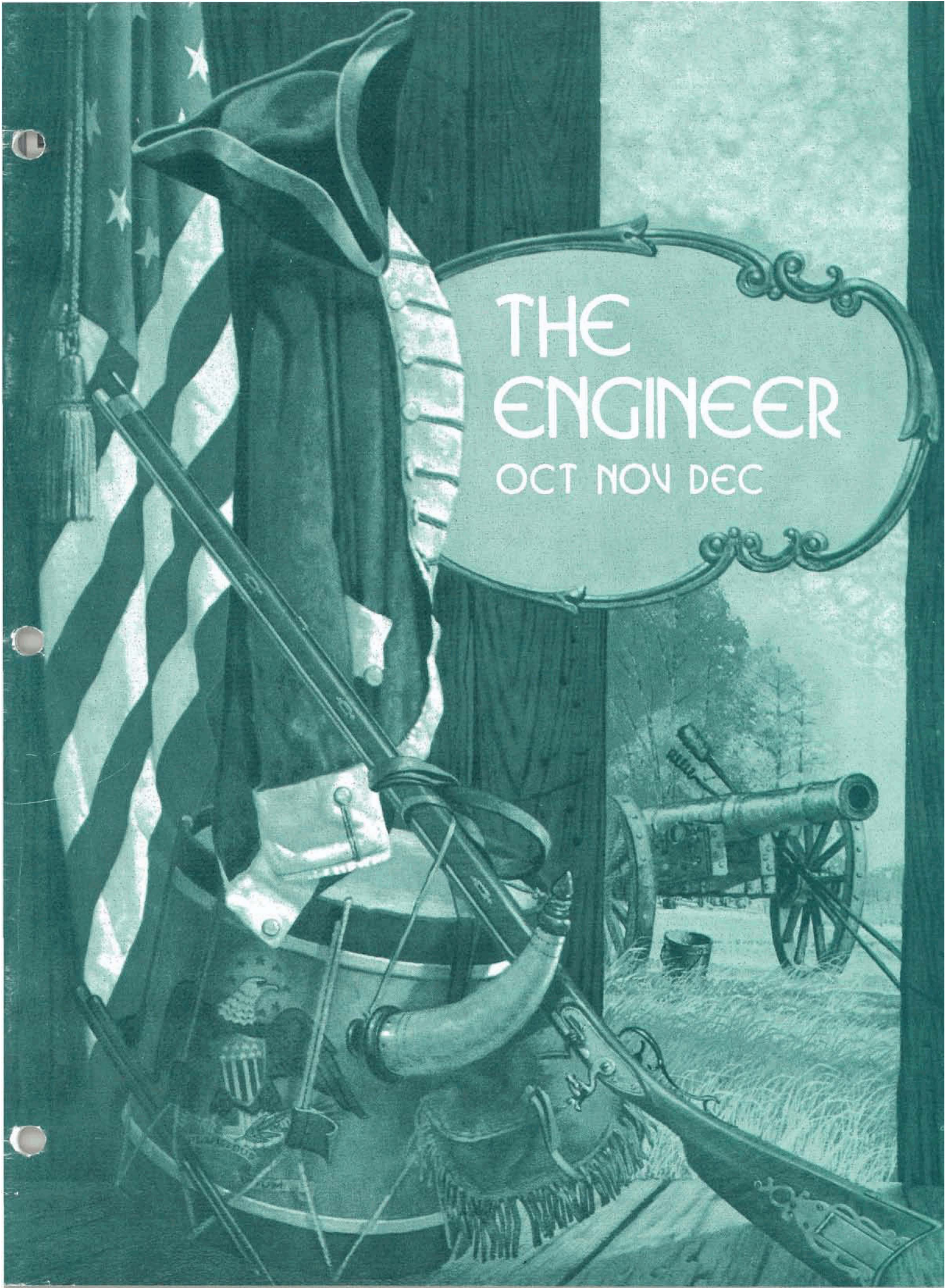
THE
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VOLUME 6 NUMBER 4 OCT NOV DEC 1976

FEATURES

DEPARTMENTS

CHIEF'S BRIEFS

Brigadier General Thomas Lincoln Casey was born at Sackett's Harbor, New York, May 10, 1831. He was graduated from the United States Military Academy on July 1, 1852 and promoted Brevet Second Lieutenant, Corps of Engineers.

Casey taught engineering at the Academy from 1854 to 1859. In 1859-1861 he commanded Engineer troops in Washington Territory.

During the Civil War Casey served on the Staff of the Department of Virginia and was entrusted with a variety of coastal fortifications responsibilities. For faithful and meritorious services he was brevetted Colonel on March 13, 1865.

Casey is best known as the Corps of Engineers most distinguished builder of public monuments and buildings. In this role he supervised from 1877 to 1888 the construction of the State-War-Navy Building and the completion of the Washington Monument. The latter project featured Casey's greatest engineering feat: the straightening of and placing of a new foundation under the monument, already 173 feet high.

While Chief of Engineers from July 6, 1888 to May 10, 1895, Casey, in addition to normal duties oversaw most of the construction work on the Library of Congress.

Prior to his death on March 25, 1896, General Casey served as a member of the National Academy of Sciences, the Society of the Cincinnati, and as an officer of the Legion of Honor of France. He was buried at the family farm in Rhode Island.

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ABOUT OUR COVER

We could not let this, the year of our Bi-Centennial, come to a close without one more relating cover. We think it is a fitting end for our article, "200 Years of Military History." Let's hope that when the United States has its Tri-Centennial that THE ENGINEER magazine will be around also.

.PIPELINE.PIPE

ANTARTICA STUDIES SCHEDULED BY CRREL LAB

Five members of the staff at the U.S. Army Cold Regions Research and Engineering Laboratory will be participating this winter in an International program for the study of glacial ice and marine organisms in Antarctica.

The CRREL team will be responsible for the drilling of three holes in the Ross Ice Shelf utilizing a wire-line mechanical drill developed at the Laboratory.

The first hole, which will go three-quarters of the way through the 1375-foot ice shelf, will be used to make age measurements of the ice. The ice will be melted at different levels and measurements made using radioactive techniques.

The second hole will be used to recover a 2-3/8-inch core which will be used in studies including determination of chemical constituents of the ice through a history that dates back into the pleistocene ice ages. CRREL recovered a 7,100-foot ice core from Byrd Station in Antarctica in 1968 and a 4,560-foot ice core from Camp Century, Greenland, in 1966. The ice coring project, sponsored in the U.S. by the National Science Foundation, has been a continuing one since that time.

The third hole, 12-inches in diameter, will be used to study the sea water beneath the ice and to analyze the ocean bottom. An underwater television camera will be used to view the ice bottom and the sea floor.

In addition to the drilling, the team will make measurements of depth, temperature, inclination, and closure of the hole.

Nets, traps, and baited lines will be lowered through the hole in an attempt to sample life beneath the ice. In addition, the team will attempt to drill 90 feet into the sea floor which is 780 feet beneath the ice shelf bottom.

In addition to the United States, participating in the project will be scientists from Australia, Denmark, England, Japan, New Zealand, Norway, Soviet Union, Switzerland, and West Germany.

NEW WATER PURIFICATION UNIT TESTED BY MERADCOM

A mobile water purification unit designed to replace four existing water purification units is undergoing developmental tests by the US Army Mobility Equipment Research and Development Command (MERADCOM) at Ft. Belvoir, Va.

The 600 gallons per hour reverse osmosis water purification unit being tested is the first and smallest in a family of multipurpose units being developed for field support. When operational, the family will replace the ERDLator, the 150 gph distillation unit, the CW-BW decontamination kit, and the mobile ion exchange unit.

The reverse osmosis system is capable of producing potable water from polluted fresh water, sea water, and brackish water and in removing chemical and radiological contaminants from water. The system can even remove certain viruses and bacteria when aided with post chlorination.

"It should be highly effective, providing water of high quality wherever troops may be located," said Allen Ford a project engineer.

Reverse osmosis is the process of pressurizing raw water above its osmotic pressure, and forcing it through a thin cellulose acetate or polyamide membrane fabricated into a spiral wound element. Twenty elements are used in the new unit.

The development of a dry membrane represents an advancement in the state-of-the-art in reverse osmosis membrane technology. Unlike commercially available wet membranes, the dry membranes can be stored dry and are wet/dry reversible.

Incoming water is pretreated with calcium hypochlorite for

disinfection and a polymer to aid filtration prior to final passage through the RO elements.

The 600 gph reverse osmosis unit is mobile and can be air dropped to forward tactical units or towed on a trailer. In both cases, it will supply enough to support at least 2000 men per day.

ENGINEER DINNER AND CASTLE BALL DATES SET

Engineer officers should mark May 6 on their calendars as the date for the 110th Annual Engineer Dinner. As in past years, the dinner is planned to begin at 6:30 p.m., the Engineer Mess, Fort Belvoir, Virginia.

On hand will be Lieutenant General John W. Morris, chief of engineers, to present the Itschner Awards for 1976. In addition, elements of the U.S. Army Chorus and the Old Guard Fife and Drum Corps and Color Guard have been requested to entertain as they have at past dinners.

In conjunction with the dinner, the annual Castle Ball for officers, wives and guests will be held the following evening at the Engineer Mess. Theme of the ball will be "The Castle."

Ticket prices will be announced soon. For reservations and further information write: Protocol Office, Bldg. 216, Fort Belvoir, Virginia 22060 or call (703) 664-4300, (Autovon 354-4300).

Seating arrangement will be available for only 550 persons, so make your plans to attend now.

ITSCHNER AND STURGIS AWARD PREPARATION FOR CALENDAR YEAR 1976

Now is the time to start planning and preparing for the Itschner and Sturgis Award nominations. The Emerson C. Itschner Award is awarded by the Society of American Military Engineers (SAME) to the engineer company which best symbolizes the character, mission and performance of the Corps of Engineers. The award, presented annually at the Engineer Dinner at Ft. Belvoir, is named in honor of LTG Emerson C. Itschner, a former Chief of Engineers and past president of the society.

One of the aims of the award is to promote leadership in junior officers and to foster "espirit" in company sized engineer units. For the purpose of the competition, company sized units include all engineer numbered and lettered or headquarters companies, separate or belonging to a battalion, brigade, group or larger organization, and activated under a TOE/TDA. In the past, the award was limited to active duty units. In 1974, the competition was expanded, providing separate awards for both National Guard and Reserve units.

The Samuel D. Sturgis Award is awarded by the (SAME) to an active Army enlisted member in recognition of outstanding contributions to military engineering, by demonstrated technical and leadership ability. This award is also presented annually at the Engineer Dinner in honor of LTG Samuel D. Sturgis, A former Chief of Engineers.

For the purpose of the competition, the individual should be classified in one of the following career management fields or military occupational specialities while performing the service for which recommended: 12 Combat Engineering, 35E (Special Electrical Devices Repairman), 51 (General Engineering), 52 (Power Production), 62B (Engineer Equipment Repairman), and 81 (Topographic Engineering and Map Reproduction). The narrative description should emphasize the individuals contribution to military engineering. The term "military engineering" may be literally interpreted to include troop or contract construction, maintenance, facilities engineering, combat engineering, engineers training, management/supervision of engineers activities, or other engineer support.

Although the designation of a single winner from a field of highly qualified finalists is a difficult chore at best, the Itschner and Sturgis Award Selection Committee would like to see more units and enlisted members compete for these awards. The key to turning out a winner, in addition to having the qualifying credentials, is to adequately document the unit's activities and the enlisted members contributions over the course of a given calendar year.

The annual presentation of this coveted award provides a means of revitalizating the competition and renewing the challenge. How does your unit stand against the others? You can find out in 1977.

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COLONELS:

ASSIGNMENTS. The assignment picture remains the same. Each Engineer Colonel received a letter last October giving a more detailed analysis. Keep us advised of your "druthers."

OPMS COMMAND. Engineer Colonels will no longer be allowed to command both a troop unit and a district. The recently announced Combat Support Army Selection Board results were developed based on this policy. Specific assignments to command positions will be made by Colonels Division.

SPECIALTIES. The primary and alternate specialty designation has been entered in Section 1 of the Officer Record Brief [ORB] for each officer. Please check this information the next time you review your ORB.

LIEUTENANT COLONELS:

COMMAND. The LTC Combat Arms Troop Command Board will select officers best qualified to fill Engineer command designated position vacancies projected for 1 October 1977 through 30 September 1978. Centralized LTC Command Selection Boards will be convened after the calendar year.

ASSIGNMENT. Engineer 'O5's at CONUS installations can expect to stay in their current assignment for 36 months. Officers who complete 36 month CONUS assignments and are not overseas vulnerable will probably remain on station for one additional year. Exceptions to stability described herein will be made for officers selected to command battalions, those completing battalion command, and those having a specific skill required to fill a Department of the Army designated priority assignment.

MAJORS:

ASSIGNMENTS. With the continued reduction in PCS funds, Engineer Majors can expect to remain on station for a minimum of three years unless they are in a "must move" assignment [officers returning from Overseas tours, completing school terms, completing four years on the DA staff, completing three-year ROTC tours without volunteering for a fourth year, and completing two-year USAREC tours without volunteering for a third year]. This stabilization impacts on becoming qualified in your alternate specialty. Therefore, if you have not had an assignment in your alternate and there is an opening at your present duty station in that specialty, you should consider moving to that position. Call or write Major Woodham at MILPERCEN for advice and assistance.

PROMOTION. Everyone in the primary zone for LTC AUS or who will be considered for RA Major [YG 64] should insure that a current [and good] official photo is in their file. Also, update your ORB if you have not done so in the past year. Don't wait until the last week. [The Major, RA board is expected to convene 29 March and the LTC AUS board on 5 April].

OPMS. Many of you have wondered what the "mechanics" are in making an assignment now that we are no longer in a branch. In Majors Division, there are at least four officers involved. Data in the computer has each of you projected into either your primary or alternate specialty for your next assignment. Approximately 6 to 9 months prior to your date of availability [completion of normal tour] the specialty manager of the specialty to which you are projected will review your file, and slate you for an assignment based on the needs of the Army, your career development and your personal desires. [Our policy is to try and contact you by either telephone or mail prior to completing the slating]. After the specialty manager has firmed up what he feels is correct, your file is routed to your other specialty manager for concurrence. If there is a disagreement, they attempt to resolve it at that point. Your file then goes to the professional development officer for his concurrence. If he feels the assignment is not appropriate, he trys to resolve it with the two

specialty managers. Your file then goes to the Chief of Assignments for final resolution.

The overriding factor on any assignment is the needs of the service. The next factor is professional development. For Engineers, it is extremely difficult to meet both due to the near critical shortage of Engineer Majors. A simulation model indicates that in order to meet the base minimum of Engineer requirements, Engineer Majors will be utilized approximately 80% of the time as Engineers. Therefore, you can see it will be extremely difficult to get you dual tracked in both of your specialties prior to promotion to LTC. Our goal, however, is to do so.

CAPTAINS:

Preference statements, letters, or verbal communication of an officer's preferences continue to be extremely important. Captains should insure that their assignment officer knows their desires at least one year, prior to DEROS or DTAV. All CONUS assignments are a minimum of 36 months in length unless the Army has an extremely urgent requirement that warrants breaking stability. Captains interested in ROTC assignments or civil schooling [graduate or undergraduate] during the next year should contact their assignment officer. If captains have any questions or concerns they should call their assignment officer. We will do what we can to help if it's within our power. Officers who have been in CONUS since 1970 are extremely vulnerable for overseas assignment [long or short].

