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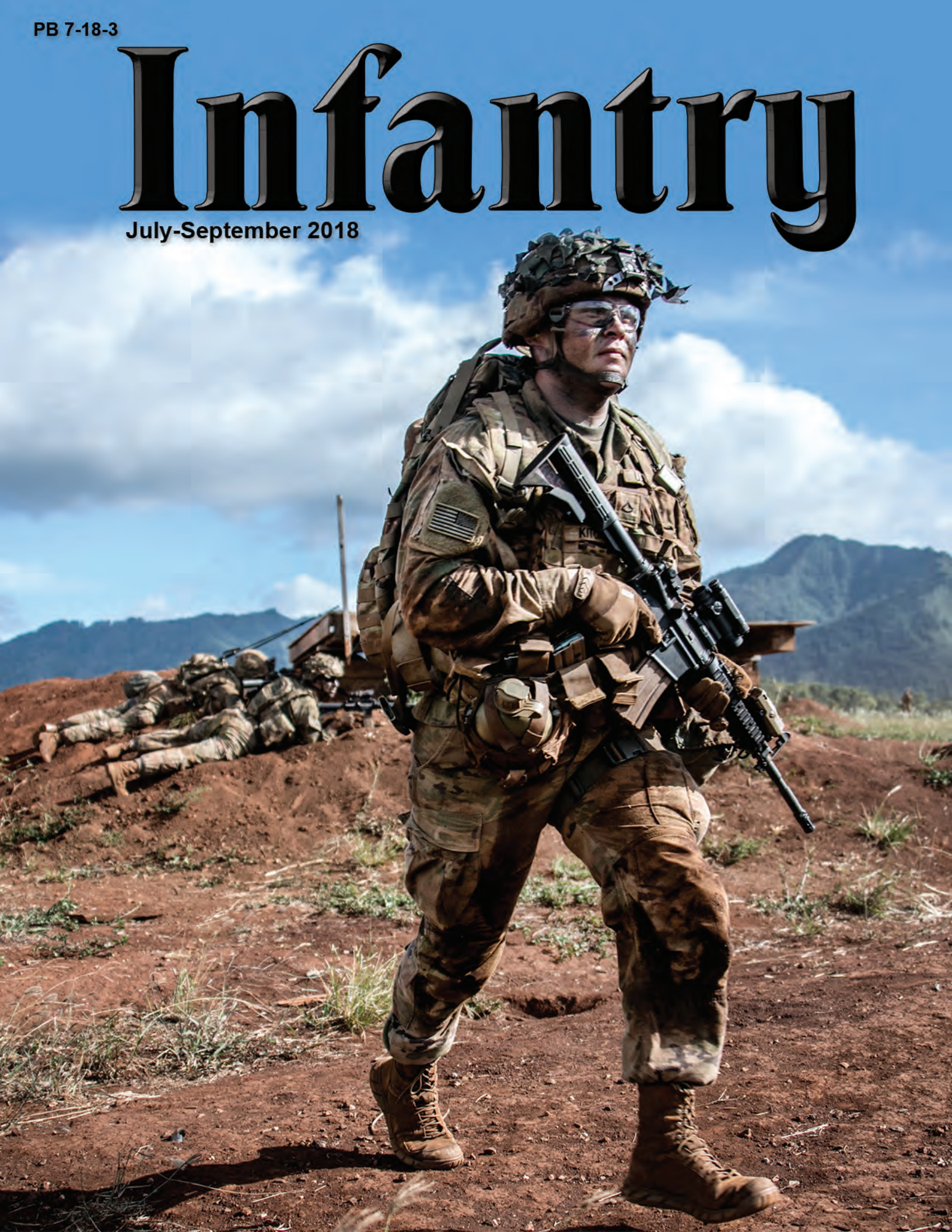
Infantry

July-September 2018



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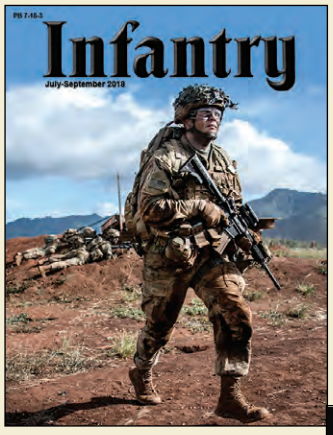
Lessons from the Past

Book Reviews



ON THE COVER:

A Soldier assigned to the 1st Battalion, 27th Infantry Regiment "Wolfhounds," 2nd Infantry Brigade Combat Team, 25th Infantry Division, moves forward on an objective during a combined arms live-fire exercise at Schofield Barracks, HI, on 3 August 2018. (Photo by 1LT Ryan DeBooy)

BACK COVER:

Paratroopers assigned to the 3rd Brigade Combat Team, 82nd Airborne Division descend onto Fort Bragg's Sicily Drop Zone during the early morning hours of 21 September 2018. The paratroopers jumped from an Air Force C-17 Globemaster at night to maintain their proficiency and to prepare for follow-on missions. (Photo by SPC John Lytle)

Commandant's Note

BG DAVID M. HODNE

Lethal Infantry Soldiers

The mission of the Infantry is to close with the enemy by means of fire and maneuver in order to destroy or capture him, or to repel his assault with fire, maneuver, close combat, and counterattack.

The oldest branch in the U.S. Army, the Infantry is proud of its mission and proud of our role in defining our Nation's history. However, in accomplishing our mission and fighting on to the objective, the Infantry incurs between 70-90 percent of all casualties sustained in combat. To the uninitiated, the Infantry fight is a close-in, no-holds-barred fight on the objective in very close quarters; it is unique in that it is both very personal and impersonal at its core.

In every respect, our Infantry requires a special type of Soldier — one who is willing to perform the tough, hard-hitting duties necessary to win on the modern battlefield.

I am incredibly proud and humbled to serve as the Chief of our Infantry. I am also honored to serve as both the U.S. Army Infantry School Commandant and as the Director of the Soldier Lethality Cross Functional Team (SL-CFT). This SL-CFT is directly responsible for modernizing our "close combat" Soldiers. Informed by observations following my first 90 days in position, I offer the following to the field:

1. In all operational environments and under all conditions, our Infantry continues to lead the way while deployed around the world in support of combat operations and deterrence efforts. In accomplishing their mission, our Infantry Soldiers are defeating our adversaries, deterring aggressive competitors, and reassuring our Allies and partners. The demand for our Infantry has also never been higher, concurrent with both the recent growth of Security Force Advise and Assist Brigades (SFABs) and the transformation of Infantry One-Station Unit Training (OSUT) at Fort Benning. Both of these efforts require increased numbers of highly experienced and professional Infantry officers and NCOs.

2. The focus of the U.S. Army Infantry School is directly aligned with the Army's modernization strategy. Responsible for one of the Army's eight Cross Functional Teams (CFTs), the Soldier Lethality CFT is the only CFT where a school Commandant retains responsibility for both the CFT and the branch. In this respect, everything we do at Fort Benning addresses improving the lethality of our Infantry Soldiers and squads. There are clear capability gaps requiring our immediate attention to sustain overmatch against current and future threats. My predecessor, BG Chris "CD" Donahue, first established the CFT a year ago and generated significant momentum on a number of important modernization efforts intended to improve squad and Soldier lethality. Over the next one to three years, we will equip the "Close Combat Force" (Infantry, Cav Scouts and their accompanying forward observers, medics, and engineers) with the Enhanced Night Vision Goggles (Binocular - ENVG-Bs), Next Generation Squad Automatic Rifles and Next Generation Rifles, and improved Small Arms Fire Control.

3. In addition to modernizing equipment, the USAIS intends to enhance lethality in our Infantry Soldiers through training and human performance efforts. This includes the transformation of Infantry OSUT from 14 weeks to 22 weeks in duration. This is the first major revision to Infantry OSUT since 1971 and delivers new Infantry Soldiers qualified (vs. familiar) on machine guns, combatives, and medical combat lifesaving skills. The results from our current pilot effort are positive, and we look forward to graduating the first two companies of the 22-week OSUT program on the 7th of December. Much like SFABs, this investment in lethality requires a corresponding investment in quality NCOs to train these initial entry Soldiers.

4. Lastly, in the coming year USAIS will publish the revised Marksmanship Course of Fire. Consistent with our other efforts to produce more lethal Infantry, the new rifle qualification standards improve Soldiers' skill in employing individual weapons in a manner that better replicates realistic firing conditions. Similar to our comprehensive transformation of OSUT, this is the first major revision to small arms weapons qualification in almost five decades.

In closing, we recently celebrated the historic 100th Anniversary of both Fort Benning and the U.S. Army Infantry School. To all of the Infantry Soldiers and leaders who read this: we are extremely proud of our last century of accomplishments and faithful service to our Nation. We have much to look forward to as we embark on the next 100 years.

I am the Infantry! Follow me!

Changes Coming to Standardize EIB Tasks, Requirements

DAVID WRIGHT

Significant changes are coming to the manual and task requirements for the Expert Infantryman Badge (EIB).

Since 1944, the EIB has set a high standard for Infantry training in the Army. It has evolved into 30 tasks — 10 each in weapons, patrol, and medical lanes. Now, new changes are about to be implemented.

MSG Charles Evans from the Office of the Chief of the Infantry is leading the effort to rewrite the manual for all 30 tasks in the EIB. He conducted a pilot program recently at Fort Benning, GA, with Infantry Soldiers from across various units.

"Their feedback was really essential to rolling out this new standard, making sure it was validated before it hit the horse," said Evans. "Just working out all the kinks and making sure that all the tasks were applicable, realistic, and up to date with the latest doctrine."

Most of the changes in the manual are intended to standardize and streamline the options for units in how to conduct the testing. Nevertheless, there will be significant changes to some of the tests themselves. Indirect fire, move under fire, grenades, CPR, and care under fire tasks are all being reworked.

"The reason we did this event was to make sure it wasn't just written from a single perspective, that it had feedback from all the different types of units across the Army," said Evans.

The purpose of the EIB is to recognize Infantrymen who have demonstrated a mastery of critical skills that build the core foundation for individual proficiency that allow them to locate, close with, and destroy the enemy through fire and maneuver and to repel an enemy through fire and close combat.

To view the latest EIB requirements and testing information, go to http://www.benning.army.mil/Infantry/EIB/index.html?_=6270.

An Infantryman assigned to the 2nd Battalion, 35th Infantry Regiment, 3rd Brigade Combat Team, 25th Infantry Division, completes a task at the move under direct fire station during Expert Infantryman Badge testing at Schofield Barracks, HI, on 13 June 2018.

Photo by SSG Armando Limon

Soldier Lethality CFT Bringing Next Generation Technologies to Soldiers

ROBERT PURTIMAN

In October 2017, the Soldier Lethality Cross-Functional Team (CFT) began work to narrow the capability gaps that affect Soldiers — particularly the 100,000 close-combat Soldiers who close with, engage, and destroy the enemy.

The team has had some early success with the implementation of the Infantry One Station Unit Training (OSUT) transformation and the requirement approval for the Enhanced Night Vision Goggle-Binocular (ENVG-B) device. In particular, the ENVG-B requirement was written and approved in 30 days. The average time it takes the Army to approve requirements is two to three years.

The Soldier Lethality CFT is doing exactly what was intended at the outset: to have warfighters and developers work together to prepare capability documents that enable the rapid delivery of capabilities to the warfighter and to inform a potential program of record.

"The Army's fundamental responsibility is to equip, train, and field Soldiers with the tools and resources to engage and destroy the enemy," said BG David Hodne, Soldier Lethality CFT director. "Soldiers must have capabilities that increase lethality, mobility, situational awareness, and protection while countering threats. New systems will be designed to employ emerging technologies to ensure our Soldiers have a decisive advantage over potential adversaries.

"Our CFT has been given the task to develop requirements informed by experimentation and technical demonstrations — through teaming, agility, and rapid Soldier feedback," Hodne explained. "This enables informed decision making by Army leadership for potential programs of record in order to regain our overmatch over near-peer competitors. We have all the right people in the organization: from warfighters, program management, finance, testing, science and technology, and others. That was the original intent for the creation of the CFTs."

Currently, the lethality team is working on three lines of effort: the **ENVG-B**, the **Next Generation Squad Weapons**

Soldiers with the 173rd Airborne Brigade hold their position during a live-fire portion of the Saber Junction 18 exercise in Germany's Grafenwoehr Training Area on 12 September 2018.

Photo by PFC Matthew J. Marcellus

(NGSW), and the **Adaptive Soldier Architecture (ASA)**. Of the three, the ENVG-B program is closest to fielding, with devices expected to be in the hands of Soldiers in 2019.

"The ENVG-B was developed based on an urgent operational requirement from U.S. Army Forces Command," said COL Chris Schneider, project manager for Soldiers Sensors and Lasers. "They were seeking a capability that provided both night vision and thermal-sensing capability with stereoscopic binocular depth perception to increase mobility and improve visual confidence in varying lighting present on the modern battlefield during day and night operations. It also had to give Soldiers increased mobility and situational awareness through a heads-up display of friendly and enemy locations."

The ENVG-B is a digital system that allows for significant capability growth and the ability to network sensors and other situational awareness systems such as NETT Warrior, Small Arms Fire Control, range finding systems, and any information transmitted across the tactical network.

"The ENVG-B utilizes the same wireless technology to communicate with the Nett Warrior system and is designed for full compatibility with future synthetic training systems to facilitate Soldiers training and fighting with the same equipment," said COL Travis Thompson, Soldier Lethality CFT chief of staff.

To meet future warfighter needs, the CFT has made significant progress in the development of the NGSW. The first of these weapons will be the Next Generation Squad Weapon-Automatic Rifle (NGSW-AR), which will be followed by the Next Generation Squad Weapon-Rifle (NGSW-R). The NGSW-AR will replace the M-249 Squad Automatic Weapon (SAW) in the automatic rifleman role, and the NGSW-R will replace the M4/M41 Carbine in brigade combat teams.

"The NGSW-AR is the first in a series of capabilities to modernize the weapons of the dismounted maneuver force," explained COL Elliott Caggins, project manager, Soldier Weapons. "NGSW capitalizes on advancing technologies to provide increased performance at range, integrated squad fire control systems, improved ergonomics of the weapon, lightweight case technologies, signature suppression capabilities, and intelligent and powered rail designs through systems integration."

The goal of NGSW is to improve lethality, mobility, and situational awareness of the dismounted Infantryman, scout, and engineer to overcome our nation's adversaries and win on the battlefield.

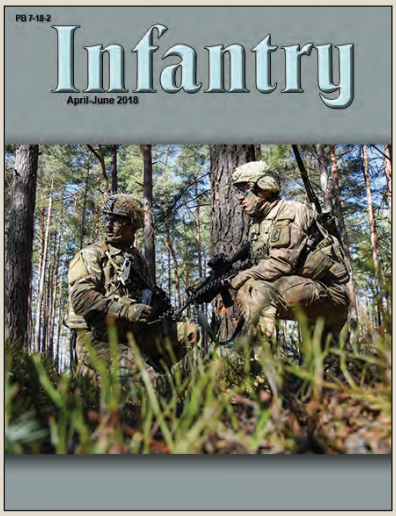
"By incorporating frequent Soldier touchpoints in the development and acquisition strategy of the system, the Army is ensuring the Soldier, weapon, ammunition, and fire control combined-system function as needed and are optimized," Caggins finished.

The most complex effort ongoing for the CFT is the work being done with the ASA. The architecture is a concept of treating the Soldier as a system much like a tank or an aircraft. It ensures that systems are integrated with the Soldier rather than added to the Soldier.

"With this new architecture, we want to provide adaptive and responsive leap-ahead capability to our Soldiers that results in an innovative, collaborative, and cross-functional culture to drive advanced capabilities into the squad to support current and future priorities," explained Thompson.

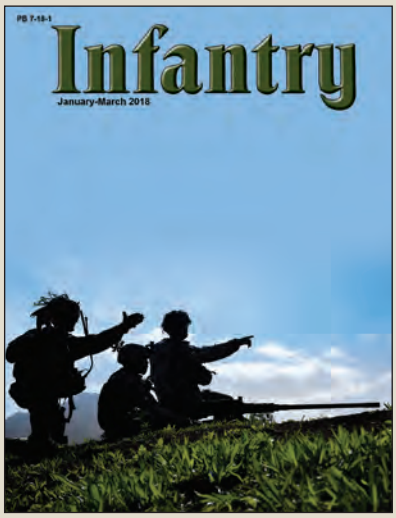
The ASA establishes power, data, connection, and transfer standards to Soldiers and their equipment, treating Soldiers the same as an integrated combat platform.

"What's vitally important about the architecture is that it facilitates technology insertion and Soldier integration through enhanced communication with industry that will enable the advanced capability that our Soldiers require to defeat our current and future threats, and facilitate future technology growth and capability integration across the Soldier and squad," Thompson added.



We Need Articles!

Infantry Magazine is always in need of articles for publication. Topics for articles can include information on organization, weapons, equipment, and experiences while deployed. We can also use relevant historical articles with emphasis on the lessons we can learn from the past. For more information or to submit an article, call (706) 545-2350 or email us at usarmy.benning.tradoc.mbx.infantry-magazine@mail.mil.



U.S. Army photos

This series of photos shows a simulated towed jumper scenario with a mannequin that is towed behind an aircraft. The Towed Jumper Recovery System includes an emergency parachute that is released once the jumpmaster cuts the aircraft anchor line cable.

New Airborne System to Save Soldiers' Lives

ARGIE SARANTINOS-PERRIN

Jumping out of a plane may be a routine part of an airborne Soldier's training, but if the equipment doesn't function properly, it can be deadly.

"Generally, there are a handful of towed jumpers per year, which can be potentially dangerous situations," said Samuel Corner, project manager for the U.S. Army Research, Development and Engineering Command (RDECOM) Soldier Center Aerial Delivery Directorate.

Until recently, there were two ways to help a towed jumper, which occurs when the static line attached to the aircraft anchor cable becomes tangled with the jumper and/or the equipment and the parachute is not released — cut the jumper's static line so the Soldier can deploy his or her reserve parachute or pull the Soldier back into the aircraft. Both scenarios are dangerous because the Soldier is dragged alongside or behind the aircraft until he is either released or pulled into the aircraft.

In March 2017, in an effort to eliminate the possibility of a towed jumper situation, the Aerial Delivery Directorate's Airdrop Technology team submitted a project proposal to the U.S. Army Foreign Comparative Testing Program, which is embedded in RDECOM's Global Technology Office, as part of their annual call for proposals. The proposal was selected, enabling the Airdrop Technology Team to purchase 10 Hung Up Parachutist Release Assemblies (HUPRA) from the United Kingdom company IrvinGQ (formally Airborne Systems Europe) for tests and evaluation.

The HUPRA, which includes an emergency parachute that is released once the jumpmaster cuts the aircraft anchor line cable, is used by the UK as well as other nations on C-130 and other military aircraft. By purchasing the system from the UK, the Army saved approximately $500,000 in non-recurring engineering costs and additional costs to develop, integrate, and validate a new recovery system.

The tests, which were conducted at Yuma Proving Ground (YPG), AZ, used mannequins that "jumped" out from the aircraft's side doors and ramp. The testing was conducted on C-130 aircraft and divided into seven phases; minor changes were made to the system after the first phase was completed.

A complete developmental test was performed on the Towed Jumper Recovery System (TJRS — the Army name for the slightly modified HUPRA) at YPG, including aircraft procedures development, safety evaluation, rigging procedure development, and performance testing.

While standard operating procedures (SOPs) were developed based on the C-130 aircraft that was used during testing, another set of SOPs will be developed for C-17 aircraft, which is a much larger aircraft that the Army uses.

"The TJRS program has been positively briefed to the Army Airborne Board," Corner said. "The next step is to work with the board and TRADOC (U.S. Army Training and Doctrine Command) to develop a formal requirement for a jumper recovery system. After that, the project will transition to PM Soldier Clothing and Individual Equipment, under PEO Soldier."

Read more at https://www.army.mil/article/209863/new_airborne_system_to_save_soldiers_lives.

Army Researchers Hope to Lighten Soldiers' Battery Load

DAVID VERGUN

Across all six of the Army's modernization priorities — long-range precision fires, next generation combat vehicle, future vertical lift, network, air and missile defense, and Soldier lethality — there has been a dramatic increase in demand for power as a result of the introduction of new system capabilities and prototypes that are energy hungry, said an Army lead engineer.

Of particular concern for Soldiers is the increase in energy demand in the areas of Soldier lethality, including augmented reality, said Julianne Douglas, Energy Harvesting Technology lead with the Army Communications-Electronics Research, Development and Engineering Center.

Based on her discussions with the Soldier Lethality Cross-Functional Team, which is in charge of overseeing the progress for that particular modernization priority, Douglas said a rifleman today requires an average of 12 watts of power in the form of AA and conformal wearable batteries. That means the weight requirement of batteries for a standard 72-hour patrol is about 15 pounds.

It doesn't sound like much weight, but it adds to the other things Soldiers are hauling like weapons and ammunition, protective gear, and food and water, she said, adding that Soldiers are always trying to be better prepared, so their battery load for a 72-hour mission is probably closer to 25 pounds.

Noel Soto, a systems engineer with the Army Research, Development, and Engineering Command, said his team is working on a number of experiments to bring down the weight and number of batteries Soldiers must carry. They include:

- Wearable solar panels that are comfortable and flex with the body
- A backpack frame kinetic harvester that produces energy for rechargeable batteries from slight movements of the Soldier's rucksack during dismounted patrols
- A kinetic knee harvester that produces energy for rechargeable batteries from movements of the Soldier's legs

The kinetic knee harvesters have received favorable reviews from Soldiers doing the testing, he said. They are most efficient when Soldiers are moving downhill.

The backpack frame kinetic harvesters are more efficient when Soldiers are going uphill, he said, as that's when their rucksacks wobble the most. Soldiers are taught to tightly fasten everything down on their person, but in this case, having a loose-fitting rucksack results in more energy-harvesting efficiency. That doesn't sit well with Soldiers, who prefer the kinetic knee harvesters. The added benefit of the kinetic knee harvesters is that when Soldiers go downhill, the mechanism helps Soldiers to more efficiently brake so they have a better-controlled descent and reduced fatigue, Soto added.

Read the full article at: https://www.army.mil/article/210673/army_researchers_hope_to_lighten_soldiers_battery_load.

Photos by David Kamm

During an energy-harvesting technology demonstration at Fort Devens, MA, Soldiers test a photovoltaic Solar Panel Harvester (left), a kinetic knee harvester (middle), and a backpack frame kinetic harvester (right).

New Army Technology Guides Soldiers in Complete Darkness

ARL PUBLIC AFFAIRS OFFICE

Researchers at the U.S. Army Research Laboratory (ARL) developed a new type of thermal imaging camera that allows Soldiers to see hidden objects that were previously undetectable.

Dr. Kristan Gurton, an experimental physicist in the Computational and Information Sciences Directorate, and Dr. Sean Hu, an electronics engineer in the Sensors and Electron Devices Directorate, are leading the ARL's effort.

U.S. Army images

The images above are examples of human identification using conventional and polarimetric thermal cameras. The thermal polarimetric image allows for finer facial details to emerge.

According to Gurton, all objects that have a non-zero temperature emit thermal radiation in the infrared portion of the spectrum, and the "intensity" of that radiation is proportional to its temperature.

The researchers said thermal radiation is always present in the environment regardless of whether it's day or night, which is why the Army uses thermal cameras to "see" objects that are often hidden in the dark. However, in addition to the "intensity" of the infrared light, there is another characteristic of light that is often ignored when it comes to imaging: polarization state.

"At ARL, we have been developing, with the help of the private sector, a special type of thermal camera that can record imagery that is based solely on the polarization state of the light rather than the intensity," Gurton said. "This additional polarimetric information will allow Soldiers to see hidden objects that were previously not visible when using conventional thermal cameras."

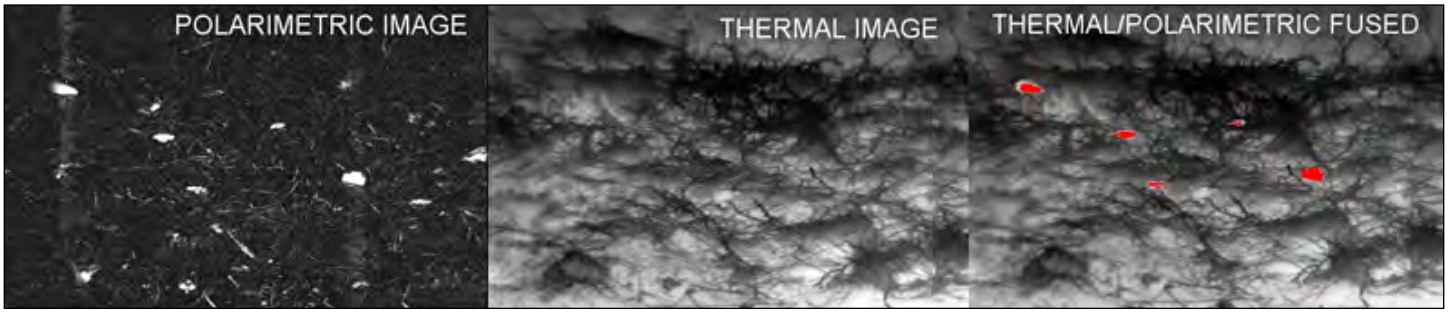
Gurton is pursuing the development of the camera hardware, while Hu is working on software designed to best exploit the additional information thermal polarimetric imaging provides.

