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Plans for Career Program for Scientists Nearing Completion

Maj Gen C. W. Clark | Lt Gen William J. Ely | Maj Gen Jean E. Engler

Revised scheduling, occasioned by the major reshuffling of personnel in the 1962 general reorganization of the Army, has deferred until the close of FY 1964 the full-scale operation of the "Civilian Career Program for Scientists and Engineers."

Objectives of the program, affecting some 23,000 scientists and engineers, are:

- **To enable the Department of the Army to meet immediate and long-range manpower requirements for scientists, engineers and technical specialists.**
- **To provide the optimum opportunity for professional growth which is related to maintenance of a high degree of capability within the Army in-house laboratories, arsenals and other scientific activities.**

Intended to apply to employees in grades GS-5 up through the top level, the program will cover a wide range of professional skills, including all the major engineering fields, the Life Sciences, Physical Sciences, Environ-

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Former Army Research Director Gets Key DDRE Job, Starting Chain Reaction Shifting Present Director

Elevation of a former Director of Army Research to a key Department of Defense post has produced a chain reaction, moving the present Director to a new assignment in Japan.

Confirmed by the Senate for promotion to 3-star rank Aug. 8, Lt Gen William J. Ely relieved Vice Admiral Charles B. Martell as Deputy Director of Defense Research and Engineering (Administration and Management) on July 24.

Scheduled to take over the Second Fleet in a change-of-command ceremony Aug. 2 at Norfolk, Va., Admiral Martell had served little more than two months in an additional capacity as Chairman of the President's Committee on Scientific Infor-

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Featured in This Issue . . .

ASA (R&D) Dr. Larsen Planning Return to Industry

Secretary of the Army Cyrus R. Vance presented Decoration for Exceptional Civilian Service to Dr. Finn J. Larsen, July 30, for "outstanding professional competance, imagination and foresight in directing the Army research and development program" . . . and for "enduring contributions to the Army and its ability to perform its mission."

Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen has offered his resignation, effective July 31, but at press time Secretary of the Army Cyrus R. Vance had not nominated a successor.

Tribute to Dr. Larsen's exceptional abilities as a scientist and administrator at a July 29 farewell party at the Arlington Hall (Va.) Officers Club attested to the personal esteem in which he is held by Army R&D associates at all levels. Two honorary plaques presented to him indicated that regard.

Brig Gen William T. Ryder, OCRD Director of Special Weapons, served as master of ceremonies and struck a responsive chord when he summarized his accolades by saying, "We hope and expect that you will return to Army R&D." (Continued on page 7)

Army R&D Newsmagazine

Vol. 4, No. 7 August 1963

Editor . . . . . Clarence T. Smith

Ass't Editor . . . . George J. Makuta

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Creativity Conflict: Management versus Scientists

(Original plans for this publication provided for, from time to time, reviews by knowledgeable scientists and engineers of new books dealing with subjects of wide interest to the Army R&D community. Perhaps no subject is of broader interest to this group, or of more high priority concern, than that here discussed by Dr. Thomas W. Adams, a member of the U.S. Army Research Office staff since June 1962 as a Research Planning Officer, and now assigned to Human Factors and Operations Research Division.)

By Dr. T. W. Adams

When one reads the first two chapters of Eugene Raudsepp's *Managing Creative Scientists & Engineers* (Macmillan, 1963) he may get the feeling that the author speaks from the researcher's standpoint. After one reads the entire book, he is convinced that Mr. Raudsepp has taken the side of the scientist in the age-old misunderstanding with management. (Socrates—if the imagination is stretched—could be considered one of the first of an endless line of scientists to have lost a battle with top-side management!)

The source of the present-day manager-scientist tension is simply that management principles have not adjusted to the current growth rate of scientific knowledge. In the traditional bureaucracy, a subordinate is expected to hold his own judgment in abeyance and accept that of an acknowledged superior without having to be convinced that the superior is correct. In dealing with creative scientists, the administrative pattern ought to be the exact opposite.

A scientist tends to accept the opinion of a superior whom he respects as a peer or as one highly qualified in a certain phase of administration. In other words, in a vital scientific community, value and deference are given to the truth, not to the ideas of the man on the top rung of the ladder. When the top and the truth happen to coincide, administrators usually find life more compatible with the working scientists and *vice versa*.

Mr. Raudsepp claims that today's scientists desire specific areas of freedom from organizational constraints. Among other things, a technical professional wants "more flexible working hours with freedom to come and go at irregular hours" and "freedom to manage his own work," that is, to be told what needs to be done but not how to do it. Simply stated, scientists expect administrators to have "faith and confidence" in them as professionals.

Hence, the traditional factory management concepts of Taylor, Mayo, etc. are no longer, if indeed they ever were, applicable or adaptable to the modern scientific community. Still, scientists, engineers, or any creative researchers in a large organization need and want some sort of administrative mechanism by which individual work can be integrated into the whole.

Such a mechanism would also provide for guidance, supporting service, encouragement, and reward to these workers. The unanswered question is just what sort of mechanism this must be. Mr. Raudsepp, psychologist with a consulting firm, drawing on social science theories and the growing body of empirical data on creativity, examines the problem in his recent work.

In Chapter 5, the author makes an incisive statement of his position:

Any superimposed plan from the outside also imposes a corset-framework on what inherently requires personal care and cultivation and maximum freedom for individualistic effort and approaches. Merely to retain their precious curiosity and initiative, basic researchers have to be handled in a free fashion and given the final authority on what ought to be done, or on what projects should receive priority. Organizational objectives are tolerable only in general terms, and management of research is best left to the research men themselves.

Genuine basic research has to stay outside the realm of systematic planning and organization by management, and its primary requirement even within the department researcher's own internal processes of creativity. If the basic researcher fails to invest his research efforts with purposes personally deeply meaningful to him, his motivation suffers and the organization that employs him suffers as well.

Raudsepp's advice might guide us to broad solutions to some knotty problems, among others, research planning, providing the proper atmosphere for creativity, the administration of creative research, inspiring motivation in scientists, and the preservation of individuality n a large organization. It is also true, however, that broadbrush solutions often gloss over the intricacies and are of little operational value.

By inference, Rr. Raudsepp would apparently solve the conflict between

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Generals Ely, Engler, Clark Involved in Chain Reaction Shift

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mation (COSI), Federal Council on Science and Technology.

Invited by Dr. Jerome B. Wiesner, Special Assistant to the President for Science and Technology, to succeed Admiral Martell as Chairman of COSI, General Ely accepted the appointment shortly before reporting to his new assignment.

Deputy Commanding General of the U.S. Army Materiel Command when given his new jobs, General Ely had served in that capacity since April 1962, at which time he concluded three years as Director of Army Research and turned the post over to Maj Gen C. W. Clark.

Assigned to the Deputy CG position at the Army Materiel Command, and scheduled to report for duty Sept. 23, is Maj Gen Jean Evans Engler, presently CG of the U.S. Army, Japan. Slated to relieve him Aug. 23 is General Clark, known as a military scientist of top professional stature who will be assuming his first major logistical command post.

To lean on an ancient and alliterative cliche, rumors were rife at press time regarding potential successors to General Clark as Director of Army Research. The keen sense of personal loss among USARO staff members that marked General Ely's departure was experienced all over again when General Clark's anticipated 3-year tour was terminated after 15 months of duty.

Coincident with announcement of Admiral Martell's reassignment, the Navy reported that Vice Adm Alfred G. Ward, whom he is relieving, will be the new Deputy Chief of Naval Operations (Plans and Policy). Also, that Vice Adm Horatio Rivero, Jr., has been nominated to become Deputy CNO (Development) upon retirement of Vice Adm William F. Raborn early in September.

GENERAL ELY carries into his new DoD duties an almost unbroken series of progressively important Corps of Engineers assignments, both military and civilian construction projects, following graduation from the U.S. Military Academy in 1933 until he became Director of Army Research in March 1959.

Educational qualifications for that assignment included a master of science degree from Cornell University, studies at Carnegie Institute of Technology, and completion of specialized training in various military schools.

During World War II General Ely served with distinction in Australia, New Guinea, the Philippine Islands and Japan.

GENERAL CLARK entered the Army as a Reserve second lieutenant in 1927 and achieved colonel rank in the Regular Army in August 1953, following which he served as Deputy G-4, Eighth U.S. Army in Korea.

Until one has observed his military incisiveness and faculty for rapid analysis of facts pertinent to quick decisions, the bland manner, easy humor and scholarly speech of General Clark might stamp him as more of a teacher than a soldier. For six years he taught mathematics and chemistry at the University of California and at San Francisco City College.

Backed by B.S. and M.S. degrees (1927 and 1929) from the University of California and a Ph. D. in physics from the University of Leyden in the Netherlands, he has engaged in low-temperature physics (cryogenics) research on the Johns Hopkins University staff following World War II. He also has experience as a consultant and physicist at the Naval Research Laboratory in Washington, D.C., where he helped to initiate low-temperature research.

Before assuming his present duties he had served as Assistant Chief of Ordnance for Research and Development for more than three years following assignments as Chief of the Guided Missile Systems Branch and Chief of the R&D Division, OCO. He also served three years as Assistant Director of the Ballistic Research Laboratories, Aberdeen Proving Ground, Md., and Director of Research and Development, Picatinny Arsenal, Dover, N.J.

GENERAL ENGLER will take into his new post as Deputy to Commanding General (Lt Gen) Frank S. Besson, Jr., of the U.S. Army Materiel Command the experience of 30 years of progressively responsible assignments since he was graduated from the U.S. Military Academy in 1933 (classmate of General Ely). He served as an enlisted man from March 1928 to June 1929.

In 1938 he transferred from the Infantry to the Quartermaster Corps, serving three years at Holabird QM Depot in Maryland followed by a similar stint at Desert Test Command, El Centro, Calif. In 1947 he transferred to the Ordnance Corps and served in Japan before reporting in June 1948 as Chief of the Automotive Branch, Industrial Division, OCO, in Washington, D.C.

After a tour as Chief of the National Production Control Division of the Ordnance Tank-Automotive Command in Detroit, Mich., he returned to a Washington assignment with OCO until he became Chief of the Procurement Division and later Director of Procurement, Deputy Chief of Staff for Logistics, in July 1957. Assigned to Hq, U.S. Continental Army Command at Fort Monroe, Va., in June 1959, as Deputy Chief of Staff for Logistics, he was made CG, U.S. Army, Japan in May 1961.

Army Orders $705,000 Electric-Propulsion System

Contracts aggregating $705,000 were awarded by the Army late in June for the construction and test of an alternating current electric-propulsion system "test-bed."

The U.S. Army Mobility Command Engineer Research and Development Laboratories, Fort Belvoir, Va., announced the awards.

The Laboratories have been conducting a research program on application of ultra-high-speed electrical machinery to electrical propulsion of vehicles, utilizing the rubber-tired Universal Engineer Tractor as the test-bed vehicle. Researchers believe results offer a real potential for significant advances in mobility of terrestrial vehicles.

Maj Norman F. McGinnis, Jr., Chief of the R&D Procurement Office of the Laboratories, said this is the first time they are using three prime contractors for the same project. One project manager from the Laboratories will monitor all three contracts.

A $365,000 contract was awarded to the AiResearch Manufacturing Co., Phoenix, Ariz., for the construction of a turbine-alternator, turbine controls, alternator controls and turbine accessories, and for the design of a final reduction gear train.

A $225,000 contract to the Louis Allis Co., Milwaukee, Wis., is for the design and construction of power converters, drive motors and vehicular system controls.

The FMC Corp., San Jose, Calif., $115,000 contract is for the design and construction of all vehicular subsystems, for the design of a final reduction gear train, and for the installation of the equipment produced by AiResearch and Louis Allis.

Scientists Career Program Plans Near Completion

(Continued from page 1)

mental Sciences—and even landscape architects.

Administrators of the program have emphasized that the present plan is the culmination of prolonged and extensive studies, and that it has been developed in conjunction with a steering committee of top-level scientists, engineers and personnel specialists.

Original development of the program was under the leadership of the Deputy Chief of Staff for Logistics, with representation from the Office of the Chief of Research and Development, Deputy Chief of Staff for Personnel, Chief of Engineers, and the seven Army Technical Services.

When the Technical Services were phased out of military materiel responsibilities with the establishment of the Army Materiel Command a year ago, a general realignment of the "Civilian Career Program for Scientists and Engineers" was necessary.

Overall monitorship responsibility for the revised program is now vested in the Career Management Branch, Employee Management Division, Deputy Chief of Staff for Personnel. Division Chief is R. O. Dale Anderson and the Branch is headed by W. R. Bruce.

Plans for implementation of the program, which are targeted for completion by Oct. 1, delegate to the Chief of Engineers the prime functional responsibility for scientists and engineers in construction activities.

Army-wide responsibility for remaining employees will rest with the U.S. Army Materiel Command, and the Chief of Research and Development will participate in developing the overall effort. All major commands are involved, including the Combat Developments Command, U.S. Continental Army Command, and the Office of the Surgeon General.

Involved in the program is a survey, at least annually, of what the total scientific manpower requirements of the Army will be, and what intake of new personnel at various levels will be necessary to meet anticipated goals. This part of the program will be integrated closely with the recruitment of college science and engineering graduates, including faculty members interested in Army career opportunities.

Planned, systematic training that will prepare employees for advancement as rapidly as possible is integral to the program. Career development is to provide the "fullest feasible opportunities," it was stated, including not only classroom training per se but other educational improvement, an integrated appraisal of capabilities, and counseling as to career potential and how it may be developed.

Mobility will become an increasingly meaningful word to many employees pursuing career advancement opportunities. Program officials emphasized that employees desiring to advance in particular fields must be prepared "to go where the work is being done, including overseas" — what is known as "geographic availability."

A Career Referral System will insure that career appraisal and development plans are documented and reviewed at higher echelons, within and outside the agency to which the employee is assigned.

Registration forms will be maintained at local activity, command and headquarters levels, and personnel inventory records will be designed to provide information on the best qualified man for a particular vacancy.

Automation employing new equipment for speedy processing of personnel information where needed also is basic to the plan. Advanced mechanical means will be used for personnel record keeping, career field analysis, and for preliminary screening of qualified individuals.

In cases where several hundred might be listed as qualified in the personnel records, automation might narrow the field to 100 or less; in other cases where the potential of filling a particular job is relatively small, machine processing may narrow the field proportionately.

Professional specialists then will identify, through thorough consideration, perhaps 10 or fewer best qualified candidates. From this list management officials will be free to make selections based on their own best judgment in meeting the mission requirements of an activity.

Other provisions of the program encourage rotation of employees to keep their skills current with new trends and developments related to their career interests.

If, for example, analysis shows a laboratory scientist has good potential for supervisory or top management responsibilities, he will be counseled accordingly. But his preference will prevail; if he is skeptical about management responsibilities, he may be given a trial assignment to guide his career development decision.

Similarly, when compelling personal reasons prevent employees from pursuing career development opportunities in other areas, they will be furnished all training opportunities feasible to develop their potential and prepare them for advanced assignments at the local command level.

Maximum dissemination will be made of information on career development ladders, opportunities for special training on the job or advanced education courses under various Army programs, specialized reading for self improvement, and various other means of encouraging employees to advance to better jobs.

Many of the finer details of the program remain to be worked out during coming weeks although planning is well advanced, an official of the Employee Management Division at DA level stated. Provisions for implementing the program will be prescribed in a forthcoming Civilian Personnel Regulation.

Vance Selects Assistant, 32, as General Counsel

Accent on youth in New Frontier administration key staff appointments is typified by Joseph A. Califano, 32, who took office July 1 as Army General Counsel. He succeeded Powell Pierpoint, who had served since 1961 and has returned to private law practice in New York.

Secretary of the Army Cyrus R. Vance announced the promotion of Mr. Califano, who had served as his special assistant since July 1962 after an assignment as special assistant to the General Counsel, DoD, since 1961.

Graduated from Holy Cross College in Worcester, Mass., in 1952 with a B.A. degree, Califano received an LL.B. magna cum laude from Harvard Law School in 1955. As a student, he was editor of the Harvard Law Review.

Commissioned in the Navy in 1955, he served three years in the Office of the Judge Advocate General in Washington, D.C., and was released to inactive duty as a lieutenant in October 1958. That same month he became associated with the law firm of Dewey, Ballantine, Bushby, Palmer and Wood in New York City.

He is a member of the Bars of the State of New York, the U.S. District Court for the Southern District of New York, U.S. Court of Appeals for the Second Circuit, American Bar Association and the American Judicature Society.

Dr. Fubini Takes Key Defense Post Vacated by Rubel

Dr. Eugene G. Fubini was confirmed recently by the Senate as Deputy Director of Defense Research and Engineering, succeeding John H. Rubel who had served three years when he resigned to return to industry.

Since March 1961, Dr. Fubini has been with the Office of the Director of Defense Research and Engineering. When the President nominated him for his new post, he was serving as Deputy Director of Defense Research and Engineering for Research and Information Systems.

Born in Turin, Italy, he earned his doctorate in physics from the University of Rome in 1933. In 1939 he came to the U.S. and was employed until 1942 as an engineer by the Columbia Broadcasting System.

As a research associate of the Harvard University Radio Research Laboratory, 1942-45, he was concerned with the design, development, operation and planning of countermeasure and ferret reconnaissance equipment.

Dr. Eugene G. Fubini

In the European Theater of Operations in 1943 and 1944, he was a scientific consultant and technical observer to the U.S. Army and Navy. He participated in the establishment of electronic reconnaissance and jamming capabilities for the invasion of Italy and Southern France.

Later in the war he was in England with the Eighth Air Force in charge of electronic reconnaissance and counter-measures, and also served as a special consultant to the Air Communications Officer of the War Department.

Following the war he joined the Airborne Instruments Laboratory, now a division of the Cutler-Hammer Corp., in Melville, Long Island, N.Y. There he worked on the development of microwave components, magnetic detectors, electronic test equipment, boundary value problems, anti-jamming devices, direction finders and reconnaissance systems.

A Fellow of the Institute of Radio Engineers, Dr. Fubini has authored approximately 30 technical publications and holds 11 patents. He has served on numerous military advisory boards, as consultant to the President's Science Advisory Committee, as a member of a panel of the National Security Agency Scientific Advisory Board, and on the Advisory Council for the Advancement of Scientific Research and Development in New York State.

Top Leaders Participate In Reserve Unit Seminar

Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen and top-ranking Army leaders discussed research and development advances, objectives and problems at the Sixth Annual R&D Seminar for Reserve Officers at Fort Belvoir, Va.

More than 40 Reserve officers from all sections of the country attended the July 22-Aug. 2 seminar, sponsored by the U.S. Army Mobility Command Engineer Research and Development Laboratories in cooperation with Mobilization Designation Detachment No. 39.

Dr. Larsen discussed "Research and Development Management," pointing out the complexities of many problems associated with Army-industry relations and the establishment of in-house laboratory relationships satisfactory to management and creative scientists insistent upon more freedom of action.

Army Director of Research C. W. Clark spoke on "Accomplishments and the Future of Army Research," and Assistant Director Col C. B. Hazeltine, Jr., explained "Army R&D Programs."

Prominent speakers included Lt Gen W. K. Wilson, Jr., Chief of Engineers; Brig Gen H. D. Edson, Deputy CG, U.S. Army Mobility Command; Maj Gen W. F. Cassidy, CG of Fort Belvoir, who gave the address of welcome; Col R. H. Hemion, U.S. Army Test and Evaluation Command.

As host officer, Col J. H. Kerkering, USAERDL commander, spoke on the organization and mission of the Laboratories and also discussed "Polar Construction Problems."

Civilian employees at the Laboratories and the U.S. Army Engineer Geodesy, Intelligence and Mapping Research and Development Agency (GIMRADA) served on the seminar staff. Col O. P. Cleaver, Chief of the USAERDL Electrical Department, served as seminar director.

The Reserve group toured the Laboratories, GIMRADA, and SM-1 Nuclear Power Plant, Army Map Service, & Beach Erosion Board facilities.

Flemming Award Winner Named Deputy Director, ARPA

Dr. C. M. Herzfeld, winner of an Arthur S. Flemming award in 1962 as one of the outstanding young scientists in Government, recently was named Deputy Director, Advanced Research Projects Agency (ARPA). With ARPA since 1961, he is presently Director for Ballistic Missile Defense for the Agency and will continue in this position in addition to his new duties.

Dr. Charles M. Herzfeld

A graduate from Catholic University with a degree in chemical engineering in 1945, he received his Ph. D. from Chicago University in 1951.

On active military service, he served for two years as a theoretical physicist at the Ballistics Research Laboratory of the Ordnance Corps. Upon return to civilian life he entered Government service at the U.S. Naval Research Laboratory. Later he served at the National Bureau of Standards as Chief of the Heat Division and as Associate Director.

During this Government service he also was a lecturer from 1953-1957 and a professor of physics from 1957 to 1961 at the University of Maryland. He is a Fellow of the American Physical Society and a member of the American Ordnance Association, the Philosophical Society of Washington, Washington Academy of Sciences and Sigma Xi.

CIDS Officials Pushing Program Implementation; Contract Awarded on ACT

Project officers designated by the U.S. Army Materiel Command, Corps of Engineers, The Surgeon General, and major Army laboratories and arsenals convened July 15-16 to report on progress in implementing the Army Chemical Information Data System (CIDS).

Intensity of the effort to launch the CIDS program on as broad a base as possible throughout the Department of Defense and industrial organizations was reflected in two additional project officers meetings scheduled in August and a briefing of industrial representatives slated Sept. 17. A briefing of the President's Committee on Scientific Information (COSI) was held July 25.

Another significant action was the award of two contracts. The Mergenthaler Linotype Co. bid successfully on a contract for redesign of the Army's new Chemical Typewriter to include a type font suitable for driving printing machines, and for providing two prototype models, the first by May 15, 1964, and the second a month later.

Ten Army installations were committed at press time to participation in the Chemical Typewriter procurement program. When full-scale production is underway the unit cost is expected to be about $17,000, but the cost for installations committed to the design and development program will be substantially higher.

Concurrently within the time frame of the Chemical Typewriter prototype procurement, the Colgate Palmolive Peet Co., will work on an Army contract to develop methods for machine searching of chemical structures on an atom by atom basis.

The Department of the Army project officer, Peppino N. Vlannes of the U.S. Army Research Office, said additional methodology studies will be undertaken.

