

FIELD ARTILLERY

*Let her bang, ye Heroes!
Victory is Ours!*

Head Quarters, Virginia Forces,
STANTON, VA.

MEN OF VIRGINIA, TO THE RESCUE!

Your soil has been invaded by your Abolition foes, and we call upon you to rally at once, and drive them back. We want volunteers to march immediately to Fairfax and report for duty. Come out! Come out! and render the service due to your State and Country. Fly to arms, and meet your brave brothers, who are now in the field.

JOURNAL

January - February 1974

a word from the editor

Welcome to the first commercially printed issue of the FIELD ARTILLERY JOURNAL to be published in over two decades. We believe that this "upgunned" (to borrow a word from one of our articles) version of the JOURNAL will make an already interesting and varied assortment of articles and features even more readable and enjoyable.

Although the gestation period for the rebirth of the JOURNAL has been lengthy, it could never have been accomplished without the excellent support and guidance provided by Major General David E. Ott, Commandant of the Field Artillery School and Fort Sill; Brigadier General Robert J. Koch, Assistant Commandant of the Field Artillery School; Lieutenant Colonel Vincent E. Falter, Director of the Army Wide Training Support Department; and Redlegs everywhere, who have become our readers, contributors, and supporters.

Colonel William Hauser, a widely published author, has contributed a previously unpublished article and personal account of the training of a field artillery battalion. Our lead article is a very thorough and complete review of the British Artillery of today, written by a retired British gunner, Colonel Norman Dodd. COL Dodd is a regular contributor to military journals of many nations. Mr. James Porter, of the Office of the Deputy Assistant Commandant for Combat and Training Developments, USAFAS, has made a study of the new weapons systems coming into the inventory to determine if they are guns or howitzers. An explanation of the "hanging six" photo on the back of the October-November issue has been provided by Major Robert Jordan, Commander of the 273d Aviation Company (Hvy

Hel). He and the men of his company participated in the tests lifting the M102 Howitzers. Captain Roger Darley of the Fort Sill Judge Advocate General Office has brought into clearer focus the Geneva Conventions and the rules for land warfare in the first of a two-part article "The American Soldier and the Law of War." We want to bring to the attention of all forward observers and fire direction officers Major Holland "Dutch" Coulter's article "The FO Takes Command," the alternate registration procedure to be added to FM 6-40, commonly referred to as the American, British, Canadian, and Australian (ABCA) registration.

As reflected by our Incoming page, we are beginning to receive excellent response and constructive comments from readers. The letters have been favorable and we would reiterate that the JOURNAL is a forum for the discussion of all aspects of the field artillery. If we are to assist in improving our Branch and enhancing professionalism, we need to hear your "cons" as well as your "pros."

A brief word on subscriptions and distribution. The increase in printing costs attendant to the commercial printing of the JOURNAL will necessitate an increase in the individual subscription rates. The new rates are to be based on the actual printing costs of this issue and were not available at the time we went to press. By the time this issue is in distribution, the USAFAS Book Department will be in a position to quote the new rates.

Our free distribution is limited to field artillery units (active and reserve component), the Field Artillery School, and various headquarters and interested agencies worldwide. With our limited press run, there simply will not be enough free JOURNALS for everyone. Captain Herman Castle, Circulation and Business Manager and newest member of our staff, is working full-time to ensure that an equitable ratio of JOURNALS is available to all field artillery units and agencies. Enjoy your JOURNAL!

editor

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FIELD ARTILLERY JOURNAL

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FIELD ARTILLERY JOURNAL

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The **Field Artillery Journal** is published bimonthly at the US Army Field Artillery School for the same reason stated in the first **Field Artillery Journal** in 1910:

"The publishing of a Journal for disseminating professional knowledge and furnishing information as to the field artillery's progress, development, and best use in campaign; to cultivate with the other arms, a common understanding of the powers and limitations of each; to foster a feeling of interdependence among the different arms, and of hearty cooperation by all; and to promote understanding between the regular and militia forces by a closer bond; all of which objects are worthy and contribute to the good of our country."

Unless otherwise stated, material does not represent official policy or endorsement by any agency of the US Army.

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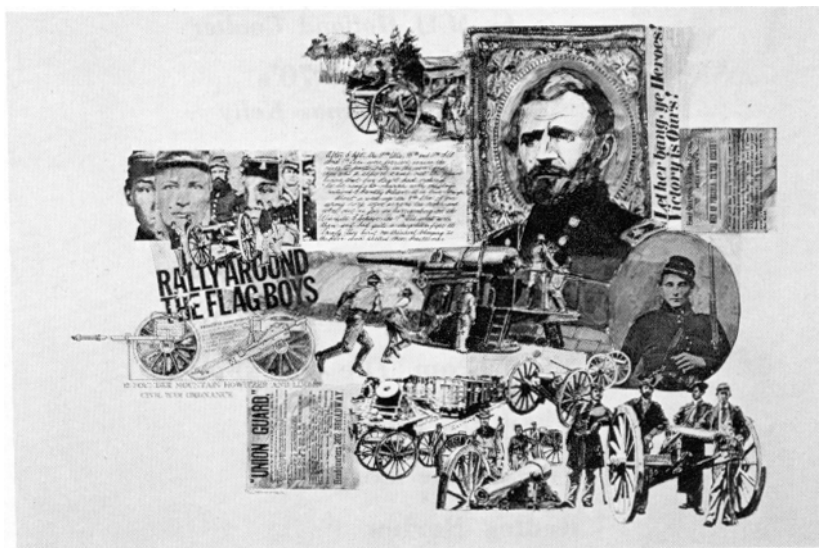
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COVER

The Civil War montage was provided by Litton Data Systems.



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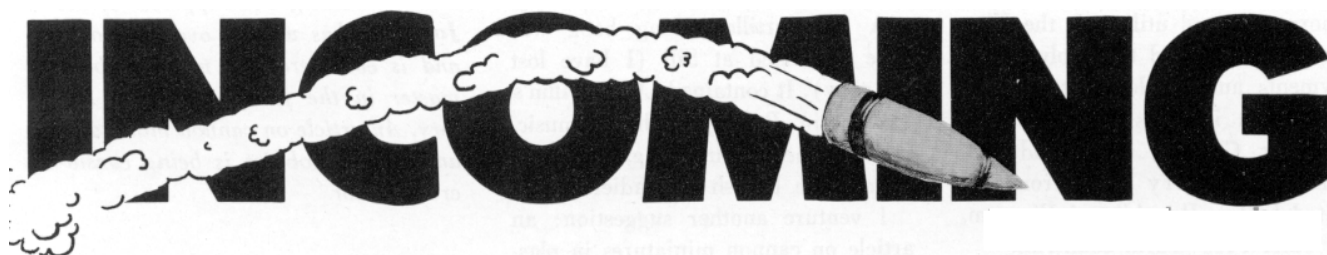
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letters to the editor

Subscription

Dear Sir:

The beginning of the **Field Artillery Journal** as announced in the most recent issue of the Branch Newsletter is indeed good news. As a subscriber to the *Military Review* and *Armor* magazines, it is great to have the Field Artillery join the field.

In this regard, I am interested in obtaining information on how I might become a subscriber to the **FA Journal** (to include a copy of the July issue which I missed). In addition, please provide me with data on the what, how, when, etc. of submitting articles for publication.

Again, congratulations on the new magazine and I hope your effort is met with the interest and enthusiasm it deserves.

Terry A. Girton
CPT, FA
Sachsen, Germany

For information pertaining to subscriptions see editors page. Editor

Can The Artillery Survive?

Dear Sir:

My Fall issue of **Field Artillery Journal** arrived the same day as the 12 November edition of *Time*. In this issue of *Time* there was an article on the battlefield post-mortem for the Arab-Israeli War. The major portion of the article concerned the success of the initial Arab attack due in great part to *extremely mobile* ground-to-air and *ground-to-ground*

missiles and rockets. In your lead article "Can the Artillery Survive?" it seems LTC William Wood (Ret) had a keen insight into the problems a western power will face in a conventional mid-intensity war against allies of Russia. His recommendations on courses of future artillery development were right on the mark if we correctly interpret the results of the war. As he said, we should not be afraid to investigate revolutionary ideas in the design and deployment of "artillery" for history has a way of quickly assimilating these ideas and making them commonplace!

Congratulations on interesting and thought-provoking articles that have appeared in your issues to date. More articles that are "target hits" like LTC Wood's and you may be forced to publish weekly!

DONALD A. HALL
CPT, FA
Assistant Professor
West Point, NY

Marlborough

Dear Sir:

I believe LT Myers' article on the Duke of Marlborough, page 28 of the October-November **Field Artillery Journal** was interesting, but I cannot understand why he did not bring out more about the artillery and how it was used. Inasmuch as this is an ARTILLERY journal let's hear about that branch rather than the Infantry or Cavalry. How was the Artillery employed? What type weapon did

they use? Was it effective?

Guns, N.Y. Graphic Society Ltd, Greenwich, Conn. 1971, says, "In the use of guns in a mobile role during the course of battle and the moving of them as required by the dictates of the action lay the great innovation of Gustavas Adolphus. The Duke of Marlborough seems to have learned from the Swedish King for he certainly employed these tactics at the Battle of Blenheim in 1704. This was the first time the English used really mobile field artillery, and this use contributed enormously to their victory."

Lord Montgomery's book, *A History of Warfare*, World Publishing Co., Cleveland and New York, 1968 says, "momentarily the French Infantry had the better of the encounter . . . Marlborough was ready. Almost the last of the nine brave French battalions were blasted out of the way by the artillery and the allied cavalry launched their charge."

Again, I think LT Myers did a fine job on the article, but can't we keep the artillery and its great history in the forefront?

Burt A. Vander Clute
COL. FA, NYARNG
Valley Stream, NY

Armor In Vietnam

Dear Sir:

An Armor Center Task Force has been formed at Fort Knox, Kentucky, to research and write the story of

Armor in Vietnam. The story will relate the growing realization of armor value and utility on the Vietnam battlefield and the evolving deployments and employments. Armor in Vietnam includes Armored Cavalry, Air Cavalry, Tank and Mechanized Infantry units from the United States, Republic of Vietnam, and other Free World countries.

For the successful completion of this project by 1 July 1974, the help and cooperation of all who have served in Armor and Armor related assignments is urgently needed. Particularly needed are accounts of personal experiences, photographs and/or yearbooks. Cassette tapes can be sent to those who wish to record rather than write their recollections. Please ask your readers to contact the Task Force by phone (AUTOVON 464-1333/6244/5831/2052) or by letter: Headquarters, US Army Armor School ATTN: ATSB-Monograph, Fort Knox, Kentucky 40121.

GEORGE J. DRAMIS, JR.
LTC, Armor
Director, Armor Monograph
Task Force

FA Song

Dear Sir:

It was good to see again the **FA Journal** to which I contributed when COL Nye was editor and for years afterward. Thank you for the kind introduction to the Molly Pitcher piece. (July 1973 issue)

You may care to use the lyrics and music of my song, "Field Artillery Guns." The words are inclosed, and your bandmaster can make a score from the tape which was submitted in the song contest and is retained by Sill. Though my song did not win the competition, it may be worth including in our repertoire. It was written in 1942 when I was Adjutant of the FA RTC (Replacement Training Center) and it was often played by the band and sung.

A field artillery song book was once

published at Sill (I have lost my copy). It contained COL Griffin's "Mountain Battery" whose music, used for the winning song, is derived from "The British Grenadiers."

I venture another suggestion: an article on cannon miniatures in plastic made by a friend of mine. They run from ancient ones through the Long Tom. The maker is John Hathaway, 3606 Walker Ave., San Pedro, Calif. 90731, to whom you may write, using my name, if interested.

Fairfax Downey
West Springfield, NH

Field Artillery Guns

Words by Fairfax Downey, FA
Music by Murray Cohan, FA

I

Some prefer machine guns,
And some the rifle's crack,
And some the gun that has to run
Along a railroad track.
Some like anti-aircraft,
But the only ones
First, last, and always
Are Field Artillery Guns.

Chorus

When you march to the sound of the guns,
The guns will always be
The wheeled guns, the steeled guns
Of the Field Artillery.
Wreathed in the smoke of battle,
Laid for victory,
Our guns stand manned
For the land of the brave and the free.
When you march to the sound of the guns,
The guns will always be
The wheeled guns, the steeled guns
Of the Field Artillery.
Trucks and tractors will pull them.
They may be self-propelled.
Their motive force was once the horse,
When ground was gained and held.
Red guidons will lead them.
Hurling shells by tons,
On into action
Go Field Artillery guns.

Chorus

When you march to the sound of the
guns . . . etc.

*Fairfax Downey, in addition to being a retired redleg and supporter of the **Journal**, has written over 40 books and is considered by many to be a master in the field of military history. An article on cannon miniatures and related hobbies is being considered.*
Editor

Newport Artillery

Dear Sir:

I wish to call your attention to an error that was published in the July 1973 issue of **The Field Artillery Journal**. I refer you to a portion of paragraph 2, page 11 of the **Journal**, and I quote: "Since 1741 the town's tradition has included the Newport Artillery Company, which is acknowledged to be the oldest continuous commissioned military unit in the United States."

I am inclosing two copies of the Lineage and Honors of what is now the First Battalion, 201st Field Artillery of the West Virginia Army National Guard. You will note that the parent unit of this organization was organized on 17 February 1735, and has had continuous service since that date. The original of the Lineage and Honors was signed by Major General J. C. Lambert who, at the time of it's printing, was The Adjutant General for the Secretary of the Army.

The First Battalion, 201st Field Artillery, is still active, with units located in the following towns in northern West Virginia: Fairmont, Elkins, Morgantown, Keyser, Camp Dawson, and Kingwood.

I know of which I am speaking, for in addition to being the President of this Association, I am also the Battalion Commander of the First Battalion, 201st Field Artillery.

I would appreciate some comment on this in a future edition of your fine magazine.

ROY C. GOFF
President

The Lineage and Honors forwarded to us by LTC Goff do indeed support his claim. It looks as if the Newport Artillery Company has been outranked by six years. Editor

Artillery History

Dear Sir:

Congratulations on your **Journal** publication. I'm sure it will be a fine additional source of knowledge for the artilleryman.

I read the letter to the editor written by CPT S. W. Floca Jr. and although I think he "came down a little hard" on the staff, I agree with his point. It is necessary to make the artilleryman aware of his heritage as well as his future.