LIEUTENANTS:

The selection board for CPT [AUS] convened in Nov 76 to consider first lieutenants of the Army and Women's Corps with a TDOR of 31 Jul 75 or earlier for temporary promotion to the grade of CP.

WARRANT OFFICERS:

Engineer Warrant Officers.

The following is a list of RA Engineer Warrant Officers as of 30 September 1976.

521A	11
621A	76
811A	3
821A	9
833A	2

AUS Promotions:

The next AUS CW2/3 and CW3/4 promotion board is scheduled to convene in January 1977.

FOR ALL:

Projected Requisitioning Authority.

The Army rarely is in a position where its officer assets, by specialty and grade, equal the sum total of all authorization documents. Like the commanders who are trying to do a job with fewer people than their TOE says they are supposed to have, the officer distribution planners and managers at MILPERCEN are also trying to make ends meet—but on a somewhat larger scale. The challenge is this—there are three principal factors which impact on the distribution process: assets, authorizations, and priorities. All three are in a constant state of change. Thus, there is a need for a master distribution plan which will assure that all commands, agencies, and activities receive, in line with their priority, a fair share of the available officer assets. The necessary management tool which brings the three principal factors into balance is called the Projected Requisitioning Authority—PRA for short—and as such becomes the Army's most important

document for officer distribution planning. Properly used, the PRA is an equitable system which allocates officers to positions in accordance with established priorites and availability of the required personnel assets.

OFFICER RECORD BRIEF:

MILPERCEN has dubbed this the "YEAR OF DATA ACCURACY." Objective is for MILPERCEN and all others in the personnel business to make a special effort to improve the quality of our personnel records and, in particular, our automated personnel records.

Data quality is crucial to effective operations at MILPERCEN. Many key personnel decisions are made daily at MILPERCEN based on the records available. If records are inaccurate we run the risk of making an incorrect decision and adversely impacting on our officers' or soldiers' careers.

The Army is being pressed for more efficient management of all aspects of the personnel system. Having a quality data base is a key element for improved personnel operating both in the field and at HQA DA and MILPERCEN. Numerous top level personnel decisions pertaining to promotion allocations, assignment distribution, training requirements and others are largely dependent on statistical data and reports obtained from the automated personnel records.

The Officer Record Brief (ORB) has become a very, if not the most, important record MILPERCEN maintains on the Officer Corps. It is no more than a print out of the officer's record on the Officer Master File. ORBs are sent out through MILPOs to officers for review and audit. Careful audit and prompt return of ORBs must get priority attention. Considerable improvement is needed in this area.

CHANGE IN TIMES—PAY

As times change, so does a soldier's pay. For the most part pay has increased. Only twice; once before the Civil War, and once after, has military pay gone down. The QRMC has been around since the Civil War — only it wasn't called the QRMC. Below are the pay scales per month for a Corporal (E-4) and a First Sergeant (E-7 and E-8) from 1785 to present.

Corporal (E-4) Inf.	1785	1790	1798	1812	1854	1864	1871	1908
	$5	$4	$7	$6	$17	$20	$17	$24
	1918	1923	1942	1949	1958	1967	1975	
	$27	$44.10	$69.30	$124.95	$150	$251.70	$459.30	
First Sergeant (E-7 & E-8)		1833	1838	1854	1864	1871	1908	1918
		$15	$16	$20	$24	$21	$57	$57
		1923	1942	1949	1958	1967	1975	
		$96.60	$165.60	$249.90	$350	$537	$949.50	

These pay rates are averages for time in service. It should be noted that the actual grades have changed over the years, i.e., a First Sergeant was "Second Grade" a Corporal was a "Tech 5," etc.

IMPACT OF THE RIBBON BRIDGE

MAJ Peter J. Mackie

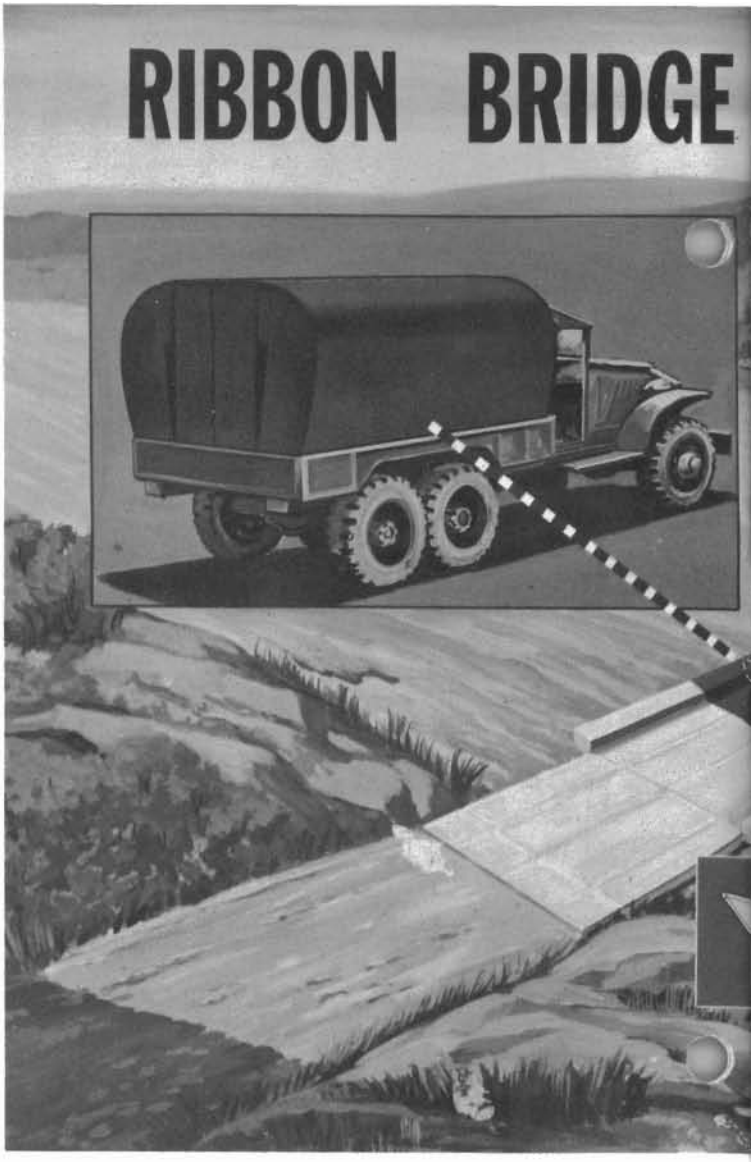
The introduction into service of the new Ribbon Bridge will solve many of the old problems of float bridge operations — but it will also pose some new ones. The aim of this article is to highlight these new problems and to suggest possible solutions.

Issue of the Ribbon Bridge system to units in USAREUR began in August 1976 with an appropriate amount of M4T6 equipment being phased out as the Ribbon Bridge is phased in. Introduction of the new equipment will prompt the formation of a new unit to operate it. The Float Bridge Company (Ribbon) will have the primary mission to haul, maintain and *install* the Ribbon Bridge. This mission is an expansion over that of the M4T6 equipped Float Bridge Companies which are organized to haul and maintain their equipment but not to install it.

Let us compare the installation of a 400 ft long M4T6 and Ribbon Bridge with a 60 ton capacity. The bridges are to be installed as part of a deliberate river crossing operation in the offense.

The first and obvious difference between the two is the bridge construction time — up to six hours for the M4T6 and one hour for the Ribbon. The faster Ribbon construction rate is a tremendous asset to the whole operation, but it will be a test for the Engineer Commanders. To emphasize this, let us assume that our bridge has to be open for traffic at H hour. The M4T6 commander would aim to be on site at H-6 hours

RIBBON BRIDGE



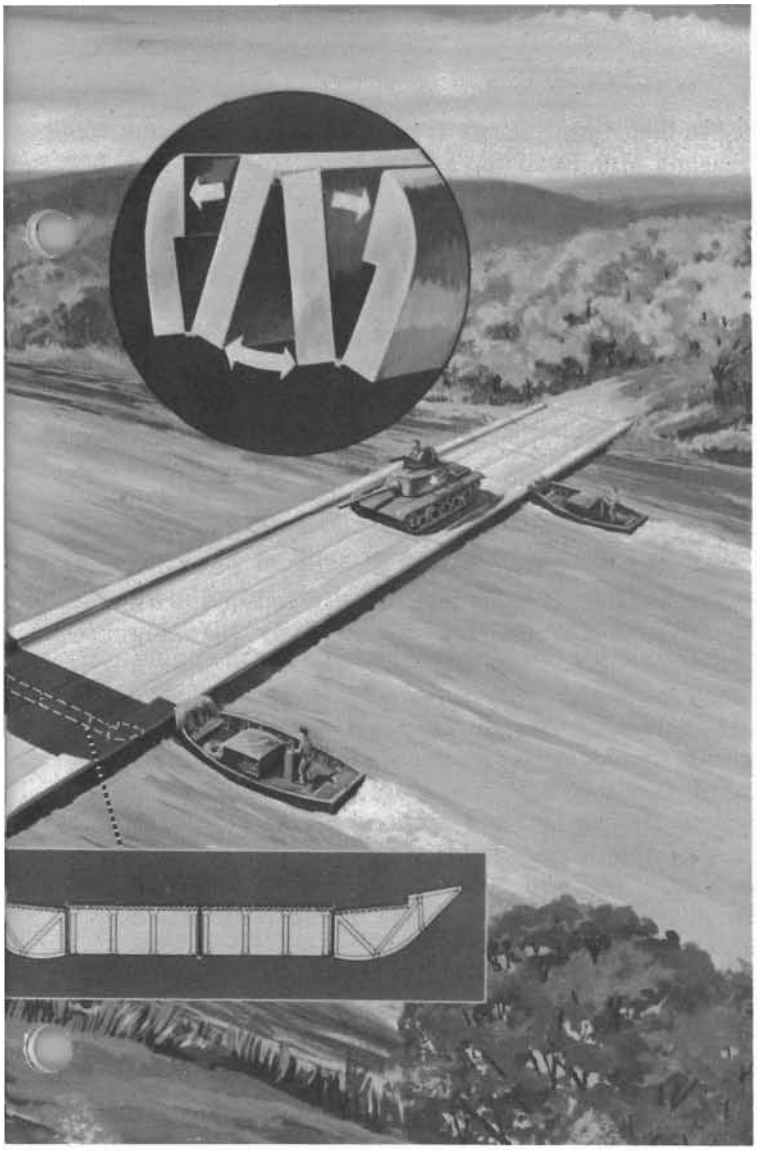
and if he left a piece of equipment behind in the assembly area by mistake he could still send someone back to collect it and have the bridge open on time. The Ribbon commander, on the other hand, would aim to be on site at H-1 hours. If there is any flaw in his construction planning he will find it virtually impossible to complete the mission on time. The first lesson to be drawn from our example, therefore, is that the plan assumes a new importance in float bridge construction: accurate map reading, careful reconnaissance, strict road movement discipline en route to the construction site and command and control on the site must be close to perfect. To use a CPM analogy — the 'float' has disappeared out of float bridging.

A second factor relevant to the road move prior to construction is the respective times of the move vis a vis our H hour. The M4T6 convoy, for a final approach of one hour's duration, will be on the road from H-7 hours until H-6 hours. At this time the road net in the river crossing area should still be comparatively clear of non-engineer movement. The Ribbon convoy on the other hand will aim to move between H-2 and H-1 hour. During this period the combat units designated to cross the bridge at H hour will be forming up and moving into position near the bridge site. There is a real danger that our convoy of Ribbon Bridging equipment will become snarled with the tactical units and the whole operation will be delayed. With Ribbon Bridge, route priority is essential for the Engineers for movement to the river line.

Construction of M4T6 is relatively complicated and demands a high degree of skill within the constructing troop units. Hopefully, the prudent construction commander will have used his time in the assembly area to brief and rehearse his soldiers and to thoroughly check his equipment. In short, experienced Engineers know that there are pitfalls in M4T6 construction and plan accordingly.

Construction of Ribbon Bridge appears to be simple, as the bays are simply released from the transporter, slide into the water, unfold automatically and are coupled together. But is it really that simple? The honest answer is 'no' — the road latches and ponton latches still have to be released, drain plugs installed, winch cable released, shore lines tied and construction tools checked. None of this is difficult but failure to perform any one of the pre-launch steps will result in a hold up in the operation. The lesson to be learned — and hopefully not the hard way — is that although Ribbon *is* much simpler than M4T6, it still has to be handled with respect. Skill and professionalism are still essential to a successful build and, because of the potentially faster construction rate, even minor mistakes can threaten that success.

Ribbon Bridge construction is dependent on the rate at which bays can be launched. With M4T6 bridging, the five ton Bridge Trucks do not normally back into the water. They can remain on firm level ground away from the waters edge. In a Ribbon Bridge build, the same trucks will usually have to back into the river. On a construction site with wide frontage and firm evenly graded access this will not pose a problem, but experience has shown that this situation is not the norm. The Ribbon Company will be issued with the flexible, fiberglass mat system known as MOMAT to aid truck access to the river. Similarly, the winches on the bridging trucks may have to be rigged to provide mutual assistance or, in extreme cases, entry slots may have to be cut. What is obvious, however, is that Ribbon Transporter drivers will have to be trained to overcome the access problem and that the various access improvement measures are going to have to be thoroughly tried, tested, and rehearsed. Finally, referring back to our bridging example, arrangements will have to be



made for the marshalling and dispersal of the 18 empty bridge transporters once the bridge is in place. They cannot be left on the bridge site but must be available for bridge retrieval when required.

Coupled with the truck access problem will be the problem of access to the completed bridge. The fact that a Class 60 bridge requires Class 60 approaches is often ignored in the rush to get bridge construction completed. In a 6 hour M4T6 build, the marking and upgrading of the immediate bridge access does not pose much of a problem. During the 6 hour construction time, dump trucks, bulldozers, improvised trackway, etc. could all be used, if required, to supplement the slow but well tried combat engineer methods of overcoming difficult ground. The one hour Ribbon construction time changes all this and the approach problem assumes a new importance on the critical path of crossing-site construction. That development personnel are aware of this, is evidenced by the new interest in rapidly emplaced trackway systems, night marking systems, etc. The fact that a Ribbon Company can install its own equipment does *not* mean that there is no longer a role for the Combat Engineer Line Company on a river crossing site. The construction and marking of approaches could well prove more difficult to accomplish than the construction of the bridge itself.

During an M4T6 bridge build there is usually ample time to concurrently install the anchorage system required. As Ribbon Bridge uses virtually the same anchorage systems — shore guys, kedge anchors and overhead cable — there is now a danger of our Ribbon Bridge being ready before the anchorage system. Without this anchorage, the bridge cannot be trafficked and the construction mission is not complete. To overcome this problem the Ribbon Company TO&E will include 14 Bridge Erection Boats mounted on modified Transporters which can be used, not only as a construction aid, but as a rapidly emplaced temporary anchorage system. The thrust from these boats can be used to hold the bridge in place until such time as the fixed anchorage system is complete and traffic is allowed to cross the bridge. This assumes that all bridge boats are functioning properly, emphasizing the importance of the bridge boat to the whole bridging operation.

