific and engineering enlisted personnel—mostly young soldiers who are using their technical training in the service occupations.

Turner, for example, received a bachelor's degree in physical science from Chico (Calif.) State College in 1961. Prior to entering the Army 14 months ago he was teaching mathematics and science at Cambria Junior High School in Cambria, Calif. He is a native of Taft, Calif.

Sp/4 Miles Turner

How Many Angels on Pin Head? . . .

Question Tied to Civil Defense Studies at Dugway

National civil defense measures and such questions as "How many angels can dance on the head of a pin?" may evidence no easy correlation, but at the U.S. Army's Dugway (Utah) Proving Ground they are related.

Actually, researchers are working on a serious problem when they consider how many spots can be counted on a 2-inch card. That question has special scientific significance in Dugway's mission.

Located in an isolated region of the Great Salt Lake Desert and covering an area larger than Rhode Island, DPG is the Army's testing site for materiel and equipment vital to national defense against enemy chemical and biological attack.

In that role the installation frequently uses chemical agents to evaluate the newest protection equipment and chemical detection devices. This evaluation program poses the problem of counting aerosal droplets.

In a standard evaluation trial, sampling cards are placed at various points in the field to aid in measuring concentrations of an agent, in a comparison of methods of dispersion. During a test, droplets collect on the card and stain it on contact.

A random section of each card used in the test is selected for comparison purposes, and the spots in this area are counted and sized. By knowing the number and diameter of the droplets falling on any certain card, the dispersion of the droplets of an agent can be accurately measured. Results are checked against the particular method of dissemination under evaluation.

Harold Spafford operates electronic spot-sizer and counter used at Dugway PG to classify drops of aerosols impacted upon cardboard collectors.

The job of analyzing an area of a card by visual inspection would take two men (one to count and size the spots; one to record the data) over 30 minutes to complete the work. In a typical test approximately 200 cards may be used. Visual inspection would require that two men work for 120 days to insure complete analysis of the test.

Dugway's rapid spot-counting problems have been solved, it appears, with the development of an Automatic Droplet Sizer and Counter by Airborne Instruments Laboratory, Deer Park, Long Island, N.Y. Constructed at a cost of $75,000 by modifying an electronic flying spot scanner, it can do the work up to 100 times faster than visual methods.

Microfilm photographs are taken of the sampling card, and the machine counts the spots directly from the microfilm—one second to count a 9 x 9 millimeter section. In 30 seconds, it can count the spots, measure the diameter of each, and divide the spots into 10 separate size categories.

The machine operates on much the same principle as an ordinary television set. A cathode ray tube projects a high-energy beam across a section of the microfilm in the form of a "flying spot" which crosses the area to be scanned 900 times, projecting the image of the spot pattern on the surface of a phototube. The phototube carries the image through an electrical circuit, and reproduces it in 900 lines on the screen of an oscilloscope.

Each time the beam crosses a spot on the film, the spot is counted. A small analog computer "remembers" each spot, so that it is only counted once. The largest diameter of a spot is computed by measuring the time the beam takes to cross it. In this way the machine can measure spots as small as 10 microns (1/2500 of an inch).

Once the spots on the card are counted, sized and divided into size groups, a small printer in the unit types out the total count and the number in each size group to complete the operation.

Test analyses can now be completed in two days rather than the 120 which would be required for a complete visual inspection. With all this time saved, there is a strong suspicion that Dugway may even come up with strange answers involving angels, pins and spots.

Trackmaster Ends Mobility Search at Dugway PG

A 5-year search for a vehicle that could negotiate the difficult terrain of the Great Salt Lake Desert ended recently with the arrival of six revolutionary tracked vehicles at Dugway Proving Ground, Utah.

Dubbed Trackmasters and manufactured by Thiokol Chemical Co., the vehicles are proving valuable in conquering the shifting sands and sucking mud of the Bonneville Basin in western Utah.