The industrial briefing on the Army Scientific and Technical Information Program Sept. 17 at the Shoreham Hotel in Washington, D.C., is expected to attract several hundred representatives of major pharmaceutical and chemical companies.

Defense Director of Technical Information Walter M. Carlson and Col Andrew A. Aines, Director of Army Technical Information, will take lead roles in the briefing, which will include a demonstration of the Army Chemical Typewriter (ACT).

As explained in the June-July issue of the Newsmagazine, the ACT is capable of encoding or decoding the whole molecule of a chemical formula in a high-speed mechanical operation. In this respect, it is believed unique.

Wide use of the ACT in the chemical and drug industry is anticipated, which will be in the interest of standardization for the Army Chemical Information Data System. It is emphasied by Army technical information officials, however, that any technique which enters the whole molecule in feeding formulas into a computer will be compatible with the Army system.

Inquiries relative to procurement of the ACT may be directed to the U.S. Army Medical Service, Fort Totten, N.Y., or to the U.S. Army Medical R&D Command, ATTN: Col Emerson Taylor, Washington 25, D.C.

Reports of project officers at the July 15-16 meeting at the Walter Reed Army Institute of Research indicated that plans are progressing according to schedule with respect to Phases 1, 2 and 5. (The various phases of the CIDS program and the responsible agencies were detailed in the June-July issue, page 4.)

Lt Col Francis W. Lanard, representing the Office of the Surgeon General, reported that the end-best-path approach is being taken in Phase I, which covers procurement of the ACT and related equipment and the formulation of machine programing techniques.

Ultimately, he said, the objective is to provide direct access by the individual scientist to the bank of chemical structures, a total of about 2.5 million compounds, encompassing in effect world knowledge of chemistry.

Paul D. Olejar, alternate project officer of the Chemical Research and Development Laboratories at Edgewood Arsenal, Md., said the extensive chemical library holdings at the CRDL will be used as a base in Phase II, along with those of installations responsible for Phase V.

This requires a determination of user needs and total resource requirements. A contract for analysis of the problem and recommendations relative to Phase II is to be awarded.

The U.S. Army Electronics Research and Development Laboratories at Fort Monmouth, N.J., were represented by David Haratz as project officer for Phase III. Much of the necessary advanced electronics equipment for the CIDS program, he said, is already "on the shelf" and studies of additional requirements are in progress.

Phase IV, involving a determination of computer requirements and programing techniques for the complete program, is the responsibility of the U.S. Army Ballistics Research Laboratories at Aberdeen Proving Ground, Md. Project officer Eli Freedman said the study is underway.

Sylvan Eisman of Frankford Arsenal, Philadelphia, Pa., reported that a letter of particulars on Phase V is to be drafted in the near future which will provide more explicit guidance to installations on requirements.

U.S. Army Materiel Command project officer is Loyal H. Titus of the R&D Directorate. He also is assigned to an overall policy committee that includes Lt Col F. W. Lanard of OTSG and Logan O. Cowgill of the Corps of Engineers. A representative of The Judge Advocate General is to be appointed.

Other CIDs project officers announced up to press time include: *Mobility Command*, Dr. Bruce Lee of the Army Tank Automotive Command, Centerline, Mich., assisted by Carlos Sigarra of the Army Chemical Research and Development Laboratories, Edgewood, Md. *Munitions Command*, Mike Costello of Picatinny Arsenal, Dover, N.J., assisted by Lt Col Russel M. Tegnell of Edgewood Arsenal, J. P. Mitchell of the Chemical R&D Laboratories, Gerald Beveridge of Fort Detrick, Md., and Sylvan Eisman of Frankford Arsenal, Philadelphia. *Walter Reed Army Institute of Research*, Washington, D.C., Alfred Feldman. *Armed Forces Pest Control Board*, Lt Col Frank G. Favorite.

Operation 'Chez Pup' Tests Redstone's Passive Defense

Plans for "Chez-Pup" (pronounced "shape-up"), the largest passive defense exercise ever conducted in North Alabama, were ready to be put into effect at press time.

Designed to test the effectiveness of Redstone (Ala.) Arsenal's passive defense plans, the exercise calls for the evacuation and assigned emergency operations of 20,000 personnel.

Emergency security measures, communications procedures, fallout shelters, and warning systems will be tested during the operations.

Arsenal units taking part in the exercise include all Army Missile Command organizations, the Army Missile Support Command, the Ordnance Guided Missile School, Marshall Space Flight Center, and some contractor personnel.

Hopkins, Whitford Win 1963 Achievement, Leadership Awards at USAERDL

Ralph E. Hopkins and Max P. Whitford are the winners of the 1963 Commanding Officer's Technological Achievement and Leadership Medals awarded at the U.S. Army Mobility Command's Engineer Research and Development Laboratories, Fort Belvoir, Va.

Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen presented the technological award to Hopkins and Maj Gen William F. Cassidy, Commanding General, Fort Belvoir, made the leadership award to Whitford June 20 at the Laboratories' sixth annual awards banquet.

Along with four other nominees for the technological award and five other nominees for the leadership award, the winners also were presented framed Certificates of Achievement and cash awards of $50.

Cash awards were made under the Special Act and Service program, except the award to the lone military nominee, Pfc J. A. Morales, which was furnished by the Fort Belvoir Post of the American Society of Military Engineers.

HOPKINS, 38, was chosen for his technical accomplishments in the field of ultra-high-speed, high-frequency electrical motors and generators, and the control techniques for these machines. The award recognized his original, radically advanced concept in electrical propulsion of ground vehicles as offering heretofore unachievable gains in terms of vehicle performance and payload.

Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen and Maj Gen W. E. Cassidy, CG at Fort Belvoir, Va., flank winners of Commanding Officer's Technological Achievement and Leadership Awards for 1963 at the U.S. Army Engineer Research and Development Laboratories. Max P. Whitford (second from left) won Leadership and Ralph Hopkins, Achievement Medal.

The concept has enabled the Laboratories to initiate the design and development of a test bed vehicle. It is based on use of a high-speed prime mover (gas turbine) to achieve high power with minimal size and weight.

A direct-connected, high-speed alternator supplies high-frequency alternating current to a static frequency or power converter. This provides controlled electrical power to high-speed motors that drive each vehicle wheel by high-ratio reduction gears.

The complete system is controlled primarily through the power converter. Closed loop control circuits employ digital logic techniques and can be programed for ease of control. The converter permits the system output to be used as precise power for an off-vehicle electrical load when the vehicle is at a standstill.

A veteran of World War II, Hopkins received his B.S. degree in electrical engineering from Ohio University and has been employed since 1950 at the Laboratories. Currently he is a supervisory electrical engineer in the Electrical Power Branch.

WHITFORD, 47, was selected for the Leadership medal because of his outstanding performance as foreman in the Evironmental Laboratory of the Developmental Fabrication Branch. The Environmental Laboratory was operated at peak efficiency on a 3-shift day and approximately 50 percent of the time on a 7-day week. During this period, the test chamber was operated almost 100 percent of the time it was scheduled.

A native of Pennsylvania, Whitford attended the Pennsylvania State University Undergraduate Center in DuBois and is a veteran of World War II service in the Pacific.

Other nominees for the Technological Achievement award were Dr. James I. Bryant, William R. Eason and Cyrus A. Martin. Leadership nominees included Charles F. Cashell, Francis B. Paca, Joseph H. Sullivan, William H. Deavers and Ralph E. Hursey. (See June-July issue for basis of nominations.)

Col J. H. Kerkering, Commanding Officer of the Laboratories, served as toastmaster and presented awards.

ASA (R&D) Dr. Larsen Planning Return to Industry

(Continued from page 1)

Chief of Research and Development Lt Gen Dwight E. Beach praised Dr. Larsen as a leader whose notable achievements in advancing new weapons systems and other military materiel "will make him a difficult man to replace."

When brought to Washington as the successor to Richard S. Morse, who resigned June 1, 1961, after serving precisely two years to the day, Dr. Larsen was Vice President for Research of Minneapolis Honeywell Regulator Co., Minneapolis, Minn.

An indication was given that Dr. Larsen intends to return to that company, with which he became associated as a research physicist in 1948 shortly after obtaining a Ph. D. degree in physics from Iowa State College. He was promoted to Director of Research in 1953 and to Vice President for Research in 1959, with responsibility for directing the central laboratory at Hopkins, Minn.

During World War II he served three years as a Navy officer and was stationed in Washington to work on design of radar-type equipment. Later he was employed as a consultant to the Army Ballistic Research Laboratories, Aberdeen Proving Ground, Md., and also served on the Army Signal Corps R&D Advisory Council.

Professional basic research and research management achievements won Dr. Larsen membership of numerous high level committees and councils, including the Maritime Research Advisory Committee of the National Academy of Sciences. He also has served on the Minnesota Atomic Development Problems Committee, and on the Minnesota State Board of Education Advisory Committee on the Nature and Problems of Science and Mathematics Education, as well as the Minnesota Nuclear Operations Group.

Dr. Larsen is a member of the American Physical Society, Institute of Radio Engineers, the Atomic Industrial Forum, and the Industrial Research Institute.

Ballistics Research Expert Named Deputy ASA (R&D)

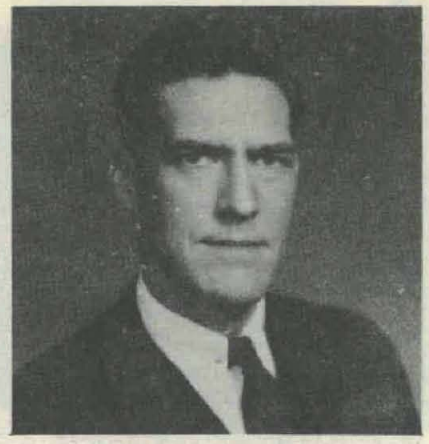
Charles L. Poor, a New Frontier prototype in appearance, decisive energy, education, experience and background, is the new Deputy Assistant Secretary of the Army for Research and Development.

As the successor to Wilbur S. Hinman, Jr., who retired May 31 to end 35 years of exceptionally distinguished service as a Government scientist, Mr. Poor was sworn in June 24. He had served as Assistant to Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen and his predecessor, Richard S. Morse, since December 1960.

Without much possibility of being successfully challenged, one could characterize Mr. Poor, 44, as a dynamic, hard-driving man who has made the right moves at the right time. He is about 6' 3", lean, athletic.

All of his years since graduation from Harvard College in 1941 with an A.B. degree in aeronautical engineering have been in research and development activities, even during 1942-46 while serving as a Navy officer.

From 1946 to 1958 he was employed at the U.S. Army Ballistic Research Laboratories at Aberdeen Proving Ground, Md. After three years duty as Chief of the Supersonic Wind Tunnels Laboratory, he was appointed Chief of the Exterior Ballistic Laboratory and in 1958 became Chief of the Future Weapons Systems Agency at BRL.



Charles L. Poor

For 10 years (1948-1958), he was a member of the National Advisory Committee for Aeronautics (NACA) Subcommittee on High Speed Aerodynamics. His experience includes service on the Guided Missiles Aerodynamics and Structures Panel of the Munitions Board and, later, on the Research and Development Board.

Additional background for his new duties includes service as a consultant to the Sandia Laboratory of the Atomic Energy Commission, membership on U.S. delegations to Tripartite Conferences in the United States, Canada and the United Kingdom, and assignment as Chief of the Bureau of Aeronautics-Taylor Model Basin Project in Germany in 1945-46. He was a member of the U.S. Naval Technical Mission in Europe in 1945.

Born in New York City on May 21, 1919, he was graduated from St. George's School, Newport, Rhode Island in 1936. Mrs. Poor is the former C. Sidney Lockwood of Topsfield, Mass. They have four children: C. Lane, Jr., David D. S., Alfred E., II, and Robert Dunbar.

Professional society affiliations of Mr. Poor include: Associate Fellow, American Institute of Aeronautics and Astronautics; American Physical Society; American Ordnance Association; Association of the U.S. Army. Yachting is his hobby. Commodore of the Chesapeake Sailing Club, his *Gallivant* has entered the Bermuda races twice in recent years.

Hinman Accepts Consultant Assignment to ASAP, Keeps Mum on Other Work

"Gotta lotta loafin' to do!" might explain reluctance of one of the Nation's most honored scientists, 57-year-old Wilbur S. Hinman, Jr., recently retired, to disclose future plans except to serve the Army Scientific Advisory Panel.

The man who ended 35 years of exceptionally distinguished Government service as a career scientist by resigning in May as Deputy Assistant Secretary of the Army (R&D) recently accepted appointment as a consultant to the ASAP.

In making available to the ASAP his broad range of scientific knowledge, Mr. Hinman will serve in the same capacity as two of his former bosses, both former Army Chiefs of Research and Development, Lt Gens Arthur G. Trudeau and James C. Gavin (USA, Ret.), who accepted ASAP consultant posts in June.

Friends who know Mr. Hinman as a vigorously active man are not satisfied that he intends to remain permanently on the retired list at a time when research and development of military weapons systems makes his services much in demand. But, for the time being at least, he is "just loafin'" while he keeps close watch on a new home being built for him near Quantico, Va., on the Potomac.

As the Newsmagazine went to press, nominations for appointment of delegates of U.S. Army Material Command advisory groups as members to the Army Scientific Advisory Panel were awaiting top level confirmation. The only other newsworthy development subsequent to the reorganization of the ASAP reported in the June-July issue was the appointment of members to six ad hoc study groups.

The In-house Laboratories Group is chaired by Dr. Hector R. Skifter, with Lt Col Raymond S. Isenson as military staff assistant. Other members are Dr. Henrik W. Bode, Martin Goland, Dr. William H. Martin, Maj Gen Leslie E. Simon (USA, Ret.) and Dr. Ernest H. Volwiler.

Dr. William C. Tinus heads the Forward Area Air Defense Weapons Group and his staff assistant is Lt Col P. A. Kelley. Other members are Willis M. Hawkins, Dr. Andrew Longacre, Dr. Edward C. Stevenson, and Dr. Herbert G. Weiss.

The Scientific Personnel Ad Hoc Group has Dr. John E. Vance as chairman, Lt Col O. H. Steed as staff assistant, and as members Donald G. Fink, Dr. Frank C. McGrew, Dr. Roger W. Russell, Dr. Ernest H. Volwiler, Dr. Robert C. White, Charles H. Zimmerman and Dr. William Shockley.

The Tactical Communications Ad Hoc Group consists of Donald G. Fink as chairman, Lt Col W. L. Holcomb as staff assistant, and Dr. William L. Everitt, Dr. Andrew Longacre, Dr. Joseph M. Pettit, Dr. Hector R. Skifter, Dr. Herbert Trotter, Jr., and Paul V. Dimock.

Richard S. Morse, who resigned in June 1961 as Assistant Secretary of the Army (R&D), is chairman of the Antitank Weapons Group, with Lt Col H. Dallinga as staff assistant. Members are Dr. Robert E. Eichelberg, Dr. Harry C. Gato, Dr. Paul A. Libby, Prof. Matthew Sands, Martin Schilling, Dr. Richard E. Slattery, David E. Sundstein and F. W. Wolcott.

Chairman of the Army Aircraft Research and Development Group is Charles H. Zimmerman and his staff assistant is Lt Col E. K. Ball. Members are Dr. C. S. Draper, Dr. Clifford C. Furnas, Lt Gen James M. Gavin (USA, Ret.), Willis M. Hawkins and Eugene L. Vidal.

Unclassified findings and recommendations of the Ad Hoc Groups will be reported in future issues of the Newsmagazine when released.

Army Research Office Initiates State-of-Ground Tropical Research Contract

A contract for state-of-the-ground research in humid tropical areas has been negotiated at the instigation of the U.S. Army Research Office.

The U.S. Army Materiel Command requested the Waterways Experiment Station (WES) at Vicksburg, Miss., to undertake the studies.

The observations pointed out that although the Army lives, sleeps, moves and fights on the ground, little research has been directed toward the feasibility of developing a system for the observation, analysis and prediction of the state of the ground.

Wilson, Nuttall, Raimond Engineers, Inc., (WNRE) of Chestertown, Md., has contracted for the studies, directed toward a system of forecasting and exploiting the state-of-the-ground conditions to the fullest. Methodology patterned after techniques employed by meteorologists and climatologists is an objective.

Daily state-of-the-ground synoptic maps and historical statistical summaries, it is envisioned, can be used to serve military and commercial interests in the same way daily weather maps and other climatological data are employed to advantage.

As a first step in the feasibility studies, representatives of WNRE and WES met recently with Dr. Alpert and Marvin Gast, environmental scientist in the Panama office.

Environmental researchers examine state of ground in Panama Canal Zone jungle area. Left to right are S. J. Knight, Chief of the Army Mobility Research Center, WES; W. C. Grenke, soils engineer, WNRE; Dr. Leo Alpert, chief scientist, U.S. Army Research and Development Office, Panama; Marvin Gast, environmental scientist, U.S. Army R&D Office, Panama.

Establishment of an experimental state-of-the-ground observational network in the Canal Zone, supervised by the Panama R&D Office, was suggested by Dr. Alpert and Mr. Gast. They pointed out that the Canal Zone offers in a small area a good cross-section of tropical environment.

Extension of the feasibility investigation to temperate and arctic areas was discussed, but no definite plans were announced.

McNamara Reports Shifts in Top Personnel of DSA

The policy of rotating key assignments in the Defense Supply Agency among the Military Services accounts for several command and staff changes announced July 8 by the Director, Lt Gen A. T. McNamara, U.S. Army.

Brig Gen Bryan C. T. Fenton, a career Army Medical Service officer, on July 3 became commander of the Defense Medical Supply Center, Brooklyn, N.Y.

Brig Gen Robert H. Herman, USAF, took over Aug. 1 as commander of the Defense Construction Supply Center, Columbus, Ohio.

Rear Adm Robert Northwood, SC, USN, became commander of the Defense Electronics Supply Center, Dayton, Ohio, Aug. 1, succeeding Brig Gen William W. Veal, USAF, now assigned as Auditor General, U.S. Air Force.

Col Roger C. Kettleman, USAF, Director of Materiel Management at the Electronics Supply Center was promoted to deputy commander.

Brig Gen Frank White, USA, is newly assigned as Deputy Assistant Director of Plans, Programs and Systems in the DSA Headquarters at Cameron Station, Alexandria, Va. He has been Deputy Executive Director of Procurement and Production.

Brig Gen Paul R. Tyler, USMC, has been named Inspector General of the Defense Supply Agency, replacing Capt Herman R. Fahlsbusch, SC, USN, who moved to the Defense Construction Supply Center as Deputy Commander. General Tyler had been Deputy Executive Director of Supply Operations in the DSA Hq.

RAC Brochure Tells Its Story

The Research Analysis Corp. an organization that is contracted to handle the bulk of the Army operations research program, has published a brochure, "Scientific Problem Solving," aimed at acquainting the professional community with RAC capabilities and career opportunities.

The brochure, with a forward by Secretary of the Army Cyrus R. Vance, can be obtained by writing to Research Analysis Corp., 6935 Arlington Road, Bethesda 14, Md.

Army Scientist to Address Geodesy, Geophysics Group

"Nuclear Explosion Rarefaction Clouds" will be discussed by an Army scientist at the XIII General Assembly, International Union of Geodesy and Geophysics, Aug. 19-31, in Berkeley, Calif.

Dr. Leo Alpert, Chief of the Research Division, U.S. Army Research and Development Office, Panama, will report on a study covering 15 experiments conducted in the Pacific Proving Grounds as far back as 1946. In the tropical Pacific atmosphere, his paper notes, transitory condensation clouds are formed at levels up to more than 60,000 feet as a result of adiabatic expansion cooling induced by the negative (rarefaction) pressure phase which develops behind the shock wave in a nuclear explosion.

Dr. Alpert will use photographs and diagrams to illustrate the characteristics of these clouds, including time of formation and dissipation, duration, height, width, thickness, shape, number, layering and spacing.

Dr. Hall Fills Deputy DDRE Space Technology Post

Dr. Albert C. Hall, acclaimed as one of the Nation's top missiles experts, left industry to enter Government service Aug. 1 as Deputy Director of Defense Research and Engineering for Space.

The new position was established as an expansion of the functions of Dr. Lawrence Kavanau, Special Assistant for Space Technology since July 1961. Honored in 1962 with the National Junior Chamber of Commerce Flemming Award as one of the 10 outstanding young men in Government service, Dr. Kavanau resigned effective Aug. 1 to re-enter private industry.

Dr. Hall was employed at the Martin Co., Baltimore, Md., from 1958 until his DDRE appointment, initially in charge of engineering at Denver and recently as vice president and general manager of the Space Systems Division. He directed the building of the launching vehicles for the Gemini space flight program.

Graduated from Texas A&M in 1936 with a degree in electrical engineering, he earned his master's in 1936 and his SC. D. in 1943 from Massachusetts Institute of Technology. He remained at MIT as associate professor of electrical engineering and director of the Dynamic Analysis ad Control Laboratory until he became director of the Research Laboratories Division, Bendix Corp.

Later, as director of engineering in the Denver Division of Martin-Marietta Corp., he was instrumental in design of three versions of the Titan rocket. He worked on the model now standard in the intercontinental missile arsenal and on Titan III, which the Air Force anticipates will be the space workhorse of the future.

Contributing to his reputation was his aggressive exponency of an orbital role for the Dyna-Soar rocket glide plane and expression of his confidence as early as 1959 in Titan III's role in the space program.

DR. KAVANAU had not indicated his future plans except that he will re-enter industry as this publication went to press. From 1956 until he entered Government service as a consultant in 1961, he was associated with the Ford Aeronautics Division which he helped to found.

Assignments with Ford included: manager of engineering research and weapon system operation, manager of planning in research operations, and principal staff scientist for advanced program.

Dr. Albert C. Hall

Following studies which earned him a Ph. D. in mechanical engineering from the University of California in 1954, he served two years with Lockheed Aircraft Corp., Missiles Division. He won a B.S. degree in engineering in 1948 and an M.S. degree in aeronautical engineering in 1949 from the University of Michigan.

Education Program Termed Basic to Army R&D Staffing

More opportunities for advanced education and specialty training for better jobs must be provided to attract and hold good engineers, scientists and technicians, in addition to challenging work and good salaries.