"Soldier-specific applications that we have been investigating include the detection of hidden tripwires and booby traps, enhanced ability to see camouflaged targets, identification of buried line-mines and improvised explosive devices, and enhanced targeting and tracking of missiles, mortars, unmanned aerial vehicles, and other airborne threats," Gurton said.

The team's most recent and exciting discovery involves the ability to detect and identify specific human subjects during complete darkness.

"Prior to our research at ARL, the only way to view humans at night was to use thermal imaging," Gurton said. "Unfortunately, such imagery is plagued by a 'ghosting' effect in which detailed facial features required for human identification are lost. However, when polarization information is included in the thermal image, i.e., a thermal polarimetric image, fine facial details emerge, which allows facial recognition algorithms to be applied."

Read the complete article at: https://www.army.mil/article/211492/new_army_technology_guides_soldiers_in_complete_darkness.



The images above are examples of identification of hidden booby traps and tripwires using conventional and polarimetric thermal cameras.

Accelerating Multi-Domain Operations: *Evolution of an Idea*

GEN STEPHEN TOWNSEND

Multi-Domain Battle has a clear origin. Stemming from the idea that disruptive technologies will change the character of warfare, it recognizes that the way armies will fight and win wars will also change. It also reflects the desire to replicate the success of AirLand Battle, which is arguably the most significant case of developing a concept and then materializing capabilities across the DOTMLPF (doctrine, organization, training, materiel, leadership and education, personnel, and facilities) spectrum. Origin stories establish the foundation from which lasting ideas emerge. However, for ideas to have a lasting impact they must evolve.

For Multi-Domain Battle, there are two things driving the need to evolve the concept.

First, ideas must evolve to ensure alignment with the strategic direction of the enterprise they serve. The 2018 National Defense Strategy lays out the missions, emerging operational environments, advances in technology, and anticipated enemy, threat, and adversary capabilities that the Department of Defense envisions for the foreseeable future. It provides direction for how the joint force must evolve to compete, deter, and win in future armed conflict. To this end, Multi-Domain Battle must reflect this strategy.

Second, when I took the reins of U.S. Army Training and Doctrine Command, I was specifically directed to "operationalize Multi-Domain Battle" by building upon the foundation created by my predecessor and accelerating its application. And what I found was an incredible foundation. GEN Dave Perkins brought together partners across the joint force, driving development of the concept to an articulated idea and a vision of how the Army fits into it. The key players are all here and are committed to building and improving the concept and finding real solutions. The concept is ready to grow.

Photo by A1C Gracie I. Lee, USAF

U.S. Army and British Army paratroopers shake hands before jumping from a C-17 Globemaster III during Exercise Swift Response 18 on 8 June 2018.

But for that to happen, we need to confront some of the problems others have noted. Over the last 18 months that Multi-Domain Battle has been out there for debate, there have been four consistent critiques. Some noted that the idea was "old wine in a new bottle." I think the iPhone analogy articulates why that just isn't true. What the original iPhone did wasn't all that new, but how the iPhone did it fundamentally changed not just a market, but people's behavior. This is exactly what we seek to achieve with this new concept. Though the domains of warfare (air, land, sea, space, and cyberspace) are not new, how the U.S. armed forces will rapidly and continuously integrate them in the future is new.

Another critique is that this is an Army-only concept. However, the Air Force and Marine Corps have been part of MDB from the start, and recent reporting from numerous forums has made clear the Army's desire to listen, learn, and include our joint and multinational partners in the development of this idea. Recently, the Navy and the Joint Staff have also joined the discussion.

Albert Palazzo's series of articles in the fall of 2017 laid out a clear argument. To be successful, Multi-Domain Battle must translate into radical effects on the U.S. military's culture. The concept must force us to reconsider fundamental tenets, like our industrial-age means of promoting, training, and educating leaders. It must also pull us from the comfort of our tactical-level trenches to develop capabilities that inform up to the strategic level of war. Putting "battle" into the name both confines the possibilities and limits the result.

In battles, combatants can win time and space and they allow one side to take ground, but they do not win wars. The world we operate in today is not defined by battles, but by persistent competition that cycles through varying rates in and out of armed conflict. Winning in competition is not accomplished by winning battles, but through executing integrated operations and campaigning. Operations are more encompassing, bringing together varied tactical actions with a common purpose or unifying themes. They are the bridge between the tactical and the strategic.

In my first months of command at Training and Doctrine Command, it became clear that the use of the word "battle" was stifling conversation and growth of the concept. There are three concrete reasons why Multi-Domain Battle evolved to Multi-Domain Operations.

First, if the concept is to be truly joint and multi-service, we need clarity and alignment in how we talk. The Air Force talks of Multi-Domain Operations and Multi-Domain Command and Control, while we talk of Multi-Domain Battle — often covering similar, if not the same, ideas and capabilities. To this point, none of the many people I have talked to, including my predecessor, are wedded to the use of "battle" — it was what fit best in time, place, and circumstances. What they are committed to are the ideas of converging capabilities across the joint force with continuous integration across multiple domains.

Multi-Domain Battle served its purpose — it sparked thinking and debate and it created a foundation. But what we need now is Multi-Domain Operations, and the next revision of the concept to be released ***this fall will reflect this change.***

Second, we cannot do this alone. The armed services can win battles and campaigns, but winning wars takes the whole of government. It helps the entire effort if our interagency partners are comfortable with and conversant in our warfighting concepts and doctrine. As highlighted to me by a former ambassador at a recent forum, talking in terms of operations instead of battles brings together those who want to get things done — whether they are civilians or the military.

And third, it is never just about the fight. When it comes to combat, there is no one better than the combined weight of the U.S. military and our allies and partners. However, the operating environment is evolving and nation-state-level competition has re-emerged, as evidenced by recent actions by both Russia and China. Our National Defense Strategy highlights the importance of winning the "competition" that precedes and follows conflict. However, our use of "Multi-Domain Battle" seemed to indicate our concept was only for the conflict phase. While there are battles within competition, winning them is pointless if they are in isolation to the larger context of deliberate operations supporting national strategy.

Multi-Domain Battle served its purpose — it sparked thinking and debate and it created a foundation. But what we need now is Multi-Domain Operations, and the next revision of the concept to be released this fall will reflect this change.

Language is important. It conveys meaning. This change is not cosmetic — it is about growing an idea to its greatest potential in order to change the way we fight today and ensure overmatch against our adversaries of tomorrow. To do this we need clarity and alignment across the joint force, whole-of-government inclusion, and perspective that reinforces our need to compete effectively outside periods of armed conflict. Changing the name does not do this by itself, but it communicates a clear vision of what we need to accomplish and where we are headed.

GEN Stephen Townsend serves as the commanding general of the U.S. Army Training and Doctrine Command at Fort Eustis, VA. He previously served as commander of the XVIII Airborne Corps and Fort Bragg, NC. GEN Townsend has led and commanded troops at every echelon from platoon to corps and combined joint task force. He has soldiered with four regiments — the 505th Parachute Infantry, the 21st Infantry, the 31st Infantry, and the 75th Ranger Regiment — and with five divisions — the 82nd Airborne Division, the 7th Infantry Division (Light), the 10th Mountain Division (Light), the 2nd Infantry Division, and the 101st Airborne Division (Air Assault). Read GEN Townsend's complete bio at: https://www.tradoc.army.mil/Leaders/Article-View/Article/1622704/general-stephen-j-townsend/.

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Building Confidence and Trust in Leaders

LTC VALENT P. BERNAT III
MAJ JOSHUA I. WILES

Infantry Soldiers assaulting an objective sight unseen with live munitions and combined arms support is as close to combat conditions as we can replicate. We refer to it as the "cold hit." Cold-hit live-fire exercises (LFXs) inherently involve increased risk above the standardized dry-blank-live scenarios. We challenged ourselves to capitalize on the increased readiness enabled by conducting cold-hit LFXs while mitigating the increased risk to an acceptable level. The following methodology, which is based on rigorous application of doctrine and procedures, serves as our solution. This training methodology was deliberately thought through, implemented, and refined as we built capacity and confidence across the formation. Our Soldiers and units achieved cold-hit competence, and they continue to sustain their readiness at peak levels.

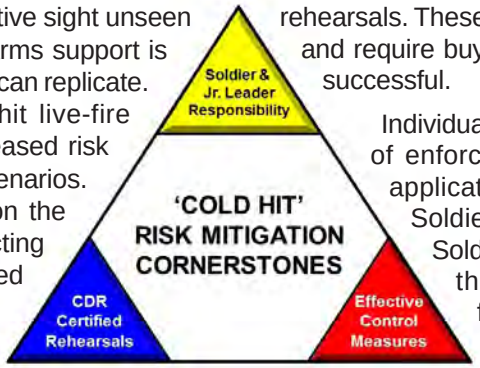


Figure 1 — Cold-Hit Risk Mitigation Cornerstones

The 1st Battalion, 27th Infantry, 2nd Infantry Brigade Combat Team (IBCT), 25th Infantry Division, developed and sustained a training methodology that enabled cold-hit competency at all levels from squad/crew to company combined arms live-fire exercise (CALFEX). This methodology is underpinned by three key foundational cornerstones: Soldier discipline and junior leader responsibility, effective control measures, and certified rehearsals. These cornerstones are essential to the process and require buy-in and implementation at all levels to be successful.

Individual discipline and junior leader responsibility of enforcement, particularly with regards to the application of the 15-degree rule, truly enable Soldiers to train up to the cold-hit level. Our Soldiers are inculcated with the concept that they are first and foremost responsible for ensuring they do not fire upon their teammates. They are enabled by being individually trained and certified by their leaders in the employment of the 15-degree rule. Additionally, team leaders are held accountable to supervise and verify their Soldiers' application of the 15-degree rule (see Figure 2).

1-27 IN units incorporated focused 15-degree rule training into advanced rifle marksmanship, buddy team, and fire team LFXs.

Soldiers from Charlie Company, 1st Battalion, 27th Infantry Regiment, 2nd Infantry Brigade Combat Team, 25th Infantry Division, engage targets in a support-by-fire position during a combined arms live-fire exercise on Schofield Barracks, HI, on 4 December 2017.

Photos by 1LT Ryan DeBooy

Small arms (5.56mm, 7.62mm, and .50 caliber), ground-mounted or vehicle-mounted machine guns may be fired at low angles of elevation (near the flank of an individual or unit). For the SDZ (surface danger zone), there must be an angle of 15 degrees or 100m (whichever is greater) between the limit of fire and the near flank of the closest individual or unit and all impacts are beyond the individual or unit. For the batwing SDZ, all non-participating personnel must be outside of the SDZ. Tripod, traversing, and depression stops will be used on machine guns to maintain the required angle and distance between the line of fire and the near flank of an individual or unit.

— DA Pamphlet 385-63, 17-4o

Figure 2 — Firing Precautions

1LT Andrew Cook, who is assigned to C Company, 1st Battalion, 27th Infantry Regiment, calls back to his subordinate leaders during a CALFEX on Schofield Barracks on 4 December 2017.

This training generated a foundational understanding for Soldiers and leaders while providing an opportunity to employ the method in relatively docile circumstances.

Company commanders built upon this foundation by executing the first cold-hit concept at the squad level. The limited number of Soldiers (nine) participating in the actual live fire presented a relatively reduced risk environment that was easily mitigated by the number of available observers and safety personnel. Leaders were able to validate Soldiers' understanding of the concept when they saw them actively checking their 15 degrees while maneuvering. Successful execution at the squad level generated increased confidence to continue to the platoon-level live fires.

Control measures are a doctrinal part of any combat operation, but their effectiveness is not always certain. This uncertainty is particularly true when a unit follows the standard dry-blank-live training method. Since the lane has been rehearsed twice prior to the execution of the live event, Soldiers may just execute the steps as rehearsed instead of truly employing the planned control measures to manage their fire and maneuver. The cold-hit process places distinct emphasis on effective and redundant control measures to ensure that subordinate elements de-conflict their fires and maneuver. Confirming a shift fire is not something the assault element leader can assume away. And the support by fire must be able to track the front line trace of the assault element.

The previous two foundational pieces are firmly buttressed by certified rehearsals. Rehearsals of actions on the objective are critical at the squad and platoon levels under the cold-hit concept. Unit leaders provided with a detailed intelligence packet of the objective — to include overhead imagery, maps, and sketches from scouts — are enabled to construct accurate replicas of the objective. These mock objectives are then certified for accuracy by the training official (two levels up). Recreating objectives at the squad and platoon levels is relatively easy. Creating a full-scale rehearsal site for a company or larger element is generally unfeasible. Therefore, the combined arms rehearsal and/or rehearsal of concept (ROC) drill is used as the certifying event in addition to certifying

Figure 3 — Example of Products Provided to Training Units by Battalion Scouts to Build "Mock Up" Objectives

platoons on their actions on contact/on the objective.

Cold-hit platoon LFXs are the nexus of complexity with the introduction of enablers: engineers, indirect fires, and combat aviation. These additional components distinctively increase the requirement for effective control measures and leader understanding of the plan. Our advanced rifle marksmanship and team/squad LFXs set the stage for the 15-degree rule while the platoon LFXs distinctly stressed clear and redundant control measures. Soldiers and leaders quickly learned the primacy of visual signals vice auditory and that radios were at best a tertiary means in the close fight.

Under the oversight of 2/25 IBCT, 1-27 IN concluded its cold-hit proof of concept with both a dismounted infantry company CALFEX and a mounted heavy weapons company CALFEX. Both iterations incorporated mounted and dismounted elements in the attack. Company-level cold-hit CALFEXs required the company leadership to conduct a combined arms rehearsal (CAR) as a final certifying event on top of the platoon-level actions on the objective. In keeping with the doctrinal two levels down rule, the battalion commander certified the platoons and the brigade commander certified the CAR. All of the steps executed in preparation for the cold-hit LFXs are in keeping with the preparations conducted prior to executing a combat operation given the necessary time and resources. This process, in fact, reinforces and validates the doctrinal emphasis to develop a detailed plan and rehearse prior to all operations if possible. This training path resulted in distinctly increased competence and confidence at all levels of the formation including trust in our enablers.

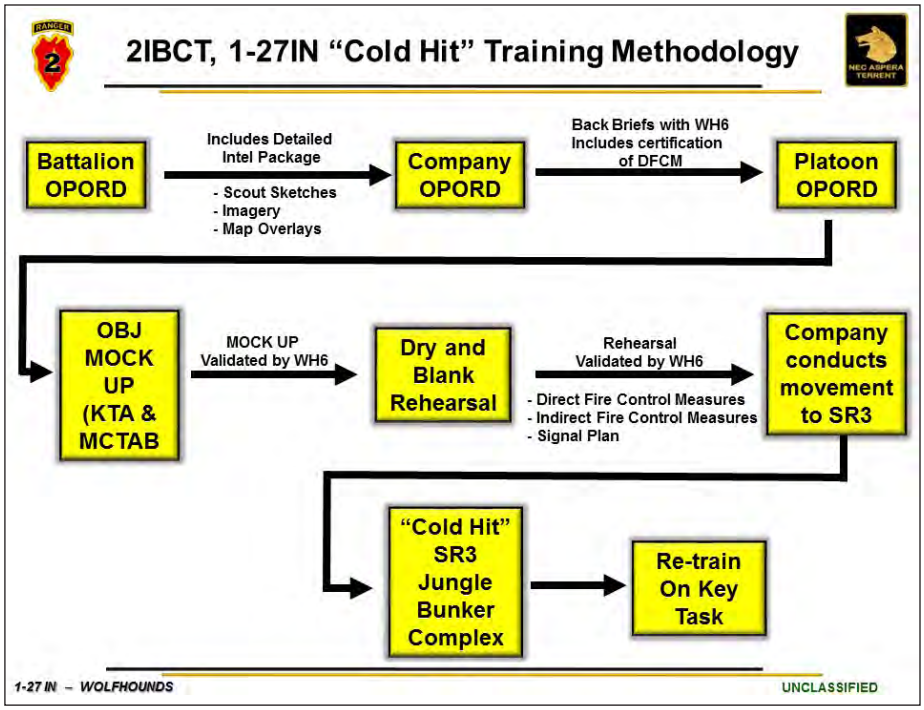


Figure 4 — Cold-Hit Training Methodology

Additionally, training efficiency was gained by executing this methodology, specifically with regards to time. Executing units built their rehearsal sites and mock objectives on available training areas away from the range. These dispersed locations greatly increased the available time to construct the actual range, and since units were only executing their live iterations on the actual lane, more time was available between iterations for range reset and retraining. Company-level leadership trained dry iterations with their units prior to the battalion commander certifying the blank iterations. The companies were enabled with more time and resources to validate control measures, signal plans, and unit standard

A squad leader in B Company, 1st Battalion, 27th Infantry Regiment, checks his Soldiers' points of aim to ensure he meets the 15-degree rule.

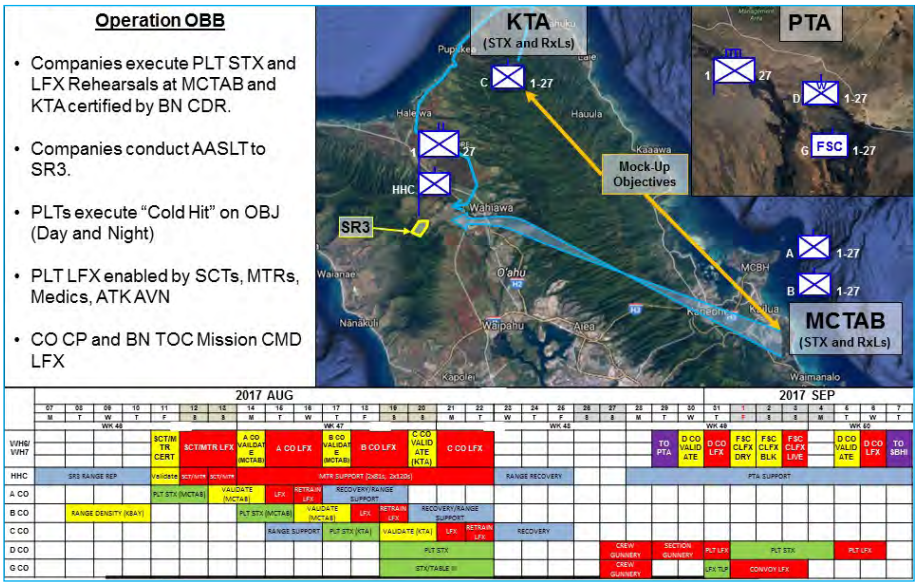


Figure 5 — Operation Barb Breakthrough Overview

operating procedures (SOPs). All of our platoons were able to take lessons learned from their first live iteration and apply them to their subsequent iteration — either correcting a deficiency or reinforcing good practices.

Cold-hit LFXs may seem to be fraught with risk and uncertain gain, but our team experienced the opposite. First, Soldiers and specifically junior leaders understood and accepted their individual roles and responsibilities to mitigate risk in order to protect one another. Secondly, the iterative building block methodology grew confidence among the Soldiers and leaders while also deepening discipline and trust across all levels. Finally, the competence and confidence generated at the conclusion of the company CALFEXs permeated the entire formation. These Soldiers and leaders understood they had successfully executed operations in conditions as close to combat as possible. We felt that the process would increase capacity in planning, control measures, and signal planning, but we underestimated the intangible confidence that was gained throughout the formation. These types of formations — those operating at the readiness levels our leadership requires of us — are the ones that can fight and win.

Soldiers of the 1st Battalion, 27th Infantry Regiment overwatch breach operations conducted by the 65th Brigade Engineer Battalion during the unit's cold-hit CALFEX.

Day Live Fire

- ☐ Range scenario approved by Wolfhound (WH) 6
- ☐ Range scenario approved by range control
- ☐ Lane safeties certified by battalion
- ☐ Range construction certified by range control
- ☐ Commander/first sergeant/executive officer and lane safeties conduct tactical exercise without troops (TEWT)
- ☐ Soldiers certified on the 15-degree rule
- ☐ Weapons qualification certified
- ☐ Individual Soldiers trained on employment of hand grenades
- ☐ Scout/Mortar Platoon validate lane
- ☐ Executing leaders receive accurate intel of objective (including imagery)
- ☐ Mock up of objective validated by battalion commander
- ☐ Dry/blank day and night iteration on mock up of objective validated by WH6
  - Confirmation of direct fire control measures
  - Confirmation of signal for lift/shift fires
- ☐ LFX uniform briefed
- ☐ OIC/range safety officer conducts final safety brief
- ☐ Execute LFX on objective

Night Live Fire

- ☐ Identical target array to day
- ☐ Day live fire completed
- ☐ Weapons/PEQ15 bore sighted
- ☐ Automatic weapons laser bore sighted
- ☐ All targets have thermal signature
- ☐ All Soldiers have working NVGs
- ☐ Execute LFX on objective

Figure 6 — Cold-Hit Live Fire Conditions Check

At the time this article was written, **LTC Valent P. Bernat III** commanded the 1st Battalion, 27th Infantry Regiment, 2nd Infantry Brigade Combat Team, 25th Infantry Division, at Schofield Barracks, HI. He currently serves as the chief of operations for the Indo-Pacific Directorate of the Defense POW/MIA Accounting Agency. His previous assignments include serving as the senior Army advisor to the Adjutant General of the Vermont Army National Guard; chief of training, deputy G3, and chief of operations for the 10th Mountain Division; executive officer (XO) of the 2nd Battalion, 22nd Infantry Regiment, 10th Mountain Division; operations officer for the 1st Squadron, 71st Cavalry; division maneuver planner and brigade assistant operations officer for the 1st IBCT, 10th Mountain Division; and experimentation staff officer in the Joint and Army Experimentation Division (JAED) of the Army Capabilities Integration Center (ARCIC) at Fort Monroe, VA.

At the time this article was written, **MAJ Joshua I. Wiles** served as the operations officer for 1-27 IN. He currently serves as the Joint Mission Training Officer, J74, with the U.S. Strategic Command. His previous assignments include serving as a battalion executive officer, headquarters and headquarters company commander, and heavy weapons company commander while serving with 3rd Infantry Brigade Combat Team, 1st Infantry Division at Fort Knox, KY. He also served as a platoon leader and executive officer with the 4th Stryker Brigade Combat Team at Fort Lewis, WA.

The BFV in the DATE

1LT ZACHARY J. MATSON

"Be careful not to fight with one enemy for too long, for you might teach him all your tricks of war."

— Napoleon Bonaparte

The U.S. Army continues to train for a position of dominance as a conventional land force after nearly two decades of unconventional conflict. To this end, it has begun to rotate armored brigade combat teams (ABCTs) through combat training centers (CTCs) to face near-peer armored and hybrid threats in a decisive action training environment (DATE). The requirement to understand the capabilities and limitations of the Bradley Fighting Vehicle (BFV) in these formations becomes increasingly imperative.[1]

The 1-18th Infantry Combined Arms Battalion (CAB) participated in Allied Spirit VIII, an exercise that tested the interoperability of a multinational NATO headquarters, at the Joint Multinational Readiness Center (JMRC) in Germany from 15 January to 5 February 2018. Our company — Attack Company, 1-18th IN — was task organized with a light infantry platoon, a motorized platoon of four high mobility multipurpose wheeled vehicles (HMMWVs), and a mechanized infantry platoon with M2A3 BFVs. As a hybrid infantry company, we conducted an area defense, a movement to contact, a hasty attack on an urban area, as well as offensive operations as part of a larger unit. This article summarizes certain lessons learned for other combined arms units as they deploy to Europe in support of Operation Atlantic Resolve.