This historical orientation could be professionally linked with the Bicentennial Project underway. I would suggest a monthly column with such a theme as "This month 200 years ago." This would show the **Journal's** interest in the Bicentennial as well as keeping the artilleryman aware of his heritage in that war. Perhaps an article of 300-400 words with an occasional map, picture, or battle plan.

I would also want to offer my services in line with the above suggestion as my PhD work was in Revolutionary Artillery. I did my dissertation at N.Y.U. under the direction of Professor North Callahan who has the latest and best biography of Henry Knox entitled *Henry Knox, General Washington's General*. I would suggest Professor Callahan for the column except he is now retired and working on another project not connected with this period at all.

My dissertation revolved around John Lamb who rose to the rank of general in the Continental Artillery. He was considered second only to Knox in his profession. Lamb served in the war from the early unsuccessful invasion of Quebec through the final victory at Yorktown. He was wounded twice, taken prisoner, took

command of West Point after Arnold defected, and organized the artillery train that moved from the Hudson River in New York to Yorktown, Virginia. As a result of studying this man I have been attracted in my research to any and all items concerning the artillery in the Revolution. This academic background, plus my past ten years as a college professor and my Reserve Commission in the Field Artillery makes me feel I would be qualified as anyone in the field.

I would be interested in hearing your reaction to this suggestion and offer. Yours for a fine publication.

Lynn L. Sims

CPT, FA

Tarrytown, NY

We have written CPT Sims expressing interest in his idea. See also Yesterday's Journal, this issue. Editor

Mule Artillery

In response to our short article on the inside back page of the October-November issue on Mule Artillery, Mr. John Panhuise of Tulsa, Oklahoma, forwarded a copy of the South Bend Replicas, Inc. catalog which contains ordnance antiques and replicas. The president of South Bend Replicas, Mr. J. P. Barnett, was kind enough to allow us to reprint the following portions from the catalog.

Reports of "mule guns" all seem to sympathetically bespeak the predicament of the mule who discovers that he has been bilked into becoming a cannon carriage.

The *North English Record*, of North English, Iowa, presents the following 1903 remembrance of a '49er, the ancestor of one of our friends there:

The Indians were finally driven away by the firing of the old mule gun. This gun was made in Mexico and was used in the battle of Monterrey. The weight was 75 lbs., taking two ounces of powder and ½

pound of buckshot to load it. The gun was fastened to a block of wood then attached to a saddle on the back of the mule. This instrument . . . could be turned in any direction by the gunner who rode a mule walking by the side of the one which carried the gun. Mr. Mule was very much opposed to this noisy luggage at first. In time he grew accustomed to the sound, and would drop his ears (and) brace himself for the shock in an attitude resembling a saw-buck. When all was over, he would pick up his ears and bray . . .

Another episode involving a mule gun took place in Montana, when the citizens of Benton decided to demonstrate their defensive prowess to the Indians, just in case. The Indians were solemnly called to witness the demonstration and to take due note of the effect. Which they no doubt did.

The fuse was lighted. The hissing sound started the mule. The mule began bucking in a circle. The settlers broke and ran in panic, diving into the river or sprawling on the ground in terror. The Indians, who knew nothing about mule guns and only a little about their new neighbors, assumed that it was all part of the show, and stood quietly watching the demonstration of the white man's dazzling tactics, which were finally brought to a close when the gun discharged harmlessly into the ground.

Dear Sir:

The practice of transporting field guns on pack animals, except in isolated instances, did not become standard procedure in the United States Army until the Spanish-American War and Philippine Insurrection period.

(continued on page 63)



The Royal Artillery of the British Army

by
Colonel Norman Dodd (Ret.)

It was not until the 26th of May, 1716, that the Artillery became a full-fledged Regiment of the British Army. On that date, King George I signed the Royal Warrant which formed the first two permanent companies of artillery. However, the Gunners claim that their true ancestry dates from some six centuries before; certainly some crude field pieces were manned by British "Gonners" at the Battle of Crecy in 1346.

In 1486 these civilian "Gonners" became an organized body of artillerymen, with a total strength of twelve! This small nucleus expanded to the strength of 699,757 at the height of World War II—more than the total strength of the Royal Navy.

In the days of Henry VIII, fee'd gunners were used to man the coastal forts erected in 1539. Thereafter, if artillery was required in the field force, a "train of artillery" was organized especially for the campaign and was disbanded afterward.

After the signature of the Royal Warrant, Woolwich, about 12 miles from London, became the Home of the Regiment, which it has been ever since. The glittering chandeliers, the fantastic collection of silver, and the beautiful paintings in the Officers Mess are the pride and joy of the regiment, whose motto is "Ubique"—Everywhere—"Quo Fas et Gloria Ducant"—Where Right and Glory Lead.

In recognition of the magnificent service of all branches of the Royal Artillery—field, medium, heavy, air defence, locating, maritime, parachute, and commando "Everywhere," His Majesty King George IV assumed the title of "The Captain General of the Royal Artillery" and so became Head of the Regiment. Queen Elizabeth, soon after her coronation, continued this tradition and from time to time she visits units of the Regiment and dines with her officers in the Headquarters Mess amidst the dazzling display of uniforms and the splendour of the mirrored dining room. The day-to-day ceremonial and traditional duties of the Colonel of the Regiment are carried out by the Master Gunner, an ancient and honourable appointment held by a distinguished ex-officer of the Regiment. He is assisted by the Royal Artillery Institution and a Committee who between them manage the affairs of the Regiment, its clubs, messes, societies, and charitable funds, and help to produce the Journal of the Royal Artillery and the Regimental magazine, the Gunner.

Although some batteries carry honour titles awarded for exploits in battles and campaigns over the years—Plassey, Nery, The Rocket Troop, etc.—the Royal Artillery are proud to have no other Colours except their guns, and the Royal Horse Artillery, when on parade with their guns, have the honour of parading "Right of the Line."



The Gunners proudly wear their badges.

Since its formation, the Artillery has woven itself into the very heart of the Army. Artillery commanders and advisers are to be found at every level of command from the Ministry of Defence to the infantry company. No infantry commander at any level, be he a company or corps commander, considers making his fire plan without the advice and help of his attached artillery officer.

In a similar manner, the Director of the Royal Artillery (a major general) and his staff are the advisers on artillery matters to the various departments of the Ministry of Defence and to the Research and Development organizations.

Army group, corps, and divisional headquarters each include a senior artillery commander with an appropriate staff to coordinate, and when necessary, command the integrated and reinforcing artillery. This function is carried out at brigade headquarters by the commander and staff of the direct support artillery regiment and at battle group by the battery commander of the direct support field or medium battery. Observation officers are normally captains who work with and advise the company or squadron commander of the infantry or armour. These observation officers (FOO's), in the British system, have wide powers of calling for artillery support from all guns in range and this may include quite a proportion of the corps artillery. The mechanics of applying this fire, at least at divisional level, are well known and well practiced in peacetime in Germany. There is, of course, considerably more control at higher levels on the firing of tactical nuclear weapons, even after the political authority to use them has been given, but the command principles are the same. The artillery commander at each level also has control over the antiaircraft and non-gun, or missile, units, for example. The sound ranging and mortar locating troops, though, are guided and helped by the commanders of these units.



The Abbot in the high register.

Since earliest times there had been a constant search for guns and other equipments which fulfill so many conflicting requirements. They must have a long range but fire a powerful shell; be light but armoured; mobile yet carry a crew, the gun, and ammunition, quick into action but accurate in fire; be deployed dispersed but able to concentrate their fire; indeed, in each generation a research man's nightmare!

In the fifties, the Royal Artillery had to accept that their excellent 25-pounder field gun, which had been the mainstay of their field units since 1940, had become outdated and out-ranged in the modern environment. The Sexton self-propelled gun, a somewhat makeshift equipment used in British Army of the Rhine (BAOR), had also come to the end of its useful life.

To meet the dual requirements of fighting a full scale war in Europe whilst retaining an intervention capability elsewhere, the Royal Artillery introduced two principle weapons into their field artillery: the Abbot 105-mm self-propelled and protected gun for use in Central Europe and the 105-mm Italian pack howitzer for use in the Strategic Reserve and in the airborne forces. Both of these guns, the capabilities of which will discussed later, can fire the NATO standard ammunition.

The 5.5-inch medium gun with its distinctive "horns," which had done sterling service since the war years, was phased out in favour of the 155-mm, 175-mm, and 8-inch guns of American origin. Some of these guns and the Honest John rockets have a nuclear capability. Perhaps one of the greatest steps forward was the introduction of computerized fire control systems to

replace the laborious artillery board and slide rule work required to get a round onto the correct target.

In step with modern developments, the missile was fast replacing the gun in the antiaircraft role. First, the 3.7-inch AA gun disappeared in favour of the Thunderbird missile, and now the 40/70-mm Bofors is giving way to the BAC Rapier AA missile for defence against low-level attack.

By the sixties, the Royal Artillery had also abandoned its specific antitank role, handing it to the Royal Armoured Corps and the infantry although keeping an antitank capability by improvements to ammunition used by conventional artillery.

The Government's decision to change the emphasis of Britain's defence policy from a worldwide commitment to a NATO-Europe-oriented strategy had its effect upon the training, manning, and organisation of the Regiment. Though it had always been recognised that the principle threat to Britain's security came from the Soviet Union in Europe, it was a fact of life that the only places where "guns became hot" had, since the war, been in Malaya, Borneo, Korea, Aden, Radfan, and the Persian Gulf, where Britain had assisted in peacekeeping duties against insurgents, and in Korea, against a fullscale invasion. It was for this reason that it was decided, as far as possible, to rotate regiments both by role and country to give all ranks an opportunity to gain experience in action and to give them an opportunity also to serve in more exciting places than the BAOR. This system is only possible in a long service Regular Army, because it requires periods of retraining on different equipments and different roles.

The exceptions to this rotating rule are the antiaircraft missile and surface-to-surface Honest John regiments, which remain stationed in Germany but, whose officers and other ranks are rotated every few years.

To attempt to meet the many and varied requirements placed upon the Regiment, it now consists of:

British Army of the Rhine (BOAR)

Major General Royal Artillery (MGRA) and staff at HQ BAOR. He becomes an artillery adviser to the NATO commander in war.

Commander, Corps Artillery (CCRA) (BRIGADIER), HQ I (BR) Corps with a staff of one lieutenant colonel and five staff officers covering nuclear operations, artillery operations, intelligence and counter bombardment, and logistics.

1st Artillery Brigade, commanded by a brigadier and small staff of:

Two missile regiments

Two heavy regiments

One locating regiment

7th Artillery Brigade, commanded by a brigadier and

small staff of:

One heavy AD regiment

Two light AD regiments

Commanders Royal Artillery (CsRA) (Brigadiers) of 1st, 2nd, and 4th Division, each with:

Two field regiments

One medium regiment

Each of the nine brigades in the Division has its own brigade artillery intelligence officers, who handle counter bombardment duties on behalf of the commander of the direct support regiment. The latter is the artillery advisor to the brigade commander and has his headquarters at brigade headquarters.

There is also one Artillery Band stationed in Germany.

In the United Kingdom

The Director Royal Artillery, located at Woolwich.

The Artillery commander and staff at UK Land Forces.

Brigadiers at the present geographic commands.

Commander, Artillery 3rd Division (CRA), and staff with:

One medium regiment

One light AD regiment

Three airportable light regiments (one per brigade)

16th Parachute Brigade—One parachute light regiment

Commando Brigade—One commando light regiment

General Reserve—One amphibious observation regiment

The King's Troop Royal Horse Artillery, employed on ceremonial duties in London and equipped with horse-drawn 13-pounder guns of World War I vintage.

The Royal School of Artillery, Larkhill, with one field Regiment and one light battery assigned to the Allied Command Europe Mobile Force, and one locating battery.

In Hong Kong

One light regiment of two 105-mm pack batteries and one battery of 5.5-inch medium guns.

In Singapore

One light battery as part of the Australian/New Zealand/United Kingdom artillery regiment in support of the ANZUK Brigade.

Reserve Forces of the Territorial and Army Voluntary Reserve stationed in the United Kingdom.

23rd Artillery Brigade with commander and staff and:

Two medium regiments, each with three batteries

Three light AD regiments, each with two batteries

One parachute light battery

Two observation batteries, which supply forward observation officers in time of war.



The Cyberline Mortar Locating Radar is slated to replace the Green Archer.

One officer-producing battery of the Honourable Artillery Company.

Since 1966 the field regiments in BAOR have been equipped with the Abbot 105-mm SP gun, which will remain in service until the mid-eighties. There are three batteries of six guns each in a regiment. The gun is mounted in a standard chassis of the new FV 430 range. It can reach out to 17 km, firing the British-designed alloy 33-pound shell. All the normal types of conventional ammunition are supplied: HE, smoke, armour-piercing HESH (high explosive squash head), and illuminating. Forty rounds are carried in the turret and a further 200 are carried in its supporting Stalwart limber vehicles.

The Abbot weighs 15 tons, has a speed of 29 mph, and is powered by a Rolls Royce 240-BHP multifuel engine. The detachment consists of six men, of which four—the No 1, the layer, the loader, and the driver—travel with the gun. The armour provides the detachment and ammunition protection against small arms and shell fragments. The barrel had a particularly long life, over 10,000 rounds, and the firing system is very reliable. The Abbot has some minor faults: the internal situation is very cramped, making accurate laying somewhat difficult; and the system of checking oil levels in the power plant is awkward. Intercommunication between the guns and the command post is still by telephone line, laid by hand, or radio. However, it must take its place amongst the best SP guns in the world when it comes to handling, reliability, and serviceability.