That is the viewpoint Chief of Staff Col Foster L. Furphy of the U.S. Missile Command, Redstone Arsenal, Ala., expressed in a recent address to the Peninsula Post of the American Ordnance Association.

Moreover, he emphasized that the Army and other agencies at Huntsville, Ala., had recognized the advanced educational requirement for a long time, but that the "seller's market" for top quality personnel at present has stimulated industry to offer educational inducements.

The Army played a major role in securing the University of Alabama educational center at Huntsville, he said, and has otherwise endeavored to broaden graduate level study opportunities for key employees.

35-Year-Old Physiologist Cited for Jungle Tests

One of 19 Army Research and Development Achievement Awards for 1963 was presented recently to Dr. Ralph F. Goldman at the Quartermaster Research and Engineering Center, Natick, Mass.

Dr. Goldman, research physiologist at the Army Research Institute for Experimental Medicine, was cited for designing and conducting a special field research project in Panama jungles and bush country to determine energy used by soldiers during simulated combat activities.

Harry Goldman, 6, and his 4-year-old sister Ellen crane their necks to watch Brig Gen Robert E. Blount, Commanding General, Medical Research and Development Command, Wash., D.C., present one of the 1963 Army Research and Development Achievement Awards to their father, Dr. Ralph Goldman, research physiologist for the U.S. Army Research Institute for Environmental Medicine. Mrs. Goldman looks on at the Quartermaster Research and Engineering Center, where the ceremony was held.

The research involved studies of man's natural tolerance to environmental extremes, what produces this natural protection, and how to best clothe and equip a soldier to extend these natural limits.

The 35-year-old scientist performed all the physiological research on the medical aspects of the Army's experimental all-weather (thermalibrium) clothing system. He has also reported on the effects of heat on soldiers wearing special protective clothing and the armored vest.

Dr. Goldman received his B.A. in chemistry from the University of Denver, his M.A. and Ph. D. in physiology from Boston University, and was a post-doctorate research fellow under the auspices of the Atomic Energy Commission and U.S. Public Health Service. He studied evenings and earned an M.S. in mathematics and physics at Northeastern U.

A member of the Biophysics Society, the Institute of Electrical and Electronic Engineers and its Professional Group on Medical Electronics, the Ergonomics Research Society, RESA, Sigma Chi, and a number of professional honorary societies, he has published 12 scientific papers in the open literature in addition to authoring Army technical reports.

Army Chief Psychologist Reports on Human Factors Survey

Communication problems involved in human factors and psychological research in New Guinea are, in the opinion of Army Chief Psychologist Dr. Lynn A. Baker, U.S. Army Research Office, "unique—and that is an understatement!"

Based on a 2-week survey of possibilities of cooperation in human factors research between nations represented on the Tripartite Research Coordination Committee (Great Britain, Australia and the United States), he offered a fascinating account of his findings in Australia and New Guinea.

In the Australian Trust Territory of New Guinea, where a full-scale intensive effort is underway to prepare the country for independence, the difficulty of many basic problems is complicated by, in Dr. Baker's words, "500 or 600 mutually incomprehensible languages, and people living in a stone-age civilization."

Add to that language barrier an almost unbroken record of mutual distrust and warlike tendencies among the tribes, compounded by occasional strife within even smaller elements. Consider that you literally can count the good roads on the fingers of one hand. Weigh the fact that travel through rugged mountains and jungles is by foot or by reliance on a few small aircraft controlled and piloted by Roman Catholic, Seventh Day Adventist, or Protestant missionaries. (No landing fields, only strips, and no lights for night landings!) Then ponder the virtual non-existence of a money economy.

Reflect upon those factors, and the magnitude of preparing the Papua-New Guinea peoples for independence becomes more comprehensible. Still, in Dr. Baker's opinion, commendable progress is being made under "extremely capable leadership of Australian Army and civil leaders."

Sir Douglas Cleland has been Administrator of the Trust Territory of New Guinea since World War II. To prepare the Papuans for independence, the Royal Australian Army has established a Pacific Island Regiment composed entirely of people who have no common language, had seldom if ever worn shoes, seldom if ever used money, or had any education except in military training.

Youths selected for the Corps are 14 to 18 years of age—"by guess or by gosh," since they have no birth records, cannot tell how old they believe they are since they may have no common concept of years, and may be deceptive in physical size and appearance since many are pygmies.

The selectees serve a 4-year "hitch" in the Pacific Islands Regiment. The Royal Australian Army Psychologists Corps, with the help of Dr. Alex Sinclair, Melbourne psychiatrist, and members of the Psychology and Anthropology Departments of the Australian National University have devised a "culture free and language free" test: to perform what is done in the United States through the Armed Forces Qualification Test (AFQT) developed by APRO.

The problem of surmounting the language barrier is solved by the expediency of teaching the troops to speak, read and write pidgin English and (later) English. Thus the troops become what is known in pidgin as "wan tak" (one talk): bound by common ties of loyalty and friendship.

Selectees for the PIR are taught many things that merit them great respect and admiration among tribesmen with whom they are brought into contact, and especially when they return to their original tribes. However, the same may be said for those who return from prison terms with knowledge of how to make brick, give livestock the benefit of animal husbandry training, and perform other tasks requiring special skills.

Considering that all of those in one prison at the time of Dr. Baker's visit, a total of 131 men and one woman, were convicted murderers, their return to society as respected practitioners of a higher culture may seem strange.

Strange, that is, until Dr. Baker tells about the tribal celebration known as a "Sing Sing" which is held biennially and took place during his visit. No less than 25 DC-3 aircraft brought 2,000 Europeans to join the 70,000 tribe members.

Without even a close second, the ranking attraction was the skeletal remains of a venerable old man who had long cherished an ambition to attend the event—but had died all of a year before. Tribesmen had proudly carried his remains over many a weary mile of mountain road, sustained by "kau kau" planted sufficiently in advance to be ripe for food as they advanced.

Completely fascinated by these and other stories about the Papuans—not forgetting a lurid triangular sex-murder mystery which has kept newspapers selling at a great rate since it occurred the night of Dec. 31-Jan. 1, 1962—your reporter almost forgot to ask Dr. Baker what he believes may grow out of his talks with Australian human factors research scientists. He replied:

"Well, for one thing, I will recommend that in concert with Australian scientists, the U.S. Army shall make a thorough study of the development of the Pacific Island Regiment which is now in process of being doubled in strength. Certainly some of the lessons that might be learned about dealing with underdeveloped peoples in remote areas of the world will prove of military value.

"There is, I believe, much to be gained by a closer working relationship with the Australian Army Psychologists Corps and with other Government agencies. For example, the Aeronautical Research Laboratory in the Ministry of Supply at Melbourne has an operations research unit and also a human engineering group. Chief Scientist Dr. George Cawsey is 'seconded' to the Australian Army from the Ministry of Supply.

"The research potential in Australian universities is excellent. Sir Leslie Martin, Chairman of the Defense R&D Policy Committee, is also Chairman of the University Commission. That enables him to determine much of the governmental support of the university research effort, and to guide its orientation to Army requirements.

"The Royal Australian Army Academy at Dunstroon, near Canberra, is comparable to and is, in fact, modeled largely after the U.S. Military Academy at West Point, N.Y. Australia is a new frontier country, with its scientific community composed largely of men trained in the United States.

Perhaps 50-75 percent of Australian faculty members in psychology departments have Ph. D. degrees from Harvard, Princeton, Michigan, Wisconsin, Ohio State and other leading American universities. Nowhere in the United Kingdom nor in Europe is there a closer scientific similarity and bond of relationship with the United States than in Australia."

Dr. Watson Authors Article

Dr. Robert B. Watson, Chief of the Physics and Engineering Branch of the Physical Sciences Division at the Army Research Office, has contributed an article to the September issue of *Ordnance* magazine. It is titled, "Laser—A Bright Star in the Sky."

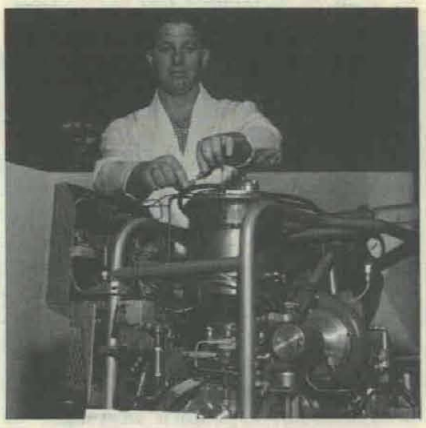
USAERDL Evaluates Engine as Silent Prime Mover

An experimental 6-horsepower Stirling Cycle engine is being evaluated as a silent prime mover by the U.S. Army Mobility Command's Engineer Research and Development Laboratories, Fort Belvoir, Va.

Procured under contract from General Motors Research Laboratories, it is being tested as part of the Army Laboratories' search for the quiet engines needed by the military for use in forward areas where extremely low operating noise level is essential to minimize detection.

An engine such as the experimental unit might be used in generator sets for communications and surveillance.

Mounted in a framework with all necessary accessories, controls and a 3-kilowatt generator load unit, the engine uses a closed cycle identical to that employed by the Rev. Robert Stirling of Scotland when he patented his hot air engine in 1816. Modern design and heat exchanger technology have been applied to produce a highly efficient engine in low power range, using hydrogen as the working fluid.



SILENT ENGINE. This experimental 6 hp. Stirling cycle engine is being evaluated at USAERDL for use as a prime mover for military equipment.

With accessory and generator drives, flywheel, combustion blower, cooling system, hydrogen system and fuel system, the engine has a dry weight of approximately 145 pounds. Fuel consumption at rated load (3 kw.) is about 0.6 lbs/bhp-hr.

Another closed-cycle engine being investigated by USAERDL because of its silent-operation potential is a Rankine Cycle power unit utilizing mercury as a working fluid. An experimental model is being developed under contract with the TAPCO division, Thompson-Ramo Woolridge, Inc.

This unit (SCAP) will consist of a mercury preheater, a liquid fuel burner, boiler, turbine, condenser, subcooler and pump. The turbine, a 3 kw. loading alternator and pump will be mounted on a single shaft and housed in a hermetically sealed unit.

The 6-horsepower turbine is designed to operate at 24,000 r.p.m. Development is presently in the component fabrication and test phase. Delivery of the first experimental unit for evaluation is scheduled in December 1963.

In-House Scientists Given Chance to Report Research At 1964 Science Conference

Instructions to Army in-house scientists and engineers interested in preparing papers on their research for presentation at the 1964 biennial Army Science Conference were about ready for distribution at press time.

Five hundred or more researchers are expected to submit narrative summaries of their projects in accordance with the instructions, which will set an October deadline. The ASC will be held late in June at the United States Military Academy, where each of the three previous sessions have convened.

As in previous years, attendance at the ASC will be limited to 500 invited guests and participants. Quotas will be established for each of the Army research and development agencies and for other Government agencies.

Response to the call for narrative summaries in the past supports the belief that 500 or more in-house scientists and engineers will submit proposals. Senior Army scientists will evaluate the summaries and select 96 authors who will be instructed to prepare papers for presentation.

Subject material of proposed papers may be classified through SECRET but cannot contain any restricted or formerly restricted data. Only papers reporting on original work performed in Army research and development installations will be considered by judges.

Many authors of papers selected for presentation at the ASC will receive certificates of achievement and all will have their work published in the Conference proceedings, which are widely disseminated.

Cash honorariums also will reward a substantial number of the authors. In 1962 five awards of $500 each and four of $300 each were made, and most of them involved three to five authors engaged in a team effort.

Attention of many high ranking scientific leaders in the Department of Defense and other Government agencies also will be focused on those who present papers at the ASC. In 1962 participants included representatives of all Defense agencies, the National Bureau of Standards, National Academy of Sciences, National Science Foundation, U.S. Atomic Energy Commission, National Aeronautics and Space Administration and defense agencies in the United Kingdom and Canada.

Objectives of the ASC include:

- To provide an opportunity for Army scientists to present papers on results of their work, either classified or unclassified, for critical comment and discussion before an audience of senior scientists.
- To stimulate an appreciation of the scope and depth of the scientific effort of Department of the Army.
- To enable Army scientists to have presentations on their work published as Army documents disseminated as widely as possible consistent with security restrictions.

CRREL Expert Aids India On Winter Road Problems

L. David Minsk, a technologist with the U.S. Army Cold Regions Research and Engineering Laboratory (USACRREL), Hanover, N.H., returned recently from a 6-week special assignment in India.

Under the U.S. Technical Assistance Program, his purpose was to aid the Indian armed forces in their mountain-road snow removal and winter maintenance problems, at the request of the Indian Government. He recommended equipment and techniques to keep open a vital 280-mile road from Srinagar, capital of the state of Jammu and Kashmir, to Leh, capital of Ladakh.

One of the critical areas of the Ladakh road he visited was a 20-mile stretch across Zoji Pass at 11,300-foot elevation. The road there is blocked for up to five months a year by heavy snowfall and avalanches.

Another area he visited was Changla Pass, a 5-mile-long stretch at 18,-300-foot elevation only 50 miles from the Tibetian border where much of the Indian-Red Chinese fighting took place last October.

Engaged in snow and ice removal research at USACRREL for four years, he investigates techniques for removing snow and ice from roads, runways, and structures such as radar antennas by mechanical, thermal and chemical means.

Army Adds Powerful New Link to Defense Communications

Global communications capabilities of the Department of Defense will be enhanced this summer by use of an Army-developed high-powered single sideband air transportable radio terminal with a range of 5,000 nautical miles.

Designated the AN/TSC-38, the powerful new link in the DoD communications system was developed jointly by the U.S. Army Strategic Communications Command, Arlington, Va., a field agency of the Office of the Chief Signal Officer, and the Collins Radio Co., Dallas, Tex.

The system is a compact communications central which can be transported quickly throughout the world by air or moved overland by road or rail. The single sideband method of transmission has proved ideally suited for long-range, multi-channel communications. It permits simultaneous use of multiple information channels and provides increased power over conventional methods.

Other advantages include high accuracy automatic tuning, synthesized frequency control of transmitters and receivers, and spaced quick-erect antennas for continuous high quality reliable signal reception and transmission capability.

Transistorized modular electronic components and new packaging techniques have cut weight of the AN/TSC-38 to approximately 19,000 pounds. Comparable ground-transportable equipment weighs about 105,000 pounds. Consisting of two transportable units, it can be transported by a single C-130B aircraft.

A shelter houses equipment offering voice and/or data communications on two independent radio terminals, a communication center, cryptographic center and a limited message center capability, and a combination heat and air conditioning system.

The Central will provide immediate communications to the STARCOM System by a secondary radio system powered by integral storage batteries. Primary power will normally be supplied to the Central by 45 to 60 kw. gas turbine generators on the auxiliary trailer.

Complete installing of the Central to support a task force area, including erection of the antenna system by a crew of three technicians, will take less than six manhours, depending on terrain conditions.

Intensive tests of the AN/TSC-38 were conducted during April at Fort Bragg, N.C., by the Strategic Communications Command and at McDill AFB, Fla., by STRIKE Command.

HumRRO Assigns Dr. Rupe As Adviser to Director

Responsibility for technical aid in implementing recommendations of Task UPSTREAM III, a high priority study conducted by the Human Resources Research Office of George Washington University, is assigned to Dr. Jesse C. Rupe who served as task leader.

Formerly executive officer of the U.S. Army Air Defense Human Research Unit at Fort Bliss, Tex., he has been transferred to the central HumRRO office in Alexandria, Va., as adviser to the HumRRO director.

As task leader, he was concerned with research directed toward reducing lead time (the time between concept of a new weapon and its production for delivery to troops) and with development of selection and training procedures for soldiers to use and repair new weapons.

In the new assignment his primary concern will be follow-up actions on Task UPSTREAM III, but he also will be available as a consultant in extending HumRRO's quick-response capability to other areas of Army interest. HumRRO operates as an Army contract agency.

A native of Bethany, Mo., he received his B.A. degree from Doane College, and his M.S. and Ph. D. degrees from Purdue University. Prior to joining HumRRO in 1959, he had served from 1950 to 1957 as a research psychologist for the USAF Personnel and Training Research Center, and from 1957 to 1959 with Lockheed Aircraft's Missile and Space Division.

At the U.S. Army Air Defense Human Research Unit, he had held positions as task leader on Tasks UPSTREAM and SAMOFF.

USAEPG Tests AN/TRN-9 Portable Radio Beacon

Portable Radio Beacon AN/TRN-9, designed to assist Army aviators as an air check-point in remote areas, is being tested at the U.S. Army Electronics Proving Ground (USAEPG), Fort Huachuca, Ariz.

The lightweight ground transmitter operates on a single crystal-controlled frequency of 75 megacycles emitting 5 watts of power in the modulated continuous wave (MCW) mode.

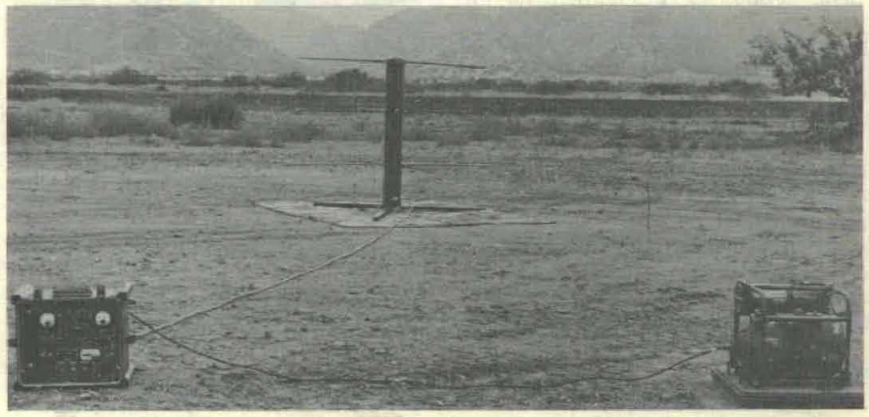
It radiates vertically either a fan-shaped or cone-shaped pattern designed to furnish a usable signal at a maximum altitude of 12,000 feet above the beacon.

Radiated energy will activate an airborne sensor light when the aircraft is within approximately two miles of the antenna, the exact distance depending upon the altitude of the aircraft. In addition to the visual signal in the aircraft, the beacon can transmit a 2-letter identifying signal.

A remote control feature of the test item permits monitoring and switching the transmitter ON or OFF from a distance of about five miles.

The equipment will operate from power sources of 115/230 volts, 50/60-cycle single-phase generators of the Army family of general purpose generators. It can also be powered by a jeep-driven inverter.

Upon completion of the engineering tests at USAEPG, the equipment will be sent to the U.S. Army Aviation Board at Fort Rucker, Ala. Service tests there will determine whether the equipment is suitable for incorporation into the Army inventory.



Radio Beacon AN/TRN-9 under engineering tests at USAEPG, Ft. Huachuca.

DLI Consolidates Armed Forces Language Programs

Language training programs of the Armed Forces combined under the direction of the newly organized Defense Language Institute (DLI), Washington, D.C., became operational July 1.

Under the supervision of the U.S. Army, DLI was established by DoD Directive 5160.41 to standardize, streamline, and consolidate testing materials, selection methods, teaching methodology, and other pedagogical elements once handled separately by the military services.

Named to direct the Defense Language Institute is Col James L. Collins, Jr., a linguist and a former commandant of the Army's Language School at Monterey, Calif.

The Institute is responsible for the language school at Monterey, now called the West Coast Branch, DLI; the Naval Language School, Washington, D.C., now the East Coast Branch; and the English training facilities at Lackland AFB, Tex.

At Lackland, almost 2,000 foreign military personnel, sponsored annually by the military departments, receive advanced English language training to equip them for further specialized training in the U.S.

The DLI expects approximately 100,000 language students to graduate during the next year, many working off-duty hours on self-study programs. Others are assigned to civilian universities or study at commercial schools under contractual agreements with the DLI.

Over 50 different languages will be taught on a full-time basis to over 6,000 military students this year. Twenty-nine foreign languages are offered at the West Coast Branch alone, ranging from Arabic to Swahili. Courses vary in length from 12 to 75 weeks according to the skill level to be achieved and to the inherent difficulty of the language. The faculty at Monterey, all natives of the country whose language they teach, numbers almost 500.

The East Coast Branch in Washington, D.C., concentrates on teaching 10 foreign languages and has a student body of approximately 250. More than 1,500 students will be sent to the contract schools at Indiana, Yale and Syracuse universities.

The establishment of the Defense Language Institute stems from the realization that the modern man or woman in uniform today must be equipped with many skills. A second language is considered essential if the Armed Forces throughout the world are to communicate effectively with those with whom they work, live and share responsibilities.

Deputy DDRE Cited for Distinguished Service

Assistant Secretary of Defense John H. Rubel, Deputy Director of Defense Research and Engineering, recently received the Department of Defense Distinguished Public Service Medal.

Secretary of Defense Robert S. McNamara cited Mr. Rubel for outstanding services since April of 1959 in awarding him the bronze medal in the presence of Department of Defense officials, senior officers of the Director of Defense Research and Engineering, and research and engineering chiefs of the Military Departments.

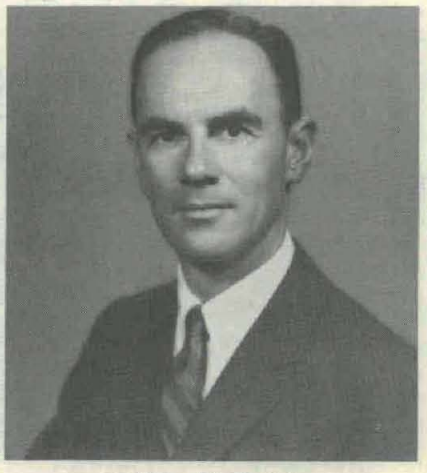
A native of Chicago, Ill., Mr. Rubel received a B.S. degree in electrical engineering with honor from the California Institute of Technology in 1942. Following graduation, he was with the General Electric Co. for 3½ years in the Research Laboratories, worked briefly with Lockheed Aircraft Co., and then joined Hughes Aircraft Co. in 1946.

While with Hughes, he contributed to the development of one of the earliest successful automatic celestial navigation systems and also was associated with development of the Falcon family of missiles. Later he became Director of Hughes' Airborne Systems Laboratories.

With the DoD, his responsibilities have included research, engineering and engineering management aspects of long-range strategic strike forces currently in being, under development or contemplated for future development. He also has been concerned with related matters including operations analysis relating to the design of strategic weapons systems.