Movement and Maneuver

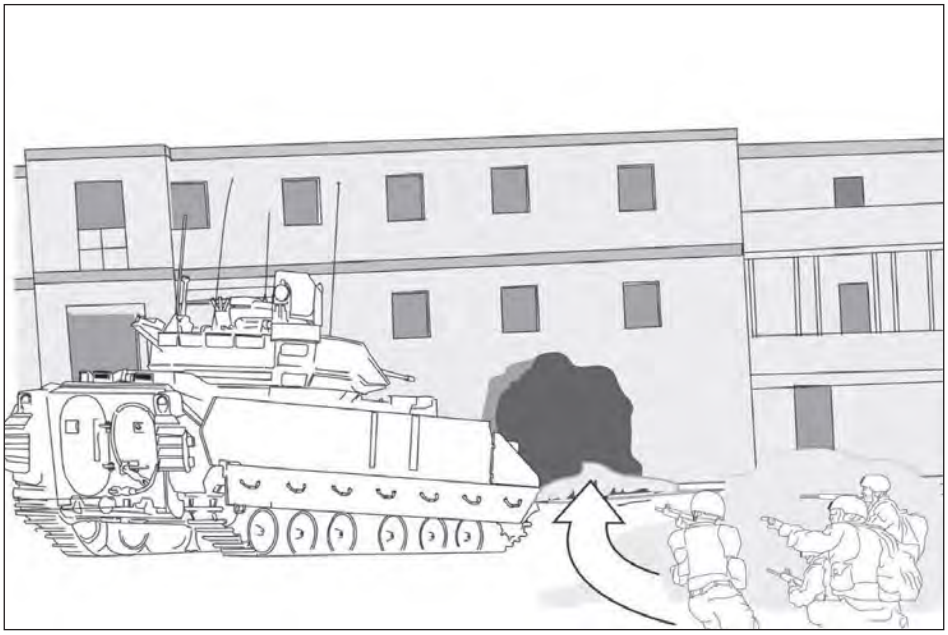
Army Techniques Publication (ATP) 3-21.8, *Infantry Platoon and Squad*, describes steps 4-6 of engagement area development (EA DEV) as fluid.[2] However, commanders recognize certain inflexible components of EA DEV — notably, that obstacles without direct fire overwatch are ineffective. Platoon leaders have noted in previous operations that obstacles are either emplaced under direct fire or they are not emplaced at all.[3] One of the steps of EA DEV — "Plan and Integrate Obstacles" — proves to be a challenge at JMRC because of the speed of the fight and the need to cover multiple engagement areas. At times, the fight would develop so rapidly at JMRC that combat vehicles were unable to remain in one position for more than one hour. Therefore, vehicles used what little time they did have to occupy hasty fighting positions overwatching high speed avenues of approach instead of first emplacing an obstacle. Our motorized platoon could move quickly to a chokepoint on a road, emplace C-wire, and move quickly back to a covered position. Our experience confirms that the only thing that will slow down an enemy mechanized column is an obstacle that the enemy must negotiate. Only when the enemy is temporarily halted will the step of integrating fires prove effective. Enemy scouts identified any avenues of

An M2 Bradley Fighting Vehicle assigned to Attack Company, 1st Battalion, 18th Infantry Regiment, traverses muddy terrain after successfully completing crew qualifications at the Novo Selo Training Area, Bulgaria, on 20 March 2018.

Photo by SSG Matthew Keeler

approach that were not blocked, and they attacked with a speed that made calling for fire ineffective.

An enduring challenge for mechanized platoon leaders is integrating their dismounted Infantrymen in the defense. We found it extremely effective to place anti-armor teams along high-speed avenues of approach with clear displacement and engagement criteria. After destroying an enemy lead vehicle along a canalized approach, the team then broke contact through severely restricted terrain back to a link-up point to remount. Restrictive fire lines (RFLs) tied into terrain such as ridgelines ensured our dismounted elements were protected from friendly direct fire.



ATP 3-21.8, *Infantry Platoon and Squad*

Bradley Fighting Vehicle 25mm Infantry Support

While using BFVs to cover an engagement area, the primary consideration of direct fire weapon emplacement should go to the platoon's most capable weapon — the TOW (tube-launched, optically-tracked, wire-guided) missile. TRADOC Capabilities Manager-Armored Brigade Combat Team (TCM-ABCT) has many useful suggestions for conducting TOW training and employment. However, while the testing/incorporating of tactics, techniques, and procedures (TTPs) is of immense use in preparation for a training rotation, it is no substitute for solid familiarization and proficiency with the TOW.[4] A good rule of thumb is if you would take a knee while dismounted, put the TOW up.

The greatest capability the BFV offers to the infantry is its 25mm cannon to support the rifle squads as a mobile, stabilized, direct fire platform.[5] Platoon leaders determine if their Infantrymen should be dismounted before, on, or beyond the objective. If an enemy anti-armor threat is detected or templated, dismounting before the probable line of contact (PLC) is recommended. Platoon leaders can identify their own PLCs for their platoons if the company does not provide one because they should always be thinking about the transition from movement to maneuver. An enemy situation template (SITTEMP) provided by the S2 is always expected and needs to be provided to maneuver units so they can better plan for that transition. Named areas of interest (NAIs) and targeted areas of interest (TAIs) should be treated as if the enemy is already there and in a prepared defense.

Because of the auditory signature of armored vehicles, it is critical to use the dismounted infantry to get eyes on an NAI before the BFVs move within direct fire range. During our final offensive, we were within audio contact of an NAI that had been cleared by friendly air only a couple hours beforehand, but in the meantime the enemy was able to establish a textbook L-shaped ambush. If reconnaissance confirms there is light infantry on the objective, bounding the BFVs forward to the objective and dismounting the rifle squads within sprinting distance of the objective is often successful; this permits them to quickly secure a foothold while the BFVs provide both cover for the rifle squads and immediate suppression of the enemy. A useful technique is to dismount the rifle squads in the last covered and concealed (LCC) position while the BFVs act as moving cover, which allows the BFVs to suppress or destroy the enemy and cover the infantry that is moving directly behind the vehicle. This also permits the rifle squads to orient themselves to the objective prior to arrival, and the tempo of an attack is not lost while lowering and raising the ramp. Under the close cover of firing BFVs, the rifle squads can maneuver much closer to the objective, and the shock effect of an approaching armored vehicle does wonders to convince the enemy to quit.

The environment in which commanders employ the BFV significantly alters which techniques are advisable. When in an urban environment, the BFV should be thought of like a tank. It serves as an armored mobile firing platform and must be pulled forward with dismounted infantry to mitigate risks against anti-armor fires. During a hasty attack on a village, our BFVs postured on the edge of the village, which allowed us to maximize the use of the main gun while the infantry was covered from the enemy moving down the streets. In a rural environment, BFVs can escort the dismounted infantry forward until they encounter restricted terrain. When the enemy was dug into a wood line, our BFVs would neutralize the enemy anti-tank threat and lead the friendly infantry forward to clear any remaining enemy dismounted soldiers to great effect.

Rifle squads should always take a 24-hour bag with them when they dismount unless it is on the objective, in direct contact, or entering and clearing an urban area. For planning purposes, the platoon leader designates multiple potential link-up sites in both the offense and the defense. Link-up sites are useful in the defense if an enemy column passes the dismounted infantry and the BFVs break contact to another position or move to another location to respond to a threat.

In the transition from the defense to the offense, observation posts (OPs) that are more than one kilometer away or patrols operating outside of direct fire support from their platforms do not always have the time or capability to link up and mount up before moving out. During troop leading procedures (TLPs), link-up operations are planned by phase. Recently, an opposing force (OPFOR) platoon leader at JMRC wrote that his unit was unable to respond to a blue force (BLUFOR) mechanized attack in time because his dismounts took too long to get ready.[6] This ends up being a primary concern for platoon leaders who might be afraid to "let go" of their rifle squads' leash. However, with proper planning, the platoon can have its BFVs move quickly enough to repel or block an enemy attack while the rifle squads move to a link-up site in the meantime. Both Training Circular 3-21.76, *The Ranger Handbook*, and ATP 3-21.8 cover the considerations for conducting the link up.

Fires

New Infantry platoon leaders have a great opportunity to attend functional schooling such as the Bradley Leaders Course (BLC) while stationed at Fort Benning, GA. BLC graduates are likely familiar with using the Blue Force Tracker (BFT) to call for fire; however, section leaders and even the platoon sergeant might not know how available this capability is. The gunner can lase a target and get a 10-digit grid which the Bradley commander can see on the commander's tactical display (CTD). In addition to learning turret functions, such as calling for fire and the importance of the commander's independent viewer in identifying threats, BLC students will go through a dedicated week of gunner skills training with expert small group instruction to fulfill the Army's educational line of effort of decreasing on-the-job training and preparing leaders before they assume their next duties.[7] TCM-ABCT recommends all incoming platoon sergeants attempt to attend BLC before reporting to their units.[8]

Protection

One of the difficulties mechanized units encounter is employing their vehicles for protection against a near-peer threat in a DATE. Vehicle spacing during convoy movements and actions at the halt still reflect global war on terrorism standard operating procedures (SOPs). The BFV can engage targets at much greater distances than what we are used to in theaters such as Iraq and Afghanistan. It allows greater spacing between vehicles while in a convoy, with at least 100 meters between vehicles and up to 200 meters between elements in a company formation. When stopped for a short halt, vehicles should occupy a herringbone formation. When in the long halt, it is more important for vehicles to find overhead concealment from enemy aircraft or unmanned aerial vehicles (UAVs) rather than sticking to a strict formation. Leaders repeatedly failing to pay attention to proper vehicle spacing and protection in ABCTs as well as Stryker BCTs is a trend that occurs often at our CTCs, as evidenced in after action reviews from the National Training Center at Fort Irwin, CA.[9]

In the case of anti-air, the company commander should assign a BFV as a primary air defense platform rather than the .50 caliber machine gun on its modified table of organization and equipment (MTOE). The number of high speed avenues of approach at JMRC will usually require rotating units to spread themselves thin in the defense with sometimes only two vehicles covering a likely road or intersection. The OPFOR masses its combat power in the attack, so every single BFV needs to be prepared to fire on an enemy column, but our experience proved that enemy aircraft attack simultaneously with armored columns. This required our 25mm guns to be focused on a massed column instead of addressing the aircraft. While some BFV gunners can claim confirmed kills on enemy helicopters, spending valuable 25mm ammunition in an attempt to shoot down an enemy aircraft that is attacking simultaneously with enemy mechanized columns is not a good use of ammunition unless priority of targets is planned beforehand.

Dominance over the air is no longer a guarantee. Currently, the CAB does not have organic anti-air assets, and it will likely remain that way until we integrate maneuver short-range air defense (SHORAD) in the future.[10] Although there were friendly NATO units with Stinger missile capability, linking up and coordinating with non-English speaking allies proved difficult during the fight. Stryker units usually assign a Soldier from the squad riding in the vehicle as an air guard, but mechanized infantry platoons do not have a similar explicit responsibility. Leaders preparing for a CTC rotation are advised to develop a plan for watching enemy air and to rehearse methods of engaging an air threat, should one arrive. It is useful to assign section leaders as primary air guards, as they should already be out of the commander's hatch but wouldn't be occupied with round counts, navigation, or radios. Before CTC rotations, time spent in virtual crew qualifications, such as the Conduct-of-Fire Trainer or the Bradley Advanced Training System that feature engaging enemy rotary wing aircraft, will prove very useful in the DATE.

Sustainment

The ground tactical plan should be disseminated to every section leader, but it is equally important that every crew member understands the battalion maintenance plan. This includes locations of the unit maintenance collection point (UMCP), field trains command post (FTCP), and the combat trains command post (CTCP). Often a track can move by itself or in a section to the UMCP if the tactical situation permits, making it increasingly important that Bradley commanders are able to self-recover and navigate back to that location. Track maintenance deserves equal attention to the security plan and must be included in the priorities of work so that every crew knows how and when to conduct it. During Allied Spirit VIII, our battalion maintained every combat platform throughout the rotation due to the strict enforcement of the maintenance plan. Our battalion also managed to get an M2A3 idler rod flown in from Poland within 24 hours because operators conducted preventive maintenance checks and services (PMCS) to standard.

Depending on the number of casualties a unit takes, combined with the low survivability of the M113 compared

Photo by PFC Shelton Smith

A Soldier with the 1st Battalion, 18th Infantry Regiment pulls security after dismounting a Bradley Fighting Vehicle during platoon live-fire qualifications on 18 December 2017 at the Novo Selo Training Area in Mokren, Bulgaria.

to that of a BFV, a company commander or platoon leader may consider using a BFV as an alternate company casualty evacuation (CASEVAC) vehicle. In an attack, fire superiority is established by the support-by-fire (SBF) element which inevitably shifts or ceases fire on the objective. One of our BFVs from the SBF element transported more casualties and acted as an escort to the first sergeant's M113, which increased battlefield survivability for both the M113 and the wounded in action. Assign that vehicle the task beforehand, as you would assign primary aid and litter to a fire team in an infantry squad. Every Soldier must know that the litter will not fit inside the back of a BFV due to the length of the equipment.

The BFV is a sophisticated fighting platform that produces incredible battlefield effects when employed correctly. Active and well-documented participation by ABCTs at JMRC provide ongoing, current, and practiced knowledge of the Bradley and its application in the Army's foundational mission to fight and win our nation's wars. Current educational resources to help maintain lethal proficiencies on this platform are listed below.

Educational Resources

* **Center for Army Lessons Learned (CALL) — https://usacac.army.mil/organizations/mccoe/call**

Army leaders can sign up with CALL for their newsletters which provide handbooks, after action reviews, and lessons captured from observer-controller-trainers at the training centers.

* **Milsuite — https://www.milsuite.mil/**

TCM ABCT offers a vast repository of insights into common issues facing units conducting live gunnery, armor/infantry integration challenges, employment considerations, and tactical SOPs. Milsuite requires CAC access.

* ***Infantry*** **Magazine — www.benning.army.mil/infantry/magazine**

Past issues contain comments and trends over the years that remain consistent in a brief and accessible format.

* **Army Techniques Publication (ATP) 3-21.8, *Infantry Platoon and Squad* — https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/atp3_21x8.pdf**

Notes

[1] U.S. Army Infantry School, "State of the Infantry," 12 September 2017.
[2] Army Techniques Publication (ATP) 3-21.8, *Infantry Platoon and Squad*, April 2016.
[3] Jerome J. Burns, "Lessons on the BIFV," *Infantry* Magazine, January-February 1990.
[4] Derek D. McCrea, "TCM-ABCT Identifies Gaps in Bradley Training," *Infantry* Magazine, July-September 2013.
[5] ATP 3-21.8.
[6] Jason R. Lally, "A Platoon Leader's Reflection on Readiness," *Infantry* Magazine, October-December 2017.
[7] Army Doctrinal Reference Publication (ADRP) 6-22, Army Leadership, Army Leader Development Strategy, August 2012.
[8] McCrea, "TCM-ABCT Identifies Gaps in Bradley Training."
[9] Michael S. Farmer and Brian J. Harthorn, "Infantry Attacks at NTC: Part II," *Infantry* Magazine, April-June 2017.
[10] "State of the Infantry."

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AI in the Last 100 Yards

CPT (RETIRED) TROY J. ALBUCK
MAJ JOSHUA K. FRYE

Automated weapons have proliferated. General artificial intelligence (AI) permeates the operational environment. Human/robot teams operate at the tactical, operational, and strategic levels. New synergies and concepts fundamentally change tactics and doctrine. Adaptation, information, and rapid decision making reign supreme over numerical strength and conventional mindset.

All of this will greet us in the near future. Exponential increases in processing power and AI research are changing our world. We must be ready.

Our community recognizes the need for new weapons systems, constantly evolving doctrine, and realistic training. In order to remain prepared for the next war, and not necessarily against a near-peer nation state, our Army must continue to embrace the future of warfare.

Human beings are inextricably linked to technology. Information systems in previous wars were relegated to high echelon elements. Recently, battle management systems and real-time data sharing made debuts with the fighting leader. Land Warrior, Force XXI Battle Command Brigade and Below (FBCB2), Command Post of the Future (CPOF), and others shape or shaped the way we share understanding and execute mission command. These systems, while sophisticated, were essentially dumb. We propose a future where our systems think, listen, speak, feel, and advise us during all phases of operations.

Picture a future battlefield where robots, drones, and other similar automata perform recon, make entry first, clear an objective, and work hand in hand with augmented human Soldiers. This time will also witness an interplay between expert AI and Army leaders in real time. Just as AI practitioners managed to create software capable of defeating the best humans at the complex game of "Go," it's perfectly reasonable to expect that they will devise systems which will excel at the game of war.[1] Systems and networks will recognize cues in intelligence and the evolving operational environment that point to high probability courses of action. At least in the near future there will be benefit in keeping a human in the loop. At some point though, a human decision-making cycle and OODA (observe, orient, decide, act) loop will be far too slow.

Target acquisition, identification, and engagement are low-hanging fruit in near-term AI integration. AI programs already exist which recognize disease in medical imaging and perform better than highly trained radiologists.[2] Software in weapons sights and attached to networked sensors will remain vigilant 24 hours a day and recognize camouflaged, concealed, and hidden targets a human would miss. They will also quickly suggest the best engagement method. A sensor on an unmanned ground vehicle may spot an expertly concealed enemy tank; it would then use a network to determine the assets available and capable of engagement. The AI might re-task another asset to confirm the target's identity using other sensors. Using a highly developed threat library, definite confirmation is possible. It would then apply rules of engagement, calculate risks to others in the area, and select the most proportional and efficient munitions option. A human in the loop might then be queried for a decision — all within seconds.

Imagine also a platoon conducting operations in an urban environment. Military operations on urban terrain (MOUT) remains one of the most hazardous task sets. Countless structures and gritty city battlefields will feature more in future conflicts.[3] A common sci-fi trope is nearer to reality today than ever before; robotic systems will exceed the performance of the best Infantryman. Robots continue to operate until exhausting their power source — or when faced with mechanical failure. Robots under advanced AI control will not tire or hesitate to make entry when ordered to clear a room. The perfect robot point man will make entry, scan a room, move, and destroy its target with mechanical precision. Today's Infantryman cannot compete with the reaction times or split second decision-making abilities of such a system. An AI in control of such a battlefield robot will analyze the contents of a room, all individuals present, weapons, intentions, and other variables within nanoseconds. It will use its capabilities to slew its weapons system and fire before a human brain is capable of even seeing it break through the door. Make entry, clear the fatal funnel, identify the enemy threats, and move to dominate the room.

Every Infantryman's worst nightmare is having part of the team go down. Casualty evacuation under fire is a dangerous and heartbreaking process. It's also resource intensive. For every Soldier wounded in combat, it may take up to five Soldiers out of the immediate fight. A general purpose combat robot would also excel here. While battlefield robots will come in many form factors, a humanoid body may prove the most flexible in many situations. The robot would instantly react to a human taking fire and respond in kind. It would then maneuver itself, and apply its superhuman strength and speed to extract the casualty. AI-powered robots may also possess the knowledge and skills of the best collection of trauma surgeons and stabilize their wounded human buddy. A robot could also carry a wounded Soldier for miles at an extremely rapid pace to a hastily coordinated casualty collection point or medical evacuation (MEDEVAC) location.

The Air Force's new operational concepts stress information dominance and sensor fusion.[4] Its F-35, paired with pilots, analysts, and leaders will fundamentally change the combat decision-making process in the air and on the ground. Similarly, the Army must also employ these concepts to mission command. Further, AI will serve as an expert advisor to even our most senior leaders. For example, when a brigade combat team commander faces an enemy force, his AI and human staff can work together to provide high-quality solutions in real time. An AI is capable of ingesting and processing countless variables and can review information feeds from thousands of sensors. The AI will recognize patterns the best human intelligence analysts would miss and run the most detailed war games thousands of times per minute. It would remain many steps ahead of an enemy opponent. Some AI systems today have even mastered the art of deception. AI will recognize enemy demonstrations, feints, and ruses while embedding deceptions in our own courses of action. The AI adviser would simultaneously run through cycles and versions of the military decision-making process (MDMP) in real time.

Academics, futurists, journalists, and scientists grapple with these possibilities today. The Army has done little to explore the ramifications of general AI within the operational force. While organizations like the Defense Advanced Research Projects Agency (DARPA) push the boundaries, it often takes years for capabilities to mature.[5] All the while, the pace of technological innovation continues to accelerate.

While AI may be our friend and helper now, some say that such an arrangement is far from permanent. Once we assign goals to intelligent systems, they will find novel ways to achieve their objectives. We must also prepare for the day that AI goes off the rails. An uncontrolled AI explosion could unleash the most cunning, ruthless opponent our Army has ever faced. We should devote some time to contingency planning. If Elon Musk, the late Steven Hawking, and others' warnings come to pass, we will not be ready.[6]

We strongly urge this community and all aspects of our government/industry team to devote resources to further AI integration in our force. We also recommend that counter AI strategy be developed.[7] Our human opponents will master the technology, too. Finally, we must prepare ourselves for a time when an automated machine-led AI threat emerges to face us in both the kinetic and cyber realms.

Notes

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Fort Benning's Namesake:

A Re-examination of General Henry L. Benning

PHILLIP LINN

In celebration of Fort Benning's centennial, it is perhaps instructive to re-examine the Civil War exploits of its namesake, General Henry L. Benning. Unlike some of his fire-eating colleagues who led the South into the Civil War, Henry L. Benning put his money — and his life — where his mouth was.

A successful lawyer from Columbus, GA, who later won election as associate justice of the Georgia Supreme Court in the decade before the war, Benning became an outspoken advocate for states' rights and one of the leaders of Georgia's secessionist movement. Soon after the start of the war, Benning raised the 17th Regiment of Georgia Volunteers and spent most of the war in General James Longstreet's First Corps of Robert E. Lee's Army of Northern Virginia, participating in all of that Army's major campaigns except the Battle of Chancellorsville. He also traveled with the portion of Longstreet's corps sent to reinforce Braxton Bragg's Army of the Tennessee in the Battle of Chickamauga. Much of Benning's Civil War correspondence is contained in the Benning/Jones Collection in the Schwob Library Archives at Columbus State University (CSU) in Columbus.[1] The materials offer a fascinating insight into Benning's impressive military career on the front lines of some of the most intense fighting of the Civil War; they also provide a rare perspective of some of his memorable arguments with the Confederate War Department over states' rights issues and periodic efforts to defend his honor against ill-informed attacks on his personal reputation.[2]

Benning's Confederate service officially began with his appointment to the rank of colonel in the Georgia militia on 17 August 1861, a copy of which, signed by Governor Joseph E. Brown, is included in the collection. After the First Battle of Manassas in July 1861, the creation of militia units at the state level was accelerated. The 17th Regiment of Georgia Volunteers which Benning headed was formed with 10 companies from Muscogee and five other counties. As its commander, Benning supervised its equipping (initially with "smoothbore muskets") and movement from Georgia to northern Virginia.[3] Along with the 1st (later assigned to Anderson's Brigade), 2nd, 15th, and 20th Regiments of Georgia Volunteers, the 17th became part of Brigadier General Robert Toombs' brigade in Major General David Jones' division of the Army of the Potomac.[4]

Benning and the 17th Regiment spent the fall and winter months of 1861-1862 establishing camps, adjusting to the rigors of military life, drilling, and preparing for the upcoming spring campaign. This proved to be more trying than one might assume. In his book *General Henry Lewis Benning, This Was a Man: A Biography of Georgia's Supreme Court Justice and Confederate General*, J. David Dameron points out that the conditions of that first winter significantly reduced the ranks of Toombs' brigade, which boasted an initial strength of around 4,000 soldiers; "by the close of 1861, the ranks of the brigade were thinned by the loss of 595 men, due to illness, desertions, and disabilities." Between 1861 and 1865, losses due to disease and illness amounted to 1,002, with pneumonia and typhoid being the major causes, followed by smallpox and measles. Overall losses from all causes were staggering; the brigade had mustered with close to 4,300 men in August 1861, and by 9 April 1865 only 812 soldiers remained on the field.[5]

During the spring and summer of 1862, Benning spent more time engaged in political battles than military ones. He corresponded extensively with the Confederate Secretary of War, G.W. Randolph, over the issue of how promotions were to be handled for company-grade officers in Benning's regiment. At stake was the tradition of electing officers in militia units like Benning's 17th Regiment, which had been in force since the unit's creation, versus the assertion by the Confederate government that officers should be officially promoted and assigned by the government. As an ardent state's rights advocate, Benning steadfastly supported the

electoral procedures. First Lieutenant Henry McCauley served as second in command of Company F in the 17th Regiment, a unit that had been mustered out of Columbus, and thus he was well known to Colonel Benning. Benning felt that McCauley, a tombstone merchant in his pre-war days, was not qualified to take command of the company after the resignation of the elected commander. In fact, the men in the company elected another officer to be the company commander. McCauley refused to accept the decision and protested directly to Randolph. Benning had him arrested and jailed for insubordination. In the ensuing interchange of letters, Randolph provided McCauley with an official promotion to captain and directed Benning to reinstate McCauley as the company commander. In the end, McCauley resigned in frustration at Benning's refusal to give him an official hearing, and he returned to Columbus to resume his pre-war occupation. Randolph's order reinstating McCauley could not be executed since he was already gone by the time it was received.[6] Despite at one point writing an impassioned, 22-page argument of his point, Benning in the end discreetly let the matter die.[7]

As this disagreement was playing out, the war began to assume a new intensity, and Benning soon found himself in the center of some of the fiercest action. George McClellan had begun his Peninsula Campaign, and Toombs' brigade, as part of Jones' division, participated in the Confederate attempt to halt McClellan's advance on Richmond. When the Confederate commander, Joseph E. Johnston, was wounded midway in the campaign, authorities appointed Robert E. Lee to replace him. An army reorganization followed, with Toombs' brigade and Jones' division becoming part of Major General John Magruder's corps in the renamed Confederate Army of Northern Virginia. At the Battle of Seven Pines, which took place on 1 June 1862, Toombs' brigade arrived too late to participate in the fighting, but later in the month (27 June) at Garnett's Farm, the brigade (including Benning's regiment) received its baptism of fire. Although Benning's original brief battle report of the engagement is not in the CSU collection, a copy of the report that appeared in *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies* is included.[8] A few days later (30 June - 1 July), Toombs' brigade and Jones' division were part of Lee's unsuccessful and costly attempt to crush McClellan's army at the Battle of Malvern Hill. Once again, Benning's original handwritten draft of his regiment's action in the battle is not in the collection, but a copy of the published version which appeared in *The War of the Rebellion* series is included.