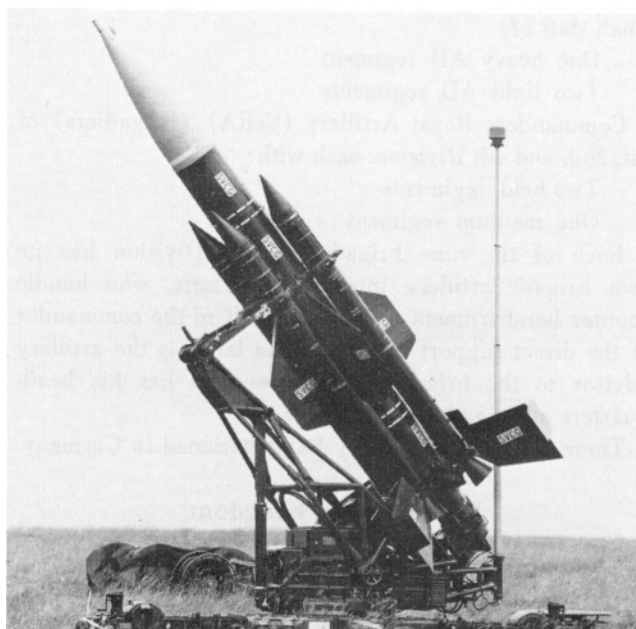
The regimental and battery staffs are carried in the FV 432 range of APC's, and the observation officers use either APC's or Centurion tanks, which are soon to be replaced by the Chieftain, as used by the Royal Armoured Corps. Communications are lavish and permit full and close contact not only between the guns, the various OP's, and artillery headquarters, but also with the infantry and armour being supported. In many battles it is the artillery communications which have "saved the day" for the infantry commander. The Gunners have an enviable reputation of always "being through."

Mortar-locating troops are attached to the field regiment; they use the successful Green Archer radars and computers, which can locate enemy mortar positions out to 10 km after the first bomb is fired. They were found to be very effective in Sharjah, where locations were obtained, to the dismay of the dissidents, whilst the first bombs were still in the air. The Green Archer will be replaced by the lighter and even more effective Cymbeline.

The medium regiments in 1 (BR) Corps are organic to divisions as general support regiments. Each has two batteries of 155-mm SP guns (six guns per battery), one battery of four 8-inch guns, and their own forward observation officers mounted in APC's. The 8-inch guns carry only a small amount of conventional ammunition, because they are the divisional nuclear weapons. The 155-mm is the US M109; it is a most effective medium gun and will shortly have a nuclear capability. It fires a 95-pound shell to a range of 14½ km and uses all normal types of ammunition, with 112 rpg carried on the gun position as the normal load.

To provide the "copy book" allocation of one close support field battery to each battle group, further Abbot batteries are required. This is because the brigades in 1 (BR) Corps are now "square" formations, each having two infantry battalions and two armoured regiments. Each brigade can provide four battle groups; therefore, two 155-mm batteries are normally placed in direct support of the fourth battle group in each of the two brigades to overcome the problem of providing close support for eight battle groups with only six batteries of Abbots. This shortage of artillery, purely for economic reasons, to some extent can inhibit the very close cooperation and friendship that has been built up between field regiments and their "own" infantry and armoured units—an important factor in the system of artillery support in the British forces.

The two corps general support heavy regiments are equipped with the US 175-mm SP M107, which fires a 147-pound shell to a range of 32 kms. There are four guns in each of the three batteries, with 122 rounds per gun. These guns are very mobile and are said to use the

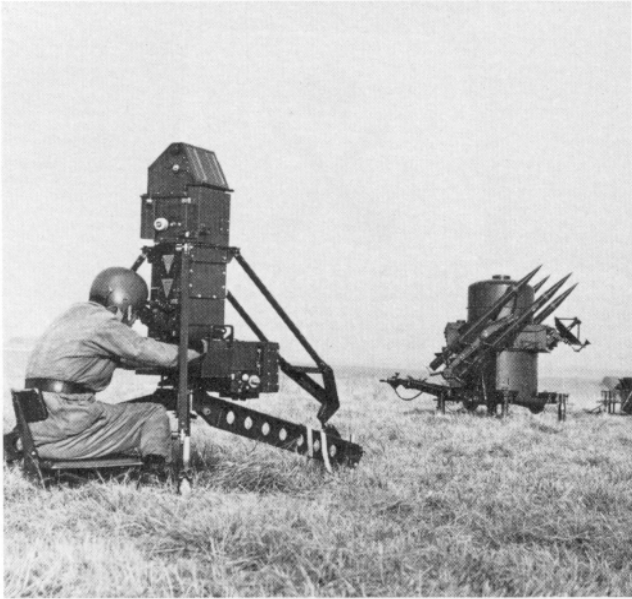


The Thunderbird handles high altitude air defense.

same engine as the Greyhound buses which race across the United States. It is very reliable and robust but not too accurate at its maximum ranges. The chassis is fully tracked and has a road speed of 30 mph. The SP mounting provides an immediately level platform, and it can be brought into action in a few minutes. Unfortunately, there is no protection for the crew of 11 men, 8 of which travel on the gun. The remainder travel in the British-built, go-anywhere Stalwart logistic vehicles that now form the major part of the wagon train for the artillery and armour of BAOR.

These regiments and the nuclear Honest John regiments are grouped with the locating regiment in the 1st Artillery Brigade. It is their task to provide general support and counter bombardment over the whole corps front. The locating regiment, using drones and sound-ranging bases, help to find the targets for the heavy regiments and also provide the meteorological information needed. A possible shortcoming of the general support regiments is their lack of organic F00's (which the direct support regiments do have); because of this, fire orders must be passed via the artillery brigade headquarters for counter bombardment missions or from the F00's of other support regiments over radio nets of the Commanders, Royal Artillery, based at divisional headquarters.

The Royal Artillery no longer has its own air OP troops, although there are trained artillery pilots in the light aircraft/helicopter squadrons at brigade and division headquarters who carry out target engagements.



The new BAC Rapier is a real breakthrough in low level air defense.

This system is not very satisfactory, but it is brought about by the need for peacetime economics.

The 175-mm gun is a purely conventional weapon and, therefore, the nuclear capability is supplied by the well-known Honest John rocket, with its limited range of 35 km. It is to be replaced in the next few years by the US Lance.

The heavy air defense regiments in BAOR are still using the very effective, ageing Thunderbird. The missile can reach 50,000 feet; it has a solid-fuel motor, and a semiactive homing guidance system. With a range of 40 to 60 km, it can successfully cover the whole corps area; an advantage not enjoyed by any other corps in NORTHAG, which must rely on the Hawk/Nike belt (that does not extend to the FEBA). In peacetime, each regiment has 12 launchers, but these will be augmented in an emergency. The surveillance radar, the No II Mk I, displays to 200 km. It is a good system, though it requires a large number of vehicles to make it mobile. So far there is no replacement in the offing.

The light AD regiments in BAOR and elsewhere still use the 40/70-mm Bofors rapid-firing gun, with a ceiling of 7,000 feet and a range of 2,300 metres. Guidance is by the FC 7 radar, with IFF. The radar, which is deployed alongside the gun acquires up to 15.5 km and tracks at 9 km. This gun in its various forms has given good service for about 25 years but is now to be replaced by the BAC Rapier system. The Rapier, which is also being given trials in the United States and elsewhere, is a weapon of great promise. It incorporates a search radar that automatically detects and interrogates the target; if no

friendly response is received it sounds an alarm. At the same time, the optical head of the tracker and missile launcher are aligned on the target. The operator sees the target in his sight and switches to manual tracking. He then fires the missile and continues to track the target; if he tracks the target accurately, the missile will strike the target. The Rapier can have a "button on" radar which will give it a night and bad weather capability. The fire unit is mounted on a trailer towed by a Land Rover, which carries the tracker and missiles; it is, therefore, very mobile.

The Rapier will be augmented by the shoulder-fired Blowpipe missile for use against low-flying aircraft. The Blowpipe has a capability similar to that of the Redeye, and since it is not a heat-seeking missile it can be fired at an approaching aircraft. It will be artillery manned and will be provided on a scale of four per battle group.

The light regiment of the Strategic Reserve and those deployed in the Far East use the Italian-designed 105-mm pack gun/howitzer. There are 18 guns in each regiment and two OP parties in each battery. The OP parties are carried in Land Rovers or Ferret scout cars, as appropriate to the task and their radios can be man-packed if required. This gun has given fine service throughout the world for the last ten years. Unfortunately, it is insufficiently robust, as it was never intended to be towed at high speed over rough country, and its range of 10,000 metres (7,000 at high angle) is too short. It is being replaced by the newly-accepted, British-developed 105-mm, which will fire the same ammunition as the Abbot to 17,500 metres. It is a remarkable gun and should become one of the "great guns" of the Royal Artillery. The carriage is welded and is made from a special metal that is resistant to both rust metal fatigue and is able to "flex" when the gun is fired. The barrel is of a totally new design, being of thin-walled, autofrettaged construction in high yield steel. The wear on the barrel is negligible; therefore, the muzzle velocity of the weapon will hardly vary during its whole life. It weighs less than the old 25 pounder, fires a 35-pound shell, is air-portable, and is easily towed by a Land Rover. It is a real breakthrough in design and construction.

The Reserve Forces' medium regiments still have the wartime 5.5-inch gun howitzer but will soon receive the new 155-mm towed gun with a range of 24 km. The light AD regiments will continue to use the 40/70 Bofors for some years but will eventually get the Blowpipe.

These units are designed to reinforce 1 (BR) Corps in time of war as do the observation batteries. The OP parties from this regiment join their wartime units for their annual 14 days training as well as on some weekends.

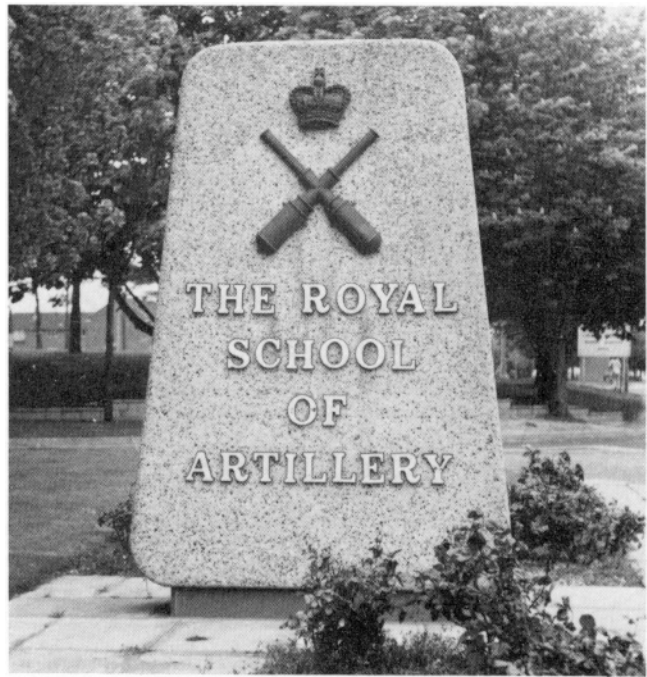
The Commando light regiment usually has some of its batteries embarked in support of the Royal Marines on Commando ships of the Royal Navy (HMS Albion and HMS Bulwark). The personnel of these batteries carry out the full commando course at the Royal Marine Training Centre and wear the green beret. They and the red-bereted parachute batteries are the elite of the Royal Artillery.

The parachute regiment enjoys "Royal Horse Artillery" status. This status dates from the earliest days of artillery, when "galloping gunners" had to keep up with the cavalry and be able to bring fast and accurate fire to bear, often in full view of the enemy. The officers and men were, and still are, specially selected for RHA duty on the basis of competence, quick thinking, and efficiency. After their selection, they are posted to one or other of the regiments with RHA status. These units are expected to set an example of efficiency, competence, and turnout for the King's Troop, which carries out ceremonial duties in London, wearing their colourful dress and riding their six-horse teams are the outward signs of the Regiment—they are constantly in the public eye. Besides being faultless in their riding and drill, they must also qualify annually on modern artillery equipments at a practice camp.

This RHA system of an elite within a regiment is considered by some officers to be an outdated anachronism. It tends to drain off the best officers and NCO's from other regiments where they are badly needed. It is self-perpetuating, as officers with RHA Jackets, as they are called, often reach the highest positions in the Artillery and the Army. The controversy has continued for years past and will probably continue in the future. In the opinion of the writer (who got his Jacket!), the system is divisive and should be abolished except for the Commandos and the Parachute units, who are indeed elite by their training and courage.

Great Britain, with its long tradition of beach landings and amphibious assaults, still retains small intervention forces who may need to be supported by naval gunfire. To assist in the control and direction of this fire, Royal Artillery had a forward observation unit that can supply nine naval gunfire support forward observation parties. Six of these parties are stationed in the UK, two in Malta, and one in Singapore when they are not embarked in Her Majesty's ships.

To assist in the maintenance of the various equipments used, to provide the rear link to brigade or division, and to cook for the unit and look after the personnel's health, education, and spiritual welfare, every Regiment has its attached troops. The Royal Electrical and Mechanical Engineers provide the workshops; the Royal Signals, the rear link only; the Army Catering Corps, the cooks; the



The Artillery School is the technical heart of the regiment.

Royal Army Education Corps, a sergeant instructor; the RAMC, the doctor and orderlies; and there is normally a chaplain attached. These subunits and individuals are commanded by the Artillery regimental commander but are under their own head of service for technical matters. In peacetime, the doctors and chaplains are sometimes provided on a station basis rather than to individual units.

What of the officers and men of the Gunners? At present, with the exception of junior officers, the Regiment is nearly up to its peacetime establishment and voluntary recruiting has been satisfactory over the last few years. Most officers enter the Regiment through the Royal Military Academy at Sandhurst, either with short service or regular commissions, or from the universities as graduate entrants. Some of the intake to the Royal Military Academy will later take BS degrees at the Royal Military College at Shrivenham, the Army's University, or at civilian establishments. All entrants to the Regiment must complete a full 5 month artillery officers course at the Royal School of Artillery at Larkhill on Salisbury Plain. Many of these officers will return to the School to attend further specialised technical and employment courses in field, locating, air defence, tactics, and communications appropriate to their ranks. Some will become true artillery specialists and attend the Long Gunnery Staff Course, which lasts 1 year. These officers of the captain and major ranks will, on graduation, become

gunnery instructors and be employed at schools, commands, and firing camps before returning to units or assuming technical staff appointments. Other officers will complete the artillery tactics courses for battery commanders and the senior officer courses for lieutenant colonels destined for higher ranks in the Army.

Men join the Regiment either directly from civilian life or from the Junior Leaders Regiment RA. This regiment accepts boys and gives them academic schooling in a military environment with emphasis on leadership, good citizenship, sports, and self respect. On reaching the age of 17½ they can join the Royal Artillery as adult soldiers and, in many cases, soon become NCO's. It is from these young men that many of the future warrant officers are obtained.