Like the M4T6, the Ribbon Bridge can also be used to build rafts. A Class 60 Ribbon raft can be built in approximately 15 minutes provided that the transporters can get the bays into the water fast enough. Similarly, any upgrading and marking of approaches must be complete before the raft can operate. Although the whole 26 foot long End Ramp Bay articulates relative to the raft, shallow water will still pose a raft access problem as will the fact that the Bridge Erection Boat has a draught of 40 inches against the Ribbon rafts 20 inches. Accurate reconnaissance is just as important as ever.

In sumnmary, the introduction of the Ribbon Bridge is a big step forward in terms of our ability to cross water obstacles quickly. To use the equipment to its best advantage, we must know of its limitations and make adequate provision to overcome these. Although the basic equipment is much simpler to use than M4T6, it must still be treated with respect. The basic Combat Engineer skills of arriving on the right site at the right time with the right equipment and properly briefed soldiers are as important, if not more important, than ever.

Submitted by Major Peter J. Mackie, Royal Engineers, Senior Bridging Instructor, Field Engineering/Bridging Branch, Combat Operations Division, Department of Military Engineering, United States Army Engineer School.

It was a dark, chilly November night as Sergeant Hanford skillfully maneuvered his enclosed MP jeep around the curve of the gravel road. Suddenly, his headlights focused on an incredible sight. Two hundred meters ahead, the road simply disappeared! Braking sharply, he reached for his hand mike and ordered the Range Central operator to connect him with the Fort Campbell Provost Marshal at once.

"Sergeant Hanford, Sir. Something's very wrong! I'm on patrol in training Area 31. I just came upon a huge crater on Stampers Chapel Road. Looks to me like some artillery rounds have missed the South Impact Area."

Before he could continue, two menancing soldiers in field gear appeared on either side of his vehicle, rifles at the ready. After establishing that the Sergeant was not a part of the aggressor force, and convincing him to douse his headlights (*"The light line, Sergeant, is on the* east *end of the Reservation"*) the two soldiers explained that the crater had been deliberately placed earlier that day by Company C, 326th Engineer Battalion (Air Assault) as part of the barrier plan ordered by 3d Brigade, 101st Airborne Division. It was designed to stop enemy tanks (provided by the Kentucky National Guard) and had been created with "about 350 pounds of cratering charges."

"In fact, Ghost Corps Trail, Killebrew Road and Pleasant Mill Road have also been cratered and mined, so you won't be able to get through them either," the soldier was saying.

There had been misgivings about using real craters from the very outset. It's not really *safe* to use large quantities of demolitions outside a controlled demolition area. Blow them at *night?* Unheard of. Those are all *major* training roads on the Fort Campbell Reservation. You would close the reservation for weeks. Every unit in the Division would be operating on the reservation. You would inhibit the infantry and support units' ability to move, once on the ground.

These objectives had all been discussed with the Division Commander in the early planning stages of "Exercise Orbiting Eagle V" — a maneuver which would pit one Brigade of the 101st using Air Assault tactics against an enemy brigade-sized force augmented with National Guard tanks and APCs employing Soviet bloc tactics. Having listened to the arguments on both sides of the issue, the Division Commander announced, "We will use actual craters and live demolitions on all major roads of the reservation except those which are asphalt." And, turning to his engineer battalion commander, he added with a half grin, "Naturally I hold you personally responsible to repair all those roads after the exercise."

LTC J. H. Moellering

Something is Very Wrong

A shortcoming of some infantry brigade S-3's is their lack of expertise in properly employing all members of the combat arms team available to them. The S-3 of the 101st's 3rd Brigade, was different. The Commander of Company C, 326th Engineer Battalion was standing before the operation's map in the 3rd Brigade TOC explaining to the 3rd Brigade Commander and the Bde S-3 the details of his proposed brigade barrier plan. Having received the "green light" from the Division Commander on the use of live craters, the Brigade Commander realized what a powerful tool he had for influencing the action, particularly since off-road mobility for tanks at Fort Campbell is relatively limited. The Crater locations were carefully selected for maximum impact and were augmented with minefields, tied in to natural obstacles, and covered by fire.

Several craters were actually blown, three at night. The effect on enemy armor and mechanized forces was devastating. The Chief Controller declared that all tanks had been destroyed in the attack, many of them more than once.

Achievement of true realism in training requires paying a price. Certainly, we must do our best to limit maneuver damage; certainly we must repair the damage we do. But "doing damage" to fixed facilities is a prime combat mission of the combat engineers. And unless they are afforded the opportunity to "do their own thing" in a combined arms maneuver setting, the other elements of the combined arms team will never gain a true appreciation for the kinds of capabilities and assistance afforded by combat engineers. In essence, these "live fire" tactical exercises will do a great deal toward fixing in the mind of the infantryman and tanker how he can enhance his already considerable capability. To achieve this requires a philosophical attitude on the part of the installation commander that the military reservation is his to "consume" much as one consumes ammunition from a CTA in training infantry. Recognizing this, the divisional engineer battalion has placed maximum emphasis on constructing hasty structures — bridges, towers, bunkers, culverts, etc. — of natural timber. The Division Commander has strongly backed this practice. There is, at the same time a vigorous reforestation program underway by the Fort Campbell Facilities Engineer to insure that trees are available in the future. During non-tactical periods, the full capability of the engineer battalion can be used to repair the craters and maintain the roads. The outstanding results achieved at Fort Campbell indicate that the benefits clearly outweighed the costs.

AUTOGRAPH COLLECTING

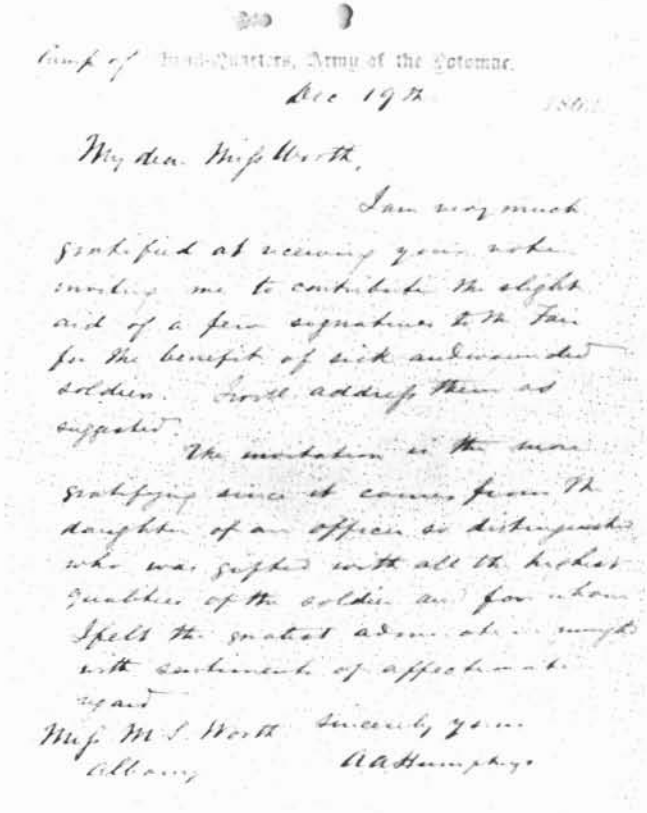
CPT John J. Connor

Autograph collecting is a "topical" hobby. Some of the common subjects collected are United States Presidents, Members of the Continental Congress and Civil War generals. Some of the less common subjects include Nobel Prize winners, Medal of Honor recipients and British royalty. In recent years, two new topics have become popular, astronauts and principals in the Watergate scandal!

Often the topic has a relationship with the collector: a doctor may collect autographs of famous figures from the medical sciences, or someone from Texas might seek autographs of famous Texans. In this fashion, an appropriate collection for an officer in the Army Corps of Engineers would be correspondence of the forty-five men who have held the position of Army Chief of Engineers. Such a collection spans more than 180 years, as the first Chief died in 1796. It also overlaps with several other topics including Civil War generals and Medal of Honor recipients.

When thumbing through catalogs it takes a keen eye to spot a Chief Engineer as you'll seldom, if ever, find him listed as such. General Rufus Putnam, the second Chief, serving from August to December 1776, would probably be listed as "Ohio pioneer." As he is best known for leading a group of Revolutionary War veterans to found what is now Marietta, Ohio. He also served as a judge of the Supreme Court of Ohio and as Surveyor General of the United States. Similarly, Major General Horatio G. Wright, Chief of Engineers from June 1879 to March 1884, is usually referred to as "Commander of Union VI Corps."

This topic also presents a problem to those who like to collect autographs of "incumbents," that is, a document signed during the period the person held the job. Brigadier General Henry M. Robert's tenure was a scant two days; appointed on April 30, 1901, he retired on May 2, 1901. His successor, Brigadier General John W. Barlow, topped this record by retiring one day later on May 3rd. By contrast, Major General Joseph G. Totten served in the position, from December 1838 to April 1864. Incidentally, General Robert is the author of the



Camp of Head-Quarters, Army of the Potomac.
Dec 19th 1862

My dear Miss Worth,

I am very much gratified at receiving your note inviting me to contribute the slight aid of a few signatures to the Fair for the benefit of sick and wounded soldiers. I will address them as suggested.

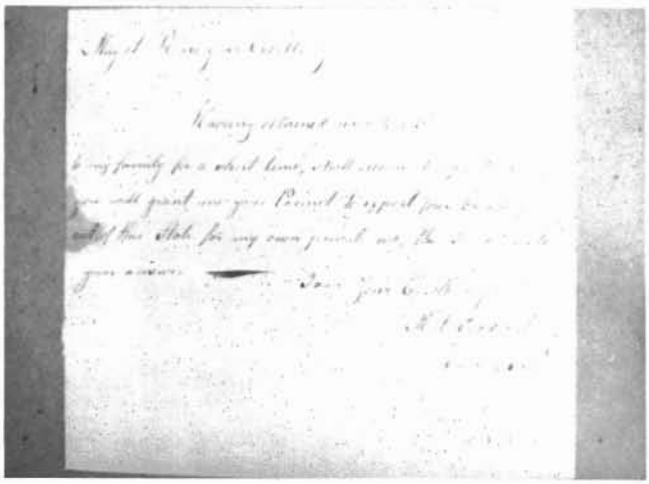
The mistaken is the more gratifying since it comes from the daughter of an officer so distinguished who was fighted with all the highest qualities of the soldier and for whom I feels the greatest admiration mingled with sentiments of affectionate regard

Miss M. S. Worth
Albany

Sincerely Yours
A.A. Humphreys

Autograph letter signed by Major General A. A. Humphreys while Chief of Staff of teh Army of the Potomac. Humphreys was the Army's fifteenth Chief of Engineers, serving from August 1866 to June 1879.

Letterheads of the Office of the Chief of Engineers between 1867 and 1976.



Letter written by a clerk, signed by Colonel Rufus Putnam, Chief Engineer of the Continental Army from August to December 1776. This letter was written to a state governor, probably prior to 1790.

"Pocket Manual of Rules of Order," the famous book of parliamentary law commonly known as "Robert's Rules of Order."

One additional feature of this topic is that it gives rise to a logical sub-topic, namely, Office of the Chief of Engineers letterheads of which there are more than a dozen different examples in the last hundred years. Part of the joy of a topical or specialized collection is the opportunity it presents to study the lives of the persons whose autographs are being sought, and to come to know them as real people and not just scraps of paper. The Chief Engineers were real people; let's take a look at a few.

One of the most fascinating of the forty-five Chief Engineers was the very first, Colonel Richard Gridley (June 1775 to August 1776). At age 65 he forsook a pension and other rewards for service in the British Army to join the Revolution. It was Gridley who laid out the defensive positions for the Battle of Bunker Hill and for the Seige of Boston which led to the British evacuation on March 17, 1776.

The third and fourth Chiefs were Frenchmen, apparently recruited by Benjamin Franklin. Interestingly, both men — Major General Louis Duportail and Lieutenant Colonel Stephen Rochefontaine — returned to France to fight *for* the King during the French Revolution, and both men escaped back to America after the defeat of the monarchy. Jonathan Williams, grand nephew and secretary to Benjamin Franklin became the Army's sixth Chief Engineer (April 1802 to July 1812) as well as the first Superintendent of West Point. Williams was not the only Chief with a famous relative. General Walker Armistead was the Father of Confederate General Lewis A. Armistead, killed leading Pickett's charge at Gettsburg. General A. A. Humphreys' grandfather designed the frigate USS CONSTITUTION (Old Ironsides). General James Duane's grandfather was a member of the Continental Congress and the first major of New York. Finally, General William Marshall was a direct descendant of Chief Justice John Marshall.

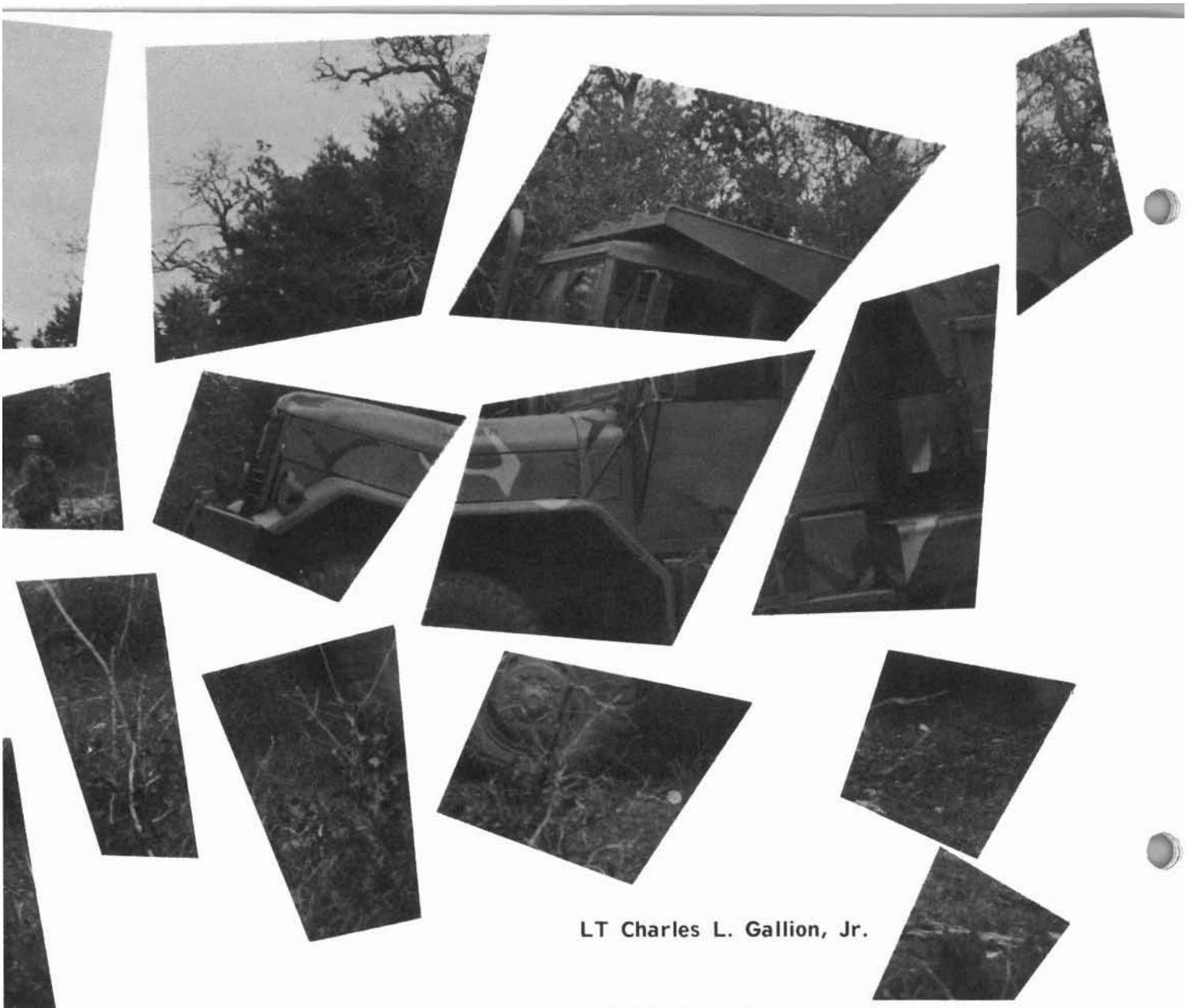
As stated previously, many of the Chief Engineers earned distinction during the Civil War, either as commanders or as engineers. Four were Southerners who supported the Union: John Newton and William Craighill of Virginia; Henry Robert of South Carolina; and George Gillespie of Tennessee recipient of the Medal of Honor for gallantry at Cold Harbor. Brigadier General John M. Wilson also received the Medal of Honor for action at Malvern Hill. Because of the wide interest in this period, autographs of the Chief Engineers of this era are more readily available than any other period excluding the last thirty years.