With McClellan's retreat from the peninsula, Lee once again reorganized the Army of Northern Virginia, and Jones' division became part of James Longstreet's newly formed First Corps. Benning, as senior regimental commander in Toombs' brigade, was appointed its interim commander after Longstreet had a falling out with Toombs.[9] Soon after, Longstreet's First Corps shifted north to link up with Jackson, crossing the Rapidan River on 18 August and the Rappahannock River on 26 August. On 28 August, following Jackson's corps through Thoroughfare Gap on the way to Manassas Junction, a Union force suddenly appeared to cut Longstreet's corps off from Jackson's corps. Toombs' brigade, led by Benning, was ordered to clear the heights on the right side of the gap, which it did by beating the Union force in a race to the top of the ridge. General Anderson's brigade, including the 1st Regiment of Georgia Volunteers, attacked up the other side of the gap. By dark, the Union attempt to block the gap had been repulsed, and the remainder of Longstreet's corps moved through the gap unmolested (again, Benning's original report is not in the collection, but the *War of the Rebellion* series version is included).

On 29 August, General Pope's Army of Virginia engaged Jackson's corps. Thinking that the Confederates were retreating westward, Pope was determined to cut them off. However, when Longstreet's corps appeared on his flank the next day, Pope had little choice but to turn and fight what became known as the Second Battle of Manassas. With Toombs still under arrest, Benning remained in command of the brigade and played a decisive role in Longstreet's fight on the Confederate left wing. The brigade took significant casualties, reported at 37 killed and another 294 wounded.[10]

The fall of 1862 proved to be a very busy time for Benning and the Army of Northern Virginia. As a newly minted (although not officially promoted) brigade commander, Benning was catching up on his official correspondence. He produced reports of Second Manassas and the Battle of Sharpsburg (Antietam) during this period; handwritten drafts of both are included in the CSU collection. At Sharpsburg, General Toombs, who by this time had been reinstated, was given command of a provisional division, which included Benning's brigade. With the 15th and 17th regiments defending Lee's supply trains, Benning and his two remaining regiments, the 2nd and the 20th, were assigned to defend the lower bridge across Antietam Creek, known forever after as "Burnside's Bridge." On 17 September, after a morning assault on the Confederate left had been repulsed, an attack on the right commenced. Benning's two regiments of around 350 officers and men faced the entire Union IX Corps of General Ambrose Burnside — around 13,000 strong. With the Union soldiers attempting to cross the narrow lower bridge, Benning's two regiments held out against five successive assaults, not yielding until they began to run out of ammunition. Ordering a withdrawal, Benning met the 15th and 17th regiments at the top of the hill, hastening to his rescue. Ultimately, A.P. Hill's division relieved Toombs' division and received the lion's share of credit for saving the day.[11] However, the fight by Toombs' division was not over; Toombs had observed some of Burnside's units threatening the town of Sharpsburg itself and ordered his division to halt the envelopment of the town. In a letter to E.P.

Photos courtesy of author

During the Battle of Antietam, Benning's regiments were assigned to defend Burnside's Bridge. The regiments held against five successive assaults but eventually had to withdraw.

Alexander after the war, Benning remarked: "...A.P. Hill's troops came up before night, but none of them had much part in the fight; none had any part in first breaking the line [of advancing Union forces on Sharpsburg]. I give the above detail for the benefit of General Toombs as I have understood the credit of retaking Sharpsburg was [and] perhaps is claimed for A.P. Hill. Toombs is the man, however…"[12] It was at Sharpsburg that Benning's son, Seaborn, was wounded for the first time as he fought with the 1st Regiment in Anderson's brigade. Toombs himself was wounded in the hand later in the evening. After a convalescence in Georgia, Toombs became frustrated in his quest for promotion to major general and resigned, thus giving Benning his opportunity for permanent brigade command.[13]

Benning would face Burnside again in December 1862 at Fredericksburg. By this time, Burnside had replaced McClellan as commander of the Army of the Potomac and had moved his army to try to outflank Lee at Fredericksburg. High water on the Rappahannock River and lack of pontoon bridging delayed his advance, allowing Lee's army plenty of time to dig in to contest the crossing. The result was a decisive victory for the Confederate forces on 13 December. Toombs' brigade, led by Benning, was in the center of the rebel position in the second line of defense on the heights overlooking the town. Aside from some casualties from stray artillery fire, the brigade escaped relatively unscathed.[14]

During the winter fighting hiatus which followed, Benning was promoted to brigadier general (the actual promotion order was dated 23 April 1863 but with an effective date of rank of 17 January).[15] He took the field again in February of 1863 as part of Longstreet's move to the Virginia Tidewater region to attempt to retake the city of Suffolk. Pausing in Richmond for close to a month awaiting favorable weather, the corps recommenced its move on 29 March and arrived in the vicinity of Suffolk in mid-April. Benning communicated extensively with Longstreet and his staff during this Tidewater campaign, requisitioning supplies from a largely Unionist populace along the border of North Carolina. Unionist sympathizers, referred to as "Buffaloes" in Benning's correspondence, were to be treated civilly as long as they were cooperative.[16] Benning's brigade was assigned the task of escorting and protecting the corps supply trains, an undertaking of special concern to Longstreet and which elicited several directives personally written and signed by Longstreet himself. On 3 May, Longstreet and his corps were directed to rejoin Lee's army but missed the Battle of Chancellorsville.

Benning took part in some of the fiercest fighting at the Battle of Gettysburg two months later. Benning's brigade was part of John B. Hood's division, which occupied the far right of the rebel line on the second day of the battle, 2 July. Although in the second echelon of the attack against Cemetery Ridge, Benning's brigade decisively engaged Union forces around Houck's Ridge and Devil's Den. In the heavy fighting in and around Houck's Ridge, two regiments of Benning's troops reinforced Brigadier General Jerome Robertson's Texas Brigade, which was under heavy artillery and sharpshooter fire from Little Round Top, while his other two regiments fought a ferocious battle in the boulder-strewn vicinity of Devil's Den, assisting the left-most regiment of Alabamians from Brigadier General Evander Law's brigade. The attack on Houck's Ridge resulted in the capture of three Union artillery pieces and at least 100 prisoners — the combined efforts of both Robertson's and Benning's brigades, although the Texan's received the credit.[17] Benning's losses were heavy on 2 July — reportedly around 400. On 3 July, after reinforcing their positions overnight, the brigade spent much of the day standing its ground while the main attack focused on the center of the Union position (Pickett's Charge). However, late in the afternoon, a series of confusing messages from General McLaws, on Benning's left, and General Law, on Benning's right, led him to send one regiment (the 15th) to a forward position now exposed on both flanks as the Confederate forces began to withdraw. Receiving a second order from General Law clarifying the first, Benning realized that his entire brigade was in danger of being outflanked, but by that time the 15th Regiment was already in that situation. Benning successfully extracted both, but the 15th Regiment

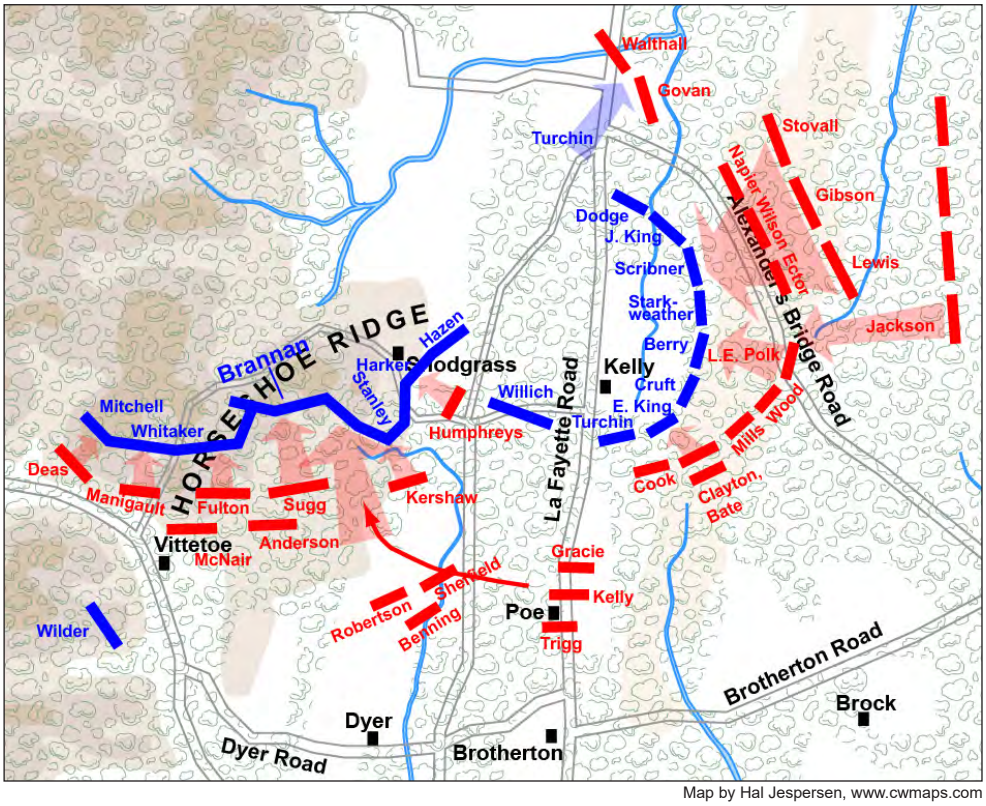
suffered heavy casualties in withdrawing under pressure. The total losses for the two days of fighting had resulted in 509 casualties.[18]

In his post-war letter to E.P. Alexander, Benning also gave an interesting second-hand account of another skirmish fought on 3 July. Major General Judson Kilpatrick (nicknamed "Kill-Cavalry"), commander of a division of Union cavalry, directed one of his brigades, commanded by rising star Brigadier General Elon Farnsworth, to make an ill-fated attack on the right flank of the Confederate position after Pickett's Charge had been stopped. The charge took place over uneven terrain against entrenched infantrymen. As the cavalrymen broke through a line of skirmishers in the rebel rear, they found themselves suddenly surrounded by an ever-increasing force of determined Texans, who were itching to avenge their own repulse at Little Round Top the day before. According to most historical accounts of the battle, Farnsworth's brigade was decimated, and Farnsworth himself was killed in a suicidal attack on a strong Confederate position, riddled with five rebel Minie balls.[19] Benning related Farnsworth's fate differently, recording that he had heard from several eye-witnesses that after the battle, as the Confederate infantrymen policed up the battlefield, they approached "…a fallen horse with the rider by his side but not dead. They ordered him to surrender. He replied wait a little or something to that effect and put his hand to his pistol, drew it & blew his brains out. This was Gen Farnsworth…"[20]

The Army of Northern Virginia had scarcely retreated back to Virginia when Lee decided to send Longstreet's corps west to reinforce Bragg's Army of the Tennessee. Since most of eastern Tennessee and Kentucky were under Union control, the corps was forced to take a circuitous rail route through North Carolina down to Atlanta, then north to Ringgold, GA, where it detrained and immediately marched into combat at Chickamauga. While enroute, Benning and his brigade became embroiled in a controversy in Raleigh, NC. Temporarily halting in Raleigh, Benning allowed some of his soldiers to explore the town. Whether his men had heard rumors while underway or once it arrived in Raleigh, they became aware that one of the newspapers in town, the *North Carolina Standard*, owned by pro-unionist editor William Holden, had been consistently publishing articles favoring the Northern cause. In the end, soldiers connected with Benning's brigade, as well as other units, raided the newspaper's offices, damaging the press and spreading containers of metal letters in the street. The brigade resumed its journey by 2300, and Benning, by his own account unaware of its activities at the time, took no action. Holden immediately wrote an angry letter to the *Milton Chronicle* (North Carolina) that was filled with unsubstantiated rumors and innuendo, blaming Benning and his troops for the incident.[21] North Carolina governor Zebulon B. Vance, himself personally involved in trying to quell the riot, also fed the controversy by making some unfortunate assumptions and then complaining to the Confederate Secretary of War, James Seddon. In the end, Benning was exonerated, Governor Vance apologized, and the affair ended.

Benning once again found himself in a major battle at Chickamauga between 18-20 September 1863. By all accounts, the heavily wooded terrain allowed units easily to become separated, and the battle degenerated into ferocious individual and small unit fights. Benning apparently temporarily lost his composure under fire during one of these firefights. On the third day of the battle and the second day of heavy combat, having had his horse shot from beneath him, Benning mounted an unsaddled artillery horse and continued on. However, the fighting was so intense that Benning lost sight of his own men. As reported later by General Longstreet in his postwar memoirs, Benning rode up on his artillery mount and excitedly reported, "Hood killed, my horse killed, my brigade

Map — Chickamauga, 20 September 1863, Part 3, Brigade Details



Map by Hal Jespersen, www.cwmaps.com

torn to pieces, and I haven't a man left." Longstreet allegedly replied, calmly telling Benning: "General, look about you. You are not so badly hurt. I know you will find at least one man, and with him on his feet report your brigade to me, and you shall have a place in the fighting line."[22] It is a tribute to both men that Benning regained his equanimity, Longstreet took Benning's lapse in stride, and both continued the fight.

Shortly after the Battle of Chickamauga, Benning accompanied Longstreet's corps into eastern Tennessee to prevent General Burnside from linking up with the Union forces in Chattanooga. Later, when this effort proved untenable, Longstreet moved his force to winter quarters near Bristol, TN. The winter was brutal — the mountains of east Tennessee were frigid, the region was sparsely populated, the populace was heavily Unionist, and the Confederate forces were isolated and poorly supplied. Benning tried to get a furlough to visit his family during this time (his first in more than two years), but it was not approved. Finally, Longstreet's corps received orders to rejoin Lee's army in Virginia, and it did so on 22 April 1864.[23]

The reunion occurred just as General Ulysses S. Grant prepared to engage and destroy Lee's Army of Northern Virginia. The Battle of the Wilderness commenced on 4 May 1864. The two-day battle — similar to Chickamauga for its heavily forested terrain and confused nature — proved expensive for both sides. Eerily similar to Chancellorsville a year earlier when General Stonewall Jackson had been mortally wounded by his own pickets, Longstreet and General Micah Jenkins (now commanding Hood's old division) were both shot by their own men in the confusion, resulting in the death of Jenkins and the serious wounding of Longstreet. In the fierce fighting, Benning was also wounded when a Union shot shattered his shoulder.[24] He finally received a furlough to return to Columbus to recover.[25]

Benning returned to the brigade in November 1864, by which time the brigade was busily involved in defending the defensive works around Petersburg in a stalemate that had turned into a lengthy siege. The brigade's role had settled into a routine of six days on the line, followed by two days of rest. Most of the casualties suffered in the trenches were the result of enemy sharpshooters, which the brigade leaders blamed on the troops themselves for "carelessness."[26] Petersburg fell in April of 1865, resulting in a chaotic retreat by the Army of Northern Virginia which ended in its surrender at Appomattox. Benning did not submit any official report of the brigade's actions. However, he did write in his postwar letter to E.P. Alexander that it was during the retreat from Petersburg that the wagon containing his trunk of official correspondence was lost. He also recounted the brigade's activities in these final days, leapfrogging from position to position covering the retreat of Lee's army. Benning wrote: "At Appomattox Courthouse the division was in the rear with the enemy close up. Its organization was perfect and it was not at all demoralized. I saw many men with tears streaming from their eyes when it was known that Lee had surrendered. They gathered in groups & debated the question whether we should not cut our way out & escape. Most of them were in favor of the attempt. They only waited for a word from me, but I would not give it. On the contrary, I urged them to acquiesce."[27]

Researchers will find most of Benning's Civil War papers in remarkably good condition, and his cursive handwriting legible and fairly easy to decipher. What is missing in most cases is Benning's personal correspondence. Those pieces which do exist are in other collections.[28] Nevertheless, what is contained in the CSU collection offers some fascinating insights into the Civil War career of Henry L. Benning. Anyone interested in that phase of Benning's life would do well to access the collection in Columbus.

Henry Lewis Benning, nicknamed "Old Rock," died on 10 July 1875 and was buried in Linwood Cemetery in Columbus, GA.

After the war, Benning returned to Columbus and reestablished his law practice, but his final years were marred by tragedy and disappointment. His wife, Mary, who had managed the household during his wartime absence, died in June 1868, leaving him to raise five daughters, his sister-in-law with her two children, his sister's two children, as well as two former slave families who had stayed on as domestics and laborers after the war. His close friend and political confidante, Howell Cobb, died in October 1868. In 1873, he ran for the open Senate seat from Georgia, but his states' rights rhetoric was outdated, and the election went to John B. Gordon, another military standout of stellar reputation. His son, Seaborn Jones Benning, who had been wounded twice during the war, never recovered from his injuries and died in December 1874 at the age of 31. On 9 July 1875, while juggling several court cases, he collapsed while on the way to court and died the next day. The cause was reported to be apoplexy, which today

would be called a massive stroke. He was 61 years old.[29]

While Fort Benning continues to excel as the schoolhouse for future leaders in the Infantry and Armor/Cavalry branches, Benning's own exploits as a military leader deserve periodic re-examination and emphasis. As the foregoing account suggests, Benning was a quick study as a combat leader of exceptional steadiness and skill, exhibited a remarkable ability to survive even as he led from the front during four years of war, and perhaps most impressive, won the enduring admiration and respect from his men who gave him the nickname on his tombstone — "Old Rock."

Notes

[1] Since Benning was in practice with Seaborn Jones, a well-known lawyer, entrepreneur, and congressmen as well as one of the founders of the city of Columbus (and also Benning's father-in-law), the CSU collection contains their combined correspondence — most of which consists of legal and financial documents from their pre-war legal practice.

[2] While the collection contains original, handwritten drafts of most of the battle reports submitted by Benning and drafts of many pieces of Benning's military correspondence, the collection is far from complete. As he explained in a letter after the war, the trunk containing his official military correspondence was lost in the chaos of the retreat from Petersburg in April 1865. What remains is nonetheless informative as an insight into Benning's military service. Researchers will find it helpful to use as companion resources to J. David Dameron's *General Henry Lewis Benning, This Was a Man: A Biography of Georgia's Supreme Court Justice and Confederate General* (Athens, GA: Iberian Publishing Company, 2000) and, by the same author, *Benning's Brigade, Volume 2: A History and Roster of the Second, Seventeenth, and Twentieth Georgia Volunteer Infantry Regiments* (Westminster: Heritage Books, 2011), both of which are available in the CSU archives. These sources provide much of the context and perspective lacking in the correspondence itself.

[3] Letter to E.P. Alexander, undated, Benning/Jones Collection, CSU archives, Box 4, Folder 18, 4.

[4] Dameron, *General Henry Lewis Benning*, 111.

[5] Ibid, 114-117.

[6] Ibid, 122-123.

[7] The correspondence relating to the McCauley Affair is dated 15 May 1862 through 25 July 1862 in Folder 15 of the CSU archives. Howell Cobb, Benning's college classmate and lifelong friend, advised him that "courtesy and prudence" would win the day with Randolph, advice that Benning evidently followed (Letter from Howell Cobb to Benning, 16 July 1862, Folder 15).

[8] *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies,* Series I-IV (1880-1901).

[9] On the move to link up with Jackson's corps, General Toombs ran afoul of General Longstreet and started the series of events that would lead to Benning being given command of Toombs' brigade. Toombs was directed by Longstreet to post a guard at Racoon Ford on the Rapidan River to prevent potential Union forays into Confederate territory. Toombs contemptuously felt that the guard was unnecessary and proceeded to dine out with one of his former congressional colleagues who lived nearby. Returning later in the evening to find that some of his regiments had been dispatched to guard the ford despite his orders to the contrary, he angrily remanded the order and withdrew the force. Later that same night, a Union cavalry force slipped across at the ford, raided General J.E.B. Stuart's headquarters, and narrowly missed capturing the Confederate cavalry leader himself. Taking his personal belongings, including his famed plumed hat, the Union force returned unscathed, much to the embarrassment of Stuart. Longstreet was furious and had Toombs arrested. Benning, as senior regimental commander in the brigade, was appointed interim commander; Dameron, *Benning's Brigade*, 38.

[10] Dameron, *Benning's Brigade*, 41-45; Benning's handwritten draft battle report dated 8 October 1862, Folder 16, CSU archives.

[11] Dameron, *General Henry Lewis Benning*, 143; for example, in Stephen Sear's *Landscape Turned Red* (Boston: Houghton Mifflin Company, 1983), 285-6, Sears praises A.P. Hill for his timely arrival on the battlefield, but in fairness, credited the Federal's delay in reorganizing after crossing Antietam Creek as a major factor in the Confederate forces holding the town of Sharpsburg.

[12] Letter to E.P. Alexander, CSU archives, Folder 18, 17-18.

[13] Dameron, *General Henry Lewis Benning*, 145.

[14] Benning's draft account of the Battle of Fredericksburg, 20 December 1862, CSU archives, Folder 16.

[15] Promotion Order from Confederate Secretary of War James, 23 April 1863, CSU archives, Folder 17.

[16] Letter from G.M. Sorrell (Longstreet's Adjutant) to Benning, 25 April 1863, Folder 17.

[17] Dameron, *Benning's Brigade*, 79.

[18] Benning's draft after action report of Gettysburg, 3 August 1863, CSU archives, Folder 17.

[19] For example, see Shelby Foote, *The Civil War, A Narrative, Vol. 2*, (NY: Random House, 1963), 574.

[20] Letter to E.P. Alexander, undated, CSU archives, Folder 18, 20.

[21] Newspaper clipping, *Milton Chronicle*, 10 September 1863, CSU archives, Folder 22.

[22] Dameron, *Benning's Brigade*, 94. See also Glenn Tucker, *Chickamauga* (Dayton: Morningside House, Inc, 1984), 281-282; Tucker's account downplays Benning's lapse, commenting that "…Bragg would have benefited from some of Benning's zest…" and includes personal accounts from Benning's own soldiers that "tended to relieve Benning of the mild censure by Longstreet..."

[23] Dameron, *General Henry Lewis Benning*, 179-184. An interesting exchange of orders and letters from this ill-advised campaign reflects significant internal dissension within Longstreet's officer cadre during this difficult winter. General Lafayette McLaws, long a stalwart in Longstreet's corps, had not responded energetically in one of the attacks on a Union position near Knoxville. Longstreet, in an action he later regretted, fired him, and the directive relieving him of command, as well as McLaws' own response to the relief, is contained in the collection. Unfortunately, Benning's own thoughts on the matter have not survived, but evidently Benning refused to be drawn into the internecine bickering, and he continued in command; Folder #17.

[24] Dameron, *Benning's Brigade*, 108-109.

[25] Special Orders, 13 May 1864, CSU archives, Folder 18.

[26] Perry letter, 22 July 1864, Folder 18. Colonel Dudley Dubose, the next senior commander in the brigade, had taken Benning's place as brigade commander. Reading between the lines, it is clear that Perry did not think that Dubose measured up to Benning's leadership: "…Entre nous, there is much dissatisfaction among the men & officers, originating in the brigade commander level. _____ _____ has played too hard for the temporary rank of brigadier. Well, to tell the truth it is hard to act modestly in high places and there's a source of discontent to old troops." Although portions of the same letter are quoted in both of Dameron's books, the author does not speculate about any discord in the brigade during Benning's absence.

[27] Letter to E.P. Alexander, undated, CSU archives, Folder 18, 13.

[28] For example, some of Benning's correspondence may be found in the Howell Cobb Papers at the Hargrett Rare Books and Archives Collections, University of Georgia, and in the James D. Waddell Papers in the Special Collections at the Robert D. Woodruff Library, Emory University.

[29] Dameron, *General Henry Lewis Benning*, 224-243.

LTC (Retired) Phillip Linn served 22 years as an Armor officer in Germany, the Republic of Korea, and stateside before retiring in 1992. He taught high school history in the Muscogee Country School District in Columbus, GA, for 14 years, and taught history part time for Columbus State University for 7 years. In 2015, he had the opportunity to inventory and organize Henry Benning's Civil War correspondence in the Columbus State University Archives.