Field tests conducted in support of chemical and biological defensive research require areas of barren isolation. Since 1942 Dugway Proving Ground has been using the vast natural laboratory of the Great Salt Lake Desert to conduct its operations.

While desert in every sense of the word, the Salt Flats become a mud pond 1,000 square miles in area during the wet months from September to April. Problems during this period create great obstacles to the efficient performance of mission testing.

The plasticity and flotation qualities of Dugway's mud pond become more fully realized when losses due to the terrain are totaled. Army 2½-ton trucks have been known to disappear beneath the surface of the ground in less than 24 hours.

An added advantage of this vehicle over others tested is ease of maintenance. The Trackmasters are powgered by standard Ford 6-cylinder engines through standard transmissions. Payload for the vehicles is 1,500 pounds with two passengers.

The vehicles embody low-density alloys and low overall weight with increased track area. In addition, a specially designed track cleans itself automatically of the desert's highly adhesive mud, preventing reduced efficiency due to drag.

TRACKMASTER negotiates terrain obstacles of Great Salt Lake Desert.

BioLabs' Dr. Fothergill Terminates Illustrious Career

Dr. LeRoy D. Fothergill, internationally renowned for achievements that won him the Army's Exceptional Civilian Service Award in 1962, retired Jan. 17 to end a Federal service civilian and military career spanning 20 years.

More than 200 colleagues in the world of science and high-ranking military leaders joined in honoring him at a testimonial dinner Jan. 9 at Fort Detrick, Md., where he began his service as an officer in 1944. Maj Gen William M. Creasy (USA, Ret.) former chief of the Army Chemical Corps, and a long-time associate of Dr. Fothergill, presided.

Dr. Ira L. Baldwin, vice president of the University of Wisconsin, outlined highlights of Dr. Fothergill's brilliant career and his many notable contributions to science in the biological and medical fields. As the first technical director of the Army biological warfare project, Dr. Baldwin was associated with Dr. Fothergill in World War II.

Only eight months after Fort Detrick was opened, Dr. Fothergill, then a captain in the Navy Reserves, became technical director of the Special Operations Division. Separated from the service in 1946, he remained as a civilian and rose to director of the Biological Warfare Laboratories. In 1953 he was named scientific adviser to the Chief Chemical Officer as well as to the commander of the BioLabs.

Dr. Fothergill, originally from Carson City, Nev., earned his baccalaureate degree at the University of Nevada in 1924. In 1929, he received an M.D. degree, cum laude, at Harvard University Medical School. He remained as an instructor and assistant professor of bacteriology and immunology.

From his professional relationships with distinguished civilian scientists, he was able to enlist their services in considering the needs of the country in the problem of defense against biological warfare. As a result of his efforts, and those of other widely recognized scientists, particularly from the Universities of Wisconsin, Ohio State, Michigan, Illinois, New York and Harvard, successful presentations were made at the highest governmental levels and a program of preparation for biological warfare was begun, with major emphasis on defensive aspects of the research.

The Department of the Army's Exceptional Civilian Service Award, its highest civilian honor, was accompanied by a citation which stated, in part: "In recognition of his dynamic leadership as scientific adviser for the Biological Warfare Research and Development Program . . . Dr. Fothergill, through his position as a recognized leader in epidemiology and his sponsorship of research in infectious diseases of crops, animals and man, has been successful in bringing to the public and to the general scientific community a realistic portrayal of biological warfare. . . ."

As further evidence of the high professional esteem enjoyed by Dr. Fothergill, he was asked to serve on a special advisory group to the Honorable John J. McCloy when he was Adviser to the President on Disarmament. He was a member of the group chosen to make a study of the chemical-biological-radiological warfare aspects of disarmament.

Dr. Fothergill was also asked to serve on the Von Karman long-range NATO scientific study group, a special committee set up at the direction of the Standing Group of NATO. He was chairman of the American group selected to study the area of chemical and biological warfare, and was vice chairman of the international group studying the same problem.