Above all else, whatever their other accomplishments, the forth-five Chief Engineers were practicing engubeers and not merely administrators. Here are four examples of their work: Brigadier General Joseph Swift (1812-1818) directed the rebuilding of the Capitol after it was burned during the War of 1812. Brigadier General Thomas Casey (1888-1895) completed the Washington Monument, which, already 173 feet high and leaning badly, had to be straightened and provided with a new, solid foundation. Major General William Black (1916-1919) chaired a board of engineers tasked to raise the sunken battleship MAINE from Havana harbor and Lieutenant General Raymond A. Wheeler (1945-1919) personally directed the massive salvage operation in the Suez Canal after the 1956 Middle East War.

Such a specialized collection obviously means slow — but satisfying — progress. Above all it has developed a greater appreciation for the important role the Corps of Engineers has played in shaping the history of the United States.

By the way, if you have any letters of William Trent Rossell, the 28th Chief of Engineers, hidden away in a drawer . . .

A 1972 EOAC Graduate, Captain Conner is presently serving as the S-2 and Information Officer for the 39th Engineer Battalion, (Combat), Fort Devens, Massachusetts. He has also received his BS in Geology from Boston College.



Keeping it Together

LT Charles L. Gallion, Jr.

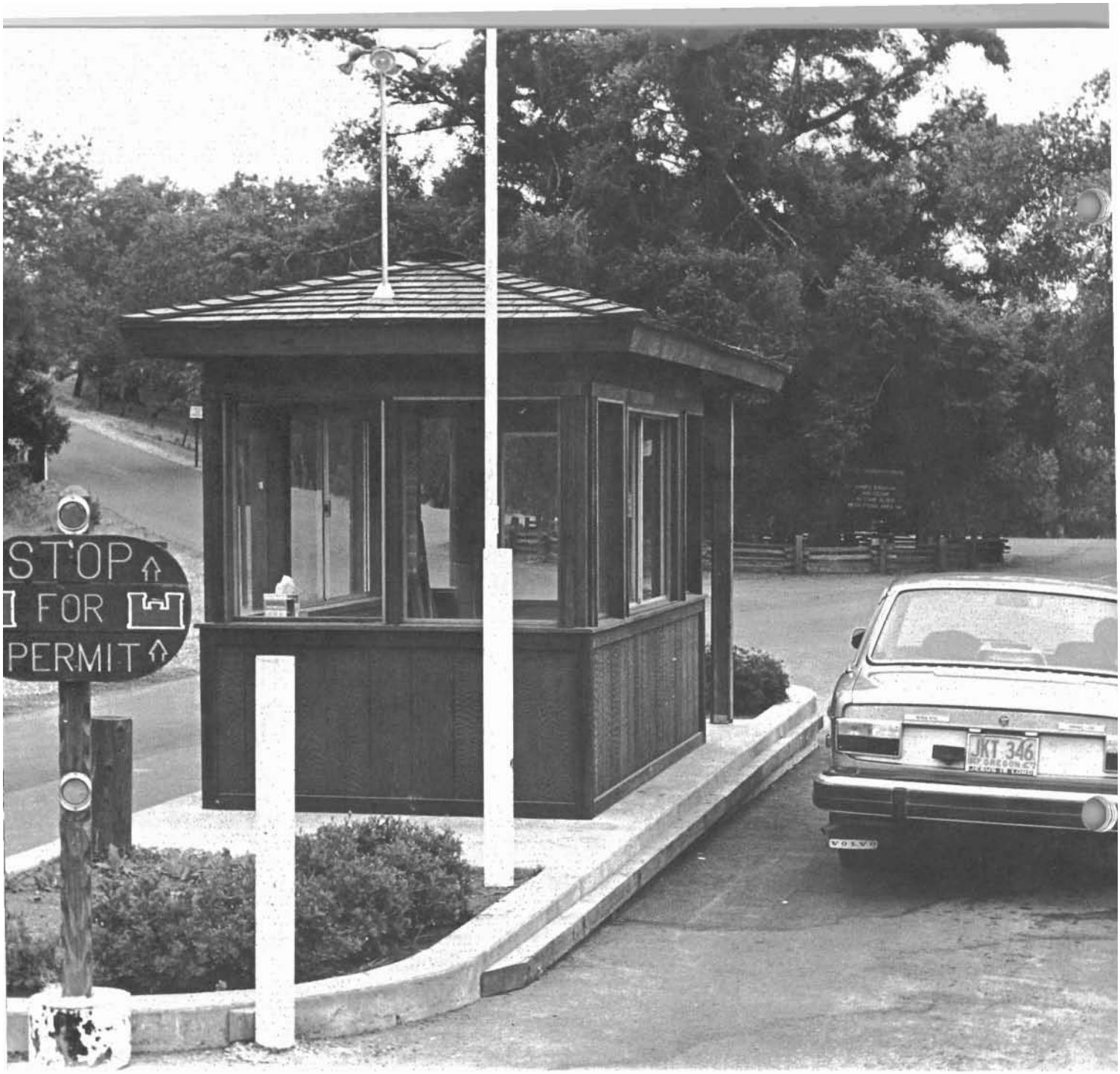
I joined the Army just about eight years ago and in many ways I'm just like many of the younger soldiers I've seen over the years. Used by the Army on every imaginable detail, taken far away from home to a strange country, and never once have I gotten a promotion. By now I should have been recognized or something; but I've never been recommended. It's a sad story; but true. Not even an Article 15 in my logbook, although I've appeared on the deadline report a couple of times. You see, I'm not the "ordinary" American Soldier. I'm A-88, multi-fuel powered, and owned by Uncle Sam. Some may call me a Dump Truck, others a Five Ton; but by the book it's really Truck, Dump, 5 Ton M51A2. Anything you ever wanted to know about me is printed in my biography. TM 8-2320-211-10. Sequels have been written that go into greater detail, these are the -20 and -34. Not as famous as TOLKEIN'S TRILOGY and they'll probably never make it to the movies; but it is a good reading collection. You really should read them for my sake.

I've sat back and watched things take their natural course for a long time, and now it's time for me to speak up and take care of myself before it's too late. Hundreds of others like me feel the same way and I've been chosen as the spokesman for all military vehicles. We're tired of being driven and neglected to death and even worse, transported to the Property Disposal Officer (PDO). My time is short, maybe two years at the most, and then my logbook will reflect "DEATH BY UNNATURAL CAUSES" like so many of my friends. My transmission seals are leaking, pistons worn, and my new operator insists on reving me past the maximum permissible RPM. That kind of treatment can mean only one thing for us — a blown engine. Sure, you can say "we can replace an engine;" but I'm eight years old with 82,000 miles, far past the limits of being economically repairable. Why not replace an operator it's cheaper, or better yet, train him to be a better operator. Keep one man on me until he knows the whole works inside and out. Daily checks in the morning are a good start; but make sure he follows up later with those during and after operations checks. Remember he needs my biography to do it right. Once the program is under way you'll be surprised how fast it catches on, and how much better we respond. I'm here to serve you and without proper care, I'll quit when you need me the most.

Over longer periods of time the Equipment Serviceability Criteria (ESC) is a good indicator of my COMBAT READINESS. It's good up to 90 days and gives a RED-AMBER-GREEN rating in all of my functional areas. I'm AMBER right now on three counts for engine, transmission, and rear differential mileage 'cause I have over 50,000 miles; but I'm ready if the need arises. Without an operator's care, I'll turn out to be a headache for everyone concerned, and end up as a Not Operational Ready (NOR) listing on the 2406. I might even add to your RED percentage and throw your Readiness Conditon (REDCON) out of whack. It's a nasty business; but I have to tell it like it it.

Now I'm speaking to a much higher level than the operator, right? It's sort of like the Big Picture and the root of a good Maintenance Program. Everyone from top to bottom has to get involved. Occasionally, I've witnessed supervisors give the OK to operate a vehicle in less than satisfactory condition. No mission can be that important and that's why we break down. Call it a revolt or a mutiny; but we like to think of it as a "Trucker's Strike." This is our time to stand up for our rights. A well timed strike forces you to re-evaluate and correct our deficiencies. At this point, we get the attention of everyone and are finally in the spotlight. Prescribed Load List (PLL) Clerks order parts, The Army Material Management System (TAMMS) Clerks make out the necessary reports, Maintenance Warrant Officers diagnose the problem and mechanics prepare to replace components. Supervisors and platoon leaders look for a replacement to finish the job that I couldn't and the Company Commander is busy explaining to the Battalion Commander. Wouldn't it be easier on everyone to plan their maintenance periods rather than let me do the scheduling. When I make the decision, I'm not as considerate of your mission requirements. It's far simpler to do something right the first time, every time, than to waste time correcting a larger problem magnified by the course of time.

A-88 isn't my only name. I could be any one of the vehicles looking back at you from the motor pool. I may even be your truck, so if my story sounds a little familiar, maybe you should check out your maintenance program.



LAKE MENDICINO

CPT Robert L. Harder

The historic versatility and *"Can Do"* performance of the Corps of Engineers was demonstrated at the Lake Mendocino Recreation Area in Ukiah, California, 120 miles north of San Francisco. In July 1975, the Corps' San Francisco District was granted $754,000 through the Department of Commerce under the provisions of the Emergency Jobs and Unemployment Assistance Act of 1974 (Public Law 93-567; *"to provide emergency financial assistance to stimulate, maintain or expand job creating activities in areas, both urban and rural, which are suffering from unusually high levels of employment."* The San Francisco District was to hire unemployed persons from Mendocino County, primarily for recreation resource improvement. As a result of this unusual program, the District was placed in the unique situation of filling all three principal positions of a major construction project: User, Designer, and Builder. The formation of a Construction Management (CM) team to coordinate the program was a logical and natural result. With characteristic *"Will Do"* determination, personnel from the District's Operation (User), Engineering (Designer), and Construction (Builder) sections quickly organized to insure the successful implementation of the Lake Mendocino program (the largest of 25 such programs assigned to the Corps).

Hiring Restrictions

Particularly challenging was the requirement to meet the many restrictions and goals specifically outlined in the Title X legislation. One such goal was the requirement to hire the majority of the work force within two weeks of being notified about the program. An analysis of the work to be accomplished and a survey of the unemployed work force in the local area demanded the development of a simple, yet flexible organizational structure. Accordingly, ten 6-man crews were proposed, each comprised of five laborers and one leader. It was anticipated that such a *'squad-type'* organization would enable crews to be easily combined or interchanged with minimum difficulty. (As the program progressed, the appropriateness of such an organization was repeatedly demonstrated as inclement weather and material delivery delays often required changing work schedules on short notice.) For supervision and support, six office positions were also proposed, including toolkeepers, clerks, and a safety officer. With a minimum of job descriptions involved, the task of identifying qualified applicants through the state employment officers was expedited. Although the precise, stringent eligibility criteria required by the program (based upon an applicant's unemployment history) posed an additional restriction to the hiring procedure, the timely coordination of effort between the project, District, and state employment personnel enabled a work force of 66 men and women to be employed and busy at work by the end of July. (During the course of the program, the multi-disciplined work force increased to a peak of 80 persons, including unemployed archaeologists and social scientists.)

Adequate Supervision

Another work-related restriction of the program that was of considerable concern was the problem of providing adequate supervision of the work force. Since program funds could not be used for salaries of permanent Corps personnel at the project or District level, it was imperative that the work crews assume a large part of the responsibility for their own performance. To facilitate the identification of workers with leadership ability, it was proposed that assistant foremen and assistant crew leader positions be created and filled by promoting qualified members of the work crews. Motivated by the possibility of promotion, many workers quickly developed and demonstrated excellent supervisory capabilities, enabling the program to become largely self-managing as anticipated. In addition, as many of the crew leaders resigned during the course of the program to accept permanent employment elsewhere, the promise of such upward mobility proved to be a continuing incentive to the work force.

Material Limitations

Perhaps the most challenging aspect of the program was the requirement to meet the severe restriction imposed upon material purchases: a maximum of twenty-five percent of the allocated funds could be expended for supplies and materials required in support of the program. In these times of spiraling material costs, the development of constructive, meaningful work projects within such a strict material budget required through deliberation. A study of the various stages of development of the camping and day use areas as outlined in the project's Master Plan resulted in a listing of proposed projects that promised compliance with the strict labor/material ratio of 75/25. By balancing labor-intensive projects with those requiring considerable material purchase, an overall labor/material goal of 80/20 was established. Detailed records were updated weekly reflecting the total manpower and material expenditures for each work project. These records

were then used to determine each individual project's labor/material ratio. Continuous monitoring of these ratios and the careful reallocation of available men, and machinery resulted in a balanced project mix that kept the overall material costs well below twenty percent. In addition, such detailed cost records proved to be a valuable source of historical data for estimating work project of a similar nature at other project locations.