A Brief History of Fort Benning

Editor's Note: *The following article was adapted from an article written by MG John M. Wright Jr. that originally appeared in the September-October 1968 issue of* Infantry *Magazine.*

Red Georgia clay clung tenaciously to his highly polished riding boots. Over his shoulder he could see a few half-completed wooden buildings neatly lining a muddy street. Below the hill and out of his sight, the rain-swollen Upatoi Creek flooded into the lowlands. The date was 24 April 1919.

MG C.S. Farnsworth, on his first day in command of a post only seven months old, reacted to the question put to him by a Columbus newspaper reporter: "My goal is simple. It is my hope and ambition to make Fort Benning the largest and most influential Army post in the United States."

Farnsworth's goal was unbelievably optimistic considering the status of Camp Benning at the time. The War Department had already disapproved his memorandum announcing Camp Benning as a permanent post; and although he referred to the post as "fort," it was, in fact, recognized only as a temporary camp. The "war to end all wars" — World War I — was over and the citizen soldiers were returning to their homes. An economy-minded Congress was drastically opposed to continued military spending and was seriously considering the abandonment of the budding Army post near Columbus. Construction and other improvements were stalemated during the political debates. And yet, despite these conditions, Farnsworth outlined his bold plans for Fort Benning's future.

Remarkably enough, it did not take many years for Fort Benning to earn the reputation among military leaders Farnsworth predicted. As we celebrate the post's centennial, here's a look back...

Early Beginnings

Camp Benning was founded on 7 October 1918 to meet the manpower needs of GEN John J. Pershing's expeditionary forces. Fortunately for the Infantry, GEN Pershing also needed a large number of artillerymen for the same purpose. When the United States entered World War I, both the Artillery School of Fire and the Infantry School of Arms were housed at Fort Sill, OK, and training grounds there were already in short supply. In addition to wanting the whole of Fort Sill, the artillery school also desired more land for the location of a training center. Thus, both the Infantry and Artillery were jockeying for camp sites.

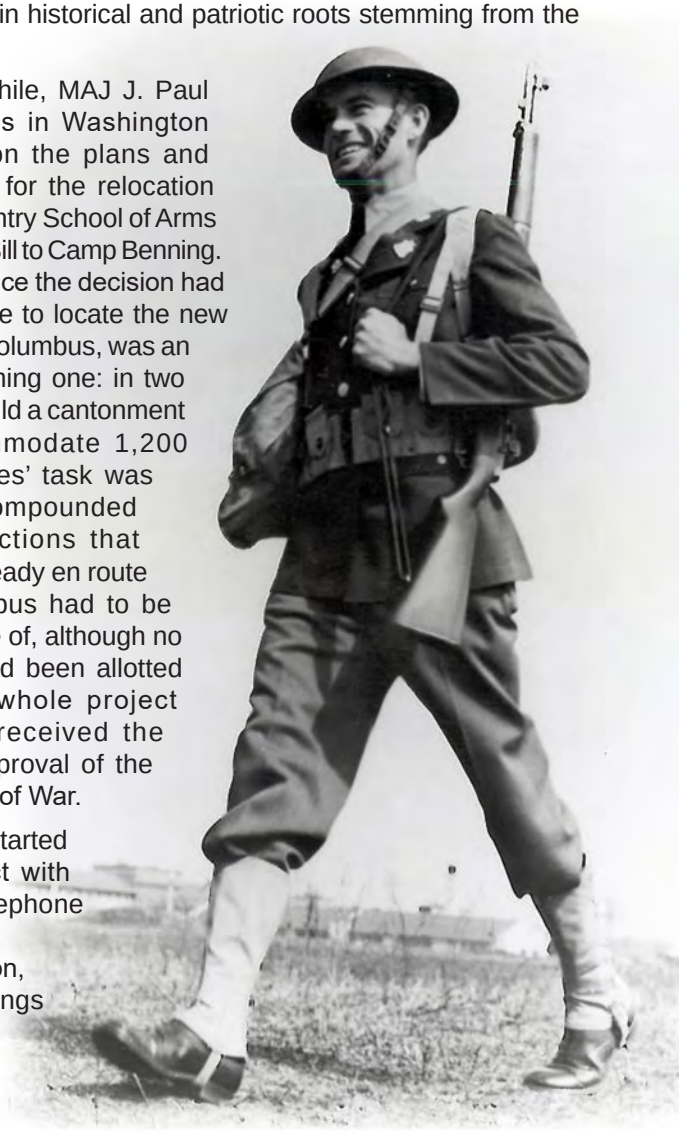
On 21 May 1918, the Adjutant General (AG) of the Army appointed COL Henry E. Eames, Infantry, to head a board of officers to meet at Fort Sill to select a new site for the Infantry School of Arms. The AG expressed a desire to consider relocating the school to either Camp Gordon, GA; Camp Pike, AR; Camp Lee, VA; or to another location central to those sites.

Columbus, GA, was central to them, but other sites also came in for consideration. Most were disqualified either because of poor climate or remoteness to population centers. Fort Wingate, NM, for example, was disqualified because of terrain. Although Eames' group considered Fort Bragg (NC), Fort Knox (KY), and Sill, artillery training needs precluded any sort of serious consideration.

The site near Columbus afforded nearly ideal conditions for Infantry training — a mild year-round climate, access to transportation, and varied terrain. COL Eames, who would become Benning's first commander, was impressed. Still, the effort of both Infantry officers and interested civilians cannot be underestimated. Although their motives may have differed slightly, their combined surge to locate Camp Benning near Columbus was considerable — the Army wanted a camp near Columbus, while the Columbus citizens had similar motives grounded in historical and patriotic roots stemming from the Civil War.

Meanwhile, MAJ J. Paul Jones was in Washington working on the plans and estimates for the relocation of the Infantry School of Arms from Fort Sill to Camp Benning. His job, once the decision had been made to locate the new camp at Columbus, was an overwhelming one: in two weeks, build a cantonment to accommodate 1,200 men. Jones' task was further compounded by instructions that troops already en route to Columbus had to be taken care of, although no money had been allotted and the whole project had not received the formal approval of the Secretary of War.

Jones started his project with frantic telephone calls from Washington, setting things



U.S. Army photos

A photo of Camp Benning from 9 January 2019.

in motion for construction. He arrived in Columbus on 24 September, the same day as COL Eames. While a camp site was being selected about three miles from town on Macon Road, a civilian and military committee was formed which began to marshal a labor force to accomplish the nearly impossible task of overnight construction. A monument now stands where Camp Benning was born, not only to serve as a fitting reminder of a significant birthplace, but also as a tribute to the entire city of Columbus and the magnificent effort expended in making Camp Benning ready for occupancy in the unbelievably short period of seven days.

Troops arrived on 6 October, and the camp was officially born the following day. Less than two weeks later, on 19 October, a ceremony was held to ceremoniously christen the Army post as Camp Benning, named after Confederate General Henry Lewis Benning, an outstanding lawyer-turned-soldier from Columbus. Camp Benning was a reality.

Influence

It's impossible to trace the history of Fort Benning, the post, without considering the influence of the Infantry School. In the first place, a school for Infantry was a long sought for goal of many Army leaders, even before Camp Benning reached the drawing board.

An Infantry School of Instruction was established in 1826 in St. Louis. Unfortunately, this school was stillborn and finally abandoned in 1828.

After this, the issue of an Infantry School lay dormant for many years. Field commanders were still required to train their soldiers while in battle, and the horrible slaughter during the Civil War proved once again that lack of discipline and formal training only brought on higher casualties.

By 1907, LTG Arthur MacArthur had noted the deplorable state to which marksmanship had fallen among his own troops, and he founded the School of Musketry at the Presidio of Monterey, CA. This school was ostensibly founded to train marksmen, but something beyond this was envisioned by LTG MacArthur when he said of the school, "In the evolution of the school, the scope of the work may take a wider range and include all subjects connected with small arms, ammunition, and tactics." An Infantry School?

The school progressed markedly during its existence. It introduced such revolutionary concepts as the coach-and-pupil method of instruction, field firing which demanded a consideration of terrain, and the combining of tactics with fire. But by 1913, the War Department chose to transfer the school to a more central location of Fort Sill.

While at Fort Sill, the School of Musketry never managed to get into full sway because of Mexican border incidents. These raids upon U.S. soil necessitated the detachment of school troops to the border, and this affected the training cycle at the Sill location. These interruptions would last until our entrance into World War I.

Name

In 1917, the name of the school was changed from the School of Musketry to the Infantry School of Arms, and it was at this time that the struggle for maneuver land began with the artillery and resulted in the selection of the new camp site near Columbus.

Obviously a few acres in what is now downtown Columbus could not satisfy the space requirements of an Infantry School, so COL Eames set about selecting a more suitable site. He finally located one south of Columbus which seemed to possess the topography needed for a school. It had originally been part of the newly ceded Indian territory disposed of in the lottery of 1827 which lay between the Flint and Chattahoochee Rivers. John Woolfolk, formerly of North Carolina, drew one lot and purchased additional lots from those who preferred to live elsewhere. Later, in 1843, he purchased additional land in the same area, so that his plantation eventually comprised more than 5,000 acres. This plantation became the nucleus of modern Fort Benning.

The great plantation system was almost gone following the Civil War, and the Woolfolk Plantation, like many of its counterparts throughout the South, was broken up and sold. Benjamin Hatcher, a citizen of Columbus, purchased 1,782 of its acres, including the old plantation house, in 1883. Although he continued to live in Columbus, he operated the plantation under the direction of a resident manager until 1907, when it was purchased by Arthur Bussey.

Since the Bussey Plantation satisfied his requirements, Eames sought — and obtained — War Department approval

One of the three cuartels built between 1925-1935 is shown under construction.

to locate the boundaries of the reservation practically as he chose. Action then began to acquire the property, including the large frame house which now serves as the home of the commanding general.

Demobilization

Then World War I ended, and most of the Army that GEN Pershing commanded was demobilized. This went well with the people and their representatives because the United States had long been suspicious of a large standing defense establishment, and the economy-minded 66th Congress turned its attention to the millions of dollars appropriated for military spending during the war emergency. The Congress particularly objected to the establishments of new posts, including Camp Benning, while other Congressional targets included Forts Bragg and Knox, although their construction was further along than that of Benning.

The League of Nations debate also seemed to threaten the new post, for half of the U.S. Senate's Committee on Military Affairs was dead set against the league and its proponents who argued that American soldiers should be the nation's enforcement arm. The Congressional Record for Friday, 13 June 1919, for example, repeatedly mentions Benning. Georgia Congressmen, mindful of the economic crunch, could not be convinced that the Army really needed another post, especially since wars were a thing of the past — for the moment, at least.

And so the debate went on. Throughout it, the Army continued to push for Camp Benning. Funds were frozen, then released. Somehow the project muddled through.

It was about this time that MG Farnsworth took over command from Eames, and his dream began materializing in 1922 when the little encampment south of Columbus was redesignated "fort." Still, Congress was in no liberal mood for full-scale development of the post.

Between the years 1925-1935, the three cuartels, now considered Fort Benning landmarks, were constructed. Other building projects were still on a stop-and-go basis.

There is little question that the highlight of the 1920s was the assignment of LTC George C. Marshall in 1927 as assistant commandant of the Infantry School. Marshall did not believe on total reliance of the "school solution" and threw open the doors of academic thinking to personal thoughts. For example, one day in a classroom, he required each student to draw a detailed map of the route he followed to class, locating both natural and man-made features. From this simple exercise, he drove home the point that military men always had to be observant to think, think, think.

Marshall surrounded himself with people who were capable of independent thought, people like Joseph W. Stilwell and Omar N. Bradley, who would later become Chairman of the Joint Chiefs of Staff. It was the beginning of a golden era in academic instruction, an era which has continued to this day.

The 1930s brought the great depression and with it massive doses of government spending. Fort Benning came in for a

1931 Doughboy Yearbook

In addition to LTC George C. Marshall (bottom right center), the 1931 Infantry Board also included (top left to right) LTC C.A. Hunt, MAJ C.H. Hodges, MAJ S.H. MacGregor, MAJ B.R. Legge, (bottom left to right) COL George F. Baltzell, BG Campbell King, and LTC T.W. Brown.

lion's share through such projects as the Works Progress Administration (WPA), Public Works Administration (PWA), and Civilian Conservation Corps (CCC), and Building 35 — for years the heart of Fort Benning and Infantry School — was completed in 1935.

It was during this period more than any other that Fort Benning literally "motored" into Army leadership as the true "Home of the Infantry." The automatic weapon, the machine gun, and above all, the tank, called for a re-examination of Infantry organization, and Fort Benning was tasked with the study. The results of the Infantry School study were recorded favorably in 1936 by the Chief of Infantry, and the study itself had a tremendous impact on the reorganization of the infantry regiment, on increased mobility, and on more firepower with the creation of a weapons battalion.

World War II and Beyond

During the build up for World War II, the 2nd Armored Division under then-BG George S. Patton was activated at Fort Benning, the first of many resident divisions. It was also during the 1940s that the Infantry Officer Candidate School came into being, and that a radical new approach in moving troops to a battlefield by parachute was tested.

The Korean Conflict in the 1950s once again energized Fort Benning after the period of military demobilization that followed World War II. Probably the most lasting innovation of this period was the creation of an environment at Fort Benning for the training of a special breed of fighting man — the Army Ranger. The U.S. Army Ranger School's purpose was, and still is, to develop combat skills of selected officers and enlisted Soldiers by requiring them to perform effectively as small unit leaders in a realistic tactical environment, under mental and physical stress approaching that found in actual combat.

The 1960s literally flew in on the blades of helicopters with the formation in 1963 of the 11th Air Assault Division under MG Harry W. O. Kinnard and a galaxy of airmobile-minded young Infantrymen. Again, Fort Benning proved a bellweather in the development of battlefield techniques as this unit — which became the 1st Cavalry Division in 1965 — repeatedly proved its mettle in combat.

In 2005, the Base Realignment and Closure (BRAC) Commission decided to relocate the U.S. Army Armor Center and School from Fort Knox to Fort Benning. In October 2009, the Maneuver Center of Excellence (MCoE) was officially activated during a ceremony, and the Armor School completed its move south by September 2011.

Today, Fort Benning continues its tradition of excellence. The mission of the MCoE and Fort Benning is to provide trained and combat-ready Soldiers and leaders; develop doctrine and capabilities for the maneuver force; and provide a first-class quality of life for our service members, civilian, and families to ensure our Army's maneuver force is ready now and in the future.

Resources

Read more about Fort Benning's history at:

* http://www.benning.army.mil/library/content/Virtual/Fort%20Benning%20History/index.htm

* http://www.benning.army.mil/Infantry/Historian/Historical-Documents.html

* http://www.benning.army.mil/100/

Fort Benning is now home to both the U.S. Army Infantry and Armor Schools. The Maneuver Center of Excellence's headquarters building is named McGinnis-Wickam Hall after SPC Ross McGinnis and CPL Jerry Wickam, Medal of Honor recipients representing the Infantry and Armor branches, respectively.

Photo by John Helms

Photo courtesy of the author

A Doughboy aims his Model 1911 Colt pistol on the edge of a German trench in France. Notice the magazine of the Chauchat automatic rifle is detached but partially full of cartridges with the fired empty cartridges on the ground.

Fire and Maneuver:

The U.S. Infantry Revolution of 1918

DAVID SCOTT STIEGHAN

Editor's Note: *This article first appeared in the Fall 2018 issue of the* Infantry Bugler*.*

The greatest revolution in U.S. Infantry tactics and organization occurred in 1918 in preparation for combat on the Western Front during World War I. The U.S. Army and Marine Corps finally transformed from an earlier reliance on linear and skirmishing tactics into the tactics and weapons for fire and maneuver that Infantrymen would recognize today.

When the United States declared war upon the Central Powers and joined the Allies on 6 April 1917, its Army numbered only 126,000 men on active duty. That strength was backed up by the entire National Guard (almost 100,000 troops), which had been originally federalized for serving on the Mexican border during the Punitive Expedition of 1916. At that time, the size and leadership structure of the Infantry company was the same as it was when first formally organized by Major General Wilhelm von Steuben at Valley Forge in 1778. In 1917, a full strength Infantry company consisted of 99 privates, corporals, sergeants, and lieutenants armed with rifles and bayonets and a captain as company commander armed with a pistol. After the U.S. declaration of war, the War Department sent two information collection teams to tour the front and observe French and British forces in both training and combat. The teams recommended that the Army reorganize the entire field army and logistics to support the anticipated trench warfare and return to open warfare after a breakthrough. Taking the best formations, tactics, and even weapons from our Allies, the result completely changed the role and use of the Infantry for the modern machine war.

On 13 January 1918, the U.S. Army Infantry company was enlarged from 100 to 256 Soldiers. For the first time, permanent numbered platoons were created within the company as units that could maneuver and fight separately. Each company now had four rifle platoons of 59 men and a headquarters platoon of 20. The assigned lieutenants were formally named platoon leaders, and the senior sergeant assistant eventually was called the platoon sergeant. While the rifle squads of eight men in each rifle platoon were led by a corporal, there were only two of these pure "rifle and bayonet" squads of Soldiers totaling 16 men in each line platoon. The other troops were considered specialists in teams or groups and trained to

become automatic riflemen, rifle grenadiers, and hand bombers. The U.S. 4th Marine Brigade that was attached to the American Expeditionary Forces (AEF) was also organized in this fashion.

Each NCO and lieutenant carried a pistol in addition to a rifle; the privates also received trench knives. All Doughboys carried two types of gas masks anywhere near the trenches and wore steel helmets. Soldiers also received entrenching tools and first aid dressings, and each squad or team carried barbed wire cutters. With the support weapons specialists concentrated in the 1st Half-Platoon on the right and the pure rifle squads on the left in the 2nd Half-Platoon, these units were now organized as "machine gun-killing machines."

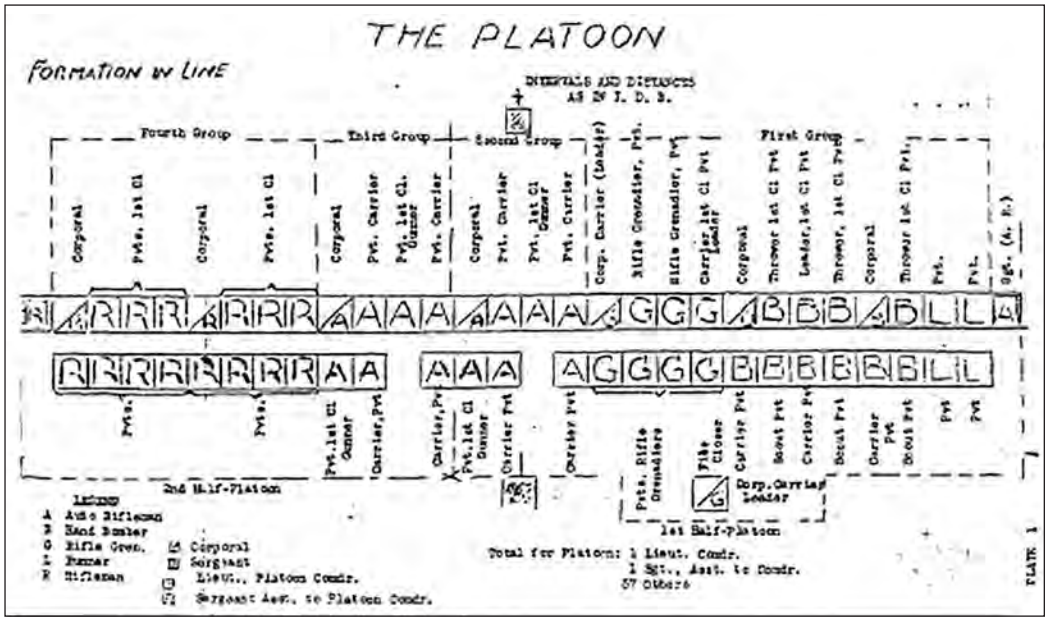


Figure 1 — Infantry Platoon Circa April 1918 (This original hand-drawn illustration from a training circular was discovered in an Infantry sergeant's footlocker in 1993.)

Each platoon was expected to maneuver using cover through fire towards a flank of an enemy machine gun or strongpoint. When advancing, the 1st Half-Platoon would keep the enemy position busy with supporting weapons fire while the 2nd Half-Platoon would maneuver to a flank, or rear, and roll up the threat. The Doughboy Infantryman of 1918 would immediately grasp the role of a modern team, squad, and platoon.

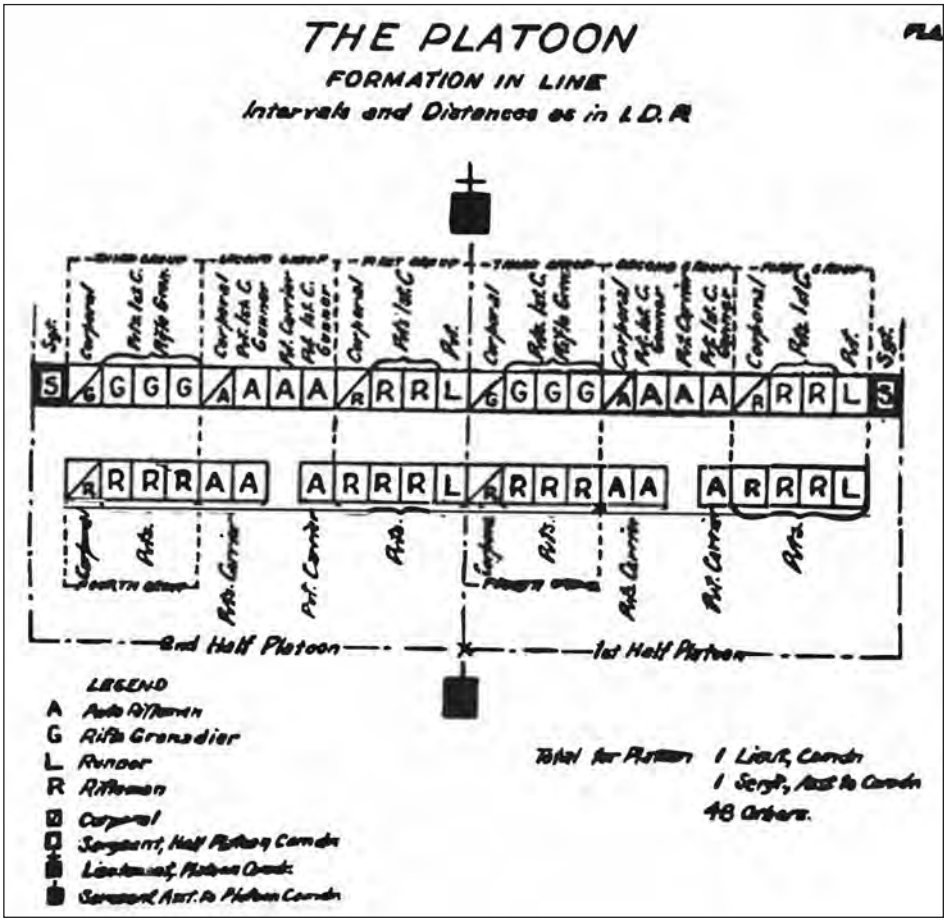
After the first AEF battles of 1918 at Cantigny, Chateau-Thierry, Belleau Wood, the Marne, and the reduction of the St. Mihiel salient, the half-platoon structure was modified. Casualties and other losses lowered the numbers of the average rifle companies from 256 to 200 and the rifle platoons from 59 to 50. In some divisions, the half-platoons were reorganized into identical formations with the same numbers of weapons and specialties assigned to each. It had proven difficult for inexperienced Soldiers in the first battles to maneuver as two uniquely organized half-platoons. As fresh divisions filled with inexperienced Doughboys arrived in France each month, training was shortened. The hand bomber, or hand grenade, group was omitted entirely from the new platoon organization as each member of the rifle platoon was issued

Signal Corps photo

Doughboys from the 6th Marines, 2nd Division, American Expeditionary Forces, complete platoon training in an extended order formation near Harmonville, France, on 23 August 1918. The close pairs are the automatic riflemen and their first assistants.

at least two grenades for close combat. Each half-platoon was composed of three unique seven- or eight-man squads — rifle grenadiers, automatic riflemen, or riflemen. Both half-platoons were now equally capable of support by fire or maneuver. A rifle battalion commander in the 80th Division, MAJ Henry H. Burdick, published an article in the *Infantry Journal* in early 1919 titled "Development of the Half-Platoon as an Elementary Unit," and described the evolution of the half-platoon:

> *Waves were too close together and individuals therein had too little interval, columns were too long, formations were lacking in elasticity and little attempt was made to maneuver. A close study of the best means to correct these faults led to greater emphasis being placed on the half-platoon as an elementary unit. Experiments conducted in rear areas developed the formations illustrated which were utilized in the last Argonne offensive and thoroughly justified their adoption and demonstrated their efficacy by greater maneuver power, better control, rapidity of deployment and conservation of life.*[1]



From *Infantry Journal,* Vol. XV, April 1919, No. 10. Copyright 1919 by the Association of the U.S. Army. Reproduced by permission.