Current responsibilites encompass the entire field of military systems. He served as Acting Director of Defense Research and Engineering for several months in the fall of 1960.

For his service as Deputy Director of Defense Research and Engineering and Acting Director of Defense Research and Engineering, he received the Secretary of Defense Meritorious Civilian Service Award in 1961.



John H. Rubel

Plan Seeks College Aid To Build Research Base

Another in a series of continuing moves by the Army Chief of Research and Development to broaden the base of communication and integrated effort with the outside scientific community is being initiated.

About 50 key scientists of the Nation's leading educational institutions are being invited to serve as a "Corps of Confidants" in keeping the Army currently advised as to their R&D activities, prospective future research projects, and possibilities for joint effort in exploring new science areas.

As this publication went to press less than a half dozen major universities had been extended written invitations to participate in the plan.

Lt Col Raymond S. Isenson, Chief of the Advanced Technology Group, U.S. Army Research Office, stated that during coming months the effort to "recruit new volunteers" will be continued by letters and by visits of members of his staff to the educational institutions considered to have the most active research programs.

"As is generally recognized," he explained, "the Army's research interests are characterized by almost unlimited depth and variety. While all research interests are directed primarily toward meeting Army immediate, medium and long range objectives, virtually every major discipline and from 75 to 100 subfields offer possibilities of serving Army requirements.

"In all Army research planning for activities, in Europe, Latin America and the Far East as well as in virtually every part of the United States, we recognize that broadening the base of working relationships with the industrial and general scientific community will serve to produce new knowledge and techniques needed for military supremacy."

Findings Drawn for Eighth ABC Operations Research Parley

Australian participation for the first time as a new member enhanced the Eighth ABC Discussions on Operations Research, June 17-28, at the Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, D.C.

Principal findings of the technical sessions included:

"Army operational research has become and must be recognized as an essential element in the planning of new Army weapon systems and in the organization, training and operation of land forces of the future."

Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen gave the address of welcome, supplemented by remarks of Maj Gen Tom R. Stoughton as Deputy Commandant of the Industrial College and Maj Gen George W. Power, Deputy Chief acting on behalf of Chief of Research and Development Lt Gen D. E. Beach.

Assistant Secretary of Defense (Comptroller) Charles J. Hitch, in the keynote address, stressed the mounting importance of operations research. He termed it still in the "embryonic stage . . . somewhat comparable to medicine in the latter part of the 19th Century—just beginning to do more good than harm."

Three main topics were: Land/Air Combat between Major Forces Post 1966; Limited War (including counterinsurgency in Southwest Asia); and Allocation of Resources. Other areas of discussion included Field Studies, War Gaming, and Operations Research in Toxicological Warfare.

Summaries of the state-of-the-art in OR techniques in the ABC countries (America, Britain and Canada) included a critical appraisal of current trends and capabilities for serving their armies after about 15 years of tripartite meetings and joint efforts to meet individual and collective requirements.

Dr. E. R. R. Holmberg, Director of Operational Science and Research, The War Office, United Kingdom, was unable to attend and his scheduled presentation was read by D. J. Bishop, Superintendent of the Royal Armament Research and Development establishment. Other summaries were given by Henry H. Watson, Director of the Canadian Operational Research Establishment, and Dr. Lynn Rymbaugh, representing the U.S., Director of Combat Developments for the Research Analysis Corp.

Director of Army Research Maj Gen C. W. Clark presided over the opening ceremonies and his Deputy and Scientific Director of the U.S. Army Research Office, Dr. Richard W. Weiss, served as permanent chairman. Dr. Ormond M. Salandt, former chairman of the Canadian Defense Research Board, introduced several of the leading speakers.

Additional findings of the group in summary reports included:

- To keep pace with the evolution of theories, analytical techniques, etc., the most important and immediate task for Army operational research is to maintain contact with the realities of field operations and to collect dependable data relating to current and future Army systems, not forgetting the human element.
- Operational research on land/air warfare should pay particular attention to objective assessment of the overall effectiveness of military forces.
- Operational research studies of single weapon or equipment systems should be made in a context which includes interactions with other systems, including those of the enemy.
- Further attention should be given to closer integration of field experiments, war gaming and analytical studies.
- There is an urgent need to develop operational research techniques to assist Army staffs to follow optimum courses in reconciling competing requirements in the allocation of resources. This demands, in particular, the development of methods of estimating cost/effectiveness ratios for Army organizations.
- Army operational research organizations must provide both for short term applied studies which contribute directly to the solutions of immediate problems and for fundamental research which stimulates the creative thinking of the scientist and provides the new ideas needed to solve the problems of the future.

Col Trigg Named Deputy Commander at Monmouth Lab

Col Thomas K. Trigg is the new deputy commander of the U.S. Army Electronics Research and Development Laboratory, Fort Monmouth, N.J. Col John R. Nickel assumed Col Trigg's former post as Director of the Laboratory's Surveillance Department on July 8.

Col Trigg joined the Coast Artillery after receiving his B.S. degree in electrical engineering from Mississippi State College in 1937.

In 1950 he transferred to the Signal Corps and has held such posts as Deputy Signal Officer of the U.S. Seventh Army in Germany, Deputy Signal Officer of the U.S. Eighth Army in Korea, and Signal Officer of the First Corps Group in Korea.

He has taken advanced scientific courses at Harvard University and the Massachusetts Institute of Technology, and attended the Industrial College of the Armed Forces and the Army General Staff College.

Until he began his new assignment Col Nickel was commanding the U.S. Army Liaison Group and was also contracting officer's technical representative for Project Michigan.

A graduate from the U.S. Military Academy in 1943, he received his masters degree from the University of Illinois in 1947, and attended the Command and General Staff College.

His previous assignments were as Chief of the Joint Communications Advisory Division, Hq., MAAG, Taiwan; and in the Combat Developments Department of the Command and General Staff College.

Col Thomas K. Trigg

Picatinny Officer Steps Up

Maj Chaphin R. Sammons, Adjutant of Picatinny Arsenal for 15 months, recently was named Director of the Staff Division and Executive Officer.

His military career began on July 12, 1945, as an enlisted man in the U.S. Naval Reserve. Later he joined the National Guard and during the Korean Conflict was called to active duty as a sergeant with the 131st Tank Battalion. He received a direct appointment as a second lieutenant in 1951. A native of Alabama, he holds a B.S. degree from Auburn U.

Army Student Cooperative Program Aids Engineer

Educational ambitions of James W. Hooie, 23, an engineer employed by the U.S. Army Missile Command, received a $10,000 stimulous recently in the form of a 3-year scholarship under the Army student cooperative program.

Assigned to the Ground Support Equipment (GSE) Laboratory, Research and Development Directorate at Redstone Arsenal, Ala., Hooie has been "gaining an education at Army expense."

Recently he was graduated from Auburn University with a B.S. degree in mechanical engineering under the program that has enabled him to continue graduate studies at Auburn. Hooie maintained more than a 2.5 average during the last seven quarters at Auburn and graduated third in his class.

The $10,000 scholarship, however, is sponsored by the National Aeronautical and Space Administration.

Hooie spent about five years studying toward his bachelors degree, working seven quarters in the GSE Laboratory and 12 quarters in school. Laboratory work paid off for Hooie not only in solid practical experience, but also in better job offers, which averaged $40 to $50 per month higher than for graduates without co-op program experience.

James W. Hooie

Much of his time at the GSE Laboratory has been spent analyzing flight and static firing data on the Little John missile system. At home his time is spent with wife Frances and a 3-year-old son James Philip.

Hooie's scholarship is based on a $2,400 per year grant, plus $400 per year for each dependent. The amount is increased $200 per year during the final two years.

Army Extends Research On ADP Control System

Award of a $23,553,667 contract has extended for five years the research and development of the U.S. Army Command Control Information System 1970.

Known by the acronym CCIS-70, the project's first 5-year phase was completed recently at the U.S. Army Electronic Proving Ground at Fort Huachuca, Ariz., by Thompson Ramo Wooldridge, Inc., TRW Computer Division. This firm won the extension contract in a field of 137 bidders.

Further work will be done by the TRW subcontractor, United Research Services, Inc., under the immediate monitorship of the Automatic Data Processing Department at Fort Huachuca. Project manager of the CCIS-70 program is Lt Col Anderson Q. Smith of the U.S. Army Materiel Command.

Evaluation of results of extensive feasibility tests in the first 5-year phase has established conclusively, Army officials said, that techniques of automatic data processing can be applied to improve combat effectiveness.

Three of the tests involved artillery firing and were identified as WHITE PLANs I, II and III. Study of findings by the U.S. Army Artillery and Missile School showed that ADP methods assure a 90 percent chance of hitting a target such as a bridge with two rounds of ammunition. An average of 25 rounds are needed to achieve the same effect using the manual system of gauging fire.

Other tests demonstrated the value of automating certain field army functions, such as intelligence and logistics supply and stock control. To date, the Army has progressed into a detailed system development plan in which applications, analysis, machine programming, and equipment development are being brought together to make CCIS-70 meet command needs for a modern field army.

Huachuca Adds to Family Of FIELDATA Computers

The INFORMER has been added to the family of mobile FIELDATA computers at the U.S. Army Electronics Proving Ground, Fort Huachuca, Ariz.

This medium-size digital data processor joins two other transportable computers, the MOBIDIC and BASICPAC. All are being used in the design and analysis of tactical Automatic Data Processing (ADP) systems by the ADP Department of the U.S. Army Electronics R&D Activity to support Army Project CCIS-70 (Command Control Information System, 1970).

A completely modular, solid-state, computer system, the INFORMER was developed for the Army by the IBM Corp.

Its logical circuitry, said Lt Col A. Q. Smith, CCIS-70 project manager, "makes possible the rapid retrieval of vast amounts of stored information, enhancing the CCIS-70 concept of providing the field commander with the means of obtaining accurate, comprehensive information instantaneously."

Mounted in a shelter which can be transported on an Army 2½-ton vehicle, the system is equipped with a disc file, which permits rapid access to 20 million FIELDATA characters, the equivalent of more than three million words.

Research Analysis Corp. Adds 2 Staff Operations Analysts

Robert E. Carter and Russell H. Putnam recently joined the Research Analysis Corp. (RAC), an Army-supported nonprofit research firm, as operations analysts.

Assigned to the Support Systems Division, Carter is backed by 11 years experience with the Aircraft and Missiles Division of Fairchild Stratos, and directed the human factors program on the U.S. Army Signal Corps surveillance drone program (AN/USD-5) from 1958 to 1962.

In World War II he was a Navy pilot, and has since served as a test pilot for cargo planes. He is a graduate and has pursued advanced studies at the University of Tennessee.

Assigned to the Combat Developments Division, Putnam until recently, was a senior aerodynamist with Fairchild Stratos Corp. and had also served the company as project engineer. From 1952 to 1955 he worked on the Army aviation program, first under the Office of the Chief of Ordnance and then under the Office of the Chief of Transportation.

He also has worked at the U.S. Navy Bureau of Aeronautics as a performance engineer and as a wind tunnel operator at the David Taylor Model Basin. He has M.S. and B.S. degrees from Catholic University of America, Washington, D.C.

Army Announces Contracts Totaling More Than $285 Million

Contracts aggregating more than $285 million for research, development and procurement of military materiel and services were announced recently by the Department of the Army. The rush to obligate funds before the end of the fiscal year led to the large total as well as a number of multiple awards.

Ling-Temco-Vought, Inc., Dallas, Tex., received the largest single contract, $79,461,956, for research and development of the Lance surface-to-surface missile.

Eight contracts totaling $35,357,397 were let to Western Electric Co., New York, N.Y. Awards call for design, development and fabrication of multifunction array radar; production of 376 AN/GRC-19 radio sets; engineering services and material for 16 months to conduct a flight test program of a radar mapping surveillance set; guidance sections and modernization kits for the Nike Hercules Missile; additional testing of the Nike Zeus antimissile missile system whose components are related to the development of the Nike X system; and R&D work on the Sprint missile, a major component of the Nike X.

White Motor Co., Lansing, Mich., received a $12,278,464 contract for 4,000 2½-ton trucks. For a research feasibility study for missile penetration aids and continuation of R&D on the Shillelagh missile system, Ford Motor Co., Aeronautics Division, Newport Beach, Calif., received two contracts totaling $11,101,888.

A $10,000,000 contract let to Philco Corp., Philadelphia, Pa., is for electronics equipment. Radio Corp. of America received a $9,143,016 contract for radio sets. Infrared searchlight sets for use on tanks will be produced under an $8,542,950 contract awarded to Varo Manufacturing Co., Garland, Tex.

Three contracts totaling $8,041,744 let to the Hughes Aircraft Co., Fullerton, Calif., call for production of an aircraft radar tracking station; equipment to coordinate fire of missile batteries; and continued R&D on the TOW (tube-launched, optically tracked, wire-guided) missile system.

General Dynamics Corp., Pomona, Calif., received two contracts aggregating $6,482,411 for work on the Redeye program and Mauler weapons system. Trucks and engineering services on the M-60 tank are ordered in three contracts awarded to Chrysler Corp., Detroit, Mich.

Caterpillar Tractor Co., Peoria, Ill., was awarded two contracts totaling $5,735,604 for cargo, fuel tank and wrecker trucks and 264 road graders. Two contracts to Raytheon Co., Bedford, Mass., totaling $5,638,537, are for radar modification kits and continuation of work on a test plan for experimental interceptor and measurement radar for the Advanced Research Projects Agency.

Contracts for ammunition included: Minneapolis Honeywell Regulator Co., Hopkins, Minn., $4,990,638; AVCO Corp., Richmond, Ind., $4,162,620; ACF Industries, St. Louis, Mo., $3,657,331; Day and Zimmerman, Inc., $3,589,216; TEMCO, Inc., $3,026,142; Ingraham Co., Bristol, Conn., $2,062,-216; and Weatherhead Co., Cleveland, Ohio, $1,071,000.

Trucks of various types will be manufactured by the International Harvester Co., Washington, D.C., under two contracts aggregating $4,669,665. Sperry Rand Corp., Salt Lake City, Utah, will produce Sergeant missile repair parts and metal components for artillery shells under two contracts totaling $4,642,008.

Production of 232 M-113 armored personnel carriers is ordered in a $4,361,600 contract let to FMC Corp., San Jose, Calif. Hiller Aircraft, Palo Alto, Calif., received a $4,317,281 contract for 137 OH-23G observation helicopters.

Aerojet-General Corp., Downey, Calif., received a $3,918,839 classified contract. A $3,570,000 contract awarded to Continental Motors Corp., Muskegon, Mich., is for tank engines.

Manufacture of 4,349 ½-ton cargo trailers is ordered in a $3,456,507 contract received by Johnson Furnace Co., Bellevue, Ohio. Two contracts totaling $3,182,000 received by Collins Radio Co., Cedar Rapids, Iowa, are for radio sets and other air-to-ground communications.

International Business Machine Corp., White Plains, N.Y., received a $2,852,675 contract for electronics equipment. A $2,800,000 contract let to Douglas Aircraft Co., Charlotte, N.C., is for Nike Hercules missile components.

Design and manufacture of instrumentation equipment for the Sacramento Test Facility of the National Aeronautics and Space Administration is called for in a $2,482,679 contract awarded to Lear Siegler Co., Anaheim, Calif. Firestone Tire and Rubber Co., Akron, Ohio, received a $2,184,350 contract for rubber shoe assemblies for use on tracked vehicles.

Radio equipment will be produced by Oneida Electronics, Inc., Yorkville, N.Y., under a $2,126,255 contract. For engineering services on the Pershing weapons system, Martin-Marietta Corp., Orlando, Fla., received a $2,082,642 contract.

Aircraft Radio Corp., Boonton, N.J., received a $2,056,542 contract for 2,723 direction finder sets. Modification of a Mobile Digital Computer is called for in a $2,045,000 contract let to Sylvania Electronics System, Needham Heights, Mass.

Additional contracts included: Ampex Corp., Redwood City, Calif., $2,000,000 for electronic equipment; Studebaker Corp., Minneapolis, Minn., $1,900,000 for engine generator sets; Aircraft Armaments, Inc., Cockeysville, Md., $1,815,000 for work on simulators used in training personnel on the Nike Hercules guided missile fire control system; Dorsey Trailers, Inc., Elba, Ala., $1,800,761 for 390 semitrailers; Electric Auto-Lite Co., Toledo, Ohio, $1,500,000 for electronics equipment;

Willys Motors Co., Inc., Toledo, Ohio, $1,367,918 for 581 M38 jeeps; General Motors Corp., Indianapolis, Ind., $1,348,064 for transmissions on the M113 and XM577 tracked vehicles; Lockheed Propulsion Co., Redlands, Calif., $1,300,000 for research and development on solid propellants; Magnavox Corp., Fort Wayne, Ind., $1,299,630 for an automated storage and retrieval system; Farmers Tool and Supply Corp., Denver, Colo., $1,133,240 for shipping and storage containers for the Nike Hercules system; and Hayes International Corp., Birmingham, Ala., $1,077,361 for 13 Pershing missile trainers.

HumRRO Unit Issues Report On Instructing Junior Officers

Dr. T. Owen Jacobs, Infantry Human Resources Unit, Human Resources Research Office (HumRRO), Alexandria, Va., recently published "A Program of Leadership Instruction for Junior Officers" (HumRRO Technical Report 84).

The report is based on findings of a task designed to develop training methods and materials for teaching effective leadership skills to junior officers prior to their first assignment to troop duty.

Dr. Jacobs headed the study group, assisted by Reginald Rahn, John Maciso, Col Henry Kelly (USA, Ret.) and 2nd Lt Charles Moore. Lt Col Lyman Clark served as military chief.

Brig Gen Allen D. Hulse

Col Allan G. Pixton

Col Robert H. Offley, Jr.

Col Roy V. Porter

Retirements, Reassignments Involve Key Personnel in OCRD

Retirement of a general officer and two colonels and normal reassignment of staff officers have effected a number of recent changes of key personnel in the Office of the Chief of Research and Development.

BRIG GEN ALLEN D. HULSE, Director of Developments, retired from active military duty on July 31.

Assigned to OCRD in June 1961 as Chief, Combat Materiel Division, he became Deputy Director of Developments in February 1962 and Director the following August.

Earlier assignments include service as Deputy Assistant Chief of Staff, Intelligence, Hq., USAREUR; and commanding officer, 11th Armored Cavalry Regiment, Hq. USAREUR.

A 1938 graduate of the U.S. Military Academy, he distinguished himself during World War II in the campaigns in Normandy, Northern France, the Rhineland and Central Europe. Among the awards conferred on him during his career were the Silver Star with Oak Leaf Cluster, the Bronze Star Medal with Oak Leaf Cluster, the French Croix de Guerre with Palm and the Purple Heart with Oak Leaf Cluster.

COL ALLAN G. PIXTON, newly appointed Director of Developments, has been with OCRD since 1962 and as Deputy to Brig Gen Hulse.

After graduating with a B.S. degree from the University of Utah in 1939, he entered the Army in 1940 and served with the U.S. Assault Training Center and the 5th Engineer Special Brigade in the European Theater of Operations during World War II. He participated in the Normandy and Northern France campaigns and the assault landing on Omaha Beach.

Following the war he was commanding officer of the 32nd Field Artillery, 1st Infantry Division for two years, and served on the faculty of the Command and General Staff College, Fort Leavenworth, Kans., for three years.

Before joining OCRD, he served three years as the U.S. Army Attache in Singapore, Malaya, and then was graduated from Army War College.

COL ROBERT H. OFFLEY, JR., the new Deputy Director of Developments, joined OCRD after graduating from the National War College, Fort McNair, Washington, D.C.

A 1942 graduate of the U.S. Military Academy, he also holds an M.S. degree in aeronautics and guided missiles from the University of Southern California (1949), and is working toward an M.A. degree in international affairs at George Washington University, Washington, D.C.

During World War II he served with armored units in the Pacific and in 1950 was project officer of the first Cape Canaveral missile launching.

Other recent assignments include commanding officer of the 32nd Missile Command, Fort Bragg, N.C.; and executive officer, STRAC Artillery, at the same installation.

COL ROY V. PORTER, Director of Plans and Programs, retired on June 30 after four years in OCRD. He has accepted a position with the Douglas Aircraft Co., Aircraft Division, Long Beach, Calif.

A 1934 graduate of Coe College, Cedar Rapids, Iowa, he earned an M.B.A. degree in 1962 from George Washington (D.C.) University.

During World War II he commanded an infantry battalion in the 79th Infantry Division, and in Korea he headed the 14th Infantry Regiment, 25th Infantry Division.

Recent staff assignments include duty with General Headquarters, Far East Command; U.S. Army Element, Joint Military Mission for Aid to Turkey; and an earlier 3-year tour

Col Merle L. Carey

Col Edward B. Kitchens

Lt Col Robert J. Hebert

Lt Col William B. Murray

(1952-55) with OCRD.

During his military career, Col Porter was awarded the Silver Star, Bronze Star Medal with four Oak Leaf Clusters, Army Commendation Medal, Distinguished Unit Citation and French Croix de Guerre.

COL MERLE L. CAREY, Chief of the Technical Industrial Liaison Office, retired from active duty July 31 and joined the Washington, D.C., office of the Alex Brown and Sons investment banking firm.

A 1943 graduate of the U.S. Military Academy, he served as a company commander in the 12th Armored Division during World War II. Following the war he served as an instructor in the Tactics Department of the Armor School, Fort Knox, Ky. In the Korean War he commanded a battalion in the 3rd Infantry Division and served in the G-1 Section, Headquarters 8th Army.

Successive assignments include serving on the faculties of the Command and General Staff College and at the U.S. Military Academy. In 1960 he completed a tour in the Operations Division, Headquarters, U.S. Army, Europe, and joined the U.S. Army Research Office as Chief, Plans Branch, Research Planning Division.

COL EDWARD B. KITCHENS is the new Chief of the Long Range Plans Branch, Plans Division. He comes to OCRD following graduation from the National War College and, previously, from the position of Chief, Operations Division, G-3, Hq., XVIII Airborne Corps, STRAC.

Joining the Army following graduation from Louisiana State University, with a B.S. degree in entomology/chemistry, he served as a company commander and battalion S-3 with the 3rd and 1st Ranger Battalion in World War II.