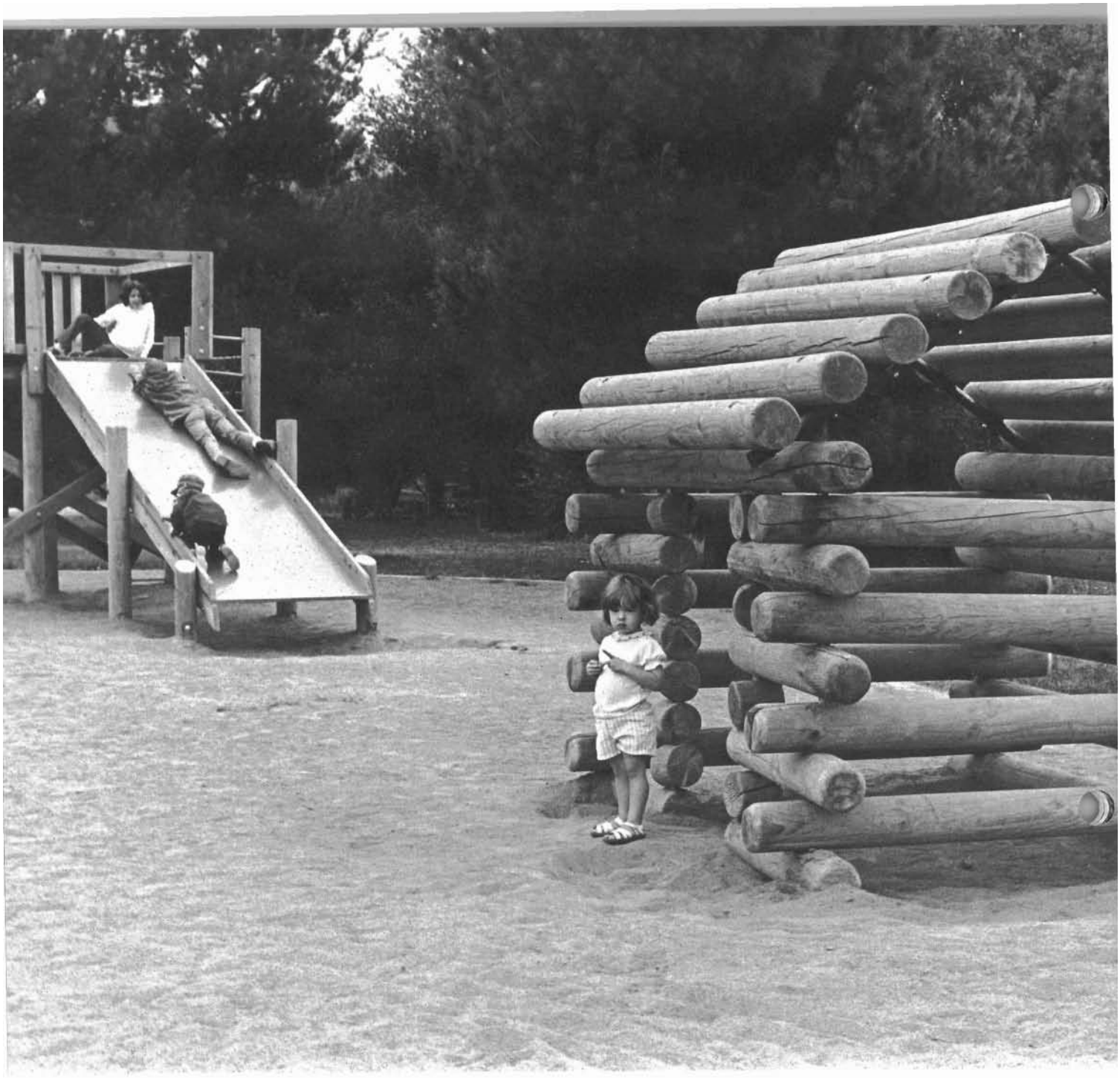
As a result of the coordination and preplanning accomplished by the CM team, and through the continuous reallocation and balancing of program resources, a diverse combination of work projects was successfully completed, that greatly enhanced the long-term protection and use of the environment and natural resources of the area. Most of these projects were aimed at the staged improvement of Lake Mendocino's many recreation facilities i.e., the construction of individual and group picnic shelters, group barbeques and picnic table pads in day use areas; the lengthening of selected campsites to accommodate longer mobile camping units; the design, fabrication and erection of natural-material play structures for the younger park visitors; the development of a 5000-meter nature trail system selectively marked with distance and interpretive signs; the construction of a central ranger station to facilitate traffic control in adjoining day use and camping areas; the upgrading and rehabilitation of many access and circulation roads in the project area; the development of

a natural amphitheater for evening slide/movie presentations and interpretive programs; and the refinement of an extensive footpath and footbridge system for park pedestrians to improve circulation between all facilities.

In addition to these facility-oriented projects, considerable manpower was directed toward the protection and preservation of the area's natural resources. These projects included the development of numerous fish habitat shelters around the lake; the placement of over 3000 tons of select riprap for shore protection; the construction of traffic barriers and guardrails for landscape protection; slope planting and drainage-works improvement for erosion control; and landscape planting for general area enhancement. Additionally, an extensive Cultural Resource Study was conducted to research and record information concerning the archaeological and ethnographical history of the Coyote Valley area. These many and varied projects richly enhanced the operation. maintenance, safety, and beauty of the entire project area and have greatly improved the utilization and enjoyment of park facilities by all visitors.

Productive Job Training

When the $754,000 Title X — Job Opportunities Program at Lake Mendocino ended in June



1976, over $600,000 had been paid in direct salaries to over 100 previously unemployed Mendocino County residents. Additionally, over $100,000 of supplies and materials were purchased from local area vendors, significantly contributing to the economy of the community. Even more significant than the one-time cost of the program, however, was the long-term investment in manpower achieved at Lake Mendocino. With a number of craft skills available in the predominantly unskilled or semiskilled work force, an informal apprentice training program naturally developed. By rotating work crews through the varied mix of projects, each worker became familiar with the basic techniques of carpentry, masonry, concrete placement and finishing, roofing, painting, plumbing, equipment operation and maintenance, and environmental protection measures, including erosion control and selective landscaping. This basic orientation completed, some work crews were reorganized, matching worker interest and aptitude with the more complex projects scheduled in each craft field. The resulting increase in worker motivation and skill level was clearly evident in the well-crafted facilities, a lasting testimony to the success of the program. In addition to such acquisition of craft skills, considerable emphasis was placed on the development of good work habits and attitudes, safety and environmental awareness, and team-

work, including active participation in work planning, scheduling, and personnel supervision. The habits and skills thus obtained by the workers enabled many of them to obtain permanent employment upon completion of the program.

Conclusion

Meaningful employment — Valuable training — Tangible results. The Lake Mendocino Title X Program was indeed Job Opportunities at its best. The success of the program exemplifies the flexibility and professionalism demanded of the Corps in response to its many missions. Be it flood control, disaster assistance, or help for the nation's unemployed, the spirit of the Corps of Engineers rings clear: "Essayons: Let Us Try!".

CPT Robert L. Harder is the Special Assistant to the Chief, Construction-Operations Division, San Francisco District, Corps of Engineers. Since joining the District in July 1975, he has been Project Manager for the Title X – Job Opportunities Programs in Mendocino, Sonoma, and Del Norte Counties. CPT Harder is an alumnus of the University of Colorado where he earned a B.S. degree in Architectural Engineering. He is also a graduate of Oregon State University where he completed two M.S. degrees in Construction Engineering Management and in Soil Mechanics and Foundations. CPT Harder is a registered professional engineer in Oregon.

MAJ Matthew J. Jones

200 YEARS OF MILITARY ENGINEERING PART 2

With the war now accomplished fact, military engineers girded their loins for still another kind of conflict — attacking the rampaging waters of our central river system. In 1927 the Mississippi and Ohio rivers overcame their banks from Illinois and Kentucky to the Gulf of Mexico. The tragic loss of human life and demolition of property throughout the region caused Congress to summon military engineers to embark on a program for controlling floods. Military engineers undertook a continuing series of projects for the control of floods and related programs concerned with navigation, electric power and irrigation.

Navigation routes along the Illinois River waterway between Lake Michigan and the Mississippi River were completed. A navigation system on the Mississippi from the mouth of the Ohio to Minneapolis-St. Paul was developed. A chain of canals to link the 1,200 mile Atlantic Intercoastal Waterway was brought to completion. Dams like the Fort Peck on the Missouri River and the Bonneville on the Columbia were built. These and other dams provided flood control systems, helped regulate water navigation, supplied water, produced huge quantities of hydroelectric power and furnished year-round recreational areas. Military engineers concentrated much of the 20's and 30's on water resource preservation, improving waterborne transportation capabilities and serving the needs of the people.

The experience gained in civil works would soon pay huge dividends in a defense emergency. On 1 September 1939 Hitler's armies introduced Blitzkrieg to the world, by overrunning Poland. The biblical Armageddon was to be visited not on the plains of Meggido but on the rolling countryside of Europe and in the islands of the calm ocean.

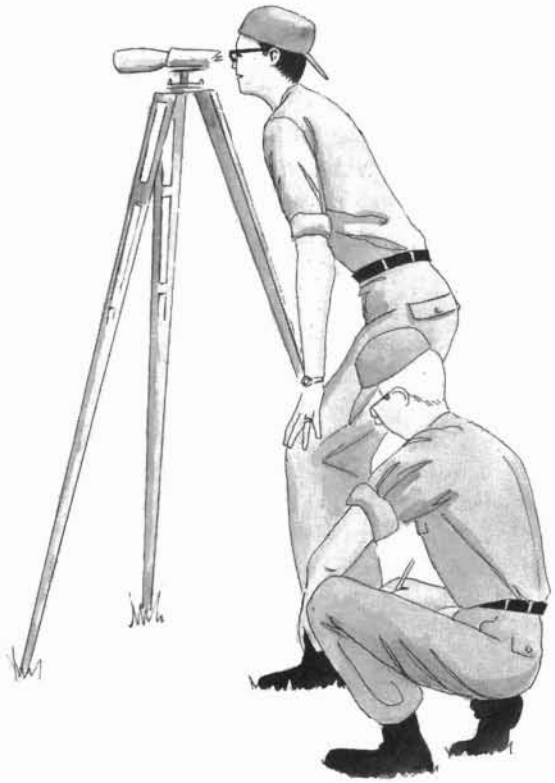
Pacifism and isolation were the order of day throughout the 30's infecting even many top levels of the War Department. In spite of Protective Mobilization Plans drawn so as not to repeat the unpreparedness experienced in 1917, no one realized the magnitude of the effort which would be needed to stem the Axis legions. The nation was beginning to re-arm by 1939 — to prepare for it really knew not what. Again military engineers were gathered in recognition that construction would be the controlling factor in mobilization. Technology had again changed the character of warfare and the preparations therefor. Mobilization camps, arsenals, depots, hospitals, seacoast defenses and training schools were needed; so were airfields, aircraft factories, ships, shipyards and a host of supporting facilities.

Before the war ended military engineers had been responsible for the acquisition of 38 million acres of real estate and the completion of approximately 3,000 command installations and 300 major industrial projects. Included in this were 500 camps, 765 airfields, 167 depots and numerous other facilities. The Pentagon was one of these projects. To accommodate the major activities of the Army in one headquarters this five story, reinforced concrete structure on concrete pile foundations was planned, designed and built in 16 months at a cost of $65 million. Several hundred architects and engineers and up to 15 thousand construction men at one time labored day and night to complete this impressive structure in so short a time.

In spite of all the mobilization effort, war surprised us on the infamous day of 7 December 1941. The nation was not yet fully ready. The pace of activity hastened toward a four million man force. At its peak in 1942 construction to support this force was being placed at the rate of over $20 million per day.

In the theaters of operations, military engineers fought and constructed. In the Pacific they built ports, airfields, and huge bases in dense jungle and on coral reefs. On the Asian mainland they built the Burma and Ledo Roads across impassable terrain. North Africa and Europe also witnessed the ability of the American military engineer. Military engineers landed as much as one hour in advance of the first assault waves of infantry and armor on Omaha and Utah beaches. They helped clear the way through the mine fields and hedgerows of Brittany. Across France they cleared rubble-choked roads of war torn cities and reduced natural obstacles. They defeated the raging rivers and the difficult mountains of Italy, France and Germany with bridges and rafts. They kept the famous Luddendorf railroad bridge at Remagen open long enough for the Allies to gain a toehold across the Rhine. They pushed pipeline, road, and railroad construction to bring forward the supplies needed to sustain the advance.

To protect our nation's northern flank a line of communication was needed to tie Alaska to the Continental United States. Military engineers undertook a road construction engineering feat of titanic proportions. Despite weather, terrain, and often criticism the Alcan Highway reaching 1,523 miles from Duncan Creek, British Columbia, through the Yukon Territory to Fairbanks, Alaska was completed in just a year.



World War II was a multi-faceted war. LTG Reybold, Chief of Engineers during the war, called it an "Engineer War" by virtue of the unprecedented engineering requirements needed to support air power, amphibious assault, and armored mobility. He observed that the military engineer was involved in every tactical and logistical decision because it was he who made possible the commander's most daring plans. And, he concluded that "By war's end it was evident that American engineering capacity was the one factor of our strength which our enemies most consistently under estimated."

The atomic bomb marked the finish to World War II. Military engineers were much present in the top secret Manhattan Project that developed the weapon which carried us into the atomic age. V-J day quickly followed the detonation of the first atomic bombs over Hiroshima and Nagasaki. The war was over and military engineers in the face of a cold war returned to peaceful pursuits.

Increasing emphasis on water resources management and modernization of the Ohio, Arkansas and Missouri Rivers occupied the military engineer until June 1950 when their attention was directed to Korea where the Cold War had suddenly gotten hot. The unexpectedness of the violation required many military engineers to engage in combat initially as infantry. Coupled with this role the rugged, mountainous terrain which dominates Korea engendered no end to the number of problems to be overcome. Moving troops into position and keeping them supplied called for uncommon effort. Aerial tramways solved this problem; but, in the Korean valleys — the only real maneuver area — military engineers had other problems in terms of obstacles and the flooding that caused these flat areas to become a nightmare. Bridge building became a daily occupation for the military engineer.

The Korean conflict ended in a truce but the hot and cold war of the 50's brought a new dimension to our security needs. Military engineers helped to construct warning systems like Dewline which spans the North American frontier. They also undertook major missile construction efforts in the NIKE, ATLAS, TITAN and MINUTEMAN launching and support facilities, and expanded our air bases to accommodate the heavier jet aircraft used to support Strategic Air Command operations.

Military engineers also travelled to Greenland to construct Camp Century, the city under the ice. Their objective — to study the polar regions with a view toward opening it for human usefulness and habitation. The 50's included other major projects for the military engineer. The long planned Saint Lawrence Seaway Project, which opened the Great Lakes ports to seagoing vessels, became a reality theough their efforts.

The 60's fulfilled the military engineer's long term role as pioneer, explorer, scientist, builder. For now he reached out to man's infinite frontier — outer space. Military engineers helped to plan and build our space age staging center at Cape Canaveral and continue to engage in the engineering of ground support facilities for space vehicles as well as in the planning for extra-terrestrial construction.

The 60's also brought the nation to a highly controversial role in supporting our commitment to the defense of Southeast Asia. Ignoring the controversy over the national effort there, and concentrating on the performance of the military engineer in his role, one can but observe that he did his job well. His first major task was the construction of air bases, seaports and logistical installations to support the arrival of increasing numbers of combat units. The terrain of Southeast Asia made the conventional tactics and machines of modern war unsuitable for much of the area. The air mobile operation came into its own as a key tactic with the helicopter joining the ranks as the workhorse to support the Army in the field.

Military engineers constructed hundreds of air strips and heliports with supporting fu l and maintenance facilities. They developed air mobile engineer equipment that could be lifted into remote worksites. Without a conventional front line the conflict was fought everywhere. They built base camps and fire bases throughout the country and then tied them together with land lines of communication, an enormo s road network complete with bridges. They thwarted the enemy's ambush tactics by clearing large areas of land along these routes using large numbers of tractors with special land clearing or "Rome Plow" blades. And they devoted significant measure of their time to civic action projects of direct benefit to the civilian population.