Figure 2 — Rifle Platoon Structure Used by the 318th Infantry Regiment During the Meuse-Argonne Offensive in Late 1918.

Taking advantage of the experience gained during recent operations, on 4 September 1918, the 42nd Division headquarters distributed a secret memorandum to all leaders with instructions for ongoing combat:

> *The foregoing phase of the operation ["2. PENETRATION OF FORWARD ZONE (Trench Warfare)"] which depends upon individual initiative, rapidity of decision, resolute daring and driving power, should afford the American officer and soldier the opportunity to display his best known national characteristics to their greatest advantage; provided he does not blindly rush against hostile strong points, ignoring the weak points and the tactical application of fire superiority combined with manoeuvre (sic).*
>
> *(c) Formations.*
>
> *For this phase of the combat the formations applicable to open warfare must be largely employed. Constantly seek to hold the men in formations which simplify control (i.e., column formations, lines or staggered lines of squad or platoon columns, etc.) without exposing them to heavy losses from artillery or machine gun fire.*[2]

By the time that the AEF pressed itself into a dedicated U.S. sector in the summer of 1918, the static trench warfare of the past three and a half years had ended, and the final phase of open warfare began. Advancing in huge divisions of 28,000 troops (three times the number of troops in veteran Allied divisions), the AEF Doughboys learned on the run how to conduct combined arms warfare as their numbers and morale helped make up for their inexperience. Starting in February 1918, about a quarter of a million fresh Americans arrived by troopship each month. After witnessing the mass arrivals and discovering the rookies' improvements in modern maneuver warfare, the Germans decided to ask for a ceasefire before they could be pushed all the way back to their national border. The money, factories, and fresh brawn of the American military made the difference across the battlefield and resulted in the Armistice of 11 November 1918.

After marching across the border to occupy a defeated Germany, AEF troops distilled the lessons they had learned the hard way along the Meuse River and deep in the Argonne Forest while they performed static occupation duty for a year. Each rifle platoon was reorganized into identical rifle squads of eight men with automatic rifle teams armed with the Browning

Signal Corps photo

Doughboys from the 6th Marines, 2nd Division, American Expeditionary Forces, demonstrate the placement of an automatic rifle squad with scouts near Harmonville, France, on 11 August 1918. The rest of the company watches the demonstration in the background.

Automatic Rifle (BAR) and a rifle grenadier; all other Soldiers became both riflemen and hand bombers with grenades. This identical squad approach served the U.S. Army Infantry well until a reorganization on the eve of entering combat in World War II. Today, the nine-Soldier Infantry squad is composed of ground combat specialists with an "automatic rifleman" and rifle grenadier in each of the two fire teams that are still able to defeat an enemy through fire and maneuver. While the tools and skills of the trade have evolved with advances in technology, the overall mission of the Infantry squad — to close with the enemy to kill or capture them and to take and hold ground through fire and maneuver — dates back to the U.S. Infantry Revolution of 1918.

Notes

[1] MAJ Henry H. Burdick, "Development of the Half-Platoon as an Elementary Unit," *Infantry Journal*, Vol. XV, April 1919, No. 10, 799.

[2] Headquarters 42nd Division, American Expeditionary Forces, 4 September 1918. Secret Memorandum No. 296. The following is published for the information and guidance of all concerned: "Headquarters First Army American Expeditionary Forces, France, Secret, 29 August 2018. Combat Instructions for Troops of First Army, 4.

David Scott Stieghan currently serves as the U.S. Army Infantry Branch Historian at Fort Benning, GA. Currently, he is editing the Doughboy Series of original World War I Soldier reminiscences for the University of North Georgia Press. He also edited *Over the Top*, which was published in 2017, and *Give 'Way to the Right*, which will be released in November 2018.

Signal Corps photo

A rifle platoon demonstrates the doctrine of deploying the two half-platoons upon contact. Note the 1st Half-Platoon on the left providing supporting fires with automatic rifle teams in front, with the rifle grenadier teams behind, backed up by the hand bomber teams still standing. The 2nd Half-Platoon's rifle squads are advancing to the right with bayonets fixed to assault the flank to take out the objective with violent maneuver. The entire platoon is organized, trained, and equipped for fire and maneuver. This photograph had been reversed for publication in August 1918 to ensure the flank movement matched the sketches in the training circulars.

Training for Subterranean Operations in the KTO

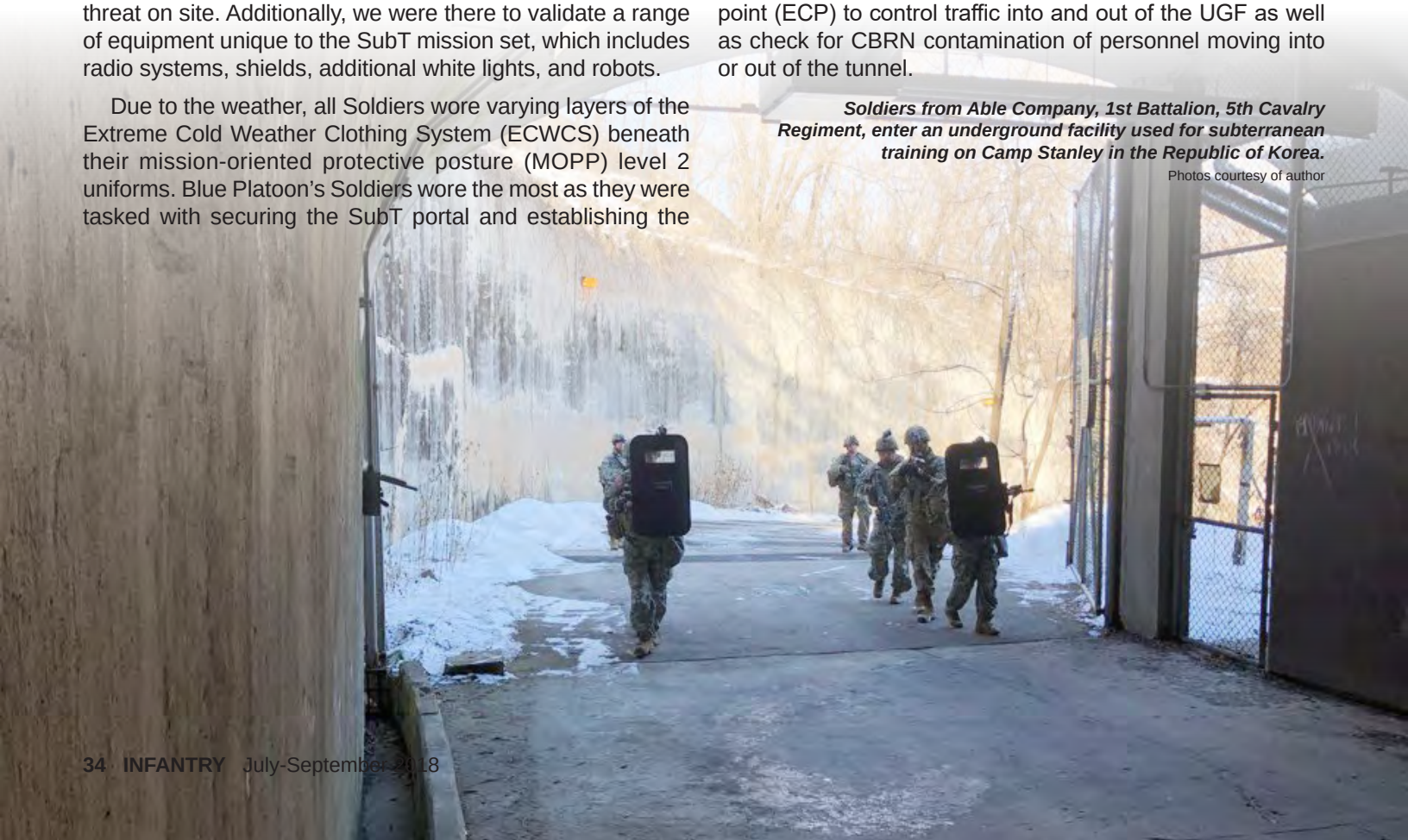
CPT DEVON P. ZILLMER

With a high around 15 degrees Fahrenheit, it was a cold, clear day on Camp Stanley in the Republic of Korea (ROK), as Soldiers from A Company, 1st Battalion, 5th Cavalry Regiment, 2nd Armored Brigade Combat Team, 1st Cavalry Division, prepared to clear Objective Rams, a medium-sized underground facility (UGF) used for subterranean (SubT) training.

The company's mission was part of the battalion's training objectives to conduct counter weapons of mass destruction (CWMD) operations as part of the 2nd Infantry Division's Micro Experiment, a primary facet of our operational deployment to the ROK. An attached chemical, biological, radiological, nuclear, explosives (CBRNE) response team (CRT) from the 23rd CBRNE Battalion also participated to confirm threats on the objective and to help with initial assessment of the threat on site. Additionally, we were there to validate a range of equipment unique to the SubT mission set, which includes radio systems, shields, additional white lights, and robots.

Due to the weather, all Soldiers wore varying layers of the Extreme Cold Weather Clothing System (ECWCS) beneath their mission-oriented protective posture (MOPP) level 2 uniforms. Blue Platoon's Soldiers wore the most as they were tasked with securing the SubT portal and establishing the entry control point. White Platoon's Soldiers wore the least cold weather gear as they were moving into the underground objective once the conditions were set. With two to three inches of snow still on the ground, the Soldiers wanted to keep moving to stay warm as they established their platoon objective rally points (ORPs) and prepared their equipment for the assault.

Blue Platoon stepped from its ORP once the conditions (some of which were constructive) had been met across the battalion — ROLE I was established, the decontamination assets were en route, and the CRT and other platoons in the operation were in their ORPs. The lead squad established an overwatch position with fields of fire into the portal while another squad secured the high ground behind it to complete isolation of the objective. With the portal isolated, the final elements of the platoon established a hasty entry control point (ECP) to control traffic into and out of the UGF as well as check for CBRN contamination of personnel moving into or out of the tunnel.



Soldiers from Able Company, 1st Battalion, 5th Cavalry Regiment, enter an underground facility used for subterranean training on Camp Stanley in the Republic of Korea.

Photos courtesy of author

During Blue Platoon's movements, CRT personnel were establishing their own conditions — preparing their own equipment and personnel decontamination line, establishing their systems, and preparing their specialty equipment.

With the ECP established, White Platoon began its movement. The Soldiers had elevated to MOPP 4 prior to entering the tunnel, and per the plan, the lead two squads had left behind their Army Combat Helmets (ACHs) with their night vision devices (NVDs) and had instead equipped their lead elements with ballistic shields with lights and at least two white lights per fire team. The entire platoon was operating with a new radio system it had been fielded, the MPU5, which provided a self-healing FM network to allow Soldiers to continue to communicate in a SubT environment. The platoon also had two small robots that could be sent ahead of the lead squad to provide early warning as the platoon progressed. Once at the tunnel mouth, the platoon deployed a robot and began bounding fire teams into the UGF.

Ten meters into the tunnel, several shots rang out when the lead squad made contact with a team of the opposing force (OPFOR) defending the facility. Due to the use of white lights, the OPFOR's NVDs were whited-out and ineffective, greatly limiting the OPFOR's ability to react. Using the lead squad, White Platoon assaulted through the initial defensive position. Continuing to bound through, the platoon cleared the first alcove in the tunnel and firmly established a foothold in the UGF.

With a foothold established, the lead elements of the CRT, including confirmatory equipment, moved forward through the portal to begin their initial analysis to confirm the threat in the portions of the SubT facility that had already been cleared.

Given the threat on the objective (one squad of infantry from Red Platoon), White Platoon's platoon leader bounded his second squad forward to give him greater flexibility as he cleared into the SubT environment. At this point in the tunnel, there was no more ambient light so the OPFOR was limited to using either infrared (IR) floodlights or their PEQ15 lasers to see anything or simply listening to the advancing platoon. The lead squad continued clearing down the tunnel, and about 50 meters deeper underground, past the first alcove, the Soldiers encountered the second alcove with a series of rooms in it. It was pitch black, but the white lights allowed the platoon to check for booby traps, visible CBRN contaminants, and identify threats. While one team with the ballistic shields provided security down the tunnel, the other lead fire team cleared the building complex, encountering several additional OPFOR.

With two squads in the tunnel that were likely to make contact again, the platoon had to execute its PACE (primary, alternate, contingency, and emergency) plan. With all of the concrete, metal, dirt, and other materials disrupting the signal, the platoon had no choice but to execute the next step of the PACE plan. White Platoon sent its RTO back to the trail squad at the mouth of the tunnel to maintain communications with company headquarters. The platoon was able to continue to use the MPU5s to communicate within the tunnel with no issues. Even with platoon-internal communications, it was extremely dark past the second alcove — no ambient light at this point — which forced the operation to slow down some. The lead squad then bounded its fire teams forward to the next alcove and once again came into contact. Two more OPFOR, moving in and out of another set of rooms, provided the final defense in the tunnel. The lead squad bounded forward, suppressing the OPFOR, and continued down to secure the length of the tunnel. The same battle drill as before: one fire team securing the tunnel, the other clearing the room complex. At last, the third alcove, more than 100 meters underground, had been cleared. With the objective cleared, the CRT moved in to complete its confirmatory analysis and initial assessment of the site.

Training in complex urban terrain — focusing on SubT terrain considerations and how to modify traditional MOUT TTPs — pays the largest dividends with limited resources... With very limited true SubT facilities to train in, we focused on turning off lights inside buildings, using utility hallways and rooms, and moving through several buildings under limited visibility conditions to simulate the nearest conditions. And it generally worked.

Thoughts

The exercise was a success for the company. Even though the training circular (TC) for SubT operations was published only a few months before the exercise, my squad and platoon leaders dove into the doctrine and did what they could to familiarize themselves with and train on the new tactics, techniques, and procedures (TTPs) particular to these operations. In addition to providing specific feedback for the TC, we had a few key points to highlight for units conducting this training. This training is a supplement to, rather than a replacement for, the mobile training team (MTT) that will be rotating out from the Maneuver Center of Excellence (MCOE) to train U.S. Army Forces Command units.

First, assuming the SubT facility is large enough to maneuver more than two Soldiers across, the most fundamental concepts are very similar to traditional military operations on urban terrain (MOUT). Training in complex urban terrain — focusing on SubT terrain considerations and how to modify traditional MOUT TTPs — pays the largest dividends with limited resources. While this can start with the traditional "Battle Drill 6," it has to expand out to include hallways, buildings, building complexes, and passing forces throughout. With very limited true SubT facilities to train in, we focused on turning off lights inside buildings, using utility hallways and rooms, and moving through several buildings under limited visibility conditions to simulate the nearest conditions. And it generally worked.

As a related consideration, given the mission set in the Korean Theater of Operations (KTO), we also focused extensively on CBRN tasks. This was an absolute necessity. While this may not always be a required component of SubT operations, given the ideal conditions for CBRN threats underground, there are many reasons to consider it. Our organization had allowed some CBRN individual and collective tasks to atrophy, and so it took several iterations of training at every level of leader to reenergize the perspective and basic skills associated with CBRN operations.

Second, deliberate and repeated rehearsals for communication are paramount. While most understand the basics of hand-and-arm signals, training and developing in-depth TTPs to allow fire team, squad, and platoon leadership to communicate quickly and quietly is critical. When operating in complete darkness, the OPFOR could hear every word our leaders used from more than 100 meters away, and so despite not being able to clearly see my lead platoon, the OPFOR knew their plan. Given the ideal sound propagation conditions underground and limited visibility, an individual's ability to hear is sharpened.

Soldiers from Able Company, 1st Battalion, 5th Cavalry Regiment, conduct training in a barracks utility hallway to simulate subterranean conditions.

Communication is also severely limited by the ground itself. As discussed in doctrine, radio communications do not work well underground. We had been fielded a set of radios that each operated as a self-retransmitting node, which helped greatly — but they were new and we did not have many. An alternative solution would be to use hard-line wires and phones, but our unit had long ago turned in all of our DR8 reel and associated equipment. We had to exercise our PACE plan and rehearse hand-and-arm signals and how we employ runners.

The final point we would like to highlight is the necessity to develop detailed standard operating procedures (SOPs) for operating in complete darkness. While most platoons and companies have basic TTPs to operate under NVDs, in complete darkness that becomes much harder. While PSQ-20s have a thermal lens that in some ways mitigates the issue, it does not completely solve the problem.

Another solution to the complete darkness was using IR light to illuminate the terrain while only remaining visible under NVDs. Again, this worked to an extent, but with the monochromatic output of the NVDs and the complexity of the situation, it was still an imperfect solution. The best technique we found was to alternate between white and IR light, between using NVDs and bare eyes, to ensure we were able to identify threats and maintain momentum without completely giving away our position. But the TTPs to operate back and forth, including room marking, leader identification in MOPP under limited visibilities, as well as marking the path back to the original portal, were all very difficult. If we had taken the time to develop those SOPs beforehand, it would have paid dividends moving into the SubT facility.

There are a variety of additional considerations, but aside from the MTT program of instruction (POI) and units taking the time to deliberately teach and work through vignettes in the TC, Army Techniques Publication (ATP), and Army Tactics, Techniques, and Procedures (ATTP) (as they are published), these are the "lowest hanging fruit" to help units prepare for SubT operations.

In closing, we felt obliged to say that while SubT operations may pose a significant threat in the next major conflict, they are not a threat fundamentally different from those in any other operating environment (OE). It is just another layer of complexity, with TTPs to help us overcome it. And for all of the differences, at their core, those TTPs will still rely on Infantrymen and our ability to close with and destroy the enemy.

At the time this article was written, **CPT Devon Zillmer** commanded Able Company, 1st Battalion, 5th Cavalry Regiment, 2nd Armored Brigade Combat Team (ABCT), 1st Cavalry Division, at Fort Hood, Texas. He currently commands the Brigade Headquarters Company, 2nd ABCT, 1st Cavalry Division. His previous assignments include serving as brigade maneuver planner for the 2nd ABCT, 1st Cavalry Division; division G3 operations officer for the 2nd Infantry Division/Republic of Korea - U.S. Combined Division, Camp Red Cloud; and executive officer of B Company, 2nd Battalion, 501st Parachute Infantry Regiment, 1st Brigade Combat Team, 82nd Airborne Division, Fort Bragg, NC. He earned a bachelor's degree in Mathematics from the U.S. Military Academy at West Point, NY, in 2010.

STE and the Digital Revolution

LTC DAMON DURALL

Hardly a day goes by without a very honest question being asked of the Synthetic Training Environment Cross-Functional Team (STE CFT): "What is the Synthetic Training Environment (STE)?"

Whether it is staffers on Capitol Hill or training capability users at a military installation, all intuitively seem to know there is something revolutionary and disruptive about the STE CFT, but they want this new "thing" described to them so they may better appreciate it.

We love getting this question, but our first task is to expand the questioner's approach to understanding it. The STE is not just another new shiny piece of technology. Not only is it part of the Army's modernization effort, it is the first holistic training strategy for the Army.

What makes the STE truly revolutionary and disruptive is the "how" as much as the "what" of it. Much like the name environment suggests, the STE is comprised of a common One World Terrain (OWT); Training Simulation Software (TSS); Training Management Tool (TMT); and common user interfaces that will change the entire ecosystem of simulation training capabilities. To better understand how, we can look at another technical revolution.

The Rise of the Machines

When imagining the period when humanity transitioned from a reliance on muscle power to machine power — the Industrial Revolution — it is easy to assume that technological developments, like steam engines replacing horses, constituted the totality of the revolution. However, the revolutionary part of the transition was just as much a change in the processes — the "how" of technological development.

Simply stated, instead of just making machines to do end product work (e.g., the creation of a tractor to replace a mule team), machines were created to make other machines. The production line, therefore, fueled the Industrial Revolution just as much as the end user individual technologies it delivered. The transition from labor intensive, hand-production methods to manufacturing processes gave rise to the factory system. This change enabled labor-saving devices to be produced en masse, therefore making them widely accessible. In turn, the effects of new technology multiplied and enabled opportunity for further innovation, creating a truly revolutionary era.

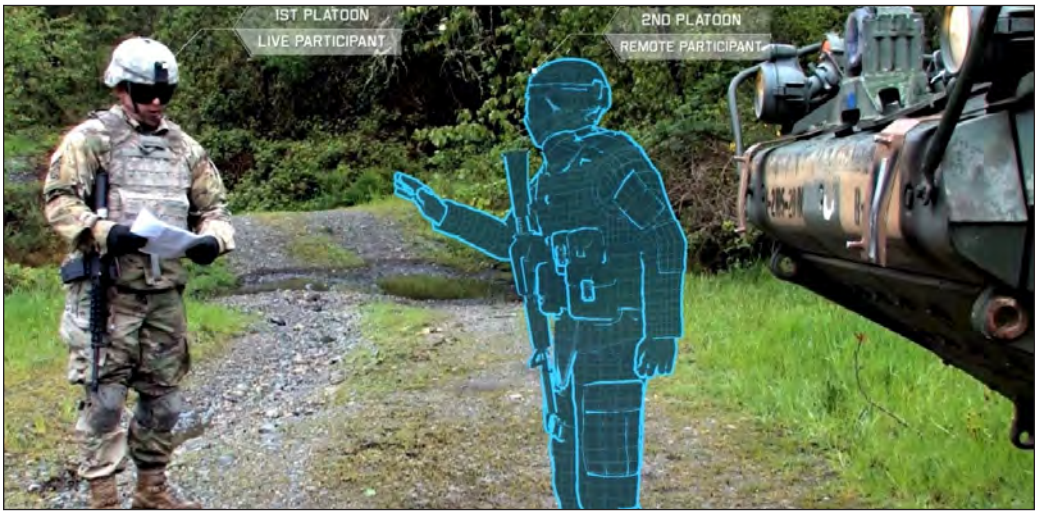
The paradigm of industrialization helps illustrate the reality that a similar revolution is taking place in our own digital and information age. The STE is part of this revolution. Consider, for example, the STE's OWT capability. In the past, simulation terrain has been painstakingly created by coders and digital artists for each simulation system, much like monks in 14th century monasteries hand writing and copying religious texts. As a result, the production and maintenance of three-dimensional simulation terrain is both incredibly costly and time consuming.

OWT revolutionizes this practice through an automated process for collecting raw digital terrain data from a multitude of preexisting sources and sensors, rectifying and correlating it to make it usable, and then storing it in a centrally accessible location for common use across 3D simulation systems.

In effect, individual scribes laboring away in digital terrain monasteries will be replaced by an automated digital terrain printing press — not just a Gutenberg-style press, but one with the power and span of those leveraged by newspaper magnate William Randolph Hearst. Updates to open-source map data, as well as uploads from squads in the field using unmanned aerial vehicles, will be able to continuously add to, refine, and update the OWT global terrain database.

Civil War Railroads

By the middle of the 19th century, the U.S. was awash



U.S. Army illustration

The Synthetic Training Environment (STE) will assess Soldiers in enhancing decision-making skills through an immersive environment. It will deliver state of the art simulation training, driving current and future innovation for not only how Soldiers train, but how they will rehearse and execute future missions.

in mechanical innovation. Ever newer, faster, and more powerful locomotives were being developed. Despite the rapid innovation, the roughly 100 railroads in the southern states did not work together as a cohesive network. More often than not, they were individually developed, and there was fierce competition between railroad owners to maintain proprietary control.

Accordingly, most railroads comprised short unconnected lines. Standards varied so significantly that track gauges ranged from four to six feet in width. The proprietary nature and unique standards for each railroad made efficient movement of cargo across the region nearly impossible. As the Civil War unfolded, scholars generally agree the Union's significant advantage in available miles of track, connections, and greater degree of standardization yielded superior lines of communication throughout the war. This Industrial Age example demonstrates the critical importance of common standards, interfaces, and protocols as we consider ways to maximize the benefits of our own digital revolution.

Today, echoes of the great 19th century railroad race — furious, albeit desynchronized and unstandardized innovation — are manifest in the similarly rapid evolution of computer and information technology. Digital technology manufacturers have employed proprietary hardware, software, interfaces, and protocols to maximize to the greatest extent possible means to control and profit from their products.

From a Department of Defense (DoD) perspective, the overlay of these factors with a lengthy and complex DoD acquisition process has resulted in military training simulation systems that suffer from the same constraints as southern Civil War-era railroads. Although similar in overarching purpose and basic design (locomotive, railcars, and tracks), most collective simulation systems were designed separately by a variety of companies for specific training purposes. As a result, they are difficult to connect, and when connected these systems cannot easily share data. These digital railroad cars run on different gauge tracks, have different types of coupling systems, and carry uniquely configured loads. With the current set of synthetic training systems, moving digital cargoes' content across systems requires simulation data to be unloaded and transferred to a different line through a variety of digitally inefficient workarounds.