During his tenure at Fort Detrick, Dr. Fothergill has spoken and lectured widely to universities and colleges,

Dr. LeRoy D. Fothergill

Government organizations, civic and fraternal groups and scientific organizations in the United States and abroad. He has authored or coauthored more than 30 scientific papers, a textbook on Immunity, and many articles in scientific and technical journals.

Dr. Fothergill holds membership in a number of professional organizations, including: The American Society for Microbiology, American Academy for Microbiology, New York Academy of Science, American Association of Immunologists, American Public Health Association and Delta Omega, and the Honorary Public Health Fraternity.

Reports-Statistics Section Supports Management

Management information presented in visual form for rapid review is the business of the Reports and Statistics Section of the Comptroller and Programs Office at Picatinny Arsenal, Dover, N.J.

The graphic arts section at any Army R&D installation is one of the many mechanisms of management needed for effective control and utilization of resources. But the unit as Picatinny is particularly proud of a group of charts that eventually were brought to the attention of the late President John F. Kennedy.

Earlier that group of charts had been used to support the Selected Ammunition Annual Report presented to Lt Gen Frank S. Besson, CG of the U.S. Army Materiel Command, and Assistant Secretary of the Army (Installations and Logistics) Paul R. Ignatius.

The Picatinny section is headed by Ray Smith and includes statistician Les Rader, illustrator Tony De La Torre, draftsmen Tom Jones, Elaine Mills and John Morogeorges, and other supporting personnel.

The section has a familiar gripe, common throughout the Army: "A little more advance planning by those requesting charts, viewgraphs or other visual information presentations would eliminate last-minute crash jobs, with resultant danger of loss in quality."

GRAPHIC ARTS illustrator Tony De La Torre and draftswoman Elaine Mills discuss chart to be used by commanding officer at Picatinny Arsenal.

U.S. Army Medical Team Works to Stamp Out Snail Scourge

By N. L. Harmon
U.S. Army, Japan Information Officer

Japan-based U.S. Army men have been engaged since 1946 in a disease-fighting operation which in action and humanitarian spirit is akin to the medical tradition of Maj Walter Reed's yellow fever work of the early 1900s.

Lt Col Joseph F. Metzger, commanding officer of the 406th Medical Laboratory, U.S. Army Medical Command, Japan, is heading the current effort. The Lab's Department of Medical Zoology recently completed a survey of regions of the Kofu Valley known to be infested with the dreaded "oncomelania." This is the type of snail that carries schistosomiasis.

Ranking with malaria as a world health problem, schistosomiasis presently endangers the health of over 200,000 Japanese connected with various phases of rice and fruit growing. Although this menace has abated in the Kofu Valley in Yamanashi Prefecture, it has not diminished to the desired extent. Rice farmers, their wives and children, who constantly wade in paddies while at work, have been especially vulnerable to schisto infection.

James E. Williams, left, civilian professional adviser to the chief of Medical Zoology, 406th Medical Laboratory, and officials from Yamanashi Prefecture pinpoint snail locations on map for elimination effort using chemical spraying method.

The schisto fight is waged against a tiny parasitic worm. Larvae leave the snail carrier to bore through human skin and live in the blood vessels of the intestinal tract, causing fever, dysentery, liver pain enlargement of the abdomen and anemia. Mental processes slow down and death may result.

Located some 70 miles due West from U.S. Army, Japan headquarters at Camp Zama, Kofu Valley was once afflicted with an alarming ratio of liver disease. No acute cases have been reported for the past three consecutive years, although previously acknowledged chronic cases persist.

Other major endemic areas in Japan include Kyushu's Fukuoka-ken, and Saga-ken. The heaviest area is currently outside the city limits of Kurume City in Fukuoka Prefecture.