All recruits carry out their initial training at the Depot in Woolwich, where they are given appropriate training for their employment as gun layers, drivers, signallers, technical assistants, etc., before joining regiment. In this long-service force, no man is allowed to rest on his laurels after passing the tests for his first speciality; all must learn two trades and often more. After completing the unit training, the more promising of the young men are sent to the School to improve their skills. Sergeants with an aptitude for instructing attend the year-long NCP's Gunnery Staff Course and become assistant instructors in gunnery (AIG), with the rank of warrant officer Class II. The position of AIG is one of great prestige and a warrant officer II, once qualified as an AIG, will remain one for the rest of his service. He may be promoted within the gunnery staff, and he may be commissioned as a technical instructor in gunnery. The AIG's are employed also at the schools, commands, and firing camps as guides, instructors, and mentors to the Regular and Reserve regiments. They are a devoted and respected body of men.

The Royal School of Artillery is the technical heart of the Regiment. It has modern and well-equipped buildings on the edge of the Larkhill Ranges on Sailsbury Plain. It is commanded by a Brigadier, and has a strength of 120 officers, 174 senior NCO's and personnel, and about 300 civilians. The School can handle 150 officers, and 240 NCO and gunner students at one time. In June 1972 there were more than 50 different courses "in the board" in the School.

There are four principle wings in the School—Gunnery, Air Defence, and Tactical Employment Wings, each under the control of a colonel, and a Signals Wing, under a lieutenant colonel. Jointly, they are responsible for assisting the various staff branches in the testing and development of new equipments and techniques.

Liaison officers from France and Germany and exchange instructors from the United States, Australia,

and Canada ensure close cooperation with the artilleries of Allied countries and assist overseas students attending courses. The School is high on the priority list for all senior artillery officers visiting Britain.

Although the School is responsible for teaching both field and air defence techniques, the range is not suitable for firing AD guns and missiles except for the breakup rounds used by the Bofors. Artillery firing is carried out at Manorbier, in Wales, and on the Island of Benbecual, in the outer Hebrides. Benbecula is used also by US missile regiments from Germany. Artillery practice is also carried out at Sennybridge, in Wales Otterburn, in the north of England; and on Dartmoor, in the southwest. The regiments stationed in Germany use the NATO ranges at Bergen Hohne, where a small detachment from the School is situated. They also, by arrangement, use the US firing areas of Grafenwoehr, in Southern Germany, and elsewhere. The ACE Mobile Force Battery practices annually with units of other nations in the Annual Barbara exercise and, with permission of the Norwegian MOD, in Arctic Norway.

The Northern Ireland situations has played havoc with the artillery training of the Royal Regiment. Each unit takes its turn to carry out a 4-month emergency tour in Ulster, where the unit is employed on peacekeeping duties, operating as infantry. It is dangerous work; to date, over 100 soldiers have been killed on the streets by terrorists. Before going to Ulster, units must go through careful training in riot drill, boobytraps, and patrolling. While this is taking place and during the tour of duty, technical training has to be abandoned. Even though service in Northeast Ireland is hard, dangerous, and uncomfortable, it is popular with the officers and men, who find it an exciting change from normal regimental soldiering. Because of the amount of independent section work required under the command of junior leaders and the necessity of becoming thoroughly involved in the area allocated, commanding officers are unanimous in saying that "as far as junior leadership is concerned Ulster is the best thing that ever happened."

The re-equipment programs started in the sixties should have the Regiment well capable of holding its own with the artilleries of the world for the period to the eighties. In the Abbot and the new 105-mm, the field branch has reliable and sturdy weapons with reasonable ranges. By the mid-eighties, the Anglo-German-Italian SP 155-mm now being developed should be in service as the replacement for the Abbot and the present SP 155-mm medium gun used in Europe. The 8-inch, assisted by missiles, will take care of the tactical nuclear requirement. The Rapier and Blowpipe low-level AD weapons are world leaders, though the Thunderbird may require improvements and modifications. Improvements to artillery competence in

the intervening years will lie in the development of laser rangefinders for use at every OP, in improved drones and target-locating radars, in the use of movement-locating radars at OP's, in data processing computers, the automatic transmission of information, and improvements to ammunition rather than on major equipments. An entirely new system of radio communications now under trial will do away with the time honoured regimental net systems.

It is however, mainly on the training, initiative, and enthusiasm of the officers and men on which the future of the Regiment depends. The Artillery has a long tradition of developing an independence of mind and an acceptance of responsibility by junior officers and NCO's. Many times, young captains and lieutenants at OP's in the forward areas have on their own initiative successfully fired guns of the whole divisional artillery or taken over command of leaderless infantry or armoured units. Single guns have been operated independently under their own NCO's in the jungles of Borneo and the deserts of the Middle East. The Victoria Cross, Britain's highest award for bravery, has been awarded to NCO's and gunners who have fought their guns, their Colours, to the end against overwhelming odds.

It is upon the feats of such men and the long independent traditions of the batteries, as much as upon the excellence of

their equipment, that the morale and well being of the Regiment depend. "Once a Gunner, always a Gunner" is a proud tradition of the Artillery which, with its Charitable Fund (169 disabled-people houses and 299 branches of the Royal Artillery Association, located in every town in Britain) tries to ensure that no Gunner will ever fall on hard times. The camaraderie and fellow feeling between the Gunners of all generations is truly remarkable; the blue artillery tie with the red zigzag is a passport to friendship throughout the British Commonwealth and with every artillery in the Free World.

"Everywhere, Quo Fas et Gloria Ducant."

Long may it remain so!



Colonel Norman L. Dodd, United Kingdom Army, Ret. has served NATO forces in several countries and has a first hand knowledge of armies throughout the world. With combat experience in Egypt, West Africa and Burma, he has served as Senior British Liaison Officer at USAREUR headquarters, and as head of the British Defense Liaison Staff in Washington, D. C.



January-February 1924

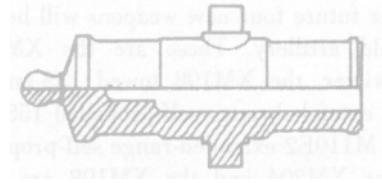
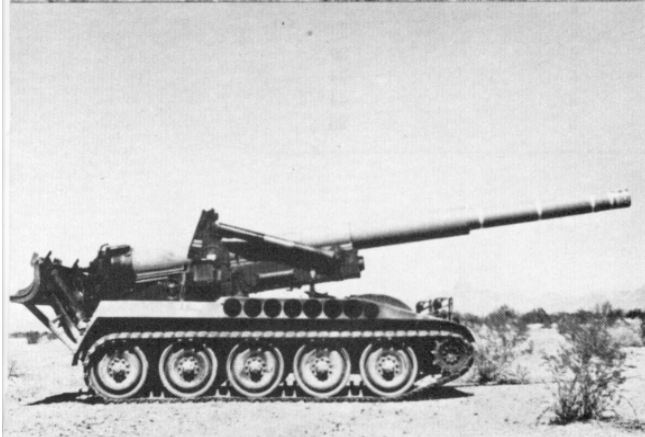
- The War Department has approved the Regimental Coat of Arms and Insignia (crest) of the First Field Artillery for wear on the uniform.
- Major General William S. Snow has rendered part one of the Annual Report of the Chief of Field Artillery. In the report, General Snow states that "activities during the past year have been directed not only to increasing the efficiency of the Regular, Reserve, and National Guard Field Artillery but also to preparing these components to meet the necessary expansion and changes incident to a mobilization." General Snow also reports that there is a significant shortage of personnel in higher field grades with the branch having only 35 percent of the colonels and 63 percent of the lieutenant colonels it requires. Significant shortages also exist in enlisted ranks.
- Training regulations governing service of the piece have

been published for three models of the 75-mm gun:

TR 430-15	Gun, model 1897
TR 430-20	Gun, model 1916
TR 430-25	Gun, model 1917

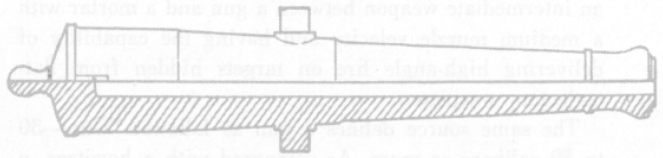
- Fairfax Downey's latest contribution to the **Journal** is a hilarious poetic tale—Redleg style—of "The Birth of the Cigarette."
- On the 28th of last September, at 12:30 A.M., Battery "C" of the 76th Field Artillery completed the third march that it has made in the last thirteen months between Fort Douglas, Utah, and Fort D. A. Russell, Wyoming, a distance of approximately 500 miles.

(Editor's Note: The 76th Field Artillery is still marching. See "Right by Piece," July 1973 issue of the Field Artillery Journal.)



Howitzer: a short barreled cannon firing a low powder charge at higher elevation than a gun, throwing diverse type projectiles; cannon intermediate between a mortar and a gun.

Howitzer or GUN ?



Gun: A long barreled cannon firing a solid shot by means of heavy powder charge through a flat trajectory with a low angle of elevation. Used for battering heavy construction and, through ricochet fire, dismantling enemy cannon.

by
James W. Porter

Artillery design and capabilities along with the definitions of guns and howitzers have evolved since 1845. Although the distinctions between the two have evolved, some still remain. The author reviews the current definitions in relation to the new weapons systems scheduled for the field artillery.

In the near future four new weapons will be introduced into the field artillery. These are the XM204 towed 105-mm howitzer, the XM198 towed 155-mm howitzer, the M109A1 extended-range self-propelled 155-mm howitzer, and the M110E2 extended-range self-propelled 8-inch howitzer. The XM204 and the XM198 are totally new systems, whereas, the M109A1 and the M110E2 are simply "up-gunned" versions of the current M109 and M110 howitzers, respectively. These four new weapons have one thing in common—they have longer tubes than do our current weapons of like caliber. Even before the weapons have been issued to the field, the question of whether they are guns or howitzers has already been raised. This article is being written with the intention of answering this question before it becomes a matter of controversy.

The first order of business is to look at some of the traditional definitions of guns and howitzers that until now have been used to distinguish between the two. The term "caliber" must be understood before any definition is meaningful. The caliber of an artillery weapon is the diameter of the bore excluding the depth of rifling; in other words, it is the diameter of the bore measured from land to opposite land. The term is also used as a unit measure to express the length of a cannon, measured from the face of the breech to the muzzle. A unit of one caliber in length is equal to the diameter of the bore.

The US Military Academy textbook *Elements of Armament Engineering* defines a howitzer as being 20 to 30 calibers in length. It further defines a howitzer as being an intermediate weapon between a gun and a mortar with a medium muzzle velocity and having the capability of delivering high-angle fire on targets hidden from flat-trajectory weapons.

The same source defines a gun as follows: "Gun—30 to 50 calibers or more. As compared with a howitzer, a gun has a longer barrel, higher muzzle velocity, a flatter trajectory, and a more limited maximum elevation (except

antiaircraft guns). It is used for long-range fire or for delivery of fire requiring a flat trajectory or high velocity." In AR 310-25, *Dictionary of United States Army Terms*, the definition of the word "gun," although stated a little differently, is essentially the same as that presented above.

Let's spread out these differences where we can examine them a little more closely and add a few traditional differences that have been accepted over the years by artillerymen. When compared to howitzers, guns have—

- longer tubes—over 30 calibers in length.
- flatter trajectories requiring lower masks.
- higher velocities contributing to shorter tube life.
- greater range probable errors.
- no range overlap between charges in high-angle fire.

Keeping these differences in mind, let's compare caliber lengths of the new weapons with lengths of the weapons being replaced (fig 1).

Using only the classic definition of 30 to 50 caliber lengths for a gun, you can readily see from the last column of figure 1 that all of our replacement weapons are guns. However, this isn't the whole story. Unless we look at the other factors, we put ourselves in the position of the three blind men of fable who were asked to describe an elephant. The first one felt the elephant's leg and decided the creature must look like a tree. The second felt the elephant's side and thought he must be like a wall. The third felt the animal's tail and decided the beast clearly resembled a rope. Obviously, the conclusions of the blind men were drawn from a too cursory examination of the subject.

Therefore, let's examine the other differences between guns and howitzers, beginning with the flatter trajectory

COMPARISON OF CALIBER LENGTHS*

<u>Weapon</u>	<u>Tube length (inches)</u>	<u>Bore diameter (inches)</u>	<u>Caliber length of tube</u>
XM204	154	4	38
M102	124	4	30
XM198	238	6	39
M114A1	140	6	23
M109A1	238	6	39
M109	142	6	24
M110E2	326	8	41
M110	202	8	25

*All values rounded off for convenience.

Figure 1.

COMPARISON OF PE_r

Range (m)	M109	M109A1	155-mm Gun	
	Charge 7	Charge 7	Normal charge	Supercharge
	PE _r	PE _r	PE _r	PE _r
5,000	19	16	20	20
6,000	20	19	21	21
7,000	22	21	23	22
8,000	24	23	25	23
9,000	25	25	26	24
10,000	27	26	27	25
11,000	29	28	30	26
12,000	31	30	32	27
13,000	33	32	35	29
14,000	36	34	37	31

Figure 2.

of the gun that requires a low mask, particularly when weapons are fired at short-range targets. Elevation for the old 155-mm gun M1 (Long Tom), firing normal charge, range 3,000 meters, is 44.5 mils. To fire at the same target with the M109 howitzer using charge 2 requires an elevation of 428.1 mils. A low mask is certainly a requirement for the gun but not for the M109 howitzer.

Next comes the matter of higher velocities and shorter tube life associated with guns. One has only to compare the 7,500-round effective full charge (EFC) tube life of the M109 howitzer with the 700-round EFC tube life of the old 155-mm gun M1 to know that the higher velocities of guns do contribute to shorter tube life.

The theory that range probable errors of guns are greater than those of howitzers just isn't so. Undoubtedly, such a statement will raise the eyebrows of some oldtimers who have had their share of trouble trying to adjust the fires of the 155-mm gun. Although this theory is commonly accepted by artillerymen, it appears to be a misconception. It is difficult to find a common ground in both range and zoning solutions for a comparison of guns and howitzers; however, some comparison may be made. For example, a comparison of the range probable errors for the M109 howitzer, the M109A1 howitzer, and the old 155-mm gun M1 at comparable ranges shows the difference in range probable error to be insignificant (fig 2).