The STE addresses these closed systems by developing common simulation software and interoperable hardware through standardized interface controls and protocols across the collective training environment. Using our railroad example, OWT effectively ensures a global rail (i.e. synthetic terrain) network that is accessible to all users, persistently interconnected, and constantly updated and improved. By leveraging the establishment of common standards, OWT will provide a complete representation of the globe, fully accessible through the Army network, which represents the complexities of the operational environment and the all-domain battlefield.

Additionally, the TSS capability, the STE's "game engine," provides a single training environment using open architecture and common application programming interfaces (APIs) to deliver a centralized capability for representing and adjudicating all simulation entities (i.e., players and the units they control) and user inputs. In terms of our railroad analogy, the TSS ensures that trains run on a universal time with synchronized movement schedules and possess the standard locomotive and railcar characteristics that make them interoperable. Further, TSS can seamlessly accommodate individual riders through corps-sized equivalent passenger manifests.

Finally, TMT provides an intuitive and easy-to-use application that's accessible anywhere and anytime to create training scenarios. TMT automatically retrieves and transforms authoritative data, automating the generation and population of simulation databases. In short, TMT ensures railroad clients are able to schedule cargo movement based on specific logistic needs as well as monitor and assess how effectively their cargo is being transported. For each of these tools — OWT, TSS, and TMT — the common standards, interfaces, and protocols enable all types of common user interfaces to effectively and efficiently connect to the rail system to rapidly load and unload a variety of standardized data on and off of railcars.

The Next Revolution

Just as manufacturing processes of machines producing machines gave rise to the Industrial Revolution, the ability to collect and make knowledge products from the sea of data (directly and indirectly produced by fully connected digital technologies) is driving a factory of factories system revolution.

The factory of factories system includes processes driven by artificial intelligence (AI), which are fundamentally algorithms, and machine learning, a predictive capability based on analysis of large data sets. The products of these processes will significantly improve Soldier workflow and training, thereby reducing Soldier cognitive loads by eliminating mundane and time-intensive cognitive tasks. By automating these tasks including navigation, situational awareness, mission command, and logistics, this technology will enable faster, more informed decisions — a critical element in achieving combat overmatch of our peer competitors. These technologies will fuel the second revolution in combat training, building upon the first with the establishment of the Combat Training Centers.

The Future is Now

The foundational capabilities of STE's OWT, TSS, TMT, with common user interfaces is a first critical step that will continue to deliver the foundation for technological innovation and increased capability. Automated digital processes — coupled with common standards, interfaces, and protocols — will enable an already emerging second wave of technical digital innovation leveraging AI and machine learning across digital systems. The STE is at the forefront of providing this common system of digital processes that will set the conditions for the next revolution in digital technologies. The STE is part of an ongoing digital revolution and a train we cannot afford to miss.

LTC Damon "DJ" Durall is currently assigned to the Synthetic Training Environment Cross-Functional Team.

Progress in Soldier Hydration

JEFFREY M. DUNN
JOHN R. KENNEDY, PH.D.

"*An army marches on its stomach.*" Attributed to both Napoleon Bonaparte and Frederick the Great, this well-known saying attests to the importance of Soldiers being well-fed. No one would dispute the validity of this sentiment, but all would agree that being properly hydrated is even more critical to the Soldier than having a full stomach.

For millennia, Soldiers have carried water in canteens. Basic canteen design has changed little over the centuries. Whether constructed of animal skin, wood, metal, plastic, or other materials, these containers typically hold about a quart of water and include a stopper or screw cap to keep the water from spilling out when the Soldier is not taking a drink.

Throughout history, canteens have done their job effectively; however, they can be inconvenient to actually use. A Soldier must remove the stopper or screw cap and then hold the canteen in place to take a swig of water. Once complete, the canteen stopper or screw cap must be securely replaced (without allowing dirt or dust to get in) to avoid leakage, which could mean losing the rest of the water. The activities required to take a drink from a canteen prevent a Soldier from simultaneously doing anything else.

In the late 1980s, which is very recent in terms of the science of personal hydration, a commercial water-carrying system revolutionized the personal hydration market. In this system, water is carried in bladders that are integrated into a backpack. Various attachments (such as tubes, mouthpieces, and clips) allow users to secure the water-pack to the body in a relatively comfortable manner and, even more importantly, drink water on demand and hands-free. Commercial versions of these personal hydration backpacks became extremely popular with Soldiers, especially those engaged in arid environments. This groundbreaking innovation was quickly adapted into the Modular Lightweight Load-Bearing Equipment (MOLLE) hydration system.

Figure 1 — MOLLE Hydration System

The quick popularity of these systems is easy to understand. In addition to providing hands-free, on-demand drinking water, the backpack eliminates the need to remove one's canteen from an already-cluttered web belt. Also, most backpack personal hydration systems hold more water than conventional canteens. The MOLLE hydration system carries three liters or a little more than three quarts of water, which is about three times the amount of a traditional canteen.

Unfortunately, there was one major drawback to the MOLLE hydration system: it was not safe for use in chemical, biological, radiological, and nuclear (CBRN) environments. The only hydration systems authorized for use with the M40/M42 series protective masks or the M50 series protective masks were the one-quart and two-quart canteens with the mask compatible canteen caps. In CBRN environments, American Soldiers were stuck with essentially the same hydration technology that Greek soldiers used during the Peloponnesian War (431-404 BC).[1]

Fortunately, Soldier hydration in CBRN environments has undergone a dramatic change with the development and fielding of the multi-purpose personal hydration system (MPHS; NSN 8465-01-643-5606).

Figure 2 — Multi-purpose Personal Hydration System (MPHS)

The MPHS is similar to the MOLLE personal hydration system, except that the MPHS has a hardened water reservoir and drink tube that protects its contents from CBRN and toxic industrial chemical/toxic industrial material (TIC/TIM) contamination. By direction of Safety of Use Message 17-010 from the TACOM Life Cycle Management Command, once a Soldier has been issued an MPHS, the canteens are not to be used with protective masks. The MOLLE personal hydration systems are also not to be used with protective masks. Although some manufacturers of commercial personal hydration systems have claimed that their products meet CBRN protection requirements, those claims have not been proven. It is also prohibited to use these commercial systems in CBRN environments. This is because canteens, the MOLLE personal hydration system, or commercial hydration systems may not adequately protect water from contamination in CBRN environments; therefore, the potential exists that a user could be exposed to hazardous levels of toxic chemicals or biological agents.

The MPHS is specifically designed to function with protective masks. Once the MPHS is removed from its packaging, it may be used for up to 30 days. It will protect the water it contains for up to six hours while exposed to threat chemicals. During that time, a Soldier may hydrate with the MPHS while wearing or not wearing a protective mask. The MPHS will be issued during the deployment phase to units requiring CBRN Individual Protection Equipment. Although the MPHS does not include a hydration system carrier, the MOLLE hydration system carrier (NSN 8465-01-641-9671) is also functional for the MPHS. When operating in high-threat environments, Soldiers

should keep their MPHS filled. Refilling any hydration system — including the MPHS — in a contaminated environment can expose Soldiers to hazardous chemicals or biological agents.

Every Soldier should be proficient in MPHS use before being confronted with a CBRN event. Because the MPHS should only be used in actual CBRN threat environments, the Army has developed a MPHS training kit (NSN 8465-01-643-6221). This training kit converts the MOLLE hydration system reservoir so it can be connected to M40 and M50 series protective masks. An initial issue of training kits has been shipped to installation Central Issue Facilities (CIFs). Any replacement components for the training kits must be ordered through normal supply channels. If your unit has not received them yet, check with your unit supply personnel.

Figure 3 — MPHS connected to Joint Service General Protective Mask

Soldier CBRN hydration has finally entered the 21st century, thanks to the efforts of the Soldier Protection and Individual Equipment Team at Natick Soldier Research, Development & Engineering Center; the Product Manager Soldier Clothing and Individual Equipment at Program Executive Office Soldier; and the Combating Weapons of Mass Destruction Requirements Determination Division at the Maneuver Support Center of Excellence.

For a training guide on the MPHS, go to: https://tulsa.tacom.army.mil/Safety/?t=soum&f=MPHSUserGuide.pdf.

For a training/familiarization video, go to: https://www.youtube.com/watch?v=OLznJLW2_j4.

For a training guide for the MPHS Training Kit go to: https://tulsa.tacom.army.mil/Safety/?t=soum&f=CBRNHydTrainKit.pdf.

Notes

[1] John R. Kennedy and Jeffrey S. Pacuska, "Evolution of Warfighter Hydration," *Infantry* Magazine, May-June 2013, 14-15.

Jeffrey Dunn is currently the Integrated Protection Thrust Area Manager within the Soldier Protection and Survivability Directorate at the U.S. Army Natick Soldier Research, Development and Engineering Center, Natick, MA. He was previously matrixed full time to Product Manager Soldier Clothing and Individual Equipment, where he was the lead engineer for the Multi-purpose Personal Hydration System. He holds a Bachelor of Arts degree in engineering from Fairfield University, a Bachelor of Science degree in chemical engineering from Columbia University, and a Master of Science degree in Project Management from Boston University. Mr. Dunn is a licensed Project Management Professional from the Project Management Institute and is also a member of the Army Acquisition Corps.

John R. Kennedy, Ph.D., is a physical scientist who works with the Engineering Directorate, Edgewood Chemical Biological Center, Aberdeen Proving Ground, MD. He holds a Bachelor of Science degree in chemistry from New Mexico State University, a Master of Science in physical chemistry from Texas Tech University, and a Doctor of Philosophy degree in physical chemistry from Texas A&M University. He is a retired Army lieutenant colonel and is a graduate of the U.S. Army Command and General Staff College and the U.S. Naval War College, College of Naval Command and Staff. Dr. Kennedy is a member of the Army Acquisition Corps.

Focused Writing Can Improve Readiness, Retention

CPT DANIEL SHELL

The Army faces a recruiting, readiness, and retention problem. Modernity has brought wondrous technology and products, but these have caused unforeseen negative consequences. Smart phones, social media, highly-processed foods, climate-controlled environments, and online shopping allow people to live more comfortably. Increased comfort, however, has failed to increase contentment and meaning, and mental and physical health have dropped in the United States and much of the developed world.[1] This crisis brings increased rates of obesity, diabetes, depression, and many other modern maladies. A growing number of Americans cannot meet the standards for enlistment, Soldiers may have issues arise during their service that prevent them from deploying and contributing to accomplishing the nation's missions, and ultimately, many Soldiers leave the service because they cannot meet medical, physical, or psychological standards.[2] The Army has developed various strategies to combat these issues, but a tool backed by psychological research remains unused. Goal-focused and trauma-focused writing offer an untapped well that the Army could use to combat these growing problems. Individual leaders and the Army should implement a program of goal-focused writing to increase Soldiers' performance and health- and trauma-focused writing to help Soldiers deal with past issues.

Army Chief of Staff GEN Mark A. Milley has declared readiness his number one priority.[3] Readiness, of course, encompasses many facets of being a Soldier — physical fitness, mental health, dental health, family resiliency, training readiness — and the Army has adopted different means of ensuring Soldiers maintain readiness across various attributes. The Army has addressed these problems through a combination of reactive solutions — ensuring the availability of mental health professionals, offering physical therapy to help Soldiers rehabilitate injuries, and offering military family life counselors for couples and families in need of counseling — and proactive solutions such as increasingly realizing and publicizing the importance of sleep and stress reduction, providing healthier food options in dining facilities, and changing the physical fitness system to reflect more recent knowledge of performance, recovery, and injury reduction. These efforts have improved Soldiers' abilities to prevent and react to problems that may arise. Another tool exists, however, in guided writing to process the past and prepare for the future.

Many psychological empirical studies have demonstrated the effectiveness of writing to process past experiences, evaluate one's character, or develop and implement goals. The benefits of writing and goal-setting include better performance at work or school and better mental and physical health.[4] Additionally, developing one's own goals as opposed to being given goals from a leader or organization leads to improved results. One study found that even when students developed goals unrelated to school, their performance on tests improved.[5] This research suggests that even if Soldiers developed personal goals for pursuits outside the Army, their performance in the Army would likely still improve. Overall, this research suggests goal-focused writing could lead to improved health and performance in Soldiers and thus increased readiness throughout the force.

Writing about experienced trauma has produced similarly positive results. Similar to discussing issues with a social worker, psychologist, or trusted friend, writing about traumatic experiences allows the Soldier to make sense of the trauma. It allows the Soldier to glean the potential wisdom from such experiences and develop a coherent narrative for the event. Different studies have demonstrated significant improvements in people's lives who complete such writing, including the following benefits: "These improvements included fewer consultations with physicians, greater long-term psychological health, and improved immune function."[6] Though such writing cannot and will not replace counseling, it may reduce the need for some people and aid the counselor, as the Soldier will have already worked on his or her feelings through writing about experiences.

The Army could develop its own writing program to achieve this or use one that already exists. One such program is the Self Authoring Suite, which offers three different guided-writing programs. Future Authoring focuses on developing goals and plans to achieve those goals, Present Authoring helps identify one's virtues or flaws and address both, and Past Authoring lets the author develop a narrative about one's life, including traumatic events, to process those experiences.

This goal-setting program has some distinct advantages over some of the others I've seen. First, it is a systematic process with well-thought out prompts and questions, and each piece builds on itself. Second, the positive — but especially the negative — visualization can help motivate Soldiers to pursue their goals. Part of the exercise involves thinking about what will happen if Soldiers achieve their goals, which is helpful, but the truly impactful aspect is visualizing what will happen if they fail and allow their worst habits and tendencies to continue unabated. Soldiers

complete this segment before they develop their goals and plan to implement them. This provides a concrete, tangible reason to be motivated to improve, which increases the exercise's effectiveness. Plenty of people have bad habits they want to end or good habits they want to develop, but too many people quit when the initial excitement disappears. Relatedly, many Soldiers perform well at work, but one event may push a Soldier over the edge and cause him or her to spiral downward and suddenly become a poor performer. This exercise can help move the Soldier in the right direction toward self-improvement, ultimately improving the Soldier's resiliency, which contributes to the unit's readiness.

A writing program could be implemented in a number of ways, but offering a goal-focused writing exercise at critical times in Soldiers' careers makes sense. Enlisted Soldiers could complete it at Basic Combat Training or Advanced Individual Training and at every NCO Education System course. Officers could complete it upon beginning the U.S. Military Academy or ROTC and during each officer education system course in their career progression. Because the exercise involves looking out three to five years, Soldiers would return to the exercise at various times throughout their career, and depending on how it is implemented, the Soldiers could return to the program on their own through a website.

Another beneficial time for Soldiers to complete goal-focused writing would be while they complete the Soldier for Life-Transition Assistance Program (SFL-TAP). This would allow them the opportunity to sit down and think how they want to begin the next phase of their lives, not just in terms of getting a job or going to school, but really think about their goals and what will happen, most importantly, if they fail to achieve their goals and let their worst habits and tendencies rule the course of their lives. Many people look forward to exiting the Army but fail to develop their own mission or purpose and mindlessly enter school or find a job. This exercise could help.

Trauma-focused writing could be used for Soldiers seeking behavioral health treatment and, potentially, could be offered to Soldiers if they feel they could use some sorting out but are not pursuing the Army's behavioral health system. This would allow Soldiers to process their issues before seeing a mental health profession and, as research has shown, potentially decrease the need to see mental health professionals. It would not, of course, replace the behavioral health system, but supplement it and allow Soldiers to address problems on their own, just as they might lift weights to address a strength deficiency.

Computers, money, and time would be the biggest hurdles to implementing a focused-writing program. If computers are a limiting factor, then the Army could provide print outs and provide space for Soldiers to write their responses by hand. The benefit to using a computer, of course, is that Soldiers can return to a digital copy of what they wrote and modify it if they so desire from anywhere they have access to the internet.

If using a commercial program, cost may also be an issue. However, one could argue this may cost less than medication or counseling. The programs may both prevent and help treat issues, so these benefits may also offset the cost.

Time would also be an issue to implementing such a program. Time is precious in Army schools, and something would probably have to be cut to make time for a focused-writing program. Instead of a class on SMART (specific, measurable, achievable, relevant, and timely) goals, Army Values, leadership, or a speech from senior leaders, Soldiers could develop goals of their own. This certainly seems to fall under the broader concept of mission command. This also shows Soldiers and leaders a certain amount of respect. Too often Soldiers get lectured, briefed, and trained to try to change behavior. How about we give the Soldiers some responsibility? This would benefit them and the Army. It would reinforce the Army Values, and probable benefits such as increased performance and improved health would likely offset its cost.

Though I hope the Army adopts a focused-writing program, I understand changes at the Army level happen slowly, and the Army does not want to invest in something without knowing it provides cost-effective benefits. For now, junior leaders could easily implement a program in their units across the force. Measures such as Army Physical Fitness Test scores, percentage of Soldiers on profile, sick call use, reenlistment rate, and behavioral incidents could be assessed before and after the use of the goal-focused writing program. These small experiments could provide evidence of the program's effectiveness in increasing readiness and retention. These leaders can then share the results in venues such as this and up the chain of command. My ultimate hope is that if this proves useful, the Army as a whole will adopt such a system.

Notes

[1] Edmund S. Higgins, "Is Mental Health Declining in the U.S.?" *Scientific American*, 1 January 2017, https://www.scientificamerican.com/article/is-mental-health-declining-in-the-u-s/.

[2] Nolan Feeney, "Pentagon: 7 in 10 Youths Would Fail to Qualify for Military Service," *Time*, 29 June 2014, http://time.com/2938158/youth-fail-to-qualify-military-service/.

[3] C. Todd Lopez, "Army Chief of Staff Urges Soldiers to Take Responsibility for Unit, Individual Readiness." Army.mil. 11 October 2017, https://www.army.mil/article/195130/army_chief_of_staff_urges_soldiers_to_take_responsibility_for_unit_individual_readiness.

[4] Jordan Peterson and Raymond Mar, "The Benefits of Writing," Selfauthoring.com, https://www.selfauthoring.com/doc/WritingBenefits.pdf.

[5] Ibid.

[6] Ibid.

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Leadership Thoughts for the Ages

LTC (RETIRED) ED DEVOS

Old Soldiers like me still recall the leadership training we received at Fort Benning, GA, 50 years ago. And while weapons and technology concerning the prosecution of war will continue to evolve, the fundamentals of leadership taught throughout the years remain constant because basic human needs, described in Maslow's hierarchy of needs, will always remain the same. Men and women still act and react to positive leadership in predictable ways, and not surprisingly, they react to negative leadership in predictable ways as well.

Below are some leadership thoughts gleaned from my observations of both positive and negative leaders and experiences in military, business, civic, political, and church settings as well as through numerous readings of books, various magazines, and papers on the subject. These thoughts are not aimed at any one rank, but at all who have a leadership role or who aspire to have such responsibility, whether military or civilian. These comments are not meant to impugn the principles taught in the field manuals and the numerous leadership books on our book shelves. Rather, the intent of this article is to reinforce various principles with some different verbiage and some practical advice that has stood the test of time.

These thoughts are organized into five groups chosen for the mottos of selected infantry regiments where the crucible of leadership is paramount. It is my hope that these thoughts will provide some inspiration to readers as they lead the men and women of our Army.

A platoon leader with the 2nd Infantry Brigade Combat Team, 25th Infantry Division signals his platoon during a combined arms live-fire exercise at Pohakuloa Training Area, HI, on 15 May 2018.

Photo by 1LT Ryan DeBooy

"We Lead the Way" — Motto of the "Pioneers" of the 29th Infantry Regiment

Understand the expectations of being a leader. MG Willard Latham, commanding general of Fort Benning from August 1975 to July 1977, penned the comments below in his first week after taking command of the U.S. Army Infantry Center:

1. Leaders are expected to lead in person. (They) are to positively and constantly energize and influence situations around their units…

2. All leaders are to exhibit:

a. Technical and tactical proficiency (in) all facets of (your) MOS.

b. Mental toughness. Never give up. Practice enthusiasm for the job at hand.

c. Physical fitness. Strive to reach your maximum potential. Your goal is to raise your unit's capabilities.

d. Spiritual soundness. Be aware that your demonstrated example is the most often observed and important facet of this quality. Act accordingly.

Be above reproach. Your morals and ethics should be beyond reproach. You are always on parade. Your unit will mirror your standards. You set the example in all things. Remember that the higher up the flag pole you go, the more your backside shows.

No days off. Your job every day is to instruct, teach, coach, lead, train, and encourage all those around you, preparing them to take your place on the line. Demonstrate continually how one in your position should act/react to the challenges thrown at you. And when you make a mistake, understand what happened and why. Then learn from it.

You set the standard. The morale in your unit is a direct reflection of your morale. If you face situations with a "Can Do" attitude, your unit will follow your lead. Remember, you are the chief morale officer or NCO of your unit. Understand that every word and every action you take influences the morale of your unit. If your unit's morale is not where you would like it to be, look in the mirror. Recognize the problem. Fix it. Then learn from it and move on.

Be real. Subordinates want to know you as their leader cares — that you bleed, have a family, have feelings, have experienced love and hate, passion and fear. In other words, subordinates do not expect you to be super-human. But they do expect you to care for them as much as the situation allows in ways that few outside the brotherhood of arms could ever understand.

Trust others to do their job. When a problem occurs at a leadership position below yours, it is not your job to personally fix their problem. That is why those leaders are there. That problem is below your pay grade. You have enough to think about. If you have to take time to fix the lower-level problem, either you didn't train them well enough or you may have the wrong leader in that position.

Improve each day. Every true leader "should be knowledgeable, skillful, and proficient and he must know more than his men... The leader should also learn to make quick decisions... Professional pride, confidence, integrity, loyalty, tact, endurance, discipline, and example are some of the qualities that go to make up good leadership."

— Major E.Y.M. Ofosu-Okyere, Army of the Republic of Ghana, from the September-October 1978 issue of *Infantry* Magazine.

"Unity is Strength" — Motto of the "Regulars" of the 6th Infantry Regiment

The golden rule. Treat all those around you like you would like to be treated. Each Soldier is a volunteer, a valuable asset to your unit's success. Treat each one as a unique, mature individual. But when discipline is required, discipline with love, understanding, and empathy — but discipline nevertheless.

Treat 'em right. A Soldier has only one family. When there is a graduation, anniversary, etc, in their family, unless we are going to war, give them a break so they can enjoy these once-in-a-lifetime events. In the years that follow, the Soldier will remember the decision you made, and it will influence their feelings about the Army forever.

Trust flows both ways. Trust is built over a long time, but it can be torn in two in one moment of stupidity. If others trust you, they will feel they have the freedom to speak their mind without fear. Without that trust, they will not contribute, and your unit will be the lesser for it. Surround yourself with people you trust. You want to get as many brains working as possible, not just yours. Be honest with one another. Consider also that weak leaders are easily threatened by competent subordinates, but strong leaders surround themselves with the best because they are not intimidated by able and competent followers.

Trust the NCOs. Our NCO corps is the backbone of our units and the envy of every other Army in the world. At the small unit level, there is the NCO way and the officer way to fix various problems. Generally, the NCO way works better at the small unit level.

Loyalty flows both ways. One of the soldiers who served under GEN Harold K. Johnson, Army Chief of Staff from 1964 to 1968 and an Infantryman in World War II and Korea, wrote, "He had an unusual sense of loyalty to the men under him, the kind of thing ordinary Soldiers notice and value when they grade an officer." Wish we all could receive such high praise from those who serve with us.

Tell 'em why. During the Revolutionary War, Baron von Steuben learned that American Soldiers did their duty much better when they knew why they were doing it. Don't hesitate to explain "why" you are doing something. If your Soldiers

understand the why, they will be much more inclined to get the job done well. If you leave your people in the dark, you will get what you've asked for.

Say thank you. A simple "thank you," sincerely said or written in a short hand-written note, goes a long way to cementing a trust and a bond between two people. Leaders should be especially mindful of saying "thanks" since it is everyone else in the unit who does the work.

Think team. It is "our" battalion. "We" and "us" are in it together for a common purpose, a common goal. The pronouns "I," "me," and/or "mine" have little place in a leader's vocabulary except when things go awry. Picture General Robert E. Lee as the men from Pickett's Charge retreated past him. Lee stood there, hat in hand, saying over and over again to his men, "It is my fault... my fault. You men did everything asked of you. It is my fault and mine alone."

Be organized. When you are in the field, you are in the field — 24 hours a day. When you are not in the field, you are not in the field. In garrison, things should (and can) get done in a timely manner. Don't waste others' time through your inability or laziness to organize.