The cessation of American participation in the Vietnamese conflict has turned military engineer attention again to peaceful purposes. Thus, the military engineer pursues his dual role of builder and preserver of our nation — always doing both — emphasizing the one or the other as national policy dictates — but ever ready to redirect his efforts when his nation asks it of him. Whether dredging a harbor at one of the port cities on our three coastlines; building a dam in the western reaches of the nation; mapping uncharted regions of the hemispheres; upgrading facilities at our military installations; teaching in the academic halls of our service schools; participating in NATO exercises; undertaking research in our laboratories; or developing new equipment and materials and systems to do his job better and more efficiently, the military engineer's principal focus is national preparedness — prepared, in peace, to enhance the quality of life of the American people; and, in war, to defend it.

Two hundred years of military engineering — indeed, a strong, enduring and glorious foundation for the future. It is to us now to duplicate that same superb quality in the structure to be placed on that foundation.

Major Matthew J. Jones, Jr. is assigned to the Office of the Deputy Chief of Staff for Operations, HQDA. A civil engineering graduate of the University of Detroit, he was commissioned in the Corps of Engineers in 1962. Since then he has served with the 326th Airborne Engineer Battalion; the 8th Engineer Battalion, 1st Cavalry Division; the 2d Engineer Battalion, 2d Infantry Divison; the US Army Support Command-Vietnam; MACV; Test Command, Defense Nuclear Agency; and the US Army Engineer School. Major Jones has a Masters Degree in civil engineering from Stanford University and is a graduate of both the Engineer Officer Advanced Course and the Command and General Staff College.

WHISTLE WHILE YOU WORK

So you've been crying about how much work you're doing. Never get any time off, eh? Well, let's look at it this way. There are 365 days in a year. You are entitled to 30 days leave and have the privilege of a three-day pass about every six weeks. That's a total of 56 days, leaving 309 days.

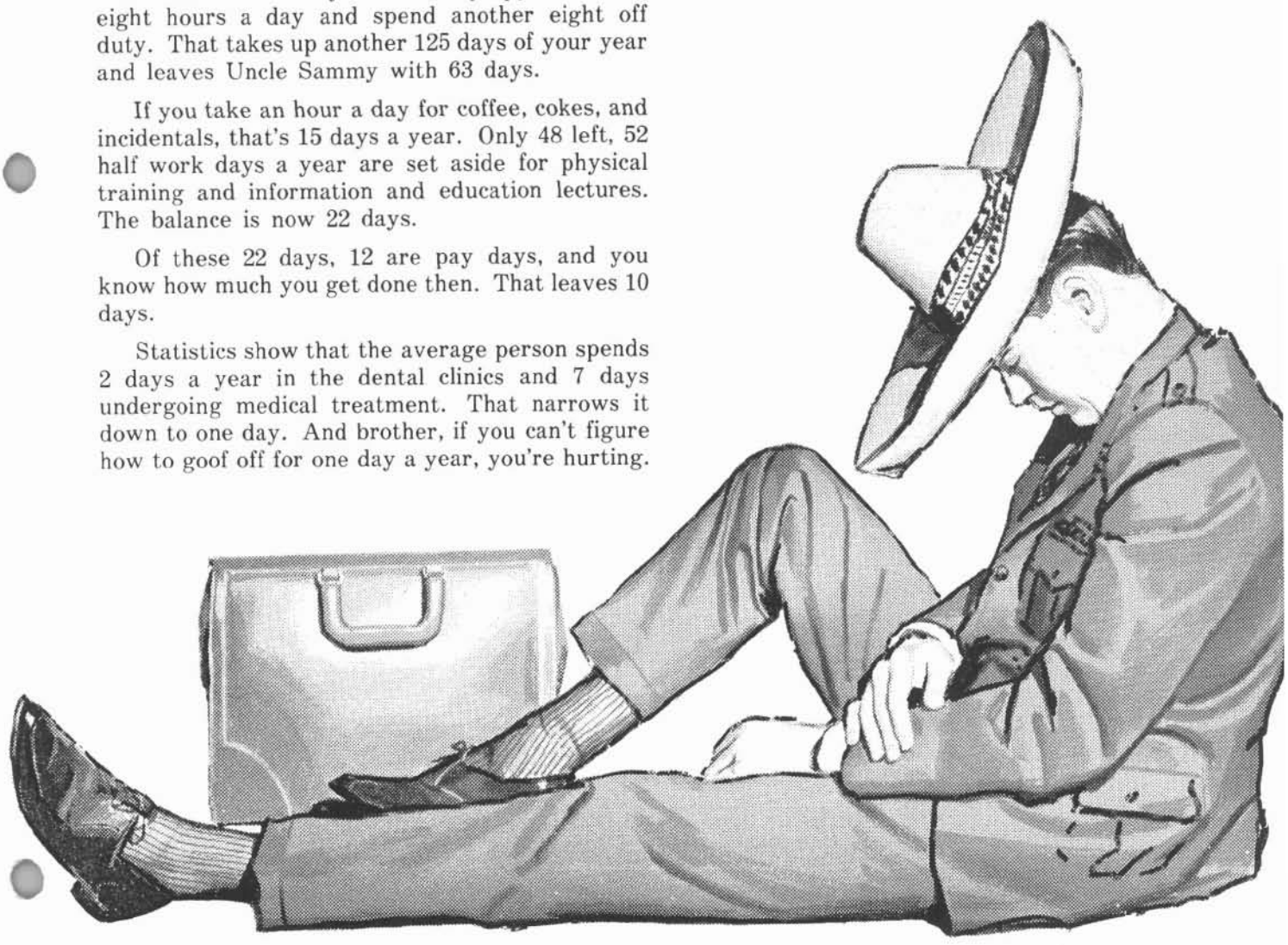
There are approximately 16 National holidays and 104 Saturdays and Sundays. That narrows the balance to 189 days. You sleep approximately eight hours a day and spend another eight off duty. That takes up another 125 days of your year and leaves Uncle Sammy with 63 days.

If you take an hour a day for coffee, cokes, and incidentals, that's 15 days a year. Only 48 left, 52 half work days a year are set aside for physical training and information and education lectures. The balance is now 22 days.

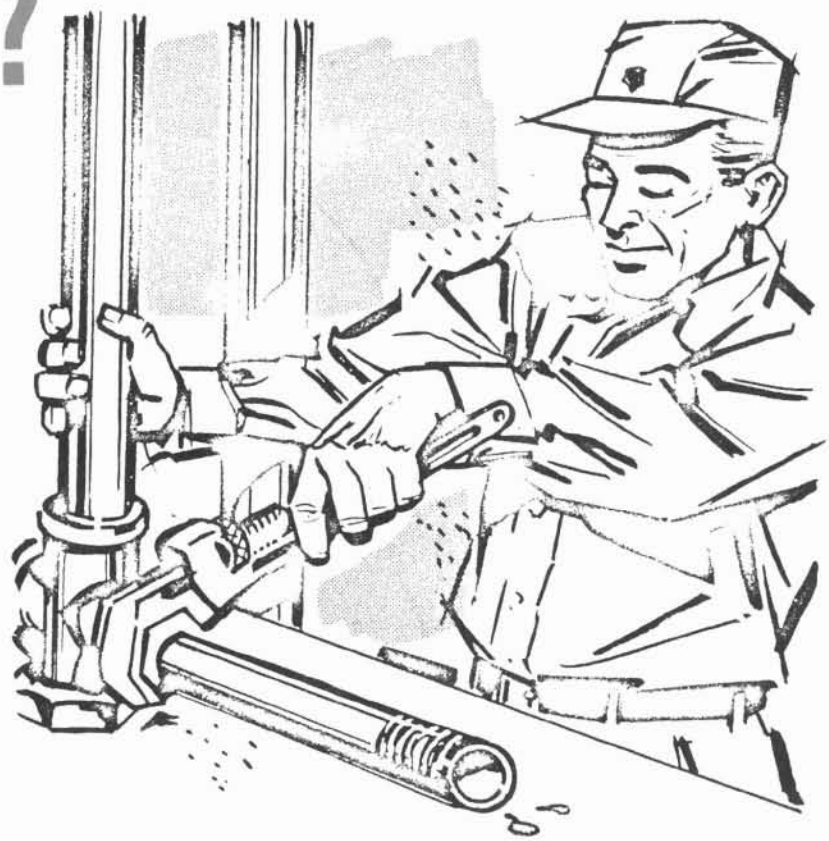
Of these 22 days, 12 are pay days, and you know how much you get done then. That leaves 10 days.

Statistics show that the average person spends 2 days a year in the dental clinics and 7 days undergoing medical treatment. That narrows it down to one day. And brother, if you can't figure how to goof off for one day a year, you're hurting.

Editors Note: This item originally appeared in STARS and STRIPES during the era between World War II and Korea. It was attributed to an Army First Sergeant. He presented it at his retirement ceremony in Wiesbaden, Germany.



YOU GOT A WATER PROBLEM ?



MAJ Douglas K. Lehmann

The nineteen seventies have recorded the Engineer distaste for the water supply function. Before you read another word, let me state my unequivocable opinion that this function is and should remain an engineer mission. Second, let me state that my viewpoint is not an official US Army Engineer School (USAES) policy.

The background on the subject is recorded in three studies, which more or less recommend the engineers get out of the water supply business. They are:

1. The West Board Study by Office of Chief of Engineers (OCE)
2. The Bachus Board Study by OCE
3. The AIM Engineer Battalion Study by USAES

The two OCE studies, published around 1971 and 1973, advocated the function to the Quartermaster Corps. The recent 1976 USAES study recommended the five water points in the Armor-Infantry Mechanized (AIM) Engineer Battalion be transferred to the Combat Engineer Battalion, Corps. Additionally, Ft. Bragg is experimenting with transferring the water supply mission to DISCOM. The latter was never sanctioned by the USAES and was upsetting to many members of the Engineer Community when it became known.

The arguments for the transfer revolve around the ten classes of supply which are primarily a Quartermaster function. Why should engineers be in the supply business? This question is shallow to me. The communication-electronics people are in the crypto supply business and the medical folks

run their own warehouses. These branches want the function and their cases along with the Engineer are the exceptions that prove the rule. The Engineers are very much in the map supply business. The latter reverts only to the Quartermaster at the DISCOM level and from Corps and above it is all engineer. I venture to say, we are very much in the transportation business, as all barrier materials forward of brigade and division combat training areas are transported by the engineers. So much so, that the ribbon bridge transporter was adapted after the fact with a pallet for cargo.

The specifics of the recommendations are aimed at field operations. Some of the studies keep such activities as equipment development with the Engineers. Some recommendations are impractical. For example, counting both the active and reserve components, there are approximately 20 divisional engineer battalions and 60 corps combat engineer battalions. The USAES recommendation would delete 100 water supply units (5 times 20) and add 300 (5 times 60). The extra 200 are not needed and wasteful. Adding just 1 or 2 per corps battalion would not cover the population and area for water supply. Then there are the problems of insuring that every division deployed has a corps combat engineer battalion with it. I doubt the priorities of combat would allow the latter.

I disagree with the transfer. A function should be deleted from a branch only when one of the following occurs:

1. The mission is no-longer feasible.
2. The mission is superceded by a new mission.
3. The transfer is mutually supportive.

Water is still necessary, potable water has not been replaced nor can we count on it being available in rural areas. No substitute has yet been developed and the Quartermaster Corps does not want the function.

You don't win friends and influence people by trying to pawn your job on them. Such is the case with water supply. It could be argued that the debate was within the engineer family. But that is no longer the case with the Ft. Bragg experiment.

The technical reasons and logic are more straight forward. Water supply is a function of location and not distribution, storage or other element. Water is not neatly boxed, placed on the shelf, and stocked when you get 3 demands in a 180 day period. The DISCOM is seldom located near the best water source. Water supply is unique to engineering because of location and reconnaissance for future locations. Engineers are in positions to locate, emplace, produce, and relocate as far forward as the brigade rear area for the combined arms team.

I suspect one reason engineers are reluctant to accept the water supply mission is that it is a bother, especially a training one in peacetime. Transferring a problem does not solve it. The mission is still essential to combat and must be maintained during peacetime. Location and terrain and thereby water supply are the property of engineers, not exclusively but within our proponency. We, as part of our regular reconnaissance engineer mission, can locate future water supply locations and have the added advantage of being able to provide construction support for access and egress.

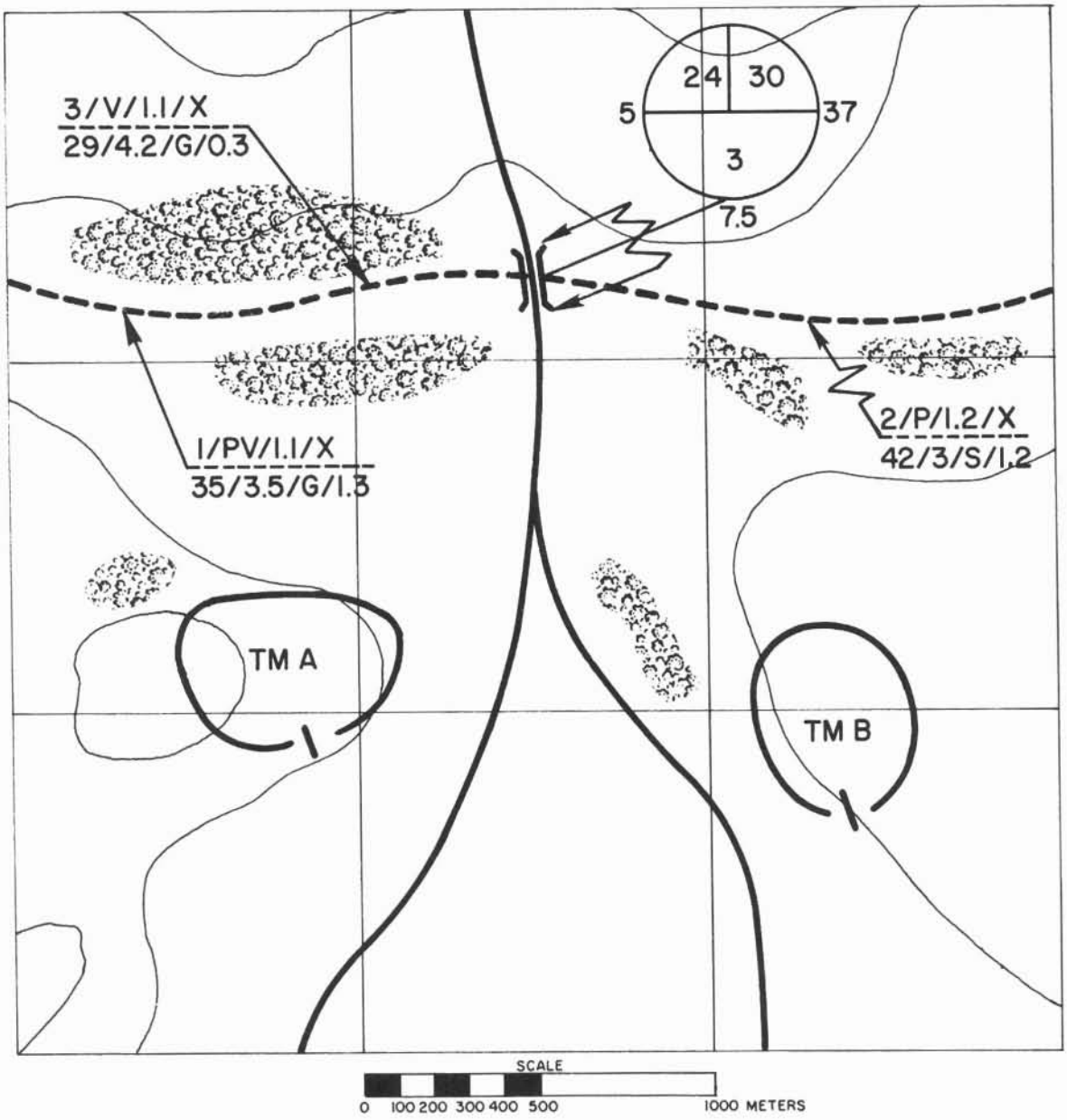
I further suspect the mission is not wanted for lack of knowledge in our officers and senior NCO's. Certainly the knowledge of our water supply specialists is not a problem. These men are one of the finest trained specialties of both the Corps and Army. But the water supply training given to engineer supervisors is lacking. It can be learned OJT by those commanders and S-4 officers who seek it out. Basically it is not taught and therefore not understood.