In fact, the 155-mm gun firing supercharge (the Long Tom could fire only two charges, normal and supercharge) shows up better than the M109 howitzer at ranges between 8,000 and 14,000 meters. It is true that actual probable errors measured on the ground increase with range; however, this is not only a peculiarity of guns—it is also true of howitzers.

As howitzer range capabilities increase, there is a corresponding increase in range probable error. Recognizing this fact, requirements documents for developmental weapons state range probable error requirements as a percentage of range.

Figure 3 illustrates that when range probable errors are considered as a percentage of range and a comparison of the M109 howitzer, the 175-mm gun, and the 155-mm gun M1 at maximum range is made, the differences in probable error are again insignificant.

Another factor that has probably led to the association of large probable errors in gun-type artillery weapons is the smaller angle of fall related to the flatter trajectory, particularly at shorter ranges. This results in a much larger change in range for a one mil change in elevation. As an example, when firing the M109 howitzer, charge 7, at a range of 12,000 meters, the change in range for a

COMPARISON OF PE_r AS A PERCENTAGE OF RANGE

Weapon	Range (meters)	PE _r (meters)	Percentage
M109	14,000	36	0.257
175-mm gun	32,000	72	0.225
155-mm gun	23,500	61	0.259

Figure 3.

one mil change in elevation is 14 meters. At the same range when firing the 155-mm gun with supercharge, a one mil change in elevation results in moving the fall of shot 38 meters. This is not of particular significance unless small errors are made in laying for elevation or in leveling bubbles on the weapon. When such errors occur, as they often do, particularly under battlefield conditions, a two or three mil error in elevation of the gun is much more obvious on the ground than it is with a howitzer, e.g., from 76 to 114 meters with the gun vs from 28 to 42 meters respectively for the howitzer at a range of 12,000 meters. As range increases for the gun, the angle of fall becomes greater and the difference between gun and howitzer lessens in this respect.


The last distinction between guns and howitzers to be discussed is the lack of range overlap for the gun between charges in high-angle fire. This is due primarily to the very few charges available for gun systems (two charges for the 155-mm gun M1 and three charges for the 175-mm gun). For example, in high-angle fire with the 155-mm gun M1, there is a range gap of 2,200 yards between normal and supercharge. The 175-mm gun has a high-angle range gap of 3,000 meters between charges 1 and 2 and 6,600 meters between charges 2 and 3. On the other hand, many more charges are available for howitzers, resulting in much greater flexibility of employment.

So where does all this leave us? To this point, with the exception of range probable error, we have succeeded only in pointing out the traditional differences between guns and howitzers, but we have finally arrived at the real purpose of this dissertation. In modern field artillery weapons, there is no longer a clear distinction between guns and howitzers. This lack of distinction has come about through a process of evolution and hybridization. Without exception, the new family of weapons (XM204, XM198, M109A1 and M110E2) are hybrids that retain all the characteristics of the howitzer and yet incorporate certain characteristics of the gun; namely, higher muzzle velocities, longer tubes, and greater range.

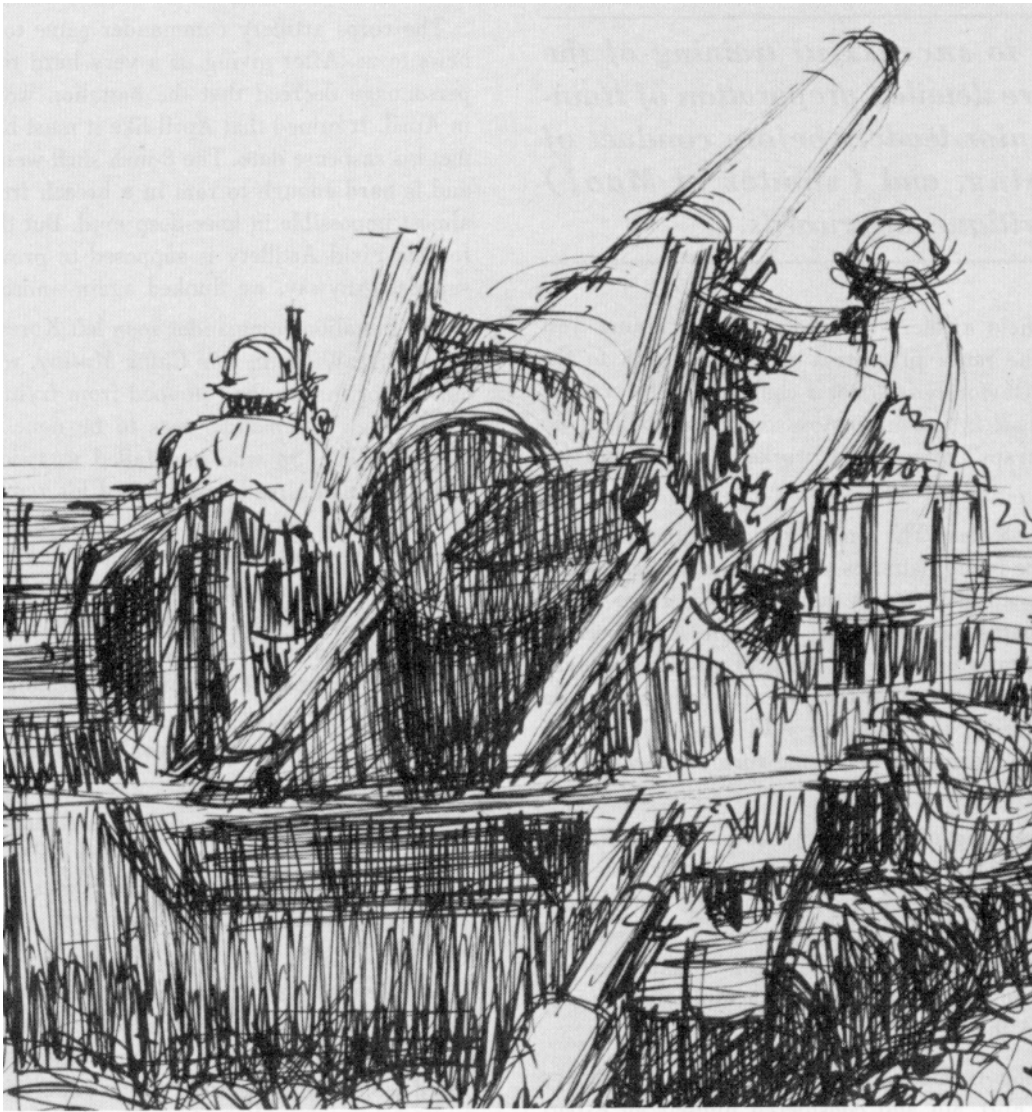
It is too early in the development process of most of the new family of artillery weapons to make direct comparisons of characteristics. We can, however, use the M109A1 howitzer as a basis for comparison, since firing table data are available for this weapon and the other weapons are closely enough related to the M109A1 to make the comparison valid.

Using the differences between guns and howitzers pointed out earlier, we will examine the M109A1 and see whether it should be called a gun or a howitzer. Concerning tube length—the 39-caliber length of the M109A1 tube is clearly in the gun category. As you recall, the flatter trajectory of a gun requires a lower mask to fire on short-range targets. As pointed out, a 155-mm gun required an elevation of 44.5 mils to fire at a range of 3,000 meters, whereas the M109 howitzer required an elevation of 428.1 mils to fire at the same target. The M109A1 firing charge 2 needs an elevation of 301.8 mils to fire at the same range. This elevation is much more closely related to that of the howitzer and far less restrictive than that of a gun. In the matter of higher velocities and shorter tube life, the M109A1 howitzer has an EFC life of 5,000 rounds. This tube life is less than the 7,500-round life of the M109 howitzer but a great deal more than the 700-round EFC life of the 155-mm gun. It is worth noting also, that the 5,000-round tube life is at charge 8. At charge 7 and below, the tube life will be comparable to that of the M109. Concerning range probable error, figure 2 shows that the probable error for the M109A1 compares favorably with the probable error of the M109 at comparable ranges.

Finally, we come to the last major difference mentioned, that of range overlap between charges in high-angle fire. By retaining all the charges associated with howitzer-type weapons, and in some cases, by adding additional charges to achieve extended ranges, we have retained the flexibility of overlapping ranges between charges in high-angle fire, not only with the M109A1 howitzer but with all of our new family of weapons.

So that's it. The answer to the basic question is that the weapons being introduced and to be introduced into the field artillery are howitzers—not guns. In order to achieve longer ranges, we have simply incorporated some desired characteristics of the gun while retaining all the characteristics of the howitzer. 

Mr. James W. Porter is a retired Army Major who served in Europe during World War II and in Vietnam just prior to retirement. He is presently the Equipment Specialist for Artillery Materiel in the Weapons Division of the Office of the Deputy Assistant Commandant for Combat and Training Development, US Army Field Artillery School.



Training The Trainer

by
COL William L. Hauser

The problems of determining how to train and training the trainer are neither new nor insoluble. Here is how one battalion solved the problem by a return to basics, decentralization, and innovation.

The keys to successful training of the pieces were detailed preparation of training by junior leaders before conduct of the training, and (shades of Mao!) mutual critique afterwards.

Failing a field artillery battalion Army Training Test and failing the retest presents a challenging task to the unit trainer. Obviously it is not a challenge to be actively sought; the task is not an envious one. But "pulling up on the bootstraps" offers some workable techniques for training.

The place—Korea. The time—Spring, a decade or so ago. The three firing batteries of the battalion had passed their ATT's with good scores the previous October. But a five-month hiatus preceded the battalion ATT because winter in Korea is no time for much of anything. Maybe that wasn't the reason since the unit did have short field exercises. Anyway, the battalion ATT wasn't held until March. In the meantime, personnel turn-over was about 50 percent.

At the beginning of March, the battalion calibration-fired its guns, planning to redistribute long-shooters to one battery, medium-shooters to another, and short-shooters to a third. The calibration device, a "sky screen," was obviously erratic, but the battalion commander was one of those guys who thinks that machines can't lie, so battalion used the results.

The battalion commander had once been a gunnery instructor at Fort Sill and considered himself an expert (he wasn't, by a long shot). So he was continually mucking in the FDC (during the ATT as well as on other occasions), thereby adding to the confusion of an inexperienced Assistant S3 whose ignorance of gunnery was compounded by an unmerited cockiness born of being the commander's protege.

To add to the weaknesses in the FDC, both battalion survey and communications sections were ill-trained, as were the battalion observers (in a general support battalion, there are no observers in the gun batteries). To make a long story short, the battalion flunked its ATT. To be perfectly fair, it wasn't entirely our fault. During the second day of the test, a cold front came through at midday, dropping temperatures some thirty degrees in an hour. The last three graded fire missions were "transfers" and our impact patterns—already badly scattered because of invalid calibration—were rendered even more inaccurate.

The corps artillery commander came to break the bad

news to us. After giving us a very hard time, this august personage decreed that the battalion would be retested in April. It rained that April like it must have when Noah met his suspense date. The 8-inch shell weighs 200 pounds and is hard enough to ram in a breech from dry ground, almost impossible in knee-deep mud. But that's no excuse, for the Field Artillery is supposed to provide all-weather support. Anyway, we flunked again—miserably.

The battalion commander soon left Korea on emergency leave. Like Willie in *The Caine Mutiny*, we discovered to our horror that we had jumped from frying pan into fire, for the new commander was to be none other than the corps artillery S3 who had failed us twice. This gentleman, who had already established his reputation at corps artillery as a hardnose, came to us breathing fire. He relieved the battalion S3, fired the FDC officer, and brought up an experienced battery commander to be assistant S3/Training Officer/FDC officer. He called in the officer and said, "Can you get this battalion through its test?" In good 15th Infantry fashion, the officer replied, "I'll try, sir!" "Do it and you're a hero," the commander said, "fail and you're a bum. You've got one month."

The best way to train a field artillery battalion is in pieces first; then the whole thing by CPX, and finally the whole thing with everybody. The pieces are: (1) survey, (2) communications, (3) observers, (4) gun sections, and (5) FDC's.

The desired result, in peacetime or war, is steel on target within a minimum time. The enemy in peacetime is weather, human error and carelessness, and time itself. Speed is judged by a stop watch (intermittently stopped so as not to penalize the unit for safety checks and umpire control measures); accuracy is determined by requiring the rounds to fall within a rectangle, the center point of which is the target and the dimensions of which are those of the gun position plus four probable errors in range and deflection. This is perhaps the reason why it is relatively easy to manage field artillery training in peacetime—except for the odd moment (road mines, sniper fire, incoming mortar fire), the enemies are the same in peace and war: *time and accuracy*.

Before going on with the rehabilitation of a sick FA battalion, let us return briefly to the human side of the yarn. The new battalion commander, who was called "Mad Ludwig" (he was later retired with physical disability for psychiatric reasons) but was very shrewd, gave the new Assistant S3 absolute *carte blanche*. He was, in effect, training czar at the battalion for one month. Bear in mind, that he knew enough history to realize what happens to unsuccessful czars.

Training the pieces

We sent survey forth to practice its individual skills in a variety of problems—closed traverses, short-base and long-base triangulation, and firing position control. Every evening, the battalion survey chief would report to the Assistant S3 who would critique the day's training, sometimes with the battery survey chiefs in tow. The Assistant S3 would critique the day's particular problem, have the NCO's discuss the strengths and weaknesses of the four battery crews, and then assign another problem for the following day.

Radio and telephone operators were required once daily to "play" a compressed battalion test. The battalion communications officer prepared about three scripts, and modified them slightly each time. The exercise took about two hours and they all grew to hate it— but they got good!

Each day, the observers were assigned "blanket board" fire missions. Also, they had two 2-hour sessions per week of observing from a hilltop while others on the ground dropped simulator firecrackers (at 500 meters range) in accordance with radio commands. The observers developed the exercise ahead of time.

The gun sections had one hour per day of dry-fire gun drill—with staggered hours, so that the executive officer, chief of firing battery, and section chiefs of one battery could always act as inspectors of another battery.

Battalion FDC and battery FDCs conducted firing problems for two hours daily. The Assistant S3 was in charge of the battalion FDC and he taught and critiqued as training progressed. The FDCs were off-limits to all


officers except fire direction officers, and that included the battalion commander.

The keys to successful training of the pieces were detailed preparation of training by junior leaders before conduct of the training, and (shades of Mao!) mutual critique afterwards.