Maj John W. Moose, chief of the Department of Medical Zoology, 406th Medical Laboratory, and James E. Williams, his civilian professional adviser, directed the recent Kofu Valley survey made by 10 U.S. Army military and Japanese laboratory assistants.

More than 2,000 orchard and rice farmers of the region and their families aided the 8-day survey, covering about 32 square miles, to determine the present location and population density of the snails. This was accomplished prior to the snails' annual cold weather hibernation when they bury themselves one to two inches underground.

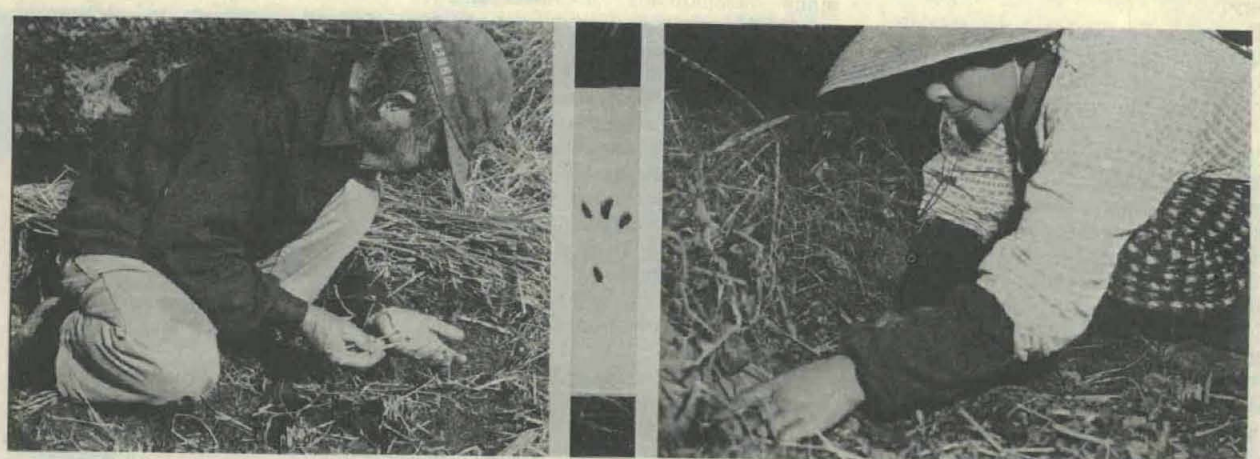
With the sanction and assistance of the Yamanashi Prefectural Government, residents of the valley sprayed a snail-killing chemical following completion of the snail density survey.

Spraying can be accomplished only during late spring and late autumn after seasonal wheat and rice crops are harvested.

The continuing humanitarian "rice roots" project began when a U.S. Army schistosomiasis team arrived in Japan from the Philippine Islands. During 1948, they commenced the 16-year life-saving effort with an intensive search for chemicals to be used as an effective molluscicide. Between 1948-1951, more than 6,000 chemicals were tested as potential snail-killing sprays.

After the U.S. Army in Japan developed methods of applying the chemical, the Yamanashi Prefectural Government provided the spray to residents of the Kofu Valley region. This was only after considerable research and development of a satisfactory molluscicide.

The project continues today as a joint advisory effort between the 406th Medical Laboratory and the Yamanashi Prefectural Government.



Japanese farmers look for snails during search at edge of a rice paddy in the Kofu Valley, Yamanashi Prefecture. Center shows closeup view of adult "oncomelania" schistosomiasis-carrying snails found in roundup.

Control procedures, research and methods of treatment have required a great deal of effort, Maj Moose said.

All knowledge is made available to public health officials, and a comprehensive annual report on the project is given to them at the end of each calendar year.

A veteran medical parasitologist, and a member of the Asian snail project for over 12 consecutive years, Mr. Williams stated:

"The disease could present an extremely serious U.S. military problem in Asia. Schistosomiasis today is still in the same position yellow fever and malaria were before being brought under control by the U.S. Army Medical Service. The World Health Organization has declared schistosomiasis the number one parasitic public health problem."