Lastly, I feel that the Fort Bragg experiment will prove nothing since a peacetime environment is not germane to water supply. The transfer under peacetime conditions would be valid in just about any branch or location. The proper location must be determined subjectively in light of our experiences and the concept of the future battlefield. The conditions that engineers must produce water in are unique to combat.

The time has come to understand this vital mission, support it, and not try to pass it along. Clearly the Corps of Engineers has accomplished its assigned mission in the past and should continue in the future. Water supply is part of that mission.

Major Douglas K. Lehmann holds a BS degree in Forestry from Syracuse University and a MSA degree in Systems Management from George Washington University. He has been a Company Commander in the 97th Engineer Battalion (Construction), Germany and 26th Engineer Battalion (Combat), Vietnam. He also has held additional staff positions in the 8th Engineer Battalion (Combat), Korea, 91st Engineer Battalion (Combat), Ft. Belvoir, and 32nd Engineer Group (Construction), France and Ft. Hood. Since 1969, the major has held successive assignments at Ft. Belvoir of EOAC student; Office of the Director of Instruction, USAES; "Bootstrap"; and USACDC.

TATICAL PROBLEM



You are the platoon leader from the divisional engineer battalion (mechanized) in direct support of a mechanized heavy task force. The task force has been moved into the sector, part of which is shown on the Sketch Map. This deployment is part of a force concentrating to blunt a breakthrough attack. Intelligence estimates predict an attack by an opposing force motorized rifle regiment within the hour. This regiment contains a tank battalion (40 medium tanks, T62) and three motorized rifle battalions (approximately 100 APC's either BMP or BTR-60 PB).

The task force commander directs you to concentrate your efforts on destroying the bridges and fords. Your estimate reveals you have only the resources and time to either destroy the bridge **or** the fording sites.

Which task do you recommend to the task force commander?

ANSWER PAGE 30

★

THE UET

An improved Universal Engineer Tractor (UET) developed by the Product Manager, FAMECE/UET at the U.S. Army Mobility Equipment Research and Development Command (MERADCOM), Fort Belvoir, VA is undergoing extensive government acceptance testing at the Aberdeen (MD) Proving Grounds.

The latest version of the UET incorporates all the desirable characteristics of earlier models, such as versatility, mobility and air transportability, plus greater durability and reliability.

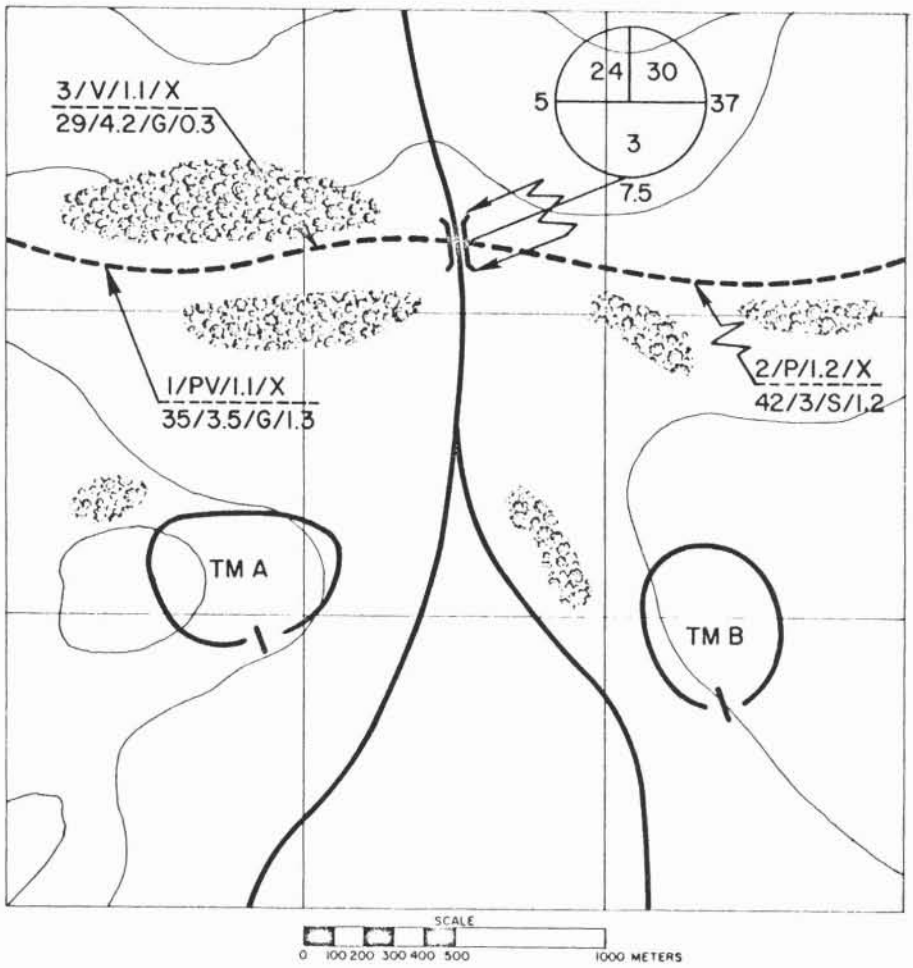
The multi-purpose, tracked UET can doze, scrape, rough grade, tow, dump and haul, to perform the earthmoving tasks required in a combat engineer unit. It features the ballast concept to keep its 32,000 pound weight within the limits for air transport and air drop and high cross country mobility while providing the work capacity of a heavier unit. The front-loaded with 8 cubic yards of soil it provides enough additional weight to almost double the UET's earthmoving capacity.

With a speed of 30 mph on level ground and outstanding cross-country mobility, the UET will, for the first time, provide the combat engineer with the mission capability to travel and to keep pace with armored units. It also is fitted with light armor protection, and has a limited swim capacity of 3 mph.

The scraper bowl is fitted with a hydraulically operated apron and positive load ejector. Dozing and scraping are accomplished by raising and lowering the UET's entire front end by means of the hydropneumatic suspension system. The 285 HP diesel engine provides more than sufficient power for all operations.

The four current pilot models built by Pacific Car and Foundry Company have completed the MASSTER test in December 1975 and are scheduled for completion of APG tests in July 1976. To date test results indicate that reliability problems encountered with previously built prototypes fabricated earlier in the development program have been overcome and that the UET will provide features of mobility, versatility, and maneuverability required to support combat forces.

ANSWER TO OUR PROBLEM



Recommend ford destruction.

This is deduced from:

a. the ability of Teams A and B to observe and fire on the canalizing bridge approach.

b. the reconnaissance symbols which reveal:

(**1**) Fords 1 and 3 may be used by all vehicles capable of fording in depths up to 1.4 meters.

(**2**) Ford 2 is for "pedestrians" only.

(**3**) Bridge 3 has one way capacity of class 30 and two way of class 24. Bypass is impossible while height and width restrictions are 5 and 7.5 meters respectively.

c. the characteristics of the armored vehicles in the opposing force regiment.

These include:

	T62	**BMP**	**BTR-60 PB**
Type:	Medium tank	Amphibious armored infantry combat vehicle	Armored personnel carrier
Weight:	40.2 tons	14 tons	11 tons
Fording Depth:	1.4 meters	Amphibious	Amphibious

ıerefore, the T62 cannot cross the bridge.

d. the availability of good concealment for ford use.

The Omaha District Engineer Mural

Michael L. Baugher

During this, our Bicentennial year; cities, organizations, groups and individuals have concerned themselves with a multitude of grandiose activities to celebrate our Nation. Plans ranged from parades, proclamations and fireworks to the planting of time-capsules and a flotilla of high-masters in New York's harbors. Like celebrants, the Omaha District of the U.S. Army Corps of Engineers formed a committee and charged them with the responsibility of a fitting and novel approach.

Among their suggestions was the idea of a mural—a mural that would depict the growth of the Nation and that of the Corps of Engineers. Mastering this scheme was George Barry, a writer-editor for the Planning Division in Omaha. A dabbler in oils himself, he envisioned a time-journey through athe Corps' major contribution to the Missouri River Basin. Included would be the Lewis and Clark Expedition, the development of major railroad routes and the construction of the mainstem dams.

Drawn from the Corps' talent resources, a pair of artists; Bob Irey and Tom Hudson; were commissioned the task. With minimum guidance, Bob set about the job of formulating George's ideas into a living mural.

Since the mural was to depict the events,

motivation and direction of the Corps, he tried to narrow its emotion and basic attitudes into a unified set of descriptive ideas. Bold, masculine, angular, geometric—all what he felt to be the overriding suggestions of the Corps.

Retaining these emotional assumptions, he began to fill his layout sheet. To the untrained eye, it was a panel of harsh lines—a pencil doodle. But to him, it was the mural. Somewhere within the layout's borders were the events and characters peculiar to the Corps.

The mural was born—there were no colors, no people, no trains, nor dams—but the mural was begun. From this first layout of emotion, he progressed to a series of characters and structures. These now had the continuity of time and direction. They had become tangible to the untrained. Soon he was water-coloring a miniaturized mural. Through this he was able, visually, to determine the impact of each part of this graphic history. While Bob was busied with the minature, Tom was delving into forgotten files, researching subjects for pictorial and historical accuracy.

Jim Brown, Chief Carpenter from the District's Maintenance Base, soon presented the artists with the frame—a three-piece, 24 by 5½-foot superstructure, over which, the canvas and 200 years of Corps history would be stretched. Since no single length of canvas could be found to cover the entire frame, two sections would have to be joined. They both measured, sketched and planned—all in an attempt to choose the least obtrusive junction. They then started to taper—actually sandpaper—the edges of the canvas. When glued and overlapped, the tapered edges combined to a single layer thickness.

Since even the slightest wrinkles and pulls were accentuated by its bulk, the canvas stretching was no little task. Tom and George took turns tightening the canvas from the rear while Bob directed and stapled from the front. With the assistance of an overhead projector to guide with a rough proportional design, Tom applied the first bit of color to the canvas. Not until this moment, seeing the light-brown underbelly of the antelope, had the artists been fully aware of the size of their undertaking. All that white space—more than 130 square feet—was frightening. Progress soon overtook the white starkness as the two men brought the mural to life.

First came the animals in the park, then the

workings of the dam, then the explorers, the water, sky and more. Work was continuous as they removed the blank from the canvas. The artists moved from one area to the next; beginning new work or returning to others to help balance or maintain continuity. To maintain their agreed upon style, each strained under the pressure of compromise—hard work for such artistically individual men. Despite the differences in age, experience and taste, they painted as one. When one became more comfortable with figures and detailed work, the other became his perfect compliment; working with the bolder, more geometric areas of the project.

Soon the entire canvas was covered.

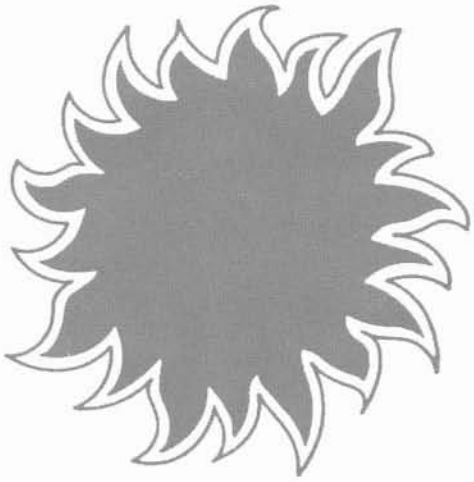
The main themes of expedition, railroads and dams overlapped in time and space to provide a vivid montage of life on the Missouri. Interlaced were scenes through history; and Indian village, settlement expansion, river commerce, power generation, flood control, irrigation, recreation, environment and wildlife.

Finally the artists had a chance to step back and get an overall view of what they had done. They were able to see how differing scenes interacted, how colors directed and how they could improve the mural's impact. Thus began the mural's revision. Whole sections were reworked: portions highlighted, given more weight, toned down, detailed for more realism. The entire canvas took new life. It had been a mural before, but now it boasted direction, motion, emotion.

Slightly more than four months after the mural was proposed, the Omaha District's tribute to the Nation's Bicentennial was completed; its creators proud to have worked on the mural and for the Corps. A graphic history of the Corps and its role in the development of one of the great regions of the United States, the mural now stands on exhibition in the west section of the Main Lobby of the U.S. Post Office and Courthouse in Omaha.

Michael L. Baugher is a Public Information Specialist for the Omaha District, U.S. Army Corps of Engineers. He has worked as a writer-editor for the U.S. Army Recruting Command, Sioux Falls, S.D. and with the Bureau of Land Management in Denver. He served as the PIO for the USAF Survival Schools and as a Public Information Specialist at Lowry AFB, Colo. He attended Santa Ana College, Calif. and the University of Colorado.

SLUFAE-SLUMINE



CPT Terry Krupp
CPT Norviel Eyrich

Current US doctrine for offensive and defensive operations emphasizes the combined efforts of the combat, combat support and combat service support units to insure success. Combat engineers will make their major contribution to the battle by impeding enemy mobility, enhancing friendly mobility and providing greater survivability to the maneuver units through construction of battle positions and protective shelters. A major part of this effort will be mine/countermine warfare — the thrust of this article.

The engineer's capability to adequately support the Combined Arms community is severely constrained by current mine/countermine hardware. This capability will be enhanced by the fielding of two systems currently under development. Utilizing a common carrier and launcher the Surface Launched Unit, Fuel Air Explosive (SLUFAE) and the Surface Launched Unit, Mine (SLUMINE) can accurately be called a revolution in mine/countermine warfare. Both systems are fired from a 30 tube rocket launcher mounted on an M548, 6 ton, full tracked cargo carrier. The system can either emplace or breach a minefield and will have mobility comparable to that of the supported armored/mechanized units. Basis of issue will be two per company in the divisional engineer battalion and one per company in the Corps Combat Engineer Battalion. Current planning calls for a resupply vehicle, and a four man crew to support each SLUFAE/SLUMINE system. The system, in either mode, can be positioned and fired within 10 minutes and reloaded with a full 30 round load within one hour.

As an example of the conceptual employment in both modes a short scenario will be presented to illustrate employment techniques and the impact of SLUFAE/SLUMINE on the FM 100-5 battlefield. B/132d Engineer Battalion is supporting Task Force (TF) 1-72 which is conducting a counterattack to secure a key ridgeline. Reconnaissance has revealed a large enemy mined area which is covered by observation and fire. The task force commander has decided to attack with two companies leading and the third company trailing in the center sector ready to reinforce either company in order to maintain the momentum of the attack.