Command Post Exercise

The battalion and battery FDC's, the "base piece" section from each battery, the survey teams, the radio and telephone operators, and the observers went to the field for a solid week. There we ran a CPX of the entire battalion test three times, using a total of 200 rounds of ammunition. No one visited us except the battalion commander, who dropped in once for fifteen minutes to ask if we needed anything.

We had used all the ammunition during the CPX. So for the final week, the battalion conducted dry fire problems while we psyched ourselves up for the impending test. Did we pass? Indubitably! Afterwards, sad to relate, we returned to the old training schedule bit—CBR, code of conduct, motor stables, etc. Even then, however, our training was better than it had been before.

The main reason for our success and improved training was that leaders were actively involved in planning and conducting the training. The leaders learned what had to be done and then they did it. The concept is now called "training the trainer." Whatever the concept is called, it works! 

COL William L. Hauser holds an M.A. in History from the University of Southern California, and is a graduate of the US Army Command and General Staff College and the Army War College. While attending the Army War College, he was a Research Associate engaged in independent study with the Johns Hopkins Center of Foreign Policy Research. His assignments include combat and peacetime troop duty and command, and duty with the Vice Chief of Staff in Washington, D.C. He is currently assigned to the Enlisted Personnel Directorate, US Army Military Personnel Center.

Enlisted Notes



Exclusive to the Journal

MILPERCEN Reorganizes Under "Team" Concept

The United States Army Military Personnel Center's Enlisted Personnel Directorate recently reorganized its Field Artillery Section under a "team concept." This internal shuffle should provide more efficient, personalized career management of enlisted field artillerymen Armywide.

The teams have been arranged as follows to give MILPERCEN career managers the continuity and flexibility which helps to insure all "Redlegs" receive assignments of increasing responsibility as they advance within their career fields:

Team 1 manages all personnel in Career Management Field (CMF) 13 grades E1 through E5.

Team 2 manages all personnel in CMF 13, grades E6 through E9.

Team 3 manages all personnel in grades E1 through E9 in CMF's 15, 17, and 21, plus those in MOS 27D, 31D, 46A, 46L, 46N, and 82C.

Team 4, also known as the Career Management Files Maintenance Team, files and maintains all pertinent correspondence in the FA section's enlisted career management files and updates the MILPERCEN copy of the soldier's DA Form 20.

SFC John Hardwick, FA section chief, has a staff of highly qualified team members ready to handle problems artillerymen have which are beyond solution by commanders or unit personnel officers.

A second important feature of the reorganization which should interest enlisted artillerymen is that individual

personnel actions (requests for extension, permissive reassignments, ROTC Instructor and National Guard/Army Reserve Advisor duty, voluntary overseas assignment applications, etc.) are processed by a centralized Special Actions Clerk within the section who coordinates each action with the appropriate assignment team.

FA enlisted career branch managers view the reorganization enthusiastically. And while they are optimistic that it will result in better career management for enlisted Redlegs, they are also quick to point out that improved professional development depends in part on the individual soldier.

"The field artillerymen plays a greater role in his own career development than he imagines," said SFC Hardwick during a recent interview. "Forwarding to us an updated preference statement is a good example. The preference statements are reviewed when making reassignments for them or when we maintain

Career Management Files, so if the artilleryman hasn't bothered either to submit or update his file, there's always the unhappy chance that he could end up in an area he'd consider personally undesirable. Of course, each soldier must take his fair share of less desirable assignments."

Another key document, according to Hardwick, is the EER. Hardwick mentioned that narrative comments are especially valuable to career managers at MILPERCEN. "Senior enlisted raters owe it to their subordinates to supply a comment on the EER. So do officer raters. If a man's a go-getter, write it up so we know what he can do." As for the rated subordinates, Hardwick had this advice: "Don't get into the habit of accepting ratings from superiors which don't include narrative comments. Take the EER back to the rater before you sign off to accept it and ask him to please supply a narrative appraisal of your performance."

"One thing many soldiers also don't realize," explained Hardwick, "is that their Official Military Personnel File (OMPF) is not at MILPERCEN. We use the MILPERCEN Career Management, which contains a copy of the Form 20, EER's, Mos test scores, preference statements, official photo, and personnel actions-type correspondence so that we can get the right man to the right job at the right time. Meanwhile, the OMPF is maintained at Fort Benjamin Harrison and is the file used for all DA selection board actions."

SFC Hardwick also passed the

word to artilleryman on the following subjects:

FA section currently has too many volunteer applicants for duty in Korea. There are other requirements, however, for Italy, Panama, Alaska, Hawaii, Greece, Turkey, and Germany.

In determining *who's* available for reassignment *where*, FA section tries to follow the rotational sequence of CONUS, long overseas, CONUS, short overseas, CONUS, long overseas, etc.

As of mid-September, turnaround times between CONUS and oversea assignments are shown in Figure 1.

Projected FA-related MOS imbalances (overages and shortages) for June 1974 are as shown in Figure 2.

TURN AROUND TIMES

CMF	GRADE/PMOS	TIME (IN MONTHS)
13	E1-E5	
	13A	24
	13B	24
	13E	24
13	E6-E9	
	13B, (E6)	24
	13E, (E6)	30
	13B, (E7)	24
	13E (E7)	24
	13Z (E8)	24
	13Z (E9)	36
15	E1-E8	24
	E9	36
17	E1-E8	24
21	E1-E9	
	21G	24
	21L	24
	21M	24
	21R	24
	21S	24
	21T	24
	21W	36
	21V	36
27	E1-E9	
	27D	24
31	E1-E9	
	31D	24
46	E1-E9	
	46A	24
	46L	24
	46N	24
82	E1-E7	
	82C	24
	E8	
	82C	36

Figure 1.

IMBALANCES IN PMOS

(Unless an MOS and grade are listed as O or S below a balanced status is projected as of 30 June 1974.)

Career Management Field	MOS Code	PMOS status by grade					
		E-9	E-8	E-7	E-6	E-5	E-4
FA	13B	—	—	O	S	S	—
FA	13E	—	—	S	S	S	—
FA	13Z	O	S	—	—	—	—
FM	15D	—	—	S	S	S	S
FM	15E	—	—	S	S	S	S
FM	15F	—	—	O	—	S	—
FM	15J	—	—	S	S	S	—
FM	15Z	—	S	—	—	—	—
SA	17B	—	—	O	O	—	—
SA	17C	—	—	O	O	S	—
SA	17D	—	—	O	O	S	—
SA	17E	—	—	O	O	O	—
SA	17K	—	—	—	S	S	—
SA	17L	—	—	—	—	S	—
SA	17M	—	—	S	S	—	—
SA	17Z	—	S	—	—	—	—
FM	21G	—	—	S	S	S	—
FM	21L	—	—	—	S	S	—
FM	21T	—	—	—	S	S	—
FM	21U	—	—	O	—	—	—
FM	27D	—	—	—	S	—	—
EE	31D	—	—	—	—	S	S
SA	82C	—	—	S	S	S	—

S—Shortage, O—Overstrength

Figure 2.

Record Center Procedures Outlined

Commanders sending teams to Fort Benjamin Harrison's Enlisted Records Center to review the Official Military Personnel Files (OMPF) of enlisted members of their commands are reminded that the following administrative procedures must be met prior to the reviewing team's arrival:

* A duplicate set of machine-run cards with names and SSAN's of all personnel whose records are to be reviewed must reach the Enlisted Records Center no later than ten days prior to the team's arrival.

* Signed authorization of each individual concerned is required. Authorizations can be delivered by the review team and may be

in roster format or on separate sheets.

Commands may arrange for team records reviews by either writing Cdr. USAERC, ATTN: PARC-O, Fort Benjamin Harrison, IN 46249, or calling AUTOVON 699-3111.

Due to the complexity of preparing the OMPF and attendant records for consideration by promotion, QMP and NCOES Boards, record reviews should be completed no later than 15 days prior to convening date of any scheduled board. However, earlier reviews are encouraged in that they are less disruptive to efforts to prepare for a board and provide additional time to obtain and forward any documents not on file.



by MAJ Robert Jordan

The artillery battalion had to move and be in position 15 miles away in 3 hours; the roads were nearly impassable and the bridges no longer existed. An airlift seemed to be the only solution, but the CH-47's could not be released from their present mission for another 2 hours; however, three CH-54B helicopters were available.

The battalion S3 scratched his head and wondered how he could possibly meet the deadline. Three helicopters couldn't move 18 M102's with ammunition and sufficient men and equipment 15 miles in time to allow the artillery to meet its deadline. Then, again, hadn't something happened in 1973 at Fort Sill? What about Hanging Six?

Hanging Six, as he recalled, had been a concept tried in 1973 at Fort Sill when a group of farsighted artillerymen and aviators used a CH-54B Skycrane to lift six M102's.

The idea was initially conceived by two experienced cargo pilots of the 273d Aviation Company—CW4 William Lamb and CW3 Marvin Nester. The pilots of the Skycrane company didn't feel that enough support was available to field artillerymen and they wanted to check new possibilities. Traditionally, the Skycrane had been used to lift a towed 155 howitzer but that was only about half of its useful payload.

Research of existing rigging manuals resulted in finding a proven load of four M102 howitzers, utilizing the four-point suspension system of the Skycrane. In July 1973 this load was successfully lifted out of Training Area 10. However, the artillerymen were not satisfied and neither were the aviators. An M102 firing battery had six tubes and, no matter how you sliced it, lifting four tubes just didn't work out unless two batteries were collocated—a situation rarely encountered in real life.

Thinking big, as Skycrane pilots usually do, the pilots decided that the solution was to move all six tubes in one lift. The weight charts indicated that it could be done—weightwise. But there was nothing to fall back on for rigging procedures (since this theory had never been tried) but experience and imagination. Now, they needed to get six tubes and imaginative artillerymen to work it out—no problem at Fort Sill, the home of the field artillery, where the Redlegs are eager to improve upon their profession of arms.

The 1st Cannon Battalion (Field Artillery School Brigade), commanded by Lieutenant Colonel J. S. Williams, sent tubes and eager artillerymen to Henry Post Army Airfield to work with the officers and men of the 273d Aviation Company to put theory into practice.

Throughout most of 2 days, many ideas and different configurations were conceived, attempted, and finally discarded. The unhappy feeling began to prevail that, although the theory was good, a six-tube lift would prove to be too difficult to have any practical application.

The individual rigging of each gun had to be modified from the procedure outlined in the rigging manual, since the tubes had to be placed in a cluster configuration, secured to each other by the trails, and lifted from a central point.

It became readily apparent from the first attempt that the tubes were riding too high, forcing the trails too far down. This resulted in damage to the lifting handles on the trails—some were broken and others bent—and a general movement back to the drawing board. The tubes needed to ride level and be secure enough that they would not roll, as one of them very nearly did on the first attempt.

The final rigging of each gun, which allowed a level configuration of the six-tube cluster, with stability, was designed as follows:

1. One 12-foot strap was attached to the lifting ring on the barrel.
2. Two 9-foot straps were attached to the lifting rings on the sides of the trails.
3. These three straps were then connected to a metal clevis.
4. One 12-foot strap was then connected to this clevis; another clevis was attached to accept six of these

straps and then attached to the main hoist of the Skycrane.

This solved the problem of straps but left the problem of securing the lunettes unsolved. On the first attempt a standard 3-foot strap was run through the eyes of the stacked lunettes and closed with a standard connecting link. However, this still allowed too much movement, placed the trails too close to each other, and endangered the lifting handles.

CW3 Nester, after a night's sleep, arrived at work the next day with what appeared to be a solution to the dilemma of the lunettes. He had designed a metal plate large enough to separate the trails and save the lifting handles. Each lunette would be secured to the plate by a 2-foot length of chain passed through two holes cut into the metal and secured by a bolt. In theory, it should have worked, but once the plate left the bench and was put to use, it was found that the chain could not be drawn tight enough to preclude movement of the tubes and that there was not enough separation between the trails. It was a positive step in the right direction and the designer returned to his drawing board with greater enthusiasm because success appeared to be close at hand.

The second model of the Nester multi-artillery lifting plate was of the same ¼-inch steel but was larger in diameter. The chain idea was discarded in favor of three ½-inch bolts, 6 inches long, for each of the six lunettes. The lunette would fit over the center bolt and between the other two bolts and would be secured by a metal cover attached by nuts. This not only would prevent the guns from moving fore and aft but would reduce lateral movement as well.

On previous attempts the tubes had demonstrated a tendency to move laterally once they were airborne. This movement allowed the handles to come into contact with each other and become damaged. As an added safety factor a 20-foot strap was secured to adjacent tubes. This precluded movement of a single tube; if one tube started a lateral movement, all the other tubes also moved. Rotation of the load would cause no problem, since the hook on the Skycrane has an ability to rotate.

It was now early September and time to try again. Everything was in readiness. The plate was off the workbench, the necessary straps were on hand, and the tubes were provided by the Redlegs, who acted as though they would probably never see their weapons again when they left.

The tubes were rigged according to plan and, as the big Skycrane helicopter began to hover over the cluster, the Skycrane aircraft commander nervously fingered his green tabs, wondering if the field artillery would ever take him back.



The author discusses the new lifting plate with its designers, CW3 Nester and CW4 Lamb, and LTC Ley, the 14th Aviation Battalion Commander.

The lift was attempted and the straps lost their slack; however, as the guns began to lift, it was obvious that all was not going according to plan. The barrels were up but the trails were on the ground. Quickly, minor adjustments were made and the Skycrane moved back into place.

Once again the straps tightened; the load looked good and lifted off beautifully. There in the air, suspended under one helicopter were all the tubes from an entire battery. The aircraft commander hovered the aircraft over the east end of Henry Post Army Airfield, doing basic maneuvers in order to check out the rigging and to determine how the load would ride. A slight rotation of the six-gun cluster was caused by the rotor wash, but that was normal.

Satisfied, the aircraft commander made his takeoff run and climbed out north through the east corridor. Out over Frisco Ridge, the aircraft and its load were put through all flight maneuvers; turns, climbs, and descents were completed with no difficulty, at airspeeds up to 75 knots.

When the load was returned, it was discovered that the plate had been damaged during the first attempt, when the tubes required minor rigging adjustments. Several observations based on this first successful lift were made. First, it was determined that the plate was still too small; the trails were too close to insure that the lifting handles would be separated enough to prevent bumping. Secondly, the tubes had to be in exact alignment before the lunettes could be attached to the plate; this was a time-consuming

task. Although the mission was accomplished, it was decided to make further modifications.