Following the war he was on the faculty of the Infantry School, Fort Benning, Ga. From 1950-52 he was assigned to the 82nd Airborne Division and 187th Airborne Regimental Combat Team as battalion S-3, executive and, later, commanding officer.

Other assignments include duty with Headquarters, U.S. Army Pacific, and a tour as deputy commanding officer of an airborne battle group. His decorations include the Silver Star, the Bronze Star Medal and the Army Commendation Ribbon.

LT COL ROBERT J. HEBERT, Assistant for Reserve Affairs, Office of the Executive, was reassigned to the U.S. Combat Developments Command, Fort Belvoir, Va., Aug. 1.

He joined OCRD in 1959 after tours as battalion executive officer, 370th AIB, Munich, Germany, and battalion commander, 2nd ARB, 58th Infantry, 2nd Armored Division, Fort Hood, Tex.

Lt Col Hebert entered the Army in 1942 upon graduating from Loyola University of the South with a B.S. in education. From 1943 he served with the headquarters staff at Fort Richardson, Alaska.

Successive assignments include: assistant professor of Military Science and Tactics, Galveston, Tex.; company commander and division headquarters commandant, 25th Division, during the Korean War; and Chief of the P&A Branch, ROTC Div., CARROTC, Washington, D.C.

LT COL WILLIAM B. MURRAY is the new Assistant for Reserve Affairs. Previously he served as Chief, Advanced Projects Branch, Combat Developments Div., G-3, ARADCOM.

Other recent assignments include instructor, Nuclear Weapons and Guided Missile Orientation Course, Fort Bliss, Tex.; assistant to the Chief of Staff, 7th Infantry Division, Korea; and plans officer, G-3, ARADCOM.

He holds a B.S. degree in physical education from the University of California at Los Angeles. During his military career he has been awarded the Bronze Star Medal and the Commendation Medal with Oak Leaf Cluster.

LT COL JOHN B. KUSEWITT is assigned to the Support Aircraft-Aerial Delivery Branch, Air Mobility Division. For the past three years he has served with the Office of the Deputy Chief of Staff for Logistics.

From 1958 to 1960 he attended the University of Alabama where he earned his M.B.A. in management.

Previous assignments included service with Headquarters, CONARC; the Army Aviation School; Headquarters, Eighth Army; 3rd Infantry Division and the 82nd Airborne Division.

His military decorations include the Bronze Star Medal, Air Medal with Oak Leaf Cluster and the Commendation Ribbon.

LT COL THURMOND D. BOAZ, Jr., has joined the U.S. Army Research Office as head of the Special Projects Branch, Life Sciences Division. Previously he served with the 9th Hospital Center in Germany.

Receiving a B.S. degree from Louisiana State University in 1934, he then attended the University's School of Medicine until 1939 when he received his M.B. and M.D. degrees. He also holds an M.P.H. degree in public health, earned in 1950 at the Harvard School of Public Health.

Commissioned a 2nd lieutenant in the Reserves in 1934, he transferred to the Medical Corps Reserve upon graduation from medical school. During World War II he was 3rd Battalion Surgeon, 41st Armored Infantry Regiment, 2nd Armored Division in the European Theater.

In Korea for almost two years, (1950-52), he served as Preventive Medicine Officer on Provincial teams of the United Nations Civil Assistance Command. Recent assignments in preventive medicine include tours at the Medical Field Service School,

(Continued on page 20)

Lt Col John B. Kusewitt

Lt Col Thurmond Boaz, Jr.

Lt Col Russell D. McGovern

Lt Col Warren G. Langley

OCRD Retirements, Reassignments Announced

(Continued from page 19)

Fort Sam Houston, Tex., and Walter Reed Army Institute of Research, Washington, D.C.

Between tours of active duty, he spent 10 years with the Louisiana State Department of Health as a regional health officer. When he returned to active duty in 1956 he was Associate Director of Local Health Services.

Lt Col Boaz is a past president of the Louisiana Public Health Association, a charter member of the American College of Preventive Medicine and the American Association of Public Health Physicians.

LT COL RUSSELL D. McGOVERN succeeds Lt Col Langley as Executive in the office of Maj Gen C. W. Clark, Director of Army Research. He has been with OCRD since 1961 when he joined the Personnel and Training Research Branch of the Human Factors Research Division of the U.S. Army Research Office.

A 1945 graduate of the U.S. Military Academy, he holds an M.S. degree in psychology from the University of Miami, Fla.

From 1945 to 1947 he served with the 86th Division and the Philippine Scouts in the Philippines. He returned to the U.S. to serve two years with the 4th Infantry Division at Fort Ord, Calif., before joining the faculty of the Infantry School at Fort Benning, Ga.

During the Korean War, he served with the 2nd Division as a company commander, battalion and regimental S-3, and assistant division G-3. From 1956 to 1959 he was an instructor in military psychology and leadership at the United States Military Academy.

Before assuming his current duties, he served as acting chief of the Human Factors and Operations Research Division, USARO.

LT COL LANGLEY (Warren G.) is newly installed as Chief of the Research Programs Office and is holding down also as Assistant Executive of the U.S. Army Research Office—successor to Lt Col Norman L. Rosen.

Until reassigned he was Executive to the Director of Army Research, a post he had held since July 1962. Assigned to USARO in August 1960, he served in and later became Chief of the Foreign Research Branch.

In the latter capacity he was instrumental in planning establishment of the Defense Research Office under a new Regional Science Office, Latin America, at Rio de Janeiro, Brazil, effective in August 1962.

In 1938 he enlisted in the National Guard, entered active duty in 1940 and served during World War II in the Pacific, taking part with the 24th Division in landings on Mindoro, Mindanao and Luzon.

Discharged in 1945, he attended Washington University until integrated into the Regular Army in 1947, serving subsequently in the Philippines, at Fort Benning, Ga., and in Korea. After completing a course at the Command and General Staff College in 1955-56, he served four years in Europe.

Information Digest Honors Army Transportation Corps

The current issue of *Army Information Digest* pays tribute to the Army Transportation Corps, 1942-63, and contains seven feature articles by high ranking officers in the field.

Maj Gen Rush B. Lincoln, Jr., former Chief of Transportation for the Department of the Army and now commander of Defense Traffic Management, describes modern Army transportation.

"The Hub of the Wheel" is the title of an article by Maj Gen John J. Lane, commanding general of the U.S. Army Transportation Center, Fort Eustis, Va.

Other contributors are Brig Gen Edward W. Sawyer, Chief of Transportation for the Department of the Army; Col Robert B. Harrison, Transportation Corps President of the U.S. Army Transportation Board; Brig Gen David B. Parker, commanding general of the U.S. Army Aviation and Surface Materiel Command; Brig Gen Robert C. Tripp, commanding general of the U.S. Army Transportation Terminal Command, Pacific; and Col N. A. Gage, Jr., commanding officer of the U.S. Army Transportation Research Command.

Naval Guns Assigned to APG Vertical Firing Duty

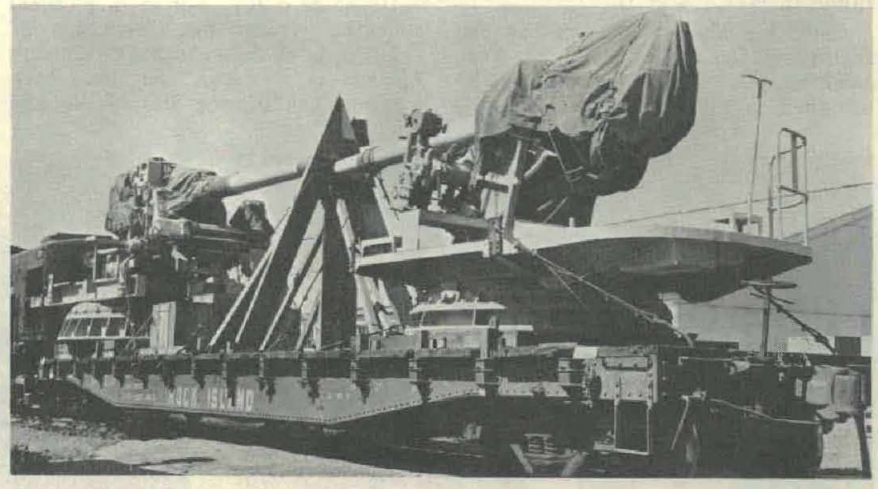
Two veteran 5-inch naval deck guns which have never seen blue water arrived recently at Aberdeen Proving Ground, Md., after a 3,000-mile trip from Dugway Proving Ground, Utah.

The guns were used at Dugway in the Army's testing program for chemical munitions. They will be installed at Aberdeen's Gunpowder Neck for vertical firing (and recovery techniques) to improve design and function of ammunition.

The guns, commonly used as destroyer armaments, one 54-caliber and the other 38-caliber, were quite a load for a railroad flatcar. Each stood almost 16 feet high and together they weiged 73,619 pounds.

Afton Chamberlain, Chief of Commercial Traffic at Dugway, who helped plan the shipment said, "Every inch of the 3,000-mile trip had to be checked for overhead clearance and other dimension factors."

The Navy unit commander at Dugway declared the guns excess after the series of chemical munitions tests, and the Navy ordered them to Aberdeen for further service. They came to Dugway's Great Salt Lake barrens in 1955 from the Naval Ordnance Depot at Pocatello, Idaho.



Two land-locked 5-inch Naval deck guns arrive on flatcar at APG following a month-long 3,000-mile rail trip from Dugway Proving Ground, Utah.

Secretary Vance Announces Reassignments, Retirements of Army Officers

Secretary of the Army Cyrus R. Vance recently announced reassignment and retirement of Army general officers which included:

Maj Gen Frank W. Moorman, Assistant Chief of Staff, Communications and Electronics, SHAPE, Paris, France, is reassigned as Commanding General, U.S. Army Electronics Command, Fort Monmouth, N.J., effective in August. He succeeds Maj Gen Stuart S. Hoff who will retire from active service.

Brig Gen Frederick J. Clarke, Engineer Commissioner, District of Columbia, was reassigned to the Office, Chief of Army Engineers, Washington, D.C., effective in July.

Brig Gen Donald C. Clayman, Assistant Division Commander, 1st Cavalry Division, Korea, was reassigned to Headquarters, Continental Army Command, Fort Monroe, Va., effective in July.

Brig Gen Arthur S. Collins, Assistant Chief of Staff, J-3, STRIKE Command, MacDill Air Force Base, Fla., was assigned to Headquarters, Office of Personnel Operations, Washington, D.C., effective in July. He has been nominated for promotion to major general.

Brig Gen William M. Connor, Office of Personnel Operations, Washington, D.C., is reassigned to Headquarters, U.S. Army, Europe, in August.

Brig Gen Howard K. Eggleston, Chief, U.S. Army Section, MAAG, Vietnam, is reassigned to the Office of the Deputy Chief of Staff for Logistics, Washington, D.C., in August.

Brig Gen Benjamin F. Evans, Jr., Headquarters, Continental Army Command, Fort Monroe, Va., is reassigned to Headquarters, XIII Army Corps, Fort Devens, Mass., effective in August, and nominated for promotion to major general.

Brig Gen Edward W. Sawyer, Assistant Commandant, Transportation School, Fort Eustis, Va., was named Chief of Transportation, U.S. Army, Washington, D.C., effective in June, and nominated for promotion to major general.

Brig Gen James W. Sutherland, Jr., Commanding General, Combat Development Experimental Center, Fort Ord, Calif., is reassigned to the Army Test and Evaluation Command, Aberdeen Proving Ground, Md., effective in August. He has been nominated for promotion to major general.

Nominated for promotion to brigadier general are: Col Randolph C. Dickens, Headquarters, Continental Army Command, Fort Monroe, Va., reassigned to Headquarters, Army Training Center, Fort Gordon, Ga., effective in September;

Col Charles J. Girard, Office of the Assistant Chief of Staff for Force Development, Washington, D.C., reassigned to Headquarters, U.S. Army Combat Development Experimental Center, Fort Ord, Calif., in August.

Col Richard J. Seitz, Office of the Deputy Chief of Staff for Personnel, Washington, D.C., reassigned to Office of Personnel Operations, Washington, D.C., effective in June.

Five general officers retired from active service July 31, namely; Brig Gen William O. Blandford, Military Executive for Education and Manpower Resources, Office of Assistant Secretary of Defense for Manpower;

Brig Gen Benjamin T. Harris, Deputy Commanding General, U.S. Army Training Center (Engineers), Fort Leonard Wood, Mo.;

Brig Gen Melvin D. Losey, Director of Transportation and Installations, Supply and Maintenance Command, Washington, D. C.

Brig Gen William F. Ryan, Commanding General, Army Test and Evaluation Command, Aberdeen Proving Ground, Md.;

Brig Gen Robert C. Tripp, Commanding General Pacific Terminal, U.S. Army Supply and Maintenance Command, Fort Mason, Calif.

Dr. Hans K. Ziegler, Chief Scientist at the U.S. Army Electronics Command, receives Meritorious Civilian Service Award presented by Maj Gen Stuart S. Hoff as Mrs. Ziegler observes. The Army career scientist, a veteran of many pioneering efforts, was recognized for "outstanding contributions to military electronics and leadership" from February 1947 to Mar. 15, 1963.

Picatinny Arsenal Initiates Adhesives Bonding Program

Picatinny Arsenal has initiated a training program for Army design engineers in adhesives bonding for fabricating weapons systems and numerous other structures.

During the last 10 years, structural adhesives have been used effectively in place of rivets, brazing and welding in many aircraft and missile applications at the Dover, N.J., facility.

Picatinny's new program is designed to teach engineers how to use adhesives as a joining method for fabricating reliable components and structures. The training covers four essential areas in structural adhesives bonding. These are proper design of joints, selection of proper adhesives, specific surface treatments and adequate process control.

The disadvantages as well as the advantages of adhesives bonding are explained, so the designer can decide whether they offer any special benefits for his specific application.

The first class of 17 engineers from the Arsenal's Nuclear Engineering Directorate completed the 2½-day intensive course.

Among items shown were two types of Army missile warheads whose components are held together completely by adhesives.

If sufficient interest is shown by other Army installations, arrangement may be made to have their design engineers attend the Picatinny course. Presentations and lab work are being conducted by personnel of the Adhesives Research Unit, Feltman Research Laboratories, under direct supervision of M. J. Bodnar, Chief, Materials Research Section.

Army Munitions Command Reorganizes

Reorganization growing out of reorganization at Headquarters of the U.S. Army Munitions Command, Dover, N.J., has been announced by Maj Gen F. A. Hansen, commanding.

Changes at Picatinny Arsenal, he said, "are the result of an intensive review of our operations for the past year. They are intended to strengthen the entire organization in keeping with the objectives of the Army reorganization instituted a year ago."

The principal feature of the latest realignment, it was explained, involves the establishment of a series of functional organizations to direct Command operations. Objective: Improved control and streamlined procedures for four large commodity centers made up of 37 installations employing more than 48,000 Government and contractor personnel.

Centers are the Ammunition Procurement and Supply Agency at Joliet, Ill., Edgewood (Md.) Arsenal, Frankford Arsenal at Philadelphia, Pa., and Picatinny Arsenal.

Reorganization of Munitions Command Headquarters will entail additional recruitment. General Hansen said, "We anticipate gradual growth because we require people with special professional and technical talent in research, development, procurement, production, supply and maintenance of high-explosive, nuclear and chemical-biological munitions."

Recent statistics show the Munitions Command complex has almost 300 Ph. Ds. as well as 500 employees with master's degrees and 3,500 with bachelor's degrees.

Key executive appointments to head the new segments of the Headquarters are as follows:

Director, Research and Engineering, Col J. W. Schroeder, with C. H. Staley as his Deputy; Director of Procurement and Production, Col L. C. Miller; Director of Materiel Readiness, Col M. D. Hiers and Deputy C. H. Robbins; and Director of Installations and Services, C. W. Fauroat;

Director of Personnel and Training, M. R. Walton; Chief of the Administrative Office, T. E. Hitch; Chief, Comptroller and Programs Office, Col L. J. Hempling, and his Deputy, L. R. Ireland;

Chief of the Management Science and Data Systems Office, E. J. Jordan; Chief of the Quality Assurance Office, W. J. Thomas; Chief Scientist, Dr. J. V. Kaufman, and Chief Engineer, R. M. Schwartz.

Picatinny Arsenal Spotting Device Aids Zeus Test

A key role in gauging success of a recent interception by the Army's Nike Zeus of a real target nose cone launched by a Titan I intercontinental ballistic missile fired into the Pacific test area can be credited to research at Picatinny Arsenal, Dover, New Jersey.

A spotting device developed by a Pyrotechnics Laboratory task group of engineers, chemists, physicists and technicians contributed to the historic daylight photographs that confirmed the intercept.

It was the first time a spotting device had been used in daylight to record intercept of a ballistic missile nose cone at the distance and extreme altitudes required by the Nike Zeus system.

The device produces a brilliant burst of light that can be photographed in daylight over a range of 80 miles. At night, its flash makes photographs possible at hundreds of miles.

The flash in the spotting device comes from a small pyrotechnic charge weighing only 0.07 of a pound.

Films showed the distance between the Nike Zeus simulated warhead detonation and the target vehicle, and proved that the Zeus warhead, many miles out in space, had correctly received the burst command. Data from the films enabled a computer to determine the actual "miss" distance, indicating the high degree of success of the intercept.

Prior to the Pacific interception, the spotting device was tested extensively at White Sands (N. Mex.) Missile Range where officials said in every case objectives were achieved.

Military circles are interested in the device because of the time and money it is expected to save testing the anti-intercontinental ballistic missile weapons system.

The Pyrotechnics Laboratory at Picatinny responded to a request from the U.S. Army Missile Command in developing the spotter. The Laboratory includes engineers, physicists and chemists with long experience in this field, ranging from battlefield illumination and signals to tracking and spotting devices for all types of missiles.

Ph.D. Goal Reached After 70,000 Miles of Travel

In mileage at least it would be correct to say that Leonard Nichols of Picatinny Arsenal, Dover, N.J., recently completed three trips around the world to gain a Ph. D. degree in mathematics.

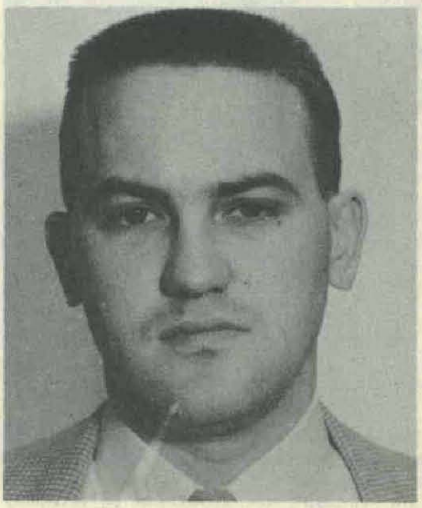
The 33-year-old supervisor in the Computing and Analysis Section, Feltman Research Laboratories, is the only one of the Arsenal's 27 Ph. D.'s who earned his doctorate as a part-time student.

By bus, car and train he traveled nearly 70,000 miles at night over the past five years to Stevens Institute, Hoboken, while carrying out his assignments at his daytime job.

Dr. Nichols traveled about 200 miles a week in 1951-52 while working for his M.A. at Columbia University. From 1955-58 he was on the road an average of 300 miles each week studying for his M.S. degree.

Under the Army R&D program aimed at encouraging scientists and engineers to work toward advanced degrees, he was granted permission to travel from Picatinny to Stevens Institute and it was arranged for him to use any spare time at his job to work on his degree.

Already well known in the field of technical mathematics as the author of 18 scholarly papers and reports now in Picatinny's library, he has played a significant role in the development of weapons analysis.



Leonard Nichols

AROD Employee Drafts Final SACLANT Summary

One of the Army's veteran public information officers, a convert from a career as a legal adviser backed by an LL.B. degree from Harvard Law School, is back on the job at the U.S. Army Research Office-Durham (N.C.) after a 5-month special study in Italy.

Peregrine White was granted a leave of absence to prepare a summary technical report of the SACLANT (Supreme Allied Commander Atlantic) Anti-submarine Warfare Research Center. Pennsylvania State University has directed the Center for a period of years through SIRAMIR, a nonprofit Italian corporation.

Until Feb. 1, 1963, when the Center was put under complete NATO management control and funding, its control had been exercised by Pennsylvania State University with funds from the Mutual Weapons Program. Prior to that time nine NATO nations had participated in Center activities.

Staffed by scientists from all NATO nations participating in the research program, the Center is concerned with applied research, operations research and oceanography. It was established in 1959 at La Spezia, Italy, following a 1958 visit of a military-civilian scientist survey team.

Although naval antisubmarine research was a new area of reporting for Mr. White, he accepted the assignment with the experience gained in a variety of similar assignments. He was assistant technical historian

Peregrine White

for Operation CROSSROADS, the first postwar atomic bomb tests at Bikini, and was a member of a survey team of the National Academy of Sciences-National Research Council which assessed scientific talent, in Government and under contract, in the Navy Department's early postwar guided missiles program.

White joined the staff of the Office of Ordnance Research in 1952 (in January 1961 it was redesignated the U.S. Army Research Office-Durham) following five years of duty as legal adviser to the Research and Development Board, Office of the Secretary of Defense. Currently his duties include editing the AROD Bulletin, a monthly periodical devoted to basic research interests.

Background experience for his technical writing assignments includes a degree in engineering sciences from Harvard College in 1933. He spent the following academic year at Trinity College, Cambridge University, as the holder of the Charles H. Fiske Scholarship.

Search for 'Best Man' Leads to Attractive Choice

A search through the U.S. Army Munitions Command to "find the best man" for a special assignment has been brought to an attractive end.

Charlotte Smith is assisting Dr. Paul Levy, research chemist and consultant to Picatinny Arsenal, in determining how various types of radiation rearrange atoms in crystals and how radiation effects their optical and electrical properties.

A graduate of Skidmore College, New York, Miss Smith has held such positions as analytical chemist in the pharmaceutical field, psycho-physiological researcher for the Veterans' Administration and analytical chemist in nonmetal analytics and environmental engineering at the Pitman-Dunn Laboratories, Research and Development Group, Frankford Arsenal. Prior to this assignment, her responsibilities at Frankford were largely those of a project scientist.

Speaking generally of the future of women in technical fields, she believes that the growing need for scientists and engineers will soon far exceed the number of trained men available.