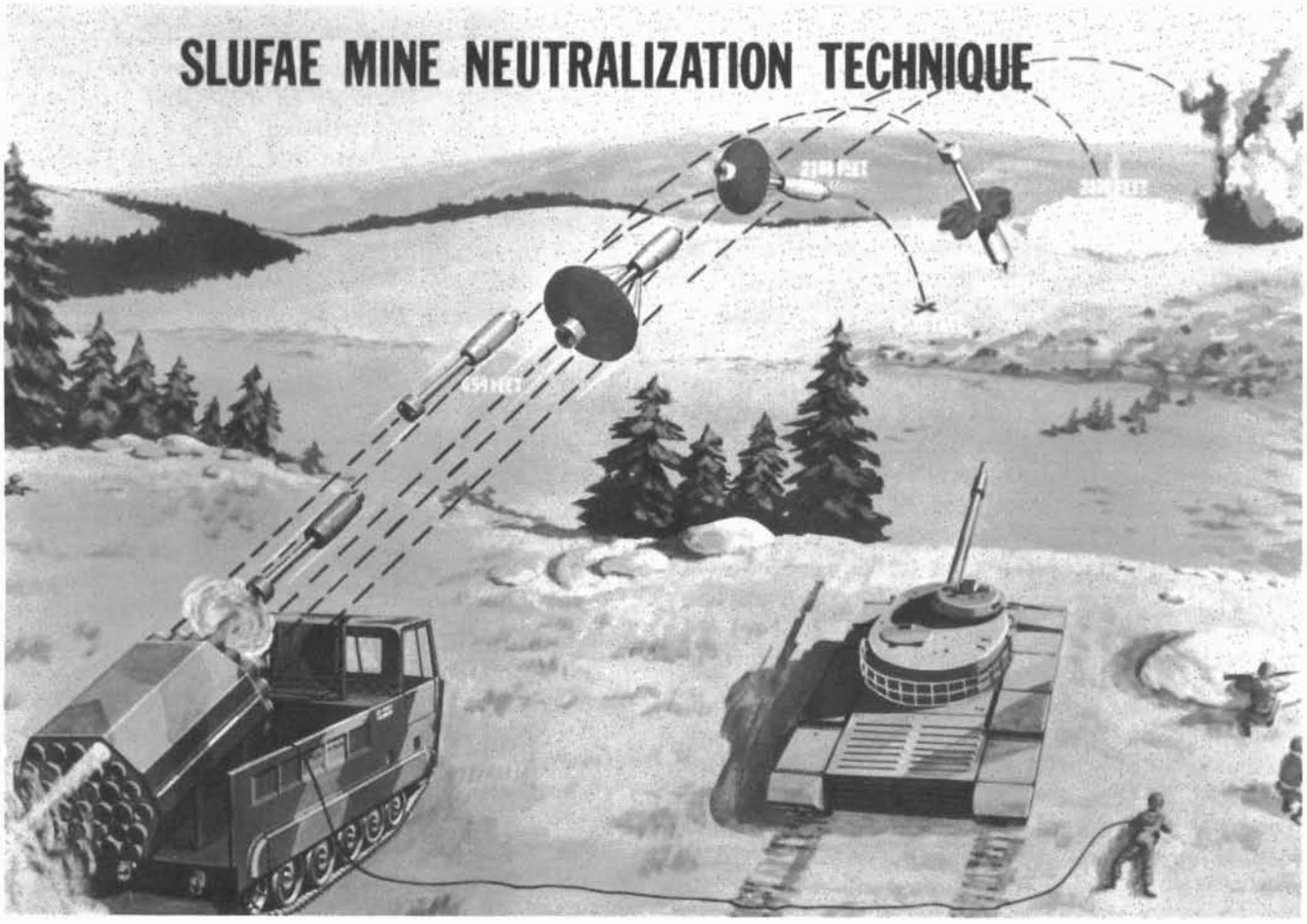
After receiving the task force commander's concept of operations, the engineer company commander analyzed those tasks which his company must perform to support the task force counterattack. During the assault phase the engineer tasks will consist of creating two assault breaches in the previously located minefield and being prepared to breach any unknown minefield encountered. After the objective has been secured, engineer tasks will consist of emplacing hasty

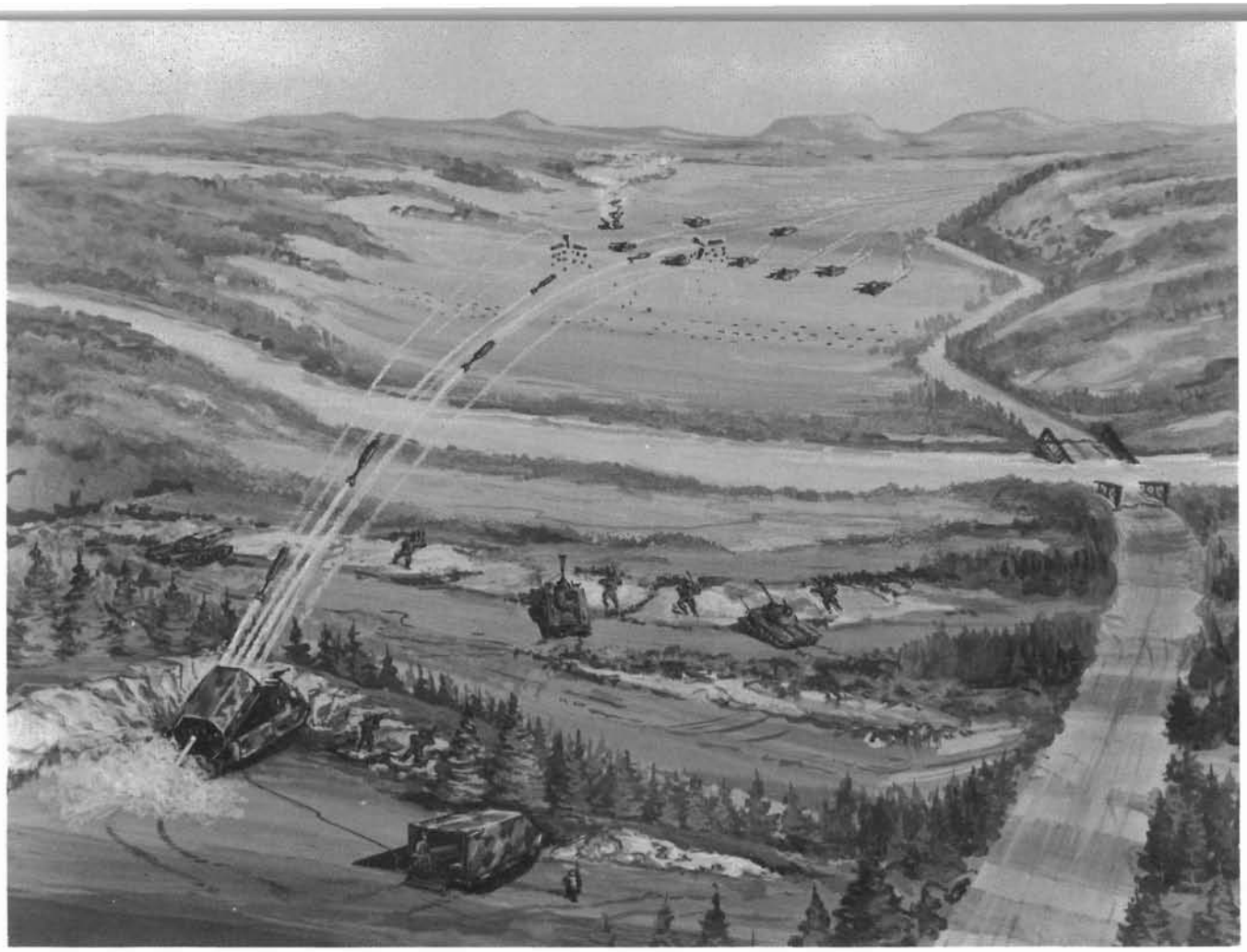
obstacles and assisting in the preparation of battle positions, to repel an enemy counterattack. No other tasks were identified based on current intelligence and available time.

Based upon the task analysis and available resources, the engineer company commander recommended that one launcher loaded with FAE rounds accompany each of the two lead companies and be located near each maneuver company headquarters element for immediate response. In coordination with reconnaissance elements, available photos, and a map analysis, possible firing positions were located along each attack route to insure maximum protection and to take full advantage of the SLUFAE's stand-off capability distance (up to 1000 meters from the far edge of the mined area). When the objective is secured both launchers will be reloaded with 30 mine rounds, and then located in protected positions from which they can emplace mines in support of the task force's defense during an enemy counterattack. The recommended launcher positions for the mine role were coordinated with the TF S-3 so that mines could be immediately placed on the approaching enemy force on the two most likely avenues of approach. At a subsequent meeting the recommendations were briefed and integrated into the task force commander's battle plan.

At 0130 the attack began against heavy enemy fire. The launchers with FAE rounds moved from protected positions to their supporting positions along concealed routes using the terrain to insure maximum protection. The launcher and crew immediately prepared the launcher by aligning it on the proper azimuth, elevating the launcher tubes and entering the firing data. Concurrently, the lead maneuver elements neared the previously located minefield and at the direction of the unit commanders, 15 FAE rounds were fired into the minefields. Upon impact in the minefield, each round formed a cloud which when detonated, neutralized all mines through the blast and overpressure effects. The result was a breach 8 meters wide for the entire depth of the minefield. Shortly afterwards both companies encountered minefields not previously located. In less than 10 minutes, both launchers were again positioned, aimed, and fired to breach the enemy minefields. An artists concept of SLUFAE employment is presented in Figure 1.

The counterattack was successful due in great part to the minimal delays created by the enemy's





obstcles, and subsequent reduced effectiveness of supporting direct fire weapons. During consolidation both launchers were reloaded with MINE rounds and positioned to support the task force while other elements of the engineer company were assisting the preparation of defensive positions.

At 1500 hours, the enemy counterattacked in strength lead by a major tank element. As the battle reached a critical phase with the US forces, outnumbered by more than 3 to 1 in firepower, the task force commander ordered one launcher to fire mines on and in front of the advancing enemy and the other launcher to standby. The mines slowed the enemy sufficiently so that the antitank weapons systems of the task force were able to engage the targets and ultimately defeat the attacking enemy unit. An artist concept of SLUMINE employment is presented in figure 2.

The SLUFAE/SLUMINE system will, when adopted by the Army, be incorporated into engineer units in the early 1980s. As can be seen from the scenario presented in this article the system will provide the engineers with a highly mobile responsive system for mine/countermine warfare and greatly enhance the combat effectiveness of the combined arms team.

CPT Norviel Eyrich graduated from the United States Military Academy in 1969 and was commissioned in the field artillery. He is a graduate of the Field Artillery Basic and Advanced Courses. CPT Eyrich spent two and one-half years in the 7th Bn 16th FA, Baumholder, Germany where he served as assistant S-3, Battery XO and Battery Commander. He served as senior RF/PF Advisor, MACV Advisory Team 36, Republic of Vietnam. Prior to his current assignment as ORSA Project Officer Concepts and Studies Division, Directorate of Combat Developments, CPT Eyrich completed his Masters Degree in ORAS at Georgia Institute of Technology.

CPT Terry Krupp graduated from the Colorado School of Mines in 1971 with a Bachelor of Science in Chemical Engineering, and was commissioned a 2LT in the Corps of Engineers. He is a graduate of the Engineer Officer Basic and Advanced courses. Previous assignments include; platoon leader, 902nd Float Bridge Company and Construction Officer, 44th CBT Engineer Bn (Heavy), Korea. Prior to his current assignment as ORSA Project Officer in Concepts and Studies Division, Directorate of Combat Developments, CPT Krupp completed his Masters Degree in ORSA at Polytechnical Institute of New York.

BRIDGING THE GAP

MORE ON PROPOSED DIVISION REORGANIZATION

If the Army adopts the new division reorganization plan now under study, the division engineer battalion will drop the present division's bridge company, and will add more combat engineering equipment. More armored Combat Engineer Vehicles, (CEV) would be added, along with Surfaced Launched Fuel Air Explosives (SLUFAE), and Surface Launched Mines (SLUMINE).

The changes would give the engineer battalion a larger role in boosting the mobility of the division, according to staffers of the TRADOC-based Division Restructuring Study Group (DRSG). The added combat engineering equipment would also serve to inhibit the mobility of enemy combat formations, say DRSG planners.

If the proposed organization gets the official nod from the Army, the division's logistical organizations will also be in for some streamlining. The logistical base of the division would be more oriented to sophisticated modern weapons. More repair and technical services support will be pushed forward to the combat units.

Some testing of the proposed reorganization plan will begin early next year.

SOME COMMANDER'S DENIALS ARE NOT OK

DA officials say that soldiers are being denied promotion and taken off promotion lists, with no authority, in the field.

The problem stems from the fact that some commanders are imposing additional, local, eligibility and promotion criteria which is against regulations, paragraphs 7-1.1 and 7-14 or AR 600-200.

As an example, some company commanders are delaying recommending E4s for the E5 board because they had not attended the Primary Noncommissioned Officers Course (PNCOC). In addition, some boards were not selecting soldiers for promotion because they had failed to complete PNCOC. This action is unauthorized.

Under EPMS, PNCOC will become a requirement for promotion to E5 in some MOSs. Commanders can't impose this requirement criteria until it has gone into effect Army wide.

The commander must judge future potential, and may use failure of PNCOC or other courses as one of the reasons for possible non-recommendation for promotion. Failure, alone, should not lead automatically to non-recommendation. Commanders are not allowed to deny a promotion recommendation solely because a soldier has not attended a PNCOC.

As far as removing a soldier from a promotion list, a soldier can be removed for cause, one of which might be failure to pass a course such as PNCOC, but a determination must be made by a board as referenced in paragraph 7-27, AR 600-200.

In addition, board members should not use failure of a course as the only reason for non-selection of a soldier.

Additional local promotion criteria can not be established because it is unfair for some soldiers to meet criteria which is not required of other soldiers.

The heart of the matter revolves around the fact that the individual commander does not have the authority to impose his own, local, eligibility and/or promotion criteria.

Junior E4 Housing

It's official, E-4s with more than two but less than four years service who don't have a six-year active duty commitment will now be considered equal with other E-4s when it comes to post family housing.

In the past, these individuals had virtually no chance of ever being assigned to family housing. Posts should receive implementing instructions by early September through the pinpoint distribution system. These are effective upon receipt.

They may look like tramps, But they build your camps, And they sometimes lead the advance.
And they sweat red blood to bridge the flood, To give you a fighting chance.
Who stays behind when it gets too hot, To blow up your roads in the rear?
Just tell your wife that she owes your life to some muddy old ENGINEER.
Some dusty, crusty, croaking, joking, muddy old ENGINEER.

A BRITISH SAPPER

Although he can't create miracles, When there goes up a hew and cry;
Being an ENGINEER means he'll give it a damn good try.

Essayons is a statement clear, That to him means a hell of a lot;
It's not to say or evem imply, That he's doing something he's not.

No fancy badge to hang on his chest, Though laurels he doesn't abhore;
His castle will gain him entry, When he walks to that golden door.

For the first to arrive, and the last to leave, the muddy old ENGINEERS
The sweating, go-getting, uproarious, glorious, muddy old ENGINEERS.

AN AMERICAN ENGINEER