A third, and by no means final, plate has been designed and produced by the Skycrane company. Larger in diameter for trail separation, it is constructed from ¼-inch steel and is too heavy for handling ease. If accepted for general use, the plate would be made of lighter material of equal tensile strength.

The plate consists of two layers, separated by 4 inches, with a pocket for each lunette. Each lunette is secured by a single ¾-inch bolt, 6½ inches long. This bolt enhances safety but would probably not be needed if speed were desired, because the weight of each tube is vectored toward the rear and would suffice to keep the lunette inside the plate.

The average time to rig the guns from arrival to liftoff has been 15 to 20 minutes. However, the crews had no experience in rigging. A battery with proper training could cut this time to less than 10 minutes.

Why Hanging Six?

The mobility of field artillery must be equal to or greater than that of supported maneuver units. The requirement to provide fire support to highly mobile infantry, armor, and cavalry forces operating over extended distances presents a challenge, even for self-propelled weapon systems with extended range capability. So the Redlegs have taken to the air; aerial field artillery units have married their weapon systems to helicopter platforms and in other field artillery units equipped with lightweight weapons, RSOP by Army cargo helicopter has become commonplace.

One can envision numerous situations in which a 105-mm howitzer battery might require rapid RSOP to achieve the necessary range capability. For example, establishment of a temporary fire base to provide support for a task force ready to deploy, reinforcement to blunt an enemy penetration or movement in an extremely fluid situation when lines are not clear would call for a high degree of mobility to compensate for lack of time.

An airlift can place time on our side and remove our dependency on road networks, which may be in poor condition, clogged with traffic and refugees, or nonexistent where we need to go. It can put us in the right place at the right time to support the attack or cover the retrograde or it can get us out of a dangerous situation to fight again.

Consider the need to combat the enemy's counterbattery measures. With very little expenditure of men, time, and materiel, a battery can move laterally along the front and

never be in one position long enough to be located by the enemy. Numerous moves of this nature can intimidate the enemy and frustrate his intelligence efforts.

The Skycrane method of airlifting all six howitzers of a battery at once offers attractive possibilities for similar administrative or logistical movements such as ship-to-shore off-loading, deployment of equipment to a larger area, withdrawing tubes when speed is essential, or a short bound over a terrain obstacle. Even more tactical-type movements might be feasible in relatively secure areas not in the face of direct fire from the enemy.

But why use the Skycrane? Certainly, the availability of this aircraft is subject to question. The CH-54B is designed to perform heavy lift missions within a 50-mile radius of its fuel source. A range/weight chart will tell you why. Fuel and endurance must be traded for payload, but this is common with all cargo helicopters. This heavy lift helicopter does jobs no other rotary-wing aircraft can accomplish. It is, after all, a relatively high-cost, low-density type of equipment that in all probability would be in very high demand for a wide variety of special purpose tasks. In Vietnam, CH-54 Skycranes were habitually employed to move 155-mm howitzers whereas CH-47 Chinooks were employed to displace 105-mm howitzer batteries. But the CH-47 method may have a disadvantage in some situations because of the number of sorties required. In Vietnam, three or four Chinooks might require three or four sorties each to move a battery. More sorties means more time and the possible loss of surprise. The aircraft activity is bound to attract the attention of the enemy, which is most undesirable during an airlift. A battery is out of action and is most vulnerable during displacement. There are battlefield situations in which the ability to place the essential firing elements of an entire battery into position in one swoop is highly preferable to the alternative of delivering the howitzers one or two at a time in successive lifts. In these situations, the "instantaneous fire base" capability of the Skycrane is a valuable addition to the mobility of the field artillery.

Hanging Six is like putting your eggs in one basket. But the Skycrane is a highly reliable basket for carrying these eggs. The aircraft has two powerful engines but after becoming airborne can carry the six-gun configuration on only one, and this has been tested by the author. Losing an engine in flight does not mean abort; it does mean, though, that the dropoff will be a little rugged, but less so than an airdrop by parachute.

If you're still not satisfied that the six-gun lift is more than a gimmick, I'd like to quote Sir General Peter Hunt, Chief of Staff of the British Army, a noted field artilleryman who witnessed the lift. "That's the way to carry artillery."

There is yet an alternate method for accomplishing the same move with the same number of sorties for the less optimistic.

Using the six-tube capability would require three Skycrane loads—tubes, basic load of ammo, and troops with section equipment. However, there are many combinations that might be envisioned with a little imagination. Two Skycranes, utilizing the same or similar types of plate, could lift three tubes with ammo and the third aircraft could carry up to 45 troops with section equipment in the universal pod. In any case, RSOP of an artillery battery utilizing the tremendous lift potential of the Skycrane offers an alternative in air mobility quite different from anything else.

In a few years a new heavy-lift helicopter with an even greater payload capability will be in the field. Such a helicopter can assist field artillerymen in many ways. Now is the time for us, officers and men of the field artillery and aviation, to accept the challenge of the future and be equal to it.

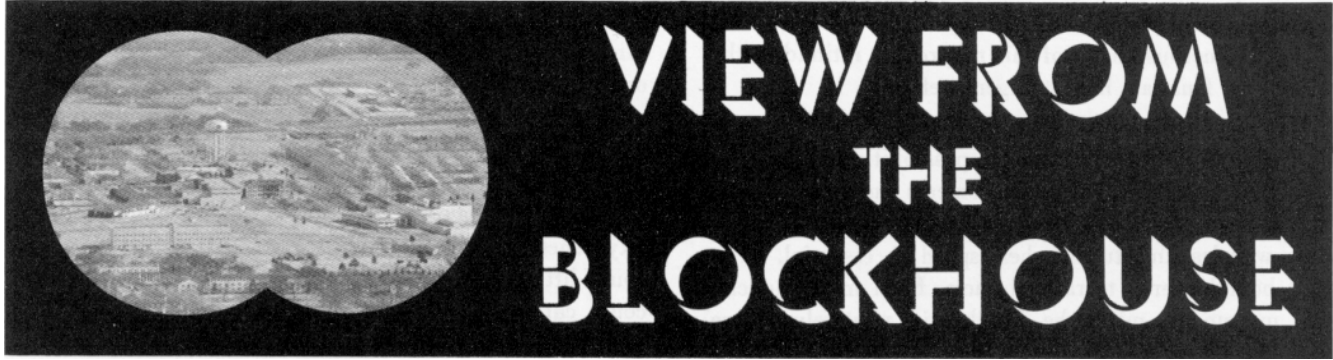
Let us hear from you!

Units of the Field Artillery Aviation Command at Fort Sill are continuously engaged in developing innovations in aviation support for the field artillery. New ideas are solicited from imaginative field artillerymen worldwide, especially Redleg aviators. Any comments or suggestions relative to Skycrane or Chinook operations or to the employment of aerial field artillery should be addressed to:

Commanding Officer
14th Aviation Battalion (Combat)
Fort Sill, Oklahoma 73503



Major Robert J. Jordan, Jr. entered the Army in 1956 and completed a tour in Germany in the Infantry and Cavalry. He later served at Fort Sill as a Field Artillery radar mechanic until entering Field Artillery OCS. Upon graduation he entered fixed wing flight school followed by a tour in Vietnam. Following rotary wing transition, he served a year in Germany as a battery commander before returning to Vietnam. He completed the advanced course in 1970 and then was assigned to the Target Acquisition Department as a branch chief. In July 1971, he received his B.S. in business from Cameron College and returned to Fort Sill as an aviation battalion executive officer and later as the S-3. He assumed command of the Skycranes in September 1972.



New FADAC Program

To maintain the field artillery's reputation as "The King of Battle," we must make a continuing effort to improve our materiel and concepts of employment. The tempo of technological changes, particularly in new weapons and munitions, coupled with improved gunnery data and techniques, has resulted in a requirement to revise the cannon, rocket, and missile programs for the M18 gun direction computer (FADAC) as the changes occur.

With the end of the Army commitment in Southeast Asia, the field artillery planners are visualizing the continued use of FADAC as a battery computer and are placing more emphasis on those capabilities that will probably be required on other geographical areas. These "look ahead" concepts are projected for the next half decade and possibly beyond. Recognizing that the current cannon program is already outdated, designers have developed an improved and updated program known as Revision 5, which is currently undergoing acceptance testing by the Test and Evaluation Command of the US Army Materiel Command. Provided the testing proceeds as scheduled, the programs for all models of cannon weapons should be available for issue early in 1974. The first tape has already been fielded for use with the new long-tube 155-mm howitzer M109A1.

The new Revision 5 program will incorporate a number of changes, additional functions for gunnery, and a survey problem solution not found in the current program and yet will retain all the capabilities of the current program. The configuration will accommodate only one caliber/model weapon. Two matrix overlays will be used in conjunction with numbered buttons 1 and 2 on the right of the matrix panel. See figures 1 and 2.

Matrix 1 (fig 1) will be used with the number 1 button depressed. This matrix controls the solution of the gunnery fire direction problem, including the computation of gun data for a fire mission. Matrix 2 (fig 2) will be used with the number 2 button depressed to control the solution of survey problems ordinarily associated

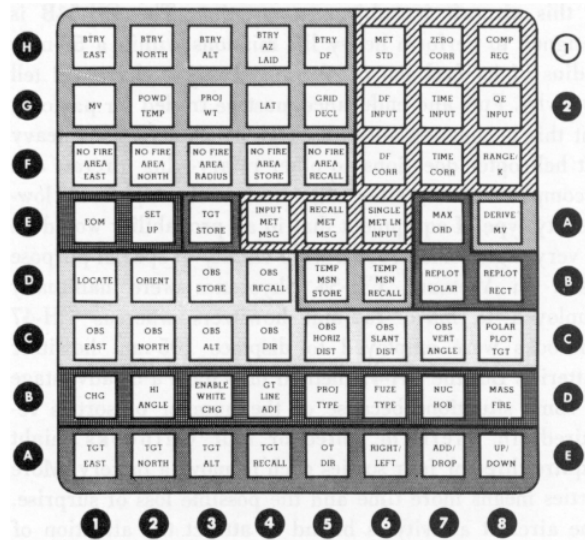


Figure 1.

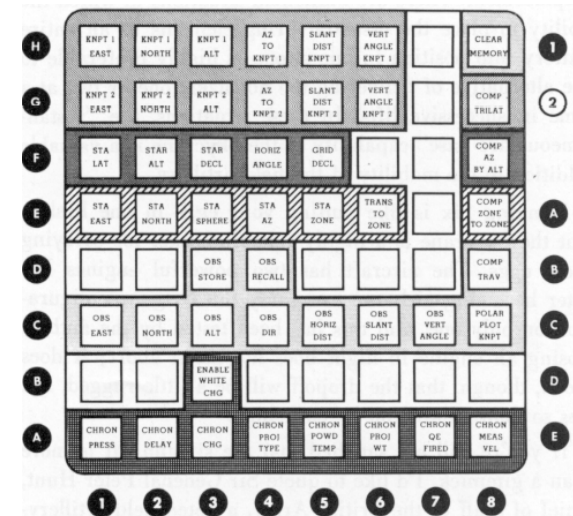


Figure 2.

with battery or battalion requirements. The survey routines that can be solved by use of matrix 2 are trilateration, azimuth by altitude, zone-to-zone transformation, and traverse. Two other survey routines that relate directly to the gunnery problem of firing a high-burst or mean-point-of-impact registration are controlled by use of matrix 1. There are orientation and intersection. These functions are used to compute orientating data for the observers and to compute the location of a group of round fired during the registration.

An increase in the storage of dynamic data has also been provided. With this new program, 128 targets, 18 observers, and 42 no-fire areas may be stored. The new program includes a function to automatically determine muzzle velocity from registration data whenever current met and other known elements of data that affect the trajectory have been entered in the computer. The program is controlled by matrix 1 function E-8 (DERIVE MV); it uses an automatic successive approximation scheme to adjust the stored muzzle velocity until the computed quadrant elevation is equal to the input adjusted quadrant elevation. The resulting derived muzzle velocity is then displayed. This function now automates a procedure that previously required considerable operator time. Use of the derived muzzle velocity will be the same as with the current Revision 4 program.

The solution to the trajectory has been improved by a redesign of this part of the program, incorporating better ballistic equations and coefficient values. These new algorithms will produce more accurate firing data than is currently possible with any other technique. These improved equations and coefficients were developed by the Ballistics Research Laboratories. They affect the data produced for all models and calibers of cannon weapons

using all types of ammunition. Included is the capability to compute firing data for the M548 rocket-assisted projectile for the 155-mm howitzer M109.

As an added input capability, it will now be possible to enter a list of targets up to 128 by use of a paper tape and the mechanical tape reader. A significant operational capability accrues with this added capability. Targets that are part of a contingency plan may now be placed on tape and filed with the plan. When the plan is implemented, the list of targets can be entered rapidly with the assurance that there will be no operator input errors.

Also added are a number of automatic memory-clearing routines for selected data. For example, the operator may clear the target list, the observer list, or the no-fire area list by entering a zero, decimal, zero (0.0), using the selected list store function. The operator can still clear or reset to standard by using the SET UP button with matrix 1 location E-2 activated.

The use of current or standard met with the new Revision 5 program will be selective. Current met will no longer be purged if standard met has been specified. The operator need only enter a flag 9 in the matrix 1 location H-6 (STD MET) to cause the computer to return to the use of current met. This technique will now save operator time in reentry of current met whenever standard met was used as an interim.

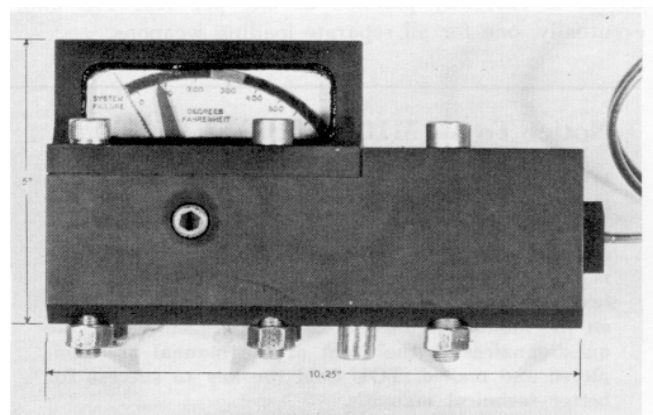
The USAFAS will begin teaching the Revision 5 procedures starting with classes that are scheduled to graduate after the fielding of the new program.