"This fact, coupled with the apparent increase in feminine interest in the sciences," she said, "will mean more women in technical work."

Charlotte Smith

Army Scientists Take Part In Gordon Research Parley

Dr. C. Jelless Carr and Dr. Allan L. Forbes of the U.S. Army Research Office will participate in the 1963 Gordon Research Conferences being held this summer in New Hampshire.

Conducted annually, the conferences are directed by W. George Parks, professor of chemistry, University of Rhode Island, Kingston, R.I. They were established to stimulate research in universities, industrial laboratories and foundations.

The informal type of the sessions is considered a valuable means of disseminating information and ideas to an extent not easily achievable through the usual channels of publication and presentation at scientific meetings.

The 48 conferences, devoted to as many subjects in the physical and life sciences, commenced on June 10 and will close Aug. 30. Dr. Carr, Chief of the Scientific Analysis Branch, Life Sciences Division, is to take part in the Conference on Medicinal Chemistry, July 29-Aug. 2. Dr. Forbes of the same branch is chairman of the session on "Calculus Formation in Soft Tissues" in the Conference on Food and Nutrition, Aug. 5-9.

Cowgill Named Executive Of Medical R&D Command

Col Charles J. Cowgill, MSC, has succeeded Col John E. Haggerty, MSC, as executive officer of the U.S. Army Medical Research and Development Command in Washington, D.C.

A native of Anderson, Ind., he joined the Army in August 1940, and subsequently attended the first class of the MSC Officer Candidate School at Carlisle Barracks, Pa. In World War II, he served 40 months in the Pacific Area.

His postwar duties have included service at Brooke Army Medical Center, Fort Sam Houston, Tex.; staff officer, Office of the Assistant Chief of Staff for Personnel; executive officer, Medical Division, Hq., COM Z, Orleans, France; and medical operations officer, Hq., Fourth U.S. Army.

He is a graduate of the Medical Service Advanced Course and the regular course at the Command and General Staff College.

Detrick Microbiologist Gets SARS Fellowship

Career developmental opportunities offered under the Secretary of the Army Research and Study Fellowship Program have opened up for Dr. Arthur Brown of the U.S. Army Biological Laboratories, Fort Detrick, Md.

Known for his work in the Virus and Ricksettsia Division, Dr. Brown will spend approximately one year in special research to enhance his capabilities as an Army employee. He will spend much of his time at Dr. Edward Kallenberger's Laboratory of Biophysics at the University of Geneva, Switzerland. The staff is composed largely of scientists who are recognized authorities. His wife, Elaine, and children, Karen, 12, Kenneth, 9, Stephen, 5, and David, 3, will accompany him on his sojourn.

Dr. Brown received his PH.D. degree in microbiology from the University of Chicago in 1950 and earned a B.A. degree in biology in 1943 at Brooklyn College, N.Y. He also did graduate work in Bacteriology at the University of Kentucky in 1946-47.

In recent years he has been a consultant in virology, Department of Microbiology, George Washington University, Washington, D.C., and lecturer in tissue culture at the University of Maryland, concurrent with his employment at Fort Detrick. From 1951-1954 he was an instructor in the Department of Microbiology, State University School of Medicine, Brooklyn, N.Y., He has been employed at Fort Detrick since 1955.

Dr. Arthur Brown (right) receives a Study and Fellowship from Dr. Riley D. Housewright, Scientific Director, Army Biological Laboratories.

Honored by appointment as a Fellow, University of Chicago, he holds membership in Sigma Xi, American Academy of Microbiology, Society for Experimental Biology and Medicine, and the American Association of Immunology.

During WW II he entered military service as a private, completed training as an aviation cadet in 1944 when he was commissioned, left the Air Force as a first lieutenant in 1946.

2 AWC Molders Win Foundrymen's Society Contest

Two Army Weapons Command molder apprentices at Rock Island (Ill.) Arsenal were awarded top honors in the 1963 Robert E. Kennedy Memorial Apprentice Contest, sponsored by the American Foundrymen's Society, competing in a record field of 486 from throughout the U.S.

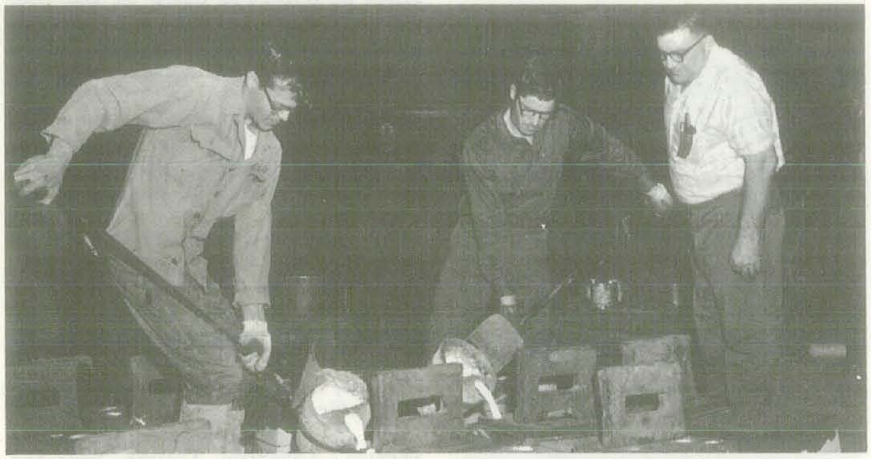
Donald L. Mallder, a fourth-year apprentice, won first place in the steel-making division. His award was a check for $100 and a trip to the American Foundrymen's Convention in St. Louis.

Edward W. O'Brien, a third-year apprentice, won second place in the nonferrous metal division and a check for $75.

These two were the only Department of Defense winners of the contest, designed to stimulate the development of individual skills and craftsmanship in pattern making and foundry skills.

During the past three years Rock Island Arsenal apprentice molders, under the supervision of V. C. Meier, foundry foreman, have received one first, two second and one third place awards in this annual event.

This year the Rock Island Arsenal apprentice program is celebrating its 53rd birthday.



Rock Island Arsenal National award winning apprentice molders, Donald L. Mallder (left), steel molder, and Edward W. O'Brien, nonferrous metal winner, "pour the soup" under the watchful eye of foreman V. C. Meier.

CRDL Announces Winners At Science Conference

Six scientists shared in awards for a first-place tie among two of 20 selected technical papers presented at the second science conference held at the U.S. Army Chemical Research and Development Labs, July 9-10.

Edgewood Arsenal, Md., Commanding General (Maj Gen) Fred J. Delmore presented the awards, and Col James A. Hebbeler, CRDL commander, reviewed results of the conference.

Because of the first-place tie, no second prize was awarded. Five civilian coauthors received first-place honorariums of $50 each, and a military officer received a CRDL Certificate of Achievement.

Dr. Robert S. Aaron, George E. Wicks, Jr., and 1st Lt Charles P. Rader won recognition for their paper on studies in the field of stereochemistry.

Judged equally meritorious was a report on electron microscope observations of certain cellular sub-units averaging in size about 1/25 millionth of an inch. Dr. Ludwig A. Sternberger, Miss Catherine E. Wilson and Edward J. Donati prepared the paper.

A third-place prize of $50 was shared by Robert H. Frickel and Roy E. Shaffer for a study of the containment of electrically charged particles in an alternating electric field.

Papers representing the work of 38 scientists were presented. Subjects discussed included much of the chemical, medical and physical research currently in progress at CRDL.

Dr. S. D. Silver, Technical Director of the Laboratories, served as toastmaster at the conference banquet.

Nuclear Energy Depot Concept Studied for Moon Base

The Nuclear Energy Depot Concept, regarded by numerous high-level Army R&D proponents over a period of years as a potential ultimate answer to the power sources mobility requirements of a modern combat force, is now being considered in support of manned bases on the moon.

By request of the National Aeronautics and Space Administration, the Army Chief of Engineers has approved initiation of two studies of the concept with respect to manned bases on the moon. Studies are to be completed in six months.

Contractor research will be supplemented by in-house laboratory investigations under direction of the Army Nuclear Power Division, with Capt C. S. Gates as project officer.

One study will involve a survey of applicable reactor and power conversion systems, including SNAP, M1-L, and MCR technologies. Maintenance and crew requirements for a manned moon base will influence choice of a concept, following which conceptual designs will be prepared.

A second study will follow the energy depot approach to developing an engine-fuel system for lunar surface vehicles and equipment. Based on an evaluation of the merits of fuel cells, cryogenic engines and internal combustion engines, a decision will be made on an integrated concept.

(NOTE: A feature article on the Nuclear Energy Depot Concept is being prepared for publication in an early issue of this periodical.)

Army Considers Turbojets In 'Copter Rotor Blades

Studies to determine the feasibility of mounting turbojet engines in the tips of giant helicopter rotor blades to increase lifting capability to between 60,000 and 80,000 pounds are being made under an Army contract.

The U.S. Army Mobility Command announced early in July that Hiller Aircraft Co., Palo Alto, Calif., has been awarded a $953,000 contract, and that $487,150 of the total will be a subcontract to Continental Aviation and Engineering Corp. of Detroit, Mich. Continental's J69-T29 turbojet engines will be used.

"Significance of this first phase tip turbojet contract," stated Stanley Hiller, Jr., "lies in the conviction that it could finally open the door to the much needed giant class of helicopters which have been retarded by unreasonable complexity and cost."

The Mobility Command's Transportation Research Command at Fort Eustis, Va., will monitor the work.

Auto Accident Ends Career Of 'Remarkable' Researcher

An automobile accident has terminated, at age 37, the career of a medical scientist acclaimed a "remarkable investigator" by Brig Gen Robert E. Blount, commander of the Medical R&D Command, Washington, D.C.

Lt Col John Douglas Lawson II died July 7 in the U.S. Army Hospital at Fort Rucker, Ala., several hours after the accident. As Chief of Professional Services and as Preventive Medicine Officer at the Fort Rucker U.S. Army Aviation Center, he gained recognition for his contributions to clinical research and teaching programs at the Center.

In 1953 he received a master's degree in public health at Harvard, following which he served with distinction in Korea. Graduated first in his class in medicine at the University of Tennessee in 1948, he later won the Charles Burr Basic Sciences Research Award while he served a 2-year Army-sponsored internship at Philadelphia General Hospital.

Col Muller Assigned TILO As Successor to Col Carey

Col Thomas H. Muller took over as Chief of the Technical Industrial Liaison Office, Office of the Chief of Research and Development, when Col Merle L. Carey retired from the Army July 31.

A U.S. Military Academy graduate in 1940, Col Muller has since commanded every Army unit from platoon through battle group, earning two bronze stars, two commendation ribbons, a combat infantryman's badge, and a parachutist badge.

Military tradition runs strong in his family. One of his brothers is a colonel in the U.S. Army Armor, another is a Marine lieutenant colonel retired for wounds in World War II, and his father is a retired Infantry colonel. An uncle is a retired major general.

Graduated from the Army War College prior to his new assignment, Col Muller also is a graduate from the Infantry School, the Airborne School, and the Command and General Staff College.

Initiated into Army research and development in 1952 as Director of the Mortar Department, and later during a tour that extended to 1956 as Director of Analysis and Control Department of the Infantry Board at Fort Benning, Ga., he has served overseas in Germany, Turkey and Korea. In World War II he was a battalion commander in Europe.

Before entering the Military Academy he was a student at Wichita University, Washington University in St. Louis, and the University of Illinois. From 1958-61 he was an ROTC instructor at The Citadel in Charleston, South Carolina.

Army NSF-I Winner Visits Nuclear Defense Laboratory

Scientists at the U.S. Army Nuclear Defense Laboratory, Edgewood, Md., recently explained operation of a positive ion accelerator to an exceptionally gifted high school sophomore selected as an Army winner at the National Science Fair-International.

David E. Katz, accustomed to a prominent place in the winners' circle on the basis of his scientific achievements, was a 6-day guest at the NDL before he went to Johns Hopkins University as a summer employee research assistant.

In the 14th NSF-I held at Albuquerque, N. Mex., he was acclaimed by Army judges for his exhibit of a diffusion cloud chamber and negative field to measure energy lost by beta particles in penetrating lead and aluminum barriers.

Selected to attend the recent First Maryland Junior Science and Humanities Symposium at Baltimore, and earlier this year to take part in the first national JSH Symposium at the U.S. Military Academy, the young scientist has won numerous honors. Among them are the Armed Services Chemical Association Award and the Navy Science Cruiser Award.

His extracurricular activities as president of his school's chemistry and science fiction clubs, treasurer of the literary club and vice president of the mathematics club reflect his future scientist career ambitions. Still he finds time to "just fool around."

NDL accelerator operator John Morrisey explains some intricate operations of positive ion accelerator to David E. Katz, visiting NSF-I winner.

WSMR Contracts for New Nuclear Effects Laboratory

Construction of a new Nuclear Effects Laboratory Facility is to be completed within a year at White Sands (N. Mex.) Missile Range under terms of a recently awarded $1,034,500 contract.

The two buildings comprising the facility will be three miles southeast of the heart of the WSMR technical area. Existing radiation equipment will be used and the only addition will be a recently developed fast-burst reactor costing approximately $250,000.

A laboratory, 143 by 189 feet, will contain present WSMR equipment—a gamma linac and a pulsed neutron generator—to be operated from remote control rooms.

The building containing the reactor is to be 3,100 feet from the main lab and surrounded by a chain fence. Housing for the reactor will be a concrete shielded cell 50 x 50 x 20 feet. The control room and associated instrumentation room are separated from the reactor cell by 20 feet of earth and concrete shielding in a building 36 x 31 feet.

Both the cell and control room are buried underground. Provisions have been made to operate the reactor at an outdoor burst site on top of the cell. The reactor can be transported to the site with a fork-lift truck.

The fast-burst reactor is expected to provide the most desirable source of neutron and gamma radiation for determination of transient effects of nuclear radiation on electronic components, materials and systems.

Shielding, activation and biological effects experiments are planned along with evaluations of range and reliability of nuclear radiation detectors.

Proceedings Being Published On 9th Army Math Conference

Proceedings of the recent Ninth Conference of U.S. Army Mathematicians, sponsored by the Army Mathematics Steering Committee on behalf of the Chief of Army Research and Development, will be published soon by the U.S. Army Research Office, Durham, N.C.

Requests for the publication should be addressed to Dr. Francis G. Dressel at the Durham installation. Dr. Dressel arranged the program which included 10 technical sessions at which 20 papers by "in-house" Army mathematicians were presented.

An innovation at this meeting, held at Watervliet Arsenal, N.Y., and attended by approximately 60 delegates, was the inclusion of two clinical sessions at which panels of experts heard and discussed papers dealing with specific mathematics problem areas.

Dr. T. N. Greville, Army Mathematics Center, University of Wisconsin, Madison, Wis., delivered a paper, "Numerical Solutions of Linear Difference Equations." At the concluding general session Dr. Richard C. DiPrima, Rensselaer Polytechnic Institute, Troy, N.Y., spoke on "Stability of Flow Between Rotating Cylinders and Related Topics."

Dugway Begins New Homes

Dugway Proving Ground, the Army's chemical testing center in Utah, has embarked on the first program since 1959 to provide more on-post housing for key personnel now living off the military reservation.

Work began this past month on construction of 66 units of 3-bedroom duplex quarters under a $1,040,260 contract, and is scheduled for completion by July 1964. The units will be of wood frame construction, garageless, 1½ baths, concrete floors.

Officer Disproves Teacher In Advanced Physics Study

A perfect scholastic average—17 A's out of 17 advanced physics courses—has been chalked up by a young Army officer serving at Picatinny Arsenal, Dover, N.J.

Capt Wendell A. Childs of Cullman, Ala., received his master of science degree in physics from Stevens Institute of Technology after maintaining a perfect 4.0 average during the two years he attended graduate school.

Wryly, he recalls that one of his teachers back home counseled him to look for a job when he finished high school, because he "just didn't have what it takes to get through college."

Following his graduation from Cullman High School in 1951, he attended Auburn University, receiving a B.S. degree in engineering physics in 1955. He was commissioned in the Army Signal Corps, later transferring to Ordnance, and served briefly as a physicist in Picatinny's Nuclear Engineering Directorate prior to his graduate work at Stevens.

His next assignment will be as a student at the Ordnance Officer Career Course, U.S. Army Ordnance Center and School, Aberdeen Proving Ground, Md.

QMREC Food Expert Gets Assistant Director Post

Dr. Ernest M. Kenyon

Dr. Ernest M. Kenyon was recently appointed Assistant Director for Food Research and Development at the Quartermaster Research and Engineering Center, Natick, Mass.

Formerly he was Assistant Chief in the Center's Field Test Coordination Branch where he was concerned with field tests of new Army products. His particular interests were arctic and food test programs.

Dr. Kenyon earned his Ph. D. in food technology, industrial microbiology and chemical engineering at Massachusetts Institute of Technology.

A registered professional chemical engineer, he is a member of the New York Academy of Sciences, the Institute of Food Technologists, American Chemical Society, American Association for the Advancement of Science, Society of Sigma Xi, Defense Supply Association and the Reserve Officers Association.

Army Legion of Merit Awarded To Lt Col Wilson for Service

The Army Legion of Merit was presented recently to Lt Col Samuel V. Wilson for his outstanding service as executive officer to the Assistant to the Secretary of Defense for Special Operations. General Earle G. Wheeler, U.S. Army Chief of Staff made the presentation.

While an instructor at the Special Warfare School, Fort Bragg, N.C., Lt Col Wilson set up the first counter-insurgency course given by the Army. He was commended for his "ability to apply operational solutions to politico-military realities which resulted in the successful accomplishment of many sensitive tasks."

In July he was enrolled at the Air War College, Maxwell AFB, Ala.

WRAIR Hires 25 Students as Research Assistants

Under the direct supervision of senior scientists at Walter Reed Army Institute of Research in Washington, D.C., 25 selected high school students planning careers in science are employed this summer as research assistants.

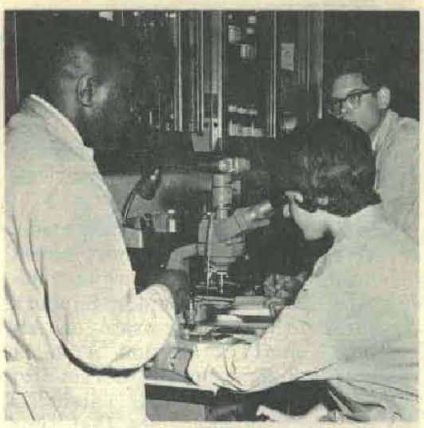
Working at one of the world's most renowned medical research centers, the students are receiving an insight into what the future may offer should they be interested in pursuing careers in Army research and development.

The program under which the students are engaged is sponsored by the Joint Board of Science Education through American University, the American Cancer Society, and the American Heart Association with the support of the National Science Foundation. Selection is controlled by the sponsoring organizations.

In general, the choice is based upon proved scholastic ability, science motivation, and completion of specified courses in high school mathematics and science. Most of the students have completed their junior year.

The National Science Foundation summer science training program provides opportunities for some 7,500 high-ability secondary school students, with the cooperation of 151 colleges, universities, and research organizations. Funds are provided to defray expenses of students who otherwise could not take part.

Talented youngsters working at Walter Reed Army Institute of Research are junior members of research teams. They are scattered in various divisions and departments, including bacteriology, metabolism, experimental psychology, zoology, hematology, immunochemistry, veterinary microbiology, biochemistry, cellular physiology, and germfree research, a relatively new field.



WRAIR microbiologist William C. Branche, Jr., briefs Adria Steinberg (seated), 17-year-old Woodrow Wilson H. S. graduate and Frank Price, 17, Sidwell Friends School, two of 25 Washington area students working at WRAIR this summer under National Science Foundation training program.

The students are Walter Rotkis, Jules Kline, Henry Maury, Marc Durand, Robert London, Ellen Brooks, Margaret Johnston, Madeleine Reines, Mary Kendall, Alfred Gluecksmann, Robert Manware, Carol Walsh, Marsha Ettinger, William Freedman, Frank Price, Almis Vietenas, Gary Malasky, John Seater, Mary Pate, Adria Steinberg, Eric Wagshal, Elizabeth Davenport, Karen Edwards, Duane Bonds, and Mark Esrick.

QMREC Announces Winner Of 1963 Scholarship Award

Winner of the 1963 Quartermaster Research and Engineering Center Research Directors Scholarship is Russell D. Cudmore of Natick, Mass.

The $150 scholarship is awarded annually to a Natick high school graduate who has been accepted in the cooperative program at Northeastern University and who plans to major in one of the physical sciences.

In addition to the cash award, Cudmore will have the opportunity to work as an electrical engineering student-trainee at the Center during the summer and in his sophomore year at Northeastern, alternating 10 weeks at school and 10 weeks work at the Center.

This summer, he will be associated with nuclear physicist Raymond Cooper who is in charge of the 24 million electron volt 18 kilowatt linear accelerator in the U.S. Army's Radiation Laboratory. It is used for the Army's extensive research in food preservation by ionizing energy.

Dr. Dale Sieling, Scientific Director, QM Research and Engineering Center, congratulates Russell D. Cudmore, winner of the Center's 1963 Research Director's Scholarship.

Redstone Arsenal Hires 83 Students for Summer

Eighty-three science and engineering students hired for the summer months by the Directorate of Research and Development at Redstone Arsenal, Ala., are advised that they are still in a learning environment.

The group received an orientation on the Army Missile Command's R&D activities from Technical Director John L. McDaniel, Project Director Harry F. Vincent and Scientific and Engineering Assistant James J. Fagan.

Heads of the eight R&D laboratories told the students about specific projects underway in the various laboratories, and broadly outlined their missions.

"Perhaps I should address you as 'fellow students' because we're all definitely in a learning environment here," stated Jesse B. Huff, Director of the Army Inertial Guidance and Control Laboratory. "If we ever stop learning, that's when our programs will flop."

The students were selected from more than 600 in the technical or scientific fields who applied for summer employment. The program is designed to attract top students from colleges and universities, and whet their interest for permanent jobs with the Army Missile Command after their schooling is completed.

The 36 schools represented by the summer group ranged from nearby Athens College to Brigham Young University in Salt Lake City, Utah. Three of the students are faculty members at their colleges, and 12 are graduate students.

R&D Winner Makes Europe Trip

One of the Army Missile Command's top scientists, winner of a 1963 Army R&D Achievement Award, returned this month from a trip to Europe related to Army missiles.