In China the entire coastal area from the Yangtze River south to Canton is considered a serious endemic area. Schistosomiasis affects the lives of more than 40 million people. The disease also occurs in islands of the Philippine chain, the Celebes, Southern Europe, North and Central Africa, the Middle East, South America and Puerto Rico.

Japan's Kofu Valley region, once considered an intensely endemic area, is no longer rated a severe problem area, due to joint efforts of 406th Laboratory and Japanese public health officials. Coordinated efforts have been aimed at interrupting the parasite's life cycle by destroying the snail host in which the worm must live for part of its life.

"Our first problem is to bring it under control," Mr. Williams explained, "and this will be achieved within another five years. Then all infected persons must be discovered. Schistosomiasis is not a communicable disease. New diagnostic procedures are being developed and eventually new methods of curing the disease will be found!"

Under direction of Col Metzger, the cultivation and observation of the Asian snail vector is being accomplished to a degree never tackled by any U.S. Forces or a private facility anywhere in the world.

"Our facilities are excellent," he said. "The 406th is also engaged in general medical laboratory services, and has an active research and development program which assists all services. It is also an invaluable tri-service reference laboratory for the WESTPAC area. With a scope ranging from Southeast Asia north to Japan, we aid military hospitals throughout Asia and the Far East."

Gun-Launched Rocket Research Leaders Meet at APG

Results of gun-launched upper atmosphere rocket probes to heights exceeding 60 miles, and possible applications of the low-cost technique to military problems, were discussed Feb. 5 by about 100 leaders.

Representatives of the Army, Navy, Air Force, National Aeronautics and Space Administration, and McGill University of Canada convened at the Army Ballistic Research Laboratories, Aberdeen Proving Ground, Md.

Dr. Charles H. Murphy, chief of the Free-Flight Aerodynamics Branch, Ballistics Research Laboratory (BRL), Aberdeen P.G. discussed the background and objectives of the High Altitude Research Program (HARP).

Dr. G. V. Bull, director of HARP 16-inch gun probes conducted in recent months at Barbados, West Indies Federation, reported on this McGill University research project conducted with U.S. Army support.

Working in close coordination with the U.S. Army Research Office Environmental Sciences Division and the APG Ballistics Research Laboratories, McGill University scientists have established the practicability of gun-launched probes to launch scientific vehicles into the upper atmosphere. Experiments are being continued. (For details on Operation HARP, see August 1962 issue, page 34.)

Other speakers included Warren Berning, Ballistics Measurement Lab, BRL, who discussed High Altitude Experiments with Gun Probe Systems, Development of Active Sensors, Military Applications; Victor Richard, BRL, Telemetry and Antenna Development for the Gun-Launched Probe; and Dr. H. I. Schiff, McGill University, High Altitude Research with the 16-inch gun.

Analysis of data obtained in recent 16-inch gun tests at Barbados is expected to reveal that the record altitude for a glide vehicle obtained last June (340,000 feet—over 65 miles) has been considerably exceeded.

Firings with Martlet 3A vehicles (with modifications to sabot and base controls and acceleration loading) will be continued to prove out the ultimate design value sought for 16-inch probes.

SCIENTIFIC CALENDAR

International Congress on Scientific-Technical Documentation and Information, sponsored by the National Productivity Council, Rome, Italy, Feb. 2-11.

International Conference of the Impact of Modern Physics on Materials, sponsored by the American Society for Testing and Materials, Philadelphia, Pa., Feb. 3-7.

ARO Working Group on Computers, sponsored by AROD and the U.S. Army Mathematics Steering Committee, Washington, D.C., Feb. 5-7.

International Solid State Circuits Conference, sponsored by IEEE and the University of Pennsylvania, Philadelphia, Pa., Feb. 12-14.