Questions concerning the Revision 5 FADAC program should be forwarded to Commandant, US Army Field Artillery School, Fort Sill, Oklahoma 73503.

CANNON THERMAL WARNING DEVICE

The emphasis in US field artillery on both mobility and firepower has dictated the use of thinner tube sections, more powerful propellants, and greater rates of fire—all of which lead toward higher tube temperatures and the resultant possibility of hazards for the crew during loading and firing. In the past, tables that limited the number of rounds to be fired at given rates were used to keep tube temperature at a reasonable level. These tables, however, did not account for the many other variables which influence tube temperature. Therefore, in certain situations, a cease fire could be required for a cannon that was still fully capable of safe use.

The cannon thermal warning device is intended to eliminate guesswork and inefficiency in cannon use by



actually measuring tube temperature and visually warning the crew when the tube reaches a dangerous temperature level. The device is mechanical and utilizes a mercury-filled primary sensor requiring no external power source. Mounted directly to the recoiling parts of the gun, it is designed for extremely rugged vibration and shock loading as well as for adverse weather conditions.

The scale's color-coded numerical display features a green safe zone, a yellow warning zone, and a red danger zone. When the needle is in the danger zone, cookoff is an immediate hazard within 5 minutes after charge insertion. The further the needle moves into the danger zone, the shorter the time until cookoff can be expected. Under this condition, no charge should be loaded without the full intention of promptly firing the gun. The breechblock should be closed immediately after charge insertion and personnel removed from the line of recoil. If a delay in firing (e.g., misfire, mechanical problem, etc.) occurs after a charge has been loaded and the tube temperature exceeds 350° F (red zone), the following table is used in determining the "safe elapsed times" within which the problem causing the delay must be rectified:

Tube temperature (°F)	Probable minimum time to cookoff (minutes)	Probable maximum time to cookoff (minutes)	"Safe elapsed time" from insertion (minutes)
350	9.5	*	5
360	7.5	*	4
370	5.0	*	3
380	2.0	*	0
390	1.8	*	0
400	1.5	8.5	0
410	1.2	5.8	0
420	1.0	3.7	0
430	0.7	3.2	0
440	0.4	2.8	0

*Not determined, but in excess of 10 minutes.

Note: Of all cookoffs, 99 percent are likely to occur within the time band indicated for a given temperature.

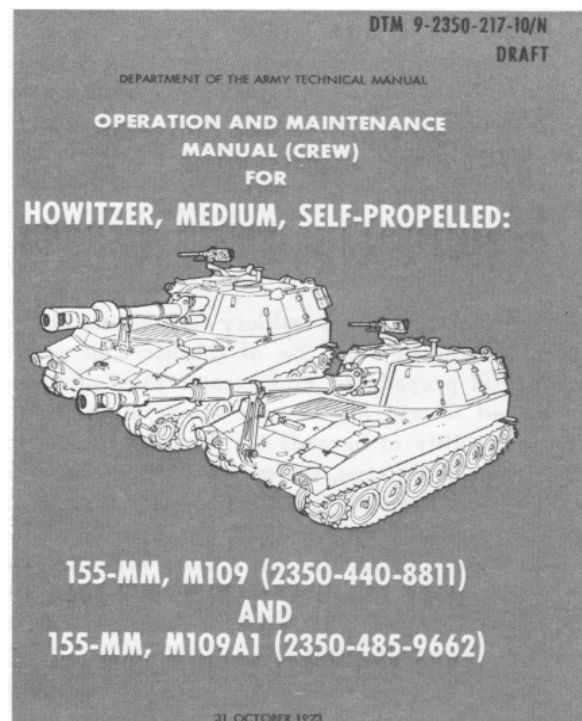
The basis of issue for the cannon thermal warning device is currently planned as one per XM 198 and, eventually, one for all separate loading weapons.

Notice To All M109/M109A1 Units

DTM 9-2350-217-10/N was mailed to all M109/M109A1 units in the late November-early December time frame. Produced jointly by the Army Armaments Command, the Combat Arms Training Board, and the Field Artillery School, the draft technical manual uses more color, more illustrations, and less text than current manuals. To enable continued work on the manual improvements, please insure that the questionnaires in the front of the manual are completed and mailed. YOU hold the key to success for better technical manuals.



Captain Roberta Jordan, shown above instructing a class of officer basic students, is being kept busy with her duties in the Target Acquisition Department of the Field Artillery School. After being the first woman to graduate from the Field Artillery Officer Advanced Course, she was assigned to the Targeting Division of Target Acquisition. She recently completed a slide-audio lesson for the USAFAS Individual Learning Center entitled "Target Acquisition from Aerial Imagery" and is planning another lesson, "Target Acquisition from Imagery Interpretation." She is presently attending the Tactical Intelligence Staff Officer course at Fort Huachuca, Arizona. In addition to her other duties, Captain Jordan is a full-time instructor of advanced, basic, and NCOES courses.



feature from the School

"ON RAPPEL!!!"

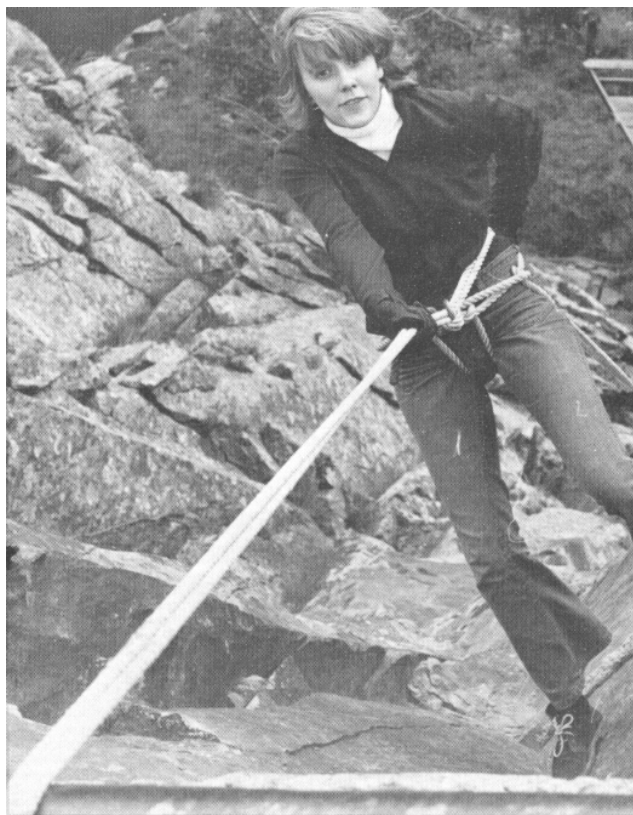
Leather-gloved fingers close in a vise-like grip around the two ropes dangling from a 180-foot precipice. An unsteady figure backs haltingly to the edge of the sheer vertical drop. With cautious movements, a United States Army Field Artillery School student (or his wife) prepares to rappel down the massive face of Medicine Bluff 3 at Fort Sill, Oklahoma.

The Command, Leadership, and Training Department of the Field Artillery School is responsible for the rappelling instruction which is offered to all Field Artillery Officer Advanced, Officer Basic, and Noncommissioned Officer Courses in residence. Many high school and college ROTC cadets, as well as Boy Scouts from Oklahoma and north Texas, also come to Fort Sill for rappelling training. A day of rappelling combined with the awesome field artillery firepower exercise imparts to these weekend visitors (and potential soldiers) a positive perspective of the Field Artillery.

Maximum participation by the wives of the USAFAS students is encouraged. As this article is being written 510 wives have attended the rappelling classes with their husbands since 20 December 1972: of these, 327 have gone off the tower and 228 have rappelled off the cliff.

In full view of the rappelling practice tower and the Medicine Bluff cliffs, the students are given an initial orientation that includes instruction on the "order of events" the students will follow throughout the rappelling course, an explanation of the equipment used, and several demonstrations.

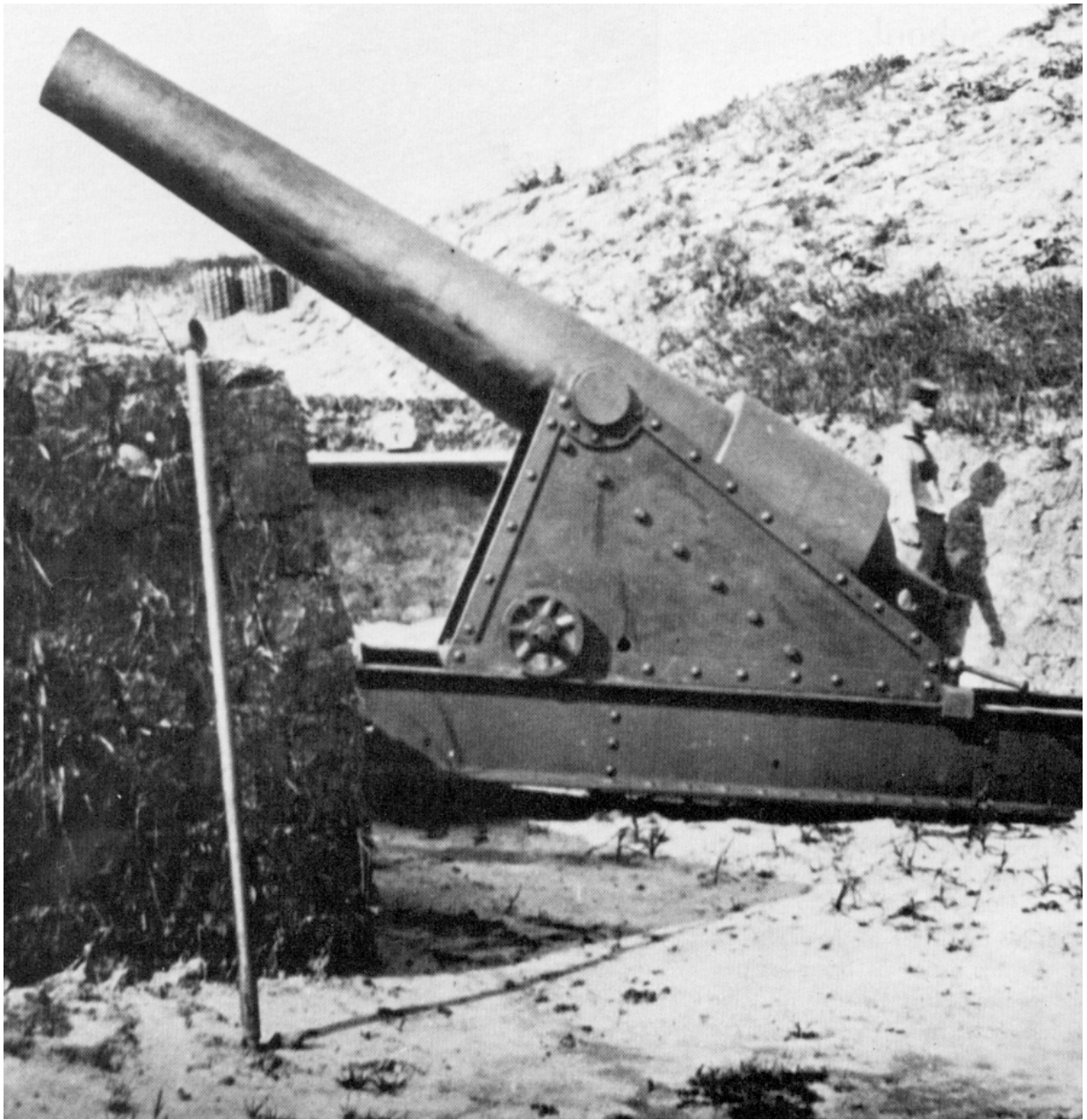
Another phase of rappelling instruction is tower rappelling—a gentle prelude to the more difficult cliff rappelling. The principles and techniques used on the tower are the same as those used on the cliff. A tower rappeller can easily hear directions given to him and, if need arises, he can make a quick trip back to the top of the tower for a second try. If a student does poorly on the tower rappel, he goes immediately to the top and tries again. There are two reasons for this immediate return: First, if there is a long delay between the first and second attempts, the student's fear may build up; second, the instructor has immediate recall of the student's mistakes. When the student demonstrates adequate competence on the tower he moves to the cliff rappel.



Getting to the top of Medicine Bluff 3 is a trial in itself. The students must climb a rock slide that has a 60-percent grade. This is no small task when cinched in a Swiss seat. After a few breathless moments at the top (both from climb and the sweeping panorama of the vast Oklahoma plain), the students are ready to descend the cliff. As they step forward in order of arrival, an instructor makes the hookup and directs their movement off the edge. At first, the students are cautious and hesitant, and their gestures are slow and tight. Then as they discover the thrill of descending a great height in a controlled fall, they become more relaxed and confident. Their first few hops away from the security of the rock wall become 20-foot bounds into the empty air high above Medicine Creek. Grim, tightly pressed lips curve into smiles of enjoyment as they plant their feet firmly on the hard ground at the bottom of the cliff and look up in disbelief at having descended under their own power.

Rappelling instruction at Fort Sill is available to members of any ROTC or Army Reserve/National Guard organization visiting this post. Coordination should be made at least 2 months prior to arrival by writing to:

Commandant
United States Army Field Artillery Center
and Fort Sill
ATTN: ATZR-DPTRC
Fort Sill, Oklahoma 73503



SWAMP ANGEL

by
2LT Robert E. Dunfield

"Swamp Angel", an 8-inch Parrott rifle (gun), was one of the few in the Union arsenal on Morris Island in the summer of 1863 with sufficient range to strike a target 5 miles distant. However, it is the uniqueness of Major General Quincy Adams Gillmore's strategy rather than that of the piece that gives this episode an important place in military history. Bombardment for the purpose of terrorizing a population to the point at which it would compel the defending garrison of a city to surrender was contrary to the recognized rules of war of the 19th century, and this cruel strategy shocked humane minds of the time surely as much as their 20th century counterparts were shocked by the indiscriminate shellings and bombings of the World Wars and, more recently, in the Indochinese struggle. Despite how one may judge Gillmore and his strategy on a moral basis, it is a fact that the strategy of terror has, in the hundred years since, become more and more a standard resort of people who call themselves civilized.