Vernon A. Nieberlein, a chemist with the Army Missile Command's Research and Development Directorate, attended the AGARD-NATO Conference on Refractory Metals held June 23-26 in Oslo, Norway. Later he visited the Ministry of Aviation in London, England, and the Metalwerk Plansee Refractory Metal Plant at Reutte, Austria.

Soldier Shows Air Frame Center Support Invention

A combination of the inventive mind of an Army sergeant, the help of a veteran machinist and parts rescued from the salvage heap may add up to a contribution to America's space progress.

The result is a working scale model of Sfc Adolphus Samms' most recent invention in the field of space technology, the Air Frame Center Support. Assigned to the Directorate of Air Testing, Yuma Test Station, Ariz., he received a patent on the device last year. It was his fourth patent in the missile field and since that time he has been working on the model and a paper called "Advance Design Rocket Boosters."

The 60-page paper includes drawings and photos of new types of rocket boosters and booster recovery devices. It will also explain the main use of his Air Frame Center Support, reliability and cost advantages.

When his inventions were brought to the attention of the Government, a letter followed from the Executive Office of the President, Office of Space Technology. It advised him to forward a copy of his forthcoming paper to Dr. James A. Hootman, Executive Secretary, Inventions and Contributions Board, National Aeronautics and Space Administration (NASA) for evaluation.

To speed work on the project, Lt Col Raymond Hodgdon, Director of Air Testing at the Yuma Station, requested that Sergeant Samms be permitted to use Station facilities. With the approval of Col James C. Taylor, Station commander, the proper equipment and the help of Max E. Rautenberg, a journeyman machinist with Combined Maintenance, the project is well ahead of schedule.

Sfc Adolphus Samms puts the finishing touches on a working-scale model of "Air Frame Center Support," while Max E. Rautenberg, journeyman machinist who helped fabricate model from scrap material, looks on.

The model, complete with fuel injection system, was fabricated from scrap material. Not intended to fly, it will be used on a test stand to demonstrate the Air Frame Center Support concept, termed a revolutionary system for multi-stage rockets.

With this device, one engine could be used to power all three stages, thus eliminating much dead weight and making heavier payloads possible. Substantially cheaper and equipped with a built-in recovery system, it could result in a sizeable saving for the space program, Samms hopefully envisions.

When the rocket model is test fired and the fuel supply is exhausted from first-stage tanks, they will be jettisoned and the rocket booster will advance at a controlled rate to the second stage. The procedure is then repeated with the second and third stage tanks giving the rocket continuous power from one engine.

If test findings of the review board are favorable, construction of a larger model and further study are contemplated, WSMR officials said.

$900,000 Contract Seeks Improved Hawk Capability

The Department of the Army recently awarded $900,000 initial funding on a developmental project to extend capability of the Hawk missile.

Raytheon Co., Lexington, Mass., will develop new equipment and modify the present Hawk equipment to meet the threat of ballistic missiles which might be encountered by a field army. In its present configuration, the Hawk has demonstrated ability to engage Honest John type rockets.

Presently operational with the U.S. Army and Marine Corps and with several foreign countries, Hawk systems are being produced by five NATO countries for their own deployment.

Developed as a low-altitude air defense weapon, the Hawk is especially effective in that range which was once considered a radar "blind spot." The 17-foot missile works on the "homing" guidance principle which locks it on a target from radar waves.

SCIENTIFIC CALENDAR

Symposium of International Cetacean Research, Washington, D.C., Aug. 15-18.

Symposium on Hydrological Aspects of Droughts, Berkeley, Calif., Aug. 19-31.

2nd International Pharmacological Meeting, sponsored by AFOSR and the International Union of Physiological Sciences, Prague, Czechoslovakia, Aug. 20-23.

16th Annual Congress on Zoology, sponsored by AFOSR and NAS-NRC, Washington, D.C., Aug. 20-27.

Inter-Association Conference on the Upper Mantle, Berkeley, Calif., Aug. 21-24.

International Symposium on Interaction Between Atmosphere and Ocean, Berkeley, Calif., Aug. 21-24.

Symposium on Aeronomy, Berkeley, Calif., Aug. 21-24.

5th Latin American Congress of Physiological Sciences, Caracas, Venezuela, Aug. 24-31.

International Conference on Lattice Dynamics, Copenhagen, Denmark, Aug. 25-30.

4th International Congress on Rheology, Providence, R.I., Aug. 26-30.

International Symposium on Radiological Health and Safety in Nuclear Materials, Mining and Milling, Vienna, Austria, Aug. 26-30.

Symposium on Cloud Physics, Berkeley, Calif., Aug. 27.

Symposium on Meso-Scale Dynamics, Berkeley, Calif., Aug. 30.

Congress on International Federation of Automatic Control, Basel, Germany, Aug. 27-Sept. 4.

Symposium on Paleomagnetism and Paleoclimatology, Berkeley, Calif., Aug. 28.

Symposium on Results from Meteorological Satellites, Berkeley, Calif., Aug. 28.

Symposium on Geochemistry of Water, Berkeley, Calif., Aug. 28-30.

International Symposium on Radiative Transfer in Spherical Atmospheres, Los Angeles, Aug. (date undetermined).

International Symposium on Radio Meteorology, Boulder, Colo., Aug. (date undetermined).

Symposium on Meteorology and Atmospheric Physics, Los Angeles, Aug. (date undetermined).

International Conference on Oxygen in the Animal Organism, London, England, Sept. 1-4.

2nd European Congress of Anatomy, Brussels, Belgium, Sept. 1-5.

3rd International Biometeorological Congress, Pau, France, Sept. 1-7.

7th International Congress on Tropical Medicine and Malaria, Sept. 1-11.

International Association for Shell Structures, Warsaw, Poland, Sept. 2-5.

Conference on Exponential and Critical Experiments, The Netherlands, Sept. 2-6.

International Symposium on Dynamic Meteorology, Boulder, Colo., Sept. 2-7.

3rd International Conference on the Mossbauer Effect, sponsored by ARPA, Ithaca, N.Y., Sept. 4-7.

Symposium on the Ellipsometer and Its Use in the Measurement of Surfaces and Thin Films, Washington, D.C., Sept. 5-6.

International Symposium on Analogue and Digital Techniques Applied to Aeronautics, Liege, Belgium, Sept. 9-12.

7th International Nematology Symposium, Auchincuive, Scotland, Sept. 9-13.

International High Temperature Symposium, Pacific Grove, Calif., Sept. 9-11.

Symposium on Laboratory Shear Testing of Soils, Ottawa, Canada, Sept. 9-11.

5th International Biometric Conference, Cambridge, England, Sept. 10-14.

3rd Annual Conference on Weather Effects on Aircraft Systems, sponsored by the Naval Air Turbine Test Station, Trenton, N.J., Sept. 16-20.

Latin American Conference for the Study of Arid Regions, Buenos Aires, Argentina, Sept. 16-21.

International Symposium on Nitrocompounds, Warsaw, Poland, Sept. 18-20.

U.S. OAS Ambassador Serves Transportation Duty

Ambassador DeLesseps S. Morrison, U.S. Representative to the Organization of American States, recently served his annual Army active duty training as Deputy Chief of Transportation, which is his mobilization designation assignment.

A former Mayor of New Orleans, Maj Gen Morrison has been active in Army Reserve affairs since 1933 when he was commissioned a 2nd lieutenant upon his graduation from Louisiana State University.

Specialized by training and experience in military transportation and logistics for nearly as long, he is a graduate of the Artillery and Guided Missile Center, Fort Bliss, Tex., and the Industrial College of the Armed Forces in Washington.

Called to active duty early in World War II, he served with the New Orleans Port of Embarkation and later as Superintendent of the Water Division, 17th Port of Embarkation and as Chief of Staff, Bremen Port Command. He was awarded the U.S. Legion of Merit and Bronze Star Medal, and was also decorated by the governments of Belgium and France.

Following the war, he returned to civilian pursuits but continued his active interest in Reserve affairs. He commanded the 377th Transportation Command (C), U.S. Army Reserve, in New Orleans until September 1962, when he was promoted to 2-star rank, and received his current mobilization assignment as Deputy Chief of Transportation.

General Morrison is a former president of the Reserve Officers Association of the United States.

DDC Moves to Cameron, Procures New Computer

Relocation of the Defense Documentation Center (until recently the Armed Services Technical Information Agency) from Arlington Hall, Va., to Cameron Station, Va., was accomplished within a 10-day period in July.

For the first time since ASTIA was established slightly over 10 years ago, all of the facilities are located on one floor in a 700-foot-long rehabilitated warehouse. Offices are air conditioned and rely completely on artificial illumination (no windows).

Coincident with the announcement of the move into the new headquarters, it was disclosed that the Defense Documentation Center will acquire a new UNIVAC 1107 computer, a third-generation development employing a thin-film processor.

Expected to be installed for use about the end of the year, the advanced computer has a processing speed of 330 manoseconds (330 billionths of a second). It has a core storage capacity of 32,768 words and an initial increment of 500 million alpha numerical characters of mass random access storage on drums.

Memory capacity of the computer is sufficient to contain the complete DDC collection (master AD file), indexes, vocabularies, profiles of specialized technical information centers, and profiles of organizations registered with the Center.

Designed to perform a variety of operations simultaneously, the computer can be interrupted at any time to come up with the answer to a particular question, and then resume operations as originally programed.

The DDC's new address is 5010 Duke Street, Cameron Station, Va., which is near the Lincolnia interchange on Shirley Highway, approximately five miles farther south than Arlington Hall.

Army, Industry Review Lance Missile Concept

Representatives from the Department of the Army and industry recently held a 3-day classified Engineering Concept Review of the Army's new Lance missile system at Redstone Arsenal, Ala.

Highlighting activities during the conference was a demonstration of mockup equipment, illustrating how the weapon system is expected to operate. It was the first time full-scale operational mockups of all the components of a weapon system have been available at the Army Missile Command for demonstration and inspection.

Soldiers from the Army Artillery Board, Fort Sill, Okla., demonstrated the equipment. A mockup missile was hoisted off its tracked carrier and placed into simulated firing position on its launcher, which is carried on a special tracked vehicle.

The Lance surface-to-surface missile system is planned as a highly mobile division support weapon and is in early stages of development.

Attending the 3-day meeting were representatives of the system's prime contractor, Ling-Temco-Vought, Inc., and representatives from various Army headquarters.

NSF-I Army Award Winners Visit Fort Monmouth Labs

Two winners of Army awards at the 14th National Science Fair-International recently visited the U.S. Army Electronics Research and Development Laboratory, Fort Monmouth, N.J.

As guests of the Army during a week-long visit, Vance G. Marshall, Jr., 17, of Flint, Mich. and Donald E. Peterson, 16, Oak Ridge, Tenn., were given an opportunity to view much of the research in progress.

Marshall and Peterson, who will be seniors this fall, were among 20 students who won the top Army awards of expense-paid tours or summer jobs in leading laboratories engaged in research in which they are interested.

Marshall's winning exhibit was a small electrostatic accelerator, or atom smasher, which he built and first demonstrated at the Flint Science Fair. One of his ambitions is to become a student at the Massachusetts Institute of Technology.

Peterson won his prize with a presentation entitled "Probability of Cube-Octahedron Dice," an exercise in higher mathematics. He qualified for the national fair after winning a first prize at the Southern Appalachian Science Fair.

Maj Gen Stuart S. Hoff, CG, U.S. Army Electronics Command, and Col T. K. Trigg, acting commander of the Laboratory in the absence of Col James M. Kimbrough, Jr., and key scientists took part in briefing the visitors on Laboratory activities, which employ about 3,000 persons.

Donald E. Peterson (left) and Vance Marshall II, two of 20 winners of Army awards at the 14th NSF-I, view ultra-high-speed teletypewriter during visit to USAERDL. Earl Rogers, engineer in the Laboratory's Communications Dept., gives the briefing.

Creativity Conflict: Management versus Scientists

(Continued from page 2)

the scientist and his administrator boss by simply eliminating the hierarchy. If his proposed organization were put on the ubiquitous organic chart, it might look more like a circle than a triangle. The broadly stated mission would obviously be in the center, with scientists and administrators interacting around the "general terms" of "organizational objectives."

Such a scheme sounds intriguing, especially for the researcher, but, to the uninitiated, it would appear to be a blueprint for confusion. Moreover, the applicability of it in Government laboratories is presently rather limited because of other facts of life—such as the system of checks and balances in American Government that makes the Federal scientific establishment unique.

Effective accounting to Congress for the expenditure of public funds subjects Goverment laboratories to investigations, audits, and other legal controls. For these reasons, the laboratories need a higher echelon, a buffer, composed not of dedicated working scientists so much as double-edged administrators skilled in the knowledge of science as well as in the art of the in-fighting of the watchdog committees on Capitol Hill.

In spite of Mr. Raudsepp's apparent bias, his book highlights the timely issue of how best to nurture scientific creativity in America. His strongest contribution is his perceptive description of the creative process and his caveat that administrators must understand the process completely in order to support properly the scientists under him.

Management, he claims, up to now has failed to comprehend essential features of the adventure of creative thinking—for instance, that all types of people are potentially creative when they are working with intense motivation and self-discipline in the right environment. Supervisors who cannot envisage this opportunity will not create it. They will find difficulty in arranging organizational conditions that fit the requirements of the creative professional. That is, there are more attempts to mold the man to the task than to adjust the assignment to his personal qualifications.

Raudsepp does not say, however, that administrators of scientists often can do little about "predetermined organizational structures." Indeed, farsighted administrators, as well as creative scientists, must at times strive for results in spite of the system rather than because of it. Whatever these overriding systematic contraints, it is true that an effective supervisor "who likes both people and ideas and feels at ease in both worlds can help make life bearable for the creative scientist working for him."

Can one honestly say that the administrator is less understanding of the creative scientist than the scientist is of the administrator? The working scientist tends to overlook the existence of such realities as budgets, production schedules, mission orientation, and the sometimes embarrassing post-audit. A tense "gulf of mutual incomprehensibility" results between the two groups when neither makes effort toward *detente.*

The easing of this tension might be effected though compromise. Supervisors should consider the human, even the irrational, side of subordinate scientists and learn not to expect the organization chart and mission statement to perform some strange feats of alchemy. In turn, scientists should recognize that creativity cannot find constructive outlets without support — which may be in the form of goading, at times!

Raudsepp lectures the Federal scientific community, suggesting that "Government agencies have to somehow cure themselves of projectitis and reinstate individual scientists and engineers to their rightful position."

On the other hand, he seems to overlook the merit or necessity in occasionally specifying for researchers such things as goals, expected end-products of research, suspense dates, a periodic reporting procedure, and budgetary limitations.

The researcher should not look upon such guidance as "the scheduling of break-throughs," the "crank-handle production of inventions," or simply as unnecessary harrassment. Rather, researchers might well consider such guidance as management's conscientious attempt to devise a practical art of systematic innovation, an art that takes account of more factors than scientists themselves consider. (See the article by J. Sterling Livington in the June, 1963, issue of *Industrial Research*, for a discussion of how PERT, for example, may be used in research management.)

It should be acknowledged that no organization, Government or private, can afford to sponsor a totally random course or unpredictable pattern in research and development. Nevertheless, administrators could remember that intelligent planning *for* research is not the planning *of* research results; that is, one can plan the investment of time and brain power in presumably profitable research areas, although the outcome may be uncertain.

The communal entropy factor of creativity seems to work against the orderliness of predetermined R&D decisions. Administrators and scientists therefore, need to acknowledge the hazards of one another's existence

Army Civil Student Program Aids USARO Officer

Lt Col Raymond I. McFadden will leave the U.S. Army Research Office Aug. 21 to study for a Ph. D. degree in electronics at Purdue University, West Lafayette, Ind., under the Army Civil Student Program to raise the educational level of career officers.

A 1945 graduate of the United States Military Academy, he holds an M.S. degree in electrical engineering from the Ohio State University.

Since 1960 he has served as staff communications and electronics engineering officer in the Physics and Engineering Branch, Physical Sciences Division. Previously, in a similar capacity with the Military Assistance Advisory Group, he was responsible for the planning, design and engineering of major U.S. communications systems on the Island of Taiwan during and following the crisis in the Taiwan Straits.

Other assignments include a 2-year tour as instructor and assistant professor of electrical engineering at the U.S. Military Academy, and two years as physicist and Chief, Thermionics Branch, U.S. Army Signal Engineering Laboratory, Fort Monmouth, N.J.

Lt Col Raymond I. McFadden

and seek to achieve a state of dynamic equilibrium out of the inherent conflict.

Conflict in itself is not all bad in the R&D business. It may have a highly salubrious effect on the process of creativity. First, differences among researchers indicate a nonconformist environment wherein potential creativity germinates. And, second, conflict resulting from the interaction contributes to the inter-disciplinary approach in problem solving.

As one corporation executive has properly observed, "Research, by its very nature, is a disruptive process! It is a business of getting things disorganized by challenging the preconceived notions of the past." By the same token, the preconceived notions of traditional bureaucracy *as carried out by rigid administrators will likely* be dysfunctional to the process of creative research.

In summary, Mr. Raudsepp charges both supervisors and creative technical men with firm, inter-related, future responsibilities.

First:

The effective supervisor realizes that the problems of running a creative department of high talent individuals are often rather ill-defined, ambiguous, amorphous and emergent, which means that any existing rules, especially those of traditional supervisory practices, are completely obsolete or beside the point.

And second:

The future creative life of the technical professional will be a disciplined, dedicated and noble life. It will be a fully employed existence with a mission, and, although it will demand sacrifice and frequent deprivation of the passive, materialistic creature comforts that make life comfortable and bearable for so many, it will be a life that is more real, spontaneous, sensitive, challenging, purposive and self-fulfilling.

While both of these responsibilities may appear highly idealistic, and overdrawn, it would be well to recall G. K. Chesterton's platonic rejoinder to the critic of visionaries: "The centre of every man's existence is a dream." Indeed, from the dream emanates deep motivation. And motivation, to repeat, is a key factor in creativity, but it is also vital to successful administration of research.

U.S. Army CDC Commander, Lt Gen Daley Dies at 53

Lt Gen John P. Daley, 53, leader of the Army's Combat Developments Command since April 1962, died in Albany, N.Y., July 21 following a heart attack.

A 1931 graduate of the U.S. Military Academy at West Point, General Daley's assignments progressed from command of horse-drawn artillery units to command of Army missile units.

During the Korean War, he served as Chief of Staff of the United Nations Military Armistice Commission, where he earned a second Oak Leaf Cluster to his prior Korean campaign awards and the World War II Legion of Merit.

General Daley was assigned to the Office of the Chief of Research and Development in March 1955. As Director of Special Weapons, he was responsible for Army R&D in air defense, guided missiles, space projects, and atomics.

Former ARO-D Chief Dies

Col George W. Taylor (USA, Ret.) Director of Program Planning for the Research Triangle Institute, Durham, N.C., died recently after an extended illness.

Until his retirement from active duty on Oct. 1, 1962, he served from May 1961 as the commanding officer of the U.S. Army Research Office-Durham.

The holder of M.A. and Ph. D. degrees from Princeton University, he was on the faculty of Washington University, St. Louis, Mo., for 11 years before entering the Army.

Army Tests 'World's Largest' Hasty Storage Tank

What is believed the world's largest hasty storage tank, capable of holding 10,000 barrels (420,000 gallons) of fuel, is being tested as an aid to Army mobility.

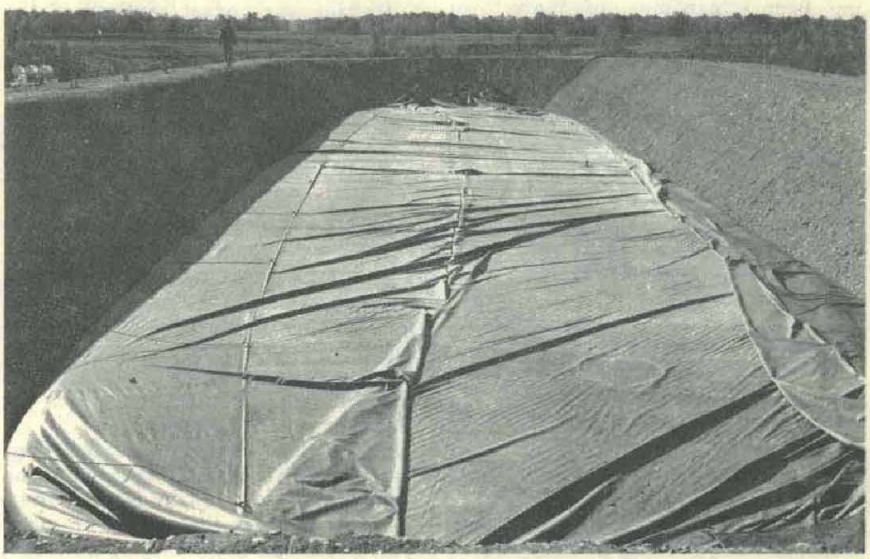
The U.S. Army Materiel Command's Mobility Command Engineer Research and Development Laboratories, Fort Belvoir, Va., are doing the testing.

Fabricated from a synthetic rubber coated on nylon cloth, the tank is 162 feet long, 49 feet wide, weighs approximately 2,300 pounds, and requires an average of only 200 man-hours to install. It is folded and rolled on a pipe mandrel, thereby making a compact package 3 feet in diameter and 13 feet long which is easy to handle, transport and install.

In use, the tank is placed in a trapezoidal shaped pit prepared by conventional earth-moving equipment, providing support. When filled to capacity with fuel, the tank has a depth of 12 feet.

The hasty storage tank is designed to replace bolted steel tanks for field use to ease logistics and erection problems. A 10,000-barrel bolted steel tank, for example, weighs 85,000 pounds and requires 2,000 man-hours to erect.

Conceived and developed by engineers in the Petroleum Equipment Branch of the Laboratories, the tank was fabricated under contract by the Firestone Tire and Rubber Co.



Shown in a partially filled stage, the Hasty Storage Tank is capable of holding 420,000 gallons of fuel. The tank can be installed in less than two hours by eight men, while it takes 16 men from three to four weeks to erect the standard bolted steel storage tank now in use, Army research leaders said.