"Willing and Able" — Motto of the "Cottonbalers" of the 7th Infantry Regiment

Keep your eyes and ears open. Understand the pulse of your unit. Hone the skill of situational awareness. If you think everything is running smoothly, you haven't looked around enough or listened carefully enough. Get out from behind your desk, visit some different places in your unit, and start asking more questions. While the truth and bad news may be painful, they do not get any better with time. Get ahead of the big crises by solving the small problems while they are still small. Small infections not taken care of early become festering wounds that will sap your energy and time.

Inspect is to emphasize. GEN Bruce Clark said, "An organization does well only those things the boss checks. Anything that has not been inspected has been neglected. To inspect is to emphasize." The larger the unit, the more checks must be delegated. Make sure someone is checking on your behalf. As President Ronald Reagan famously said, "Trust but verify."

Raise the bar. All anyone can ask of you is to do your best. The question then is what is your best? Can your best be improved? Of course! Think about pushups. How do you increase the number of pushups you can do? You do more pushups. You devote more time and effort to reach the goal.

Always keep your mission in the forefront of your mind. Keep "selling" your mission and goals for your unit. Keep reminding your unit what "we" are trying to achieve and why. If you don't have well-established goals, you will always be in the crisis management mode, and the entire unit will suffer because of it. Do things because they are the right things to do, not because someone is coming to observe or test you. Don't paint rocks if painting them has nothing to do with your mission.

Know yourself. Are you patient enough to gather all the important facts before you make a decision on incomplete information? Two good military truisms to live by:

(1) Always expect the unexpected; and

(2) The first report in almost every crisis will be partially wrong because that first report will be missing some very important facts.

Are you so set in your ways that you have difficulty being flexible when the situation calls for it? Can you laugh at yourself when you do something stupid? More importantly, can you learn from your mistakes? And as the ups and downs of the day occur, can you keep perspective and stay focused on the important issues or will the trauma and drama of the day take you off course?

Professionals are always learning. Devour everything you can find that relates to military history and military leaders. As President John F. Kennedy once wrote, "Knowledge of the past prepares us for the crisis of the present and the challenge of the future." As a minimum, Sun-Tzu's *The Art of War* and *On War* by Clausewitz should be in your library. Know the principles of war backwards and forward.

Be the lion. Consider this statement attributed to George Washington: "An army of asses led by a lion is vastly superior to an army of lions led by an ass."

"Deeds Not Words" — Motto of the "Regulars" of the 22nd Infantry Regiment

Your word must be your bond. Say what you mean. Mean what you say. Be dependable. Be the one everyone can always count on because you gave your word and everyone knows you will keep it. Make it a point to under-promise and over-deliver.

Be a servant leader. One of the definitions of the word "lead" is to serve. Therefore, a leader is to serve others. That is why you are the last man in your unit's chow line to eat or the last one the medics treat with moleskin for your blisters. Those are simple messages to your unit that you care for them. We have all seen examples of where a leader has taken advantage of his/her position. What message does that send to the unit?

Only results count. Everyone but the Chief of Staff of the Army will miss a promotion list one day. Just because you spend every waking hour at work doesn't mean a thing. As Benjamin Franklin said, "Never confuse motion with action."

Don't waste time. GEN Douglas MacArthur once said, "The loss of time is irretrievable in war. Every military disaster can be explained in two words: 'Too late.'" Give orders so that they cannot be misunderstood. Show respect for others by always being on time. If you are the subordinate, 10 minutes early is being on time. Start all meetings on time and end them on time.

If you have allocated 30 minutes for a meeting, live up to your word and adjourn the meeting at the 29-minute point.

Do your best, no matter what the job. Leaders at all levels should simply do the best job they can, wherever they are assigned, and promotions and recognition will follow. If leaders focus too much on promotions, they will very quickly turn from what is important for the unit's benefit and concentrate on trying to make themselves look good. You are far better off thinking that there is almost no limit to what a unit or team can accomplish if it doesn't matter who gets the credit.

"Frightened By No Difficulties" — Motto of the "Wolfhounds" of the 27th Infantry Regiment

Your first priority is your combat mission. That combat mission is why your unit exists. Therefore, prioritize your time accordingly. Don't waste time on things that have nothing to do with your mission. Your survival and the lives of those in your unit depend upon how well you prepare them for battle. Keep your focus there. Keep the main thing, the main thing. Your potential enemy should be approaching his mission the same way. You must use your time more wisely than your enemy is using his. In war, our goal is to win every battle 100 to 0, not 60 to 40. Bring all your assets to bear. Beat the enemy to a pulp and then be gracious in victory.

Take time to think. Learn to put your feet up on the desk, lean back, and ask yourself "what if...?" This will help you get a head start when one of Murphy's Laws raises its ugly head. A big part of your job is to think ahead and to not get caught up too much in the present. Like a good chess player, you should be thinking several moves ahead. Get inside your enemy's decision-making cycle. Have him dance to your tune instead of the other way around.

Encourage initiative. Encourage those around you to use their initiative within the broad commander's guidance you give them. Then be ready to back them up when things go a bit haywire. And when they do, when the time is right, use the positives and the negatives of what happened as a teaching opportunity for all concerned. But tread carefully. Ultimately, your goal is for your subordinates to use their initiative within the mission-type orders you issue. You do not want to stifle initiative.

Be bold and aggressive. A plan in combat is just that — a plan. When the bullets start flying and as you cross the line of departure, remember that a poor plan executed aggressively is better than a good plan executed by timid leaders. Boldness and aggressiveness can win the day when nothing else can. Remember Joshua Chamberlain's bayonet charge at Gettysburg. Or as the English author Charles Dodgson said, "If you limit your actions in life to things that nobody can possibly find fault with, you will not do much."

Believe in your Soldiers and in yourself. "Decide what will hurt the enemy most within the limits of your capabilities to harm him and do it. Take calculated risks. That is quite different from being rash. My personal belief is that if I have a 50-percent chance, I will take it because the superior fighting qualities of American Soldiers led by me will surely give you the extra one percent necessary."

— Excerpts from a letter written by GEN George Patton to his son on 6 June 1944.

Strive to be the best. Thoughts expressed in *Profile of a Commander* by Yigal Allon, Deputy Defense Minister of Israel: "The best leader... has the qualities of a father and a youth leader, an instructor and an educator, a leader of men and a commander in battle. He must prove himself to be a man who thinks and acts, who plans and organizes, who weighs up all sides of an argument and comes to a firm, clear-cut decision."

Finally, remember that others have seen potential in you and they assigned you to be a leader, a commander. So on those days when the responsibility weighs heavy, take heart in the words of Theodore Roosevelt, our 26th President:

> *"It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again... who knows the great enthusiasms, the great devotions; who spends himself in a worthy cause... and who... if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat."*

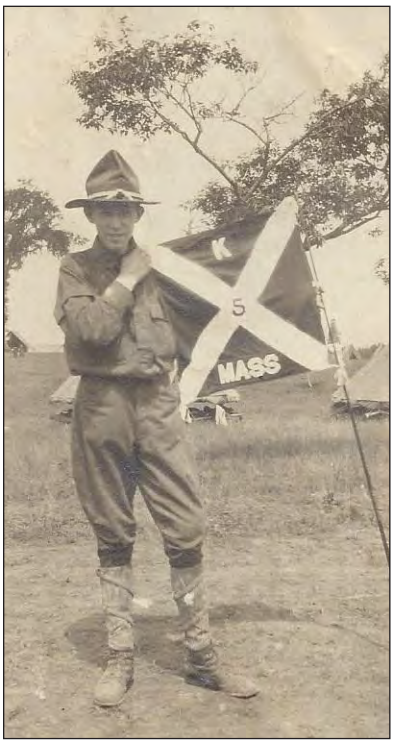
LTC (Retired) Ed DeVos, an Infantryman for more than 20 years, now invests the majority of his time writing thought-provoking historical narratives about Soldiers. His four books are about men who exhibit valor and integrity, courage, and honor. His first contribution to *Infantry* Magazine was an article published in 1984.

Out of Uniform

LTC (RETIRED) WILLIAM C. COLLIER

On 7 December 1914, 17-year-old William Albert Collier enlisted as a private in Company K, 5th Infantry Regiment, Massachusetts National Guard. In those days, a National Guard company commander could enlist a boy under age if he showed some leadership potential. After he enlisted, Collier enrolled as an officer cadet at the Massachusetts Officer Training School.

The school's name was eventually changed to the Massachusetts Military Academy because the term "training school" connoted what was done to convicts during their incarceration rehabilitation. Each state's National Guard operated a state-run military academy. Eventually, the state military academies became state Officer Candidate Schools.



Photos courtesy of author

The above photos show William A. Collier as a private bugler assigned to Company K, 5th Massachusetts Infantry, circa 1915.

Cadet Collier successfully completed his course of instruction at the Massachusetts Officer Training School in 1916. He was not commissioned at graduation because he was under 21 years old. Upon completion of the Officer Training School, he was reassigned as a sergeant bugler in Headquarters and Headquarters Battery, 1st Massachusetts Field Artillery. Collier would remain with this unit until he became 21 and eligible for a second lieutenant's commission. During his assignment to Headquarters and Headquarters Battery, the Massachusetts National Guard was federalized and sent to the Texas-Mexican border along with rest of the 1st Massachusetts Field Artillery.

One of Collier's personnel characteristics, which he maintained all of his life, was a fastidious attention to dress. He always wore a hat and a necktie. He was so conscious of dress and appearance it was unnerving to bystanders. As an example of this penchant for dress, when dress shirts were sent to the laundry for cleaning, they would be returned to the owner starched, folded, and boxed in cardboard boxes. Collier was known for going through all of his laundered shirts until he found one that the collar was prepared to his satisfaction. The rest were returned to the laundry for a re-cleaning and pressing. Collier's family found his affinity for dress to be very annoying.

Collier went with his battery and performed his duties as mounted bugler and other duties as assigned while serving on the Texas-Mexican border with the Pershing Expedition. Living in the desert, a person gets very dirty, and cleanliness becomes a chore that requires constant attention.

Prior to World War I, the U.S. Regular Army was very small with only 10 regiments of Cavalry and 24 regiments of Infantry. In 1916 and early 1917, the United States entered into war fever. After war was declared in April 1917, the size of the Army would grow rapidly. The need for commissioned officers was great, and commissioning regulations were greatly relaxed. Since Collier had successfully completed his officers training, he was one of the candidates for immediate commissioning.

When Collier's commission came down through channels to the battery, the unit was still serving along the Texas-Mexican border. Sergeant Collier was ordered to report to the battery commander for reasons unknown to him. He cleaned himself up and straightened up his uniform, the best he could considering how long he had been in the desert, and reported to the battery commander in the orderly room tent.

Once in the orderly room tent, the battery commander began to chew out his bugler for being out of uniform. Being the Soldier he was, Collier stood at attention and replied, "Yes sir; no excuse, sir!" After Collier was dismissed, he left the orderly room tent and took a short walk to recover from his verbal down dressing by the battery commander. Collier was mad and he did not appreciate comments about being out of uniform. Collier felt he had done the best he could under the existing circumstances. It was about 30 minutes after he left the orderly room tent that it dawned on him. The battery commander never once addressed him as Collier. Throughout the entire counseling session, he had been addressed as Lieutenant Collier.

Troops from the Massachusetts National Guard patrol along the Texas-Mexican border circa 1917.

SGT William A. Collier poses for a photo outside his tent while serving on the Texas-Mexican border in 1917.

Collier had been promoted to second lieutenant! Having had this revelation, the new lieutenant returned to the orderly room tent, much to the laughter of all those inside. There, Collier received additional instructions that he was to immediately leave his regiment and report for duty at a new regiment at Syracuse, NY. Hopefully, he would be in the right uniform!

Second Lieutenant Collier arrived at his new unit — the 47th Infantry Regiment, 4th Division — and was sent overseas to serve with the Allied Expeditionary Force in the First World War. During combat operations in France, Collier would receive another promotion — to first lieutenant. However, his promotion to first lieutenant was far less dramatic. He did have to wrap his gold second lieutenant insignia with silver tin foil which came from chewing gum wrappers. In the trenches, Collier had no means to obtain proper first lieutenant insignia. As any former second lieutenant can attest to, one wants to replace those gold bars with silver ones as soon as possible!

Collier would continue serving in the U.S. Army until he retired in 1954 as a brigadier general. He saw service in the Mexican Border Expedition, World Wars I and II, and the Korean Conflict. Two of his sons served in the U.S. Army, and one son served in the U.S. Air Force. Two of his grandsons currently serve in the U.S. Army.

Author's Note: *This article is based on the reflections of the late BG (Retired) William A. Collier. Two of his sons have confirmed witnessing him going through laundry shirts. The pictures are from his personal photograph collections.*

Book Reviews

Hal Moore on Leadership: Winning When Outgunned and Outmanned

By LTG (Retired) Harold G. Moore and Mike Guardia
Maple Grove, MN: Magnum Books, 2017, 155 pages

Reviewed by LTC (Retired) Rick Baillergeon

For readers of *Infantry* Magazine, LTG Hal Moore needs no introduction. He was a legendary Soldier who made incredible contributions on and off the battlefield. These contributions were sparked by his tremendous leadership skills. Undoubtedly, Hal Moore belongs to a select group of individuals who could lead in any environment. Moore's thoughts on leadership are now captured in the superb volume aptly entitled *Hal Moore on Leadership: Winning when Outgunned and Outmanned*.

Every book has its own unique story as to its process of moving from an idea to eventual publication. Clearly, *Hal Moore on Leadership* had its own distinctive chronicle. Moore began crafting his words and thoughts on leadership several decades ago on a yellow legal pad. These words were then typed by his wife, Julie (the only person who could read his handwriting), onto an old Dell computer in Microsoft Word. As events transpired in Moore's life, the future book justifiably was put to the side.

Several years ago, Moore and his family felt it was time to complete the project. After some arduous work, they were able to retrieve Moore's words from the computer. However, they soon discovered that someone with a unique skill set was needed to assist in transforming these words into a book. Enter Mike Guardia.

Guardia truly possessed the credentials required to aid in this challenge. First, Guardia had established a superb reputation as a writer. This included a body of work comprising several award-winning volumes. Second, he served as an active duty Armor officer from 2008-2014. Finally, Guardia had already developed a relationship with Moore and his family. This association began many years earlier when he was crafting a biography on Moore aptly titled *Hal Moore: A Soldier Once... And Always*, which was published in November 2013. Guardia truly developed a bond with Moore during the book's research and preparation.

So what can readers expect from the volume? Both Moore and Guardia provide their thoughts on the volume's content, purpose, and value in the book's initial pages. Moore states, "This book is not an autobiography. It's not a 'how to' book on military leadership, the chapters include selected periods in my life. Covered will be leaders, leadership, and experiences which made life-long impressions on me; and lessons learned — most of which have application in all fields of endeavor."

Guardia adds his thoughts in the volume's introduction. He remarks, "*Hal Moore on Leadership* offers a comprehensive guide to the principles that helped shape Moore's success both on and off the battlefield. They are strategies for the outnumbered, outgunned, and seemingly hopeless. They apply to any leader in any organization. These lessons and principles are nothing theoretical or scientific. They are simply rules of thumb learned and practiced by a man who spent his entire adult life leading others and perfecting the art of leadership."

In order to capture these lessons and practices, Moore and Guardia have organized a volume which truly highlights Moore's thoughts on leadership. They begin the volume by stressing what in Moore's vast experience are his four basic principles of leadership. Moore initially developed these principles as a young officer serving in the Korean War. The principles are:

1. Three strikes and you're not out.
2. There's always one more thing you can do to influence any situation in your favor. And after that, there's one more thing.
3. When nothing is wrong, there's nothing wrong — EXCEPT there's nothing wrong. That's when a leader has to be the most alert.
4. Trust your instincts.

Each of the above principles is addressed in detail, and this chapter truly sets the conditions for the rest of the volume.

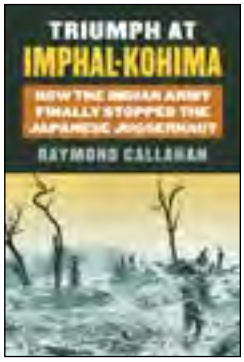
In regards to the remainder of the book, Moore and Guardia utilize it to provide readers with examples from Moore's past in which leadership was at the forefront. He includes events which cover the period from his childhood until his retirement from the U.S. Army in August 1977. In between, they obviously focus on Moore's combat tours during the Korean and Vietnam Wars. However, there are also many references to Moore's garrison experiences which will resonate with many.

Throughout the book, readers will find dozens of "Moore Leadership Nuggets" inserted within the text. Moore and Guardia have highlighted these by using bold text or placing them in bulletized lists. They have aptly named these lists as, "Moore's Observations, Lessons Learned, or Relearned." For the reader, this is an excellent technique which greatly aids in finding these for future reference.

At about 150 pages, this is not a very long volume. However, it is an extremely powerful book and certainly not

short on quality. It is a volume which will appeal to and greatly benefit a wide variety of readers. Be it on the battlefield, the boardroom, or the athletic field, leaders and future leaders will find this to be an invaluable book and tremendous resource. Unquestionably, there is much to be gained from reading *Hal Moore on Leadership*.

Triumph at Imphal-Kohima: How the Indian Army Finally Stopped the Japanese Juggernaut



By Raymond Callahan
Lawrence, KS: University Press of Kansas, 2017, 212 pages

Reviewed by Maj Timothy Heck,
U.S. Marine Corps Reserve

In 1942, the Imperial Japanese Army, simultaneous with its lightning advance down the Malay Peninsula to Singapore, thrust into British-controlled Burma and relentlessly advanced towards the Indian border. The Indian Army was revealed to be nearly inept and was all but destroyed in the process. Smashed British and Commonwealth units, including the 17th Indian Infantry Division, trickled back to India to refit, recover, and eventually re-engage the Japanese. Under the leadership of General William Slim, the reborn Indian Army — with American and British assistance — pushed back into Burma in 1944 and administered the largest defeat to the Japanese up to that point in the war. The fall, rebirth, and rise of the Indian Army, along with perceptive analysis of British-American combined warfare and logistics, make *Triumph at Imphal-Kohima* a valuable work that offers lessons for today's military.

British policy from the outbreak of war in Europe through 1942 was a large part of the reason the Indian Army suffered such staggering initial defeats at the hands of the Japanese. The Indian Army was largely considered a manpower pool for British interests, with its long-service regular troops sent to Africa and the Middle East to support colonial defenses and the war against the European Axis. These regulars were largely led by British officers as Indian officers were limited in numbers. To backfill the Indian Army, drafts of replacements were leavened with some regulars, but over time there were fewer and fewer experienced troops, NCOs, and officers to spread among the new recruits. The over-expansion resulted in an Indian Army without the requisite experience or command skills needed to master combat operations, as was displayed in the retreat across Malaya and Burma.

The Indian Army's rebirth is central to the narrative of *Triumph at Imphal-Kohima*. Leaders like Slim enacted several policies that allowed for the rebuilding. By capping expansion, Slim prevented further dilution of the experienced soldiers under his command. Furthermore, he enacted fundamental changes in how the army trained, which impacted all units and individuals in the revitalized army. Under Slim's leadership, however, "the training regime was so intense that even the babus — the Indian non-combatant clerks... were required to do physical training." Furthermore, an emphasis on jungle warfare training refocused the Indian Army on the task at hand. The standardization of jungle warfare training helped incorporate lessons learned and disseminate the best tactics, techniques, and procedures to defeat the Japanese.

The impacts of terrain, logistics, weather, and disease also played a major role on the campaign in Burma. Perhaps most striking was the impact of logistics on sustaining combat units. The Indian Army had to rely on single track roads that were not designed for heavy traffic and were incapable of surviving monsoon seasons. This anemic infrastructure significantly hampered mobility and sustainability of Indian operations. As an example, "in August 1942, only seventy-two truckloads of supplies made it through from Dimapur to Imphal," a distance of several hundred kilometers and a major axis of Allied advance. Immense efforts were undertaken to strengthen the lines of communication throughout India and into Burma in order to support the Indian Army. Those logistics assets, however, were low-density, and high-demand units such as the Americans needed the same trucks, trains, and airfields to support Chiang Kai-Shek's Nationalist Chinese, putting further strain on an already weak system and requiring cooperation between the Allies.

Author Raymond Callahan does an excellent job of describing the differing political objectives of the British and Americans in the China Burma India (CBI) Theater. America's desire to support Chiang Kai-Shek's Nationalist Chinese forces came into conflict with British desires to recapture their colonial possessions of Burma, Malaya, and Singapore. Coupled with personality conflicts between the British leadership and American General Joseph "Vinegar Joe" Stilwell, the difficult nature of combined warfare in Burma becomes readily apparent. As Churchill remarked, "the only thing worse than fighting with Allies is fighting without them."

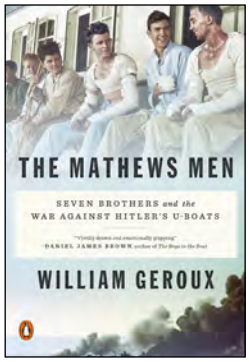
The battle itself is rather quickly covered in the book. Slim's objective of pinning the Japanese at the gateways to the Imphal plain while his XXXIII Corps reopened the Dimapur-Imphal Road were accomplished through the use of combat boxes which broke up Japanese attacks, slowed their advance, and fixed them while they were in turn counter-attacked or surrounded. Fighting in and around these boxes devolved into a "conflict of platoons, companies, and occasional battalions." The logistics efforts before and during the battle were leviathan. "Delivering 12,250 reinforcements and 18,800 tons of supplies, and flying out 13,000 sick and wounded and 43,000 noncombatants, [Operation] Stamina's 7,500 sorties were absolutely essential to Slim's victory." In short, Slim designed the battle, the rebuilt Indian Army fought it at the small unit level, and Allied transport planes kept it supplied through to victory.

Triumph at Imphal-Kohima focuses on the operational nature of this critical battle and the political elements therein. Despite the nature of the fighting around the Imphal plain, there is a limited sense of the combat involved at the battalion level or below. The lack of maps requires readers to consult their own in order to track units, staging areas, and events throughout the text. Despite these minor shortfalls, Callahan has written a readable study on rebuilding armies, combined warfare, and the importance of logistics at the operational level in an oft-overlooked theater.

The Mathews Men, Seven Brothers and the War Against Hitler's U-boats

By William Geroux
NY: Penguin Random House, 2016, 371 pages

Reviewed by LTC (Retired)
Keith Everett



This story of the World War II service of U.S. Merchant seamen begins with the cutting open of a shark caught by a Cuban fisherman, who finds human remains including a forearm and ring with the initials G.D.H. This ring traces back to George Dewey Hodges, a U.S. Merchant seaman from Mathews County, VA, who was killed along with 17 other men, when a U-boat torpedoed and sunk their American steam merchant vessel, the Onondaga, on 23 July 1942. The Hodges family contributed seven sons, including Dewey, to wartime merchant sea service, and many other men from Mathews County went to serve onboard merchant ships. William Geroux, the author, captures many of these seamen's stories for a greater understanding of the tremendous risks taken on a daily basis to keep the supply routes open.

Looking at Mathews County on the map in the prologue, readers will immediately see a scattering of small towns with no large urban centers dominating the landscape. The story of the courageous contributions of the merchant seamen is told through the experiences of not only the seven sons of the Hodges family but also other members of the Mathews County community; it is a fascinating read, which includes details of sinking ships, desperate attempts to survive, and efforts to sink the enemy before he can attack. The 300 million tons of cargo the U.S. Merchant Marines transported through U-boat hunting grounds brought "ammunition, aircraft, fuel, tanker trucks, landing craft, ambulances, locomotives, food, clothing, and medicine" to Allied troops throughout World War II. This heroic effort was instrumental to overwhelming the Germans and Japanese.

The author, who served as a newspaper journalist for the *Richmond Times-Dispatch* for 25 years, also worked for Maersk, the largest container shipping company in the world so he knows the fine points of shipping. He tells of how the U.S. Merchant Marines kept the supplies coming despite the violently active U-boat hunting grounds they had to cross. The details of U-boat warfare are included, such as how magnetic torpedoes explode when entering a ship's magnetic field and how acoustic torpedoes home in on the sound of a ship's propellers. He goes on to explain British countermeasures for each torpedo type and the limitations and effectiveness of depth charges and sonar at the time. In just two years from 1941 to 1943, U-boats sank more than 1,000 British merchant ships and killed more than 20,000 British seamen, so the efforts of the U.S. Merchant seamen helped keep Britain in the war.

This volume looks at various aspects of World War II shipping and the fight against the U-boats. The sections of the book provide stand-alone stories telling various parts of the efforts to resupply by sea. If you are looking for one continuous story, this is not the book for you, but the combined stories make a compelling read. I loved the last sections of the book which include a map showing where many of the merchant ships sank and a listing of many of the merchant seamen in the book with what happened to each of them during and after the war — if they survived.

Have you read a book lately that you think would be of interest to the Infantry community and want to submit a review? Or are you interested in being a book reviewer for *INFANTRY*?

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