International Symposium on Metals for Use at High Temperature, N.Y.C., Feb. 17-20.

International Conference on Transmission Aspects of Communications Network, London, England, Feb. 24-28.

Annual Meeting of the American Biophysical Society, Chicago, Ill., Feb. 26-28.

Aerospace Bearings Symposium, sponsored by the Aeronautical Systems Division and the Southwest Research Institute, San Antonio, Tex., Feb. (date undetermined).

Annual Symposium on Fundamental Cancer Research, sponsored by the University of Texas and Anderson Hospital and Tumor Institute, Houston, Tex., Mar. 2-4.

Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, sponsored by the Society for Analytical Chemists of Pittsburgh and the Spectroscopy Society of Pittsburgh, Pittsburgh, Pa., Mar. 2-6.

Symposium on the Thermal Radiation of Solids, sponsored by NASA and the National Bureau of Standards, San Francisco, Calif., Mar. 4-6.

Aerodynamic Testing Conference, sponsored by the American Institute of Aeronautics and Astronautics and the U.S. Navy David Taylor Model Basin, Washington, D.C., Mar. 9-10.

International Conference and Exhibit on Aerospace Electro Technology, Phoenix, Ariz., Mar. 19-25.

3rd Conference on the Exploding Conductor Phenomenon, sponsored by AF Cambridge Research Laboratory, Boston, Mass., Mar. 10-12.

Electronic Timing for Ordnance, sponsored by the Harry Diamond Laboratories, Washington, D.C., Mar. 18-19.

Cybernetic Medicine, sponsored by the International Congress of Cybernetic Medicine, Naples, Italy, Mar. 21-24.

International Convention of the Institute of Electrical and Electronic Engineers, sponsored by IEEE, N.Y.C., Mar. 23-26.

RECOGNITION THROUGH PUBLICATIONS

Springfield Armory Recognizes 'Employee of Month'

An idea to give large-scale visual recognition for outstanding work, tested at Springfield (Mass.) Armory and found satisfactorily rewarding over a 6-month period, may be of interest for use by other R&D units.

The "Employee of the Month" program was initiated by the Support Research Branch, Research and Engineering Division. It calls for constant evaluation of personnel progress within the branch in areas ranging from creative thinking to extracurricular activities, and from personal background information to outstanding achievements.

The recognition gimmick is that of mounting an enlarged head-and-shoulders photograph of the recipient of the award each month on a special display board. The display documents the basis of the award and is located conspicuously at the entrance to the building in which the Support Research Branch operates.

In addition, Col William J. Durrenberger, commanding officer of Springfield Armory, as well as the recipient's superiors, send congratulatory messages which are included in the display, shown for a one-month period.

To date personnel rewarded are: H. Robert Erard, cited for Presentations; Henry P. Swieskowski, Publications; Hazel Lundy, Dependability; John F. Hartnett, Capability; Robert D. Korytoski, Coordination; Francis X. Ledoux, Service.

Top management personnel and Research Support Branch supervisors report that the "Employee of the Month" program has served effectively to stimulate productivity and higher work standards in that for at least one full month the recipient of the award is brought to the attention of coworkers every time they pass the entrance where the display is located.

Air Force Sets Up Liaison In Army R&D Office, Panama

The Research and Technology Division of the Air Force Systems Command has established a Scientific and Technical Liaison Office (STLO) with the U.S. Army Research and Development Office (USARDO), Panama.

Establishment of the new office follows a recent visit of top Department of Defense, Army, Navy, Air Force, Marine Corps and Advanced Research Projects Agency officials to the Canal Zone to observe the research and development activities of the USARDO. (See June-July 1963 issue, page 52.)

As the focus for U.S. Air Force R&D programs in the humid tropics, the STLO will work closely with all other Government agencies in the Canal Zone as well as with its host, USARDO.

Maj Danley F. Straight, who has been assigned primarily to research and development in the Air Force since 1951, heads the new office.