CE Awards CPIF Contract for Automatic Map Systems

Delivery of two complete universal automatic map compilation systems following the stereometer approach is ordered in a $1,750,000 cost-plus-incentive-fee contract awarded recently by the Army Corps of Engineers.

Equipment involved is expected to reduce greatly the time required to produce large-scale topographic maps from aerial photographs. Technical supervision of the contract to Thompson Ramo Wooldridge Corp. will be under the U.S. Army Engineer Geodesy, Intelligence and Mapping Research and Development Agency (GIMRADA), Fort Belvoir, Va.

The Corps of Engineers has been actively engaged in development of equipment for automating the process of mapping from aerial photographs for nearly 15 years. Results of this program are reflected in the type of equipment to be acquired under the new contract.

In that it is designed to handle almost any type of aerial photographs, the equipment is considered universal. The output of the system will be contoured orthophotographs, or photographs in which the images have been individually rearranged into scaled horizontal positions, and elevations indicated by lines of constant elevation.

The process matches electronically corresponding images from two overlapping presentations. It calculates from individual coordinates on the photographs their true horizontal and vertical positions on the earth, employing a fast digital computer to accommodate and correct all factors.

The CPIF contract for the equipment is one of the first awarded by the U.S. Army Mobility Command Engineer Research and Development Laboratories at Fort Belvoir, Va. Incentives center on time and cost.

The target fee will be increased by 20 cents for every dollar under the target cost up to a saving of $325,000, and 10 cents for every dollar thereafter. The same rate of penalty applies to an overrun. Earlier than target-date delivery is rewarded by $450 for every calendar day saved on an objective of 25 months from date of contract, or reduced by $450 for each day of overrun.

Dr. Wiseman Gives Lecture On Image Intensification

Dr. Robert S. Wiseman of the U.S. Army Mobility Command's Engineer Research and Development Laboratories, Fort Belvoir, was a guest lecturer at the University of Rochester's Institute of Optics, Rochester, N.Y.

Internationally known for his work in the field of image intensification and night vision devices, Dr. Wiseman is Chief of the Warfare Vision Branch. He discussed image intensifiers at the University's summer "Methods of Modern Optics" course.

The unclassified talk dealt with advantages and limitations, applications, image tube construction and principles of operation, tube characteristics, system considerations and factors affecting system performance.

Major Wins Hoff Medal As Graduate at WRAIR

Maj Daniel C. Plunket is the 1963 winner of the Hoff Medal, established in 1897 to honor the outstanding graduate of the Army Medical School, a forerunner of Walter Reed Army Institute of Research in Washington.

Twelve other Medical Corps officers and six nurses were graduated from an intensive 9-month course—the officers as students in Military Medicine and Allied Sciences, and the ladies in Nursing Practice and Research.

WRAIR Director Col William D. Tigertt and Chief of the Army Nurse Corps Col Margaret Harper delivered the commencement addresses. Diplomas were presented by Lt Col Paul E. Teschan, assistant commandant at WRAIR, and Maj Phyllis J. Verhonick, Chief of the WRAIR Department of Nursing.

Diploma recipients included: Lt Cols Elmer F. Gillespie (USAF), William C. Kilpatrick, Jr., Warren E. Porter, and Mary E. Steinheimer; Majs Edwin S. Busch, Joseph R. Cruse, Ronald E. Easterling, Gerald S. Johnston, Peter B. Macomber, and Daniel C. Plunket; Capts Jerry M. Earl, Leroy Hieger, and Erich Ryll; Majs Betty L. Madden and Ira P. Gunn; Capts Glennadee A. Nichols, Margaret M. Ruskin, Amy D. Geissinger, and Beverly A. K. Glor.

Maj Daniel C. Plunket (left) receives Hoff Medal from Lt Col Paul E. Teschan, assistant commandant of WRAIR and director of the Military Medicine and Allied Sciences Course.

Watertown Arsenal 'Steel Ears' Listen for Navy

Diversified skills of Metals Processing Branch personnel of Watertown (N.Y.) Arsenal have aided initial success of underwater research tests.

High precision, stainless steel ear castings made at Watertown are being used in underwater listening devices by the Navy Department for various research projects dealing with movement and sound of objects.

Stainless steel ears developed by Watertown for underwater research.

Castings are exact replicas of the human external ear, except they are 4½ times larger—because the velocity of sound in water is approximately 4½ times that in air.

Manufacture of the 30-pound cast ears is believed unique in that varied processes are used separately and in conjunction with each other. The first operation is to make a castable rubber mold from a human ear. By various processes a latex rubber die 4½ times larger than the original mold is then produced. The lost wax and Shaw ceramic processes are then used in conjunction to manufacture a precision ceramic mold into which the stainless steel is poured.

Economical and short lead-time manufacture of the cast ears and similarly difficult castings at Watertown Arsenal is the payoff of many years of research to develop advanced metal processing techniques that have gained wide recognition among personnel trained in the complexities of metal manufacture.

3 NSF-I Winners Prove Worth at Edgewood Arsenal

Dr. S. D. Silver (right), Technical Director, U.S. Army Chemical Research and Development Laboratories, Edgewood Arsenal, Md., congratulates 1963 Science Fair finalists on their performance of summertime positions. Left to right are Donald J. Crownover, Sheila McMorris and James A. Moorer.

Three 1963 National Science Fair-International (NSF-I) finalists who won summertime laboratory assistant jobs at Edgewood Arsenal, Md., are proving the value of hiring outstanding high school science students.

This is the opinion of supervisors who work with the students at the U.S. Army Chemical Research and Development Laboratories. Dr. S. D. Silver, Technical Director, said this year's trio of teenage future scientists will be welcomed back to CRDL each summer throughout their academic careers.

Beginning as GS-2 Civil Service employees, they can anticipate successive increases in grade each summer, provided they continue at the same high level of performance. They are learning by working side-by-side with the Laboratories' top scientists.

Miss Sheila E. McMorris, a pretty 18-year-old brunette from Phoenix, Ariz., is assigned to the Directorate of Developmental Support, doing mathematical analysis. In the NSF-I her study of infrared content of a selected sky area and its relationship to cloud formations won a top award.

James A. Moorer, a 17-year-old Floridian from Tallahassee, is employed in CRDL's Directorate of Medical Research in toxicology. His NSF-I first-place award in biology recognized experiments in memory retention of learned responses in the fresh-water flatworm.

Donald J. Crownover, a 18-year-old mid-westerner from Rock Island, Ill., is working in the Directorate of Defensive Systems. His NSF-I award in chemistry was for synthesizing large molecules including boron to produce improved plastics.

For each of the college-bound students, the summertime job opportunity was the coveted main prize at the 1963 Science Fair, held in Albuquerque last May. In addition, the Armed Forces Chemical Association presented them with bronze plaques for exhibiting outstanding projects, together with a $50 check to defray travel expenses from their homes to Edgewood Arsenal.

"We would like to employ more summertime research technicians of this calibre," said Dr. Silver. "The granting of more paid jobs here in reward for scientific excellence at the forthcoming 15th National Science Fair-International is anticipated.

"We feel that having these outstanding students as summertime employees is furthering the growth of the Maryland research and development complex, as outlined by our state's Department of Economic Development."

JMPTC Completes Move From Toledo to Aberdeen

Relocation of the Joint Military Packaging Training Center at Aberdeen Proving Ground, Md., in a move from Toledo, Ohio, was virtually completed at press time. The Center expects to start classes Sept. 9.

Col Elmer W. Grubbs, APG Post Commander, announced that the transfer of the Center was started June 17 and was to finish by July 29.

The JMPTC mission is to train military and civilian personnel of the Armed Forces and personnel of defense contractors and subcontractors in the methods, materials and techniques employed in cleaning, preserving, packaging, packing and carloading military supplies and equipment. More than 1,400 of the 21,000 JMPTC graduates have come from industry.

The activity was established by the Army in 1950 as the Ordnance Packaging Training Course at Rossford Ordnance Depot. Redesignated about a year later, it has functioned since as a Defense Department activity administered by the Army. With the reorganization of the Army's logistical elements last year, it was placed under control of the Army Materiel Command.

The school is staffed entirely by civilian personnel and has an annual payroll well over $350,000.

The JMPTC handles an average of 2,400 students each year. Normally, three classes are in session at a time with an attendance of approximately 100 students, usually about 75 percent civilian, the balance military.

ARADCOM Realignment Sets Up New Defense Regions

Realignment of the Army Air Defense Command (ARADCOM) in the Continental United States without any change of tactical air defense missile forces is aimed at achieving the best defense against the long-range bomber threat.

Announced by the Department of the Army June 21, in consonance with the reorganization changes in the North American Air Defense Command reported in DoD press releases in March and April, the ARADCOM realignment sets up five regions.

Region 1 consists of the Eastern States. Others are: Fourth, the prairie and western Gulf States; Fifth, the Midwest; Sixth, Southwest and Central Rocky Mountain States; Seventh, Pacific Northwest.

Region 2 will be inactivated Nov. 1 and its areas of responsibility reassigned to Regions 1 and 4. On Sept. 1 the 1st Region will take over the Cleveland, Cincinnati and Detroit defenses from the 5th Region.

The Georgia and Florida defenses under the 1st Region will be supervised by the 53rd Air Defense Artillery Brigade with Headquarters at a site to be selected near Montgomery, Ala. Texas and Louisiana defenses under the 4th Region will be under the 12th Air Defense Artillery Group with Headquarters to be established at Oklahoma City Air Force Station.

Headquarters of Region 1 will be at Fort Totten, N.Y., of Region 4 at Richards-Gebauer Air Force Base, Mo., and Region 5, Ft. Sheridan, Ill.

NATO Fellowships Offer Foreign Study

Opportunities for about 45 senior scientists of the United States to study for 9 to 12 months in Europe will be provided through the North Atlantic Treaty Organization (NATO) Postdoctoral Fellowships in Science ranging from $4,125 to $5,000.

Administered by the National Science Foundation (NSF), at the request of the Department of State, the Fellowships will be awarded to citizens and nationals of the U.S. who have earned a doctoral degree in the sciences, or who have research training and experience equivalent to that represented by a doctoral degree.

Sciences in which awards will be made include mathematics, physics, medicine, biology, engineering, anthropology, geography, psychology (excluding clinical psychology), sociology (excluding social work), economics (excluding business administration), and the history and philosophy of sciences.

Awards also will be made in two or more overlapping sciences such as oceanography, meteorology, biochemistry and biophysics.

Applicants should be of demonstrated ability with special aptitude for advanced training in the sciences. They are encouraged to apply for study in a country that is a member of the NATO community, including Belgium, Canada, Denmark, France, The Federal Republic of Germany, Greece, Iceland, Italy, Luxembourg, The Netherlands, Norway, Portugal, Turkey and the United Kingdom.

These countries also grant NATO fellowships to their own citizens. Awards to U.S. citizens and nationals are not, however, restricted to study in a NATO country, and consideration will be given to those planning study elsewhere.

Applications will be evaluated for the NSF by panels of scientists appointed by the National Academy of Sciences-National Research Council (NAS-NRC). Evaluation and selection of candidates will be solely on the basis of ability.

Applications and more detailed information may be obtained from the Fellowship Office, National Academy of Sciences-National Research Council, 2101 Constitution Avenue, N.W., Washington 25, D.C.

Fellowship applications must be received by the NAS-NRC by Oct. 18, 1963. Awards will be announced on Dec. 9, 1963. The program provides also for limited round-trip travel and dependency allowances.

Laser Rangefinder Passes Field Tests at Fort Sill

Successful testing of a lightweight (35-pound) battery-powered Laser range finder developed by Frankford Arsenal, Philadelphia, Pa., was conducted recently at Fort Sill, Okla., the U.S. Army Munitions Command has announced.

Field evaluation tests of the instrument were made with the cooperation of the U.S. Army Artillery Board (USAAB).

Concurrently, the rangefinder was demonstrated to Lt Gen John P. Daley, leader of the Combat Developments Command, along with representatives of the Artillery School and the Artillery Combat Development Agency.

The engineering model of the Rangefinder XM23 has an optical telescope for sighting and uses a Laser transmitter and a photo-multiplier receiver. The high-frequency ranger meter and control circuitry were microminiaturized by using thin-film techniques.

The tests included a wide variety of terrain and materiel targets at short and long ranges. Officials said range and accuracy capabilities exceeded the design requirements for the instrument. Simplicity of operation was confirmed.

Another successful demonstration, using FADAC, a 105 mm. Howitzer battery and the XM23 Rangefinder, was held for conferees attending the national Target Acquisition Conference at Fort Sill.

FADAC is a solid-state field artillery digital automatic computer, the only such computer standardized for the Armed Forces, and is also a Frankford Arsenal development.

W. T. Abell, Chief, Fire Control Division, Research and Development Group, Frankford Arsenal, conducted the tests and demonstrations.

S/Sgt L. H. Wookham (USAAB) operates new Frankford Arsenal Laser rangefinder during successful field evaluation tests at Fort Sill, Okla.

By Ralph G. H. Siu

KEEPER OF THE GATES. The ancient civilizations of the Indus valley were sustained by a complex irrigation network. The flow of water through its canals was regulated by a series of gates. The farmers found it necessary to assure equitable distribution of water among themselves. So a group of gatekeepers was hired and trained to sit astride this apportionment of water in accordance with the requirements and instructions of the farmers.

According to some historical accounts, not too many decades later the keepers of the gates became the rulers of the farms.

CORRECTION. It was Schiller not Goethe, as printed in the April T-Thoughts, who commented on the gods' struggle with stupidity. Right country, wrong poet, poor information retrieval.

THE WRIGGLE. It seems you just can't pin some people down, for it has been said thousands of years ago: Even in a bamboo tube snakes try to wriggle.

SARSAPARILLA. Efficient teamwork requires solution of the sarsaparilla problem in the story of the three turtles.

Two large turtles and a little one went to a bar one day to quench their thirst with a mug of sarsaparilla. As they began to drink it, one of the large turtles observed that it had begun to rain. After a lively discussion, it was decided that the little turtle should go home for their umbrella. The little turtle objected, afraid that if he went, the big turtles would drink his sarsaparilla. But they convinced the little fellow they would leave his sarsaparilla alone, and he started after the umbrella.

Three weeks passed and finally one of the big turtles said to the other, "You know I don't think the little guy is ever coming back. Let's drink his sarsaparilla."

"I was just thinking about the same thing," said the other big turtle. "Let's do it."

From down at the end of the bar near the door, a shrill voice cried out, "If you do, I won't go after the umbrella."

Army Orders Test Models of S-64 'Flying Crane'

Concept testing models of the Sikorsky S-64, the largest helicopter ever developed in the U.S., have been ordered by the U.S. Army.

Officially termed "Skycrane," the craft has a bubble cockpit in front and a high backbone. The customary cabin has been eliminated from the design to allow the helicopter to carry the widest variety of loads.

Subsequent to the order for six aircraft, at a total cost of about $13,500,000, the Army tested a leased model. Army officials said results were highly satisfactory. In September the leased model again will be used for testing over a 2-month period.

Delivery of the helicopters is slated for next summer. Two of the aircraft will be used for R&D work, Federal Aviation Agency certification and Army Aviation Board Tests.

Four will be sent to a test division now being formed at Fort Benning, Ga., to develop the new concept. This division will use a number of fixed-wing and rotary-wing aircraft for duties now performed largely by truck and jeep.

If the versatility of the new helicopter is provided in field trials, Army officials said it is likely to be used in support of the Army's proposed new air-assault divisions.

Twin-turbine, heavy-lift helicopter ordered by the Army will be used to develop heavy-lift concept with emphasis on increasing battlefield mobility. Missions envisioned include retrieval of aircraft and missiles, towing of mired vehicles, transport of vans, erection of towers, and placement of bridge spans.

WSMR Scientist Appointed To Defense Institute Staff

Chief Scientist Dr. Russell K. Sherburne of White Sands Missile Range, N. Mex., has been appointed to the professional board of the Institute for Defense Analyses, and will depart this month for Washington, D.C.

Dr. Sherburne has served as senior technical adviser to the Commanding General since 1959.

From 1950 to 1957 he was assistant professor and associate professor in physics at New Mexico State University, and then for two years was chief physicist with the Physical Science Laboratory at NMSU.

Born in Tyngsboro, Mass., he received an A.B. degree in mathematics from Dartmouth College, Hanover, N.H., and M.S. and Ph. D. degrees in physics from Brown University, Providence, R.I.

From 1946 to 1950 he did research and teaching while doing graduate work at Brown University. He is a member of the American Rocket Society, American Meteorological Society and the Geophysical Union.

Control of Frequency Monitoring Facility Changed

Change of control and redesignation of the first frequency monitoring facility serving the U.S. Armed Forces, established 15 years ago at White Sands, N. Mex., became effective July 1.

Since 1948, the Frequency Management Activity of the U.S. Army Signal Radio Propagation Agency (RPA) had been under direct control of the Chief Signal Officer, Washington, D.C. Renamed the Frequency Management Division, it is now under the Range Operations Directorate at White Sands.

The FMD controls and monitors military use of the radio frequency spectrum in New Mexico and all U.S. territory within 150 miles radius of WSMR headquarters. About 95 percent of its efforts are extended in direct support of the 4,000-square-mile range though operations extend high into the Sacramento Mountains.

Modified C-131 aircraft function as aerial monitoring stations to track down any frequency interference that could invalidate or disrupt a missile test. Two converted trucks augment the track-down capability. Fixed monitoring stations are located on all sides of the range.

Because frequencies used at WSMR do not stay within range limits, established at Albuquerque, N. Mex., and El Paso, Tex. Their job is to ensure that WSMR agencies stay within authorized frequency bands.

As an integral part of WSMR testing, the FMD mission expands as the tri-service range takes an increasingly important role in the missile and space program. The FMD assisted when the Sergeant missile was fired from Datil, N. Mex., and will perform similarly when the Army fires its Pershing missile from Green River and Blanding, Utah.

The FMD works closely with the Federal Communications Commission and local nongovernmental agencies in carrying out its monitoring and control mission. The El Paso Natural Gas Co. has a microwave system that runs parallel to the east side of WSMR and the telephone company has a line that crosses the range.

Modified C-131 cargo planes function as aerial monitoring stations to track frequency interferences that could disrupt missile tests at WSMR.

215 Leaders Take Part in Army Problem Solving Experiment

A 2-month experiment in which 215 leaders representing 14 Government agencies and industry tried to resolve specific scientific and technical problems to the most advanced state of knowledge has set some primary guideposts — but no easy standard procedure.

The experiment was planned by and conducted under the auspices of the U.S. Army Research Office Advanced Technology Group, Office of the Chief of Research and Development. It was headed by Lt Col Raymond S. Isenson and Dr. Paul A. Siple with the assistance of USARO division chiefs.

Reports on findings and recommendations of panels which considered five specific problems will be forthcoming in the near future, and will be distributed on a selective basis.

Continued experiments, several of which already are planned, will be necessary to determine more definitively the basic operational procedures effective in coping with scientific problems interdisciplinary in nature, Lt Col Isenson emphasized. That is the concensus of those who participated, including some 25 representatives of industry.

General agreement was reached on at least one procedure, that is, avoid large panels of participants. Confine them, preferably, to 8 to 10 individuals and consider the advisability of even smaller groups if the requirement for interdisciplinary knowledge can be met by qualified "generalists." Moreover, it was decided, even observers inhibit free discussion of differing views.

Further, the panel must be carefully selected to provide the breadth and depth of knowledge needed to consider all relevant interdisciplinary aspects of a particular problem. Also, personality factors must be considered, that is, members must have common respect conducive to rapport, and must be neither domineering nor too reserved.

Basically, the "group creativity" experiment was an advanced modification of the "eclectic" or "brainstorming" techniques of bringing together recognized experts and stimulating them to expound views or ideas freely, in the hope that cross fertilization of give-and-take discussion will spawn advanced new concepts. It was given a code name of ACSOG, derived from administration, continuity, specialists, observers and generalists.

One management and four technical problems were considered by the panels. They were: Ultrasonic Image Converters and Cinesonography; More Effective Utilization of Land Sub-Surfaces; Oxygen Requirement and Supply to Troops at High Elevations; Prediction of Performance of Individuals; More Effective Research Planning Techniques.

Forty of the specialists who participated came from colleges and universities, including Northwestern, Harvard, Duke, Brown University, Ohio State, Penn State, University of Pittsburgh, Purdue, Washington State, University of Southern California, Miami, Michigan, Illinois, New York University, Columbia, University of Chicago, and Johns Hopkins University.

Forty-one participants came from Government agencies outside of the Department of the Army, including the U.S. Bureau of Mines, Federal Aviation Agency, Central Intelligence Agency, U.S. Coast and Geodetic Survey, U.S. Geological Survey, National Bureau of Standards, National Science Foundation, National Research Council, Aero Space Medical Laboratories, Office of the Director of Defense Research and Engineering, Naval Research Laboratories, Department of the Navy, and Department of the Air Force.

Army representation, in addition to about 50 participants from the U.S. Army Research Office, included the Harry Diamond Laboratories, Springfield Armory, Frankford Arsenal, U.S. Army Electronics Research and Development Laboratories, U.S. Army Medical Research and Nutritional Laboratory, U.S. Army Tank Automotive Command;

U.S. Army Waterways Experiment Station, U.S. Army Engineering Research and Development Laboratories, U.S. Army Research Institute for Experimental Medicine, Chemical Research and Development Laboratories, Ballistic Research Laboratories, U.S. Army Personnel Research Office, and Army Limited War Laboratory.

Industrial representation was furnished by companies concerned with aviation, electronics, materials production, transportation, and military materiel.

A Continuity Group of about 50 persons was established to provide a connecting link between the panel discussions, membership of which changed constantly as different specialists and generalists were called in as consultants. Since a substantial portion of the Continuity Group is from the U.S. Army Research Office staff, the necessary link for future experiments is assured.

In an informal poll, 10 to 24 USARO staff members in the Continuity Group said they believed the experiment had resulted in new areas for research, 15 were of the opinion that fallout research areas were uncovered, and 19 indicated that additional problems should be considered for future discussions.

President John F. Kennedy receives a model of the U.S. Army's Sergeant missile from Sfc Harman D. Swits, member of B Battery, 3rd Battalion, 38th Artillery, a Sergeant unit. The presentation was made during the President's June visit to the White Sands Missile Range, N. Mex. General Earle G. Wheeler, Chief of Staff, U.S. Army, stands in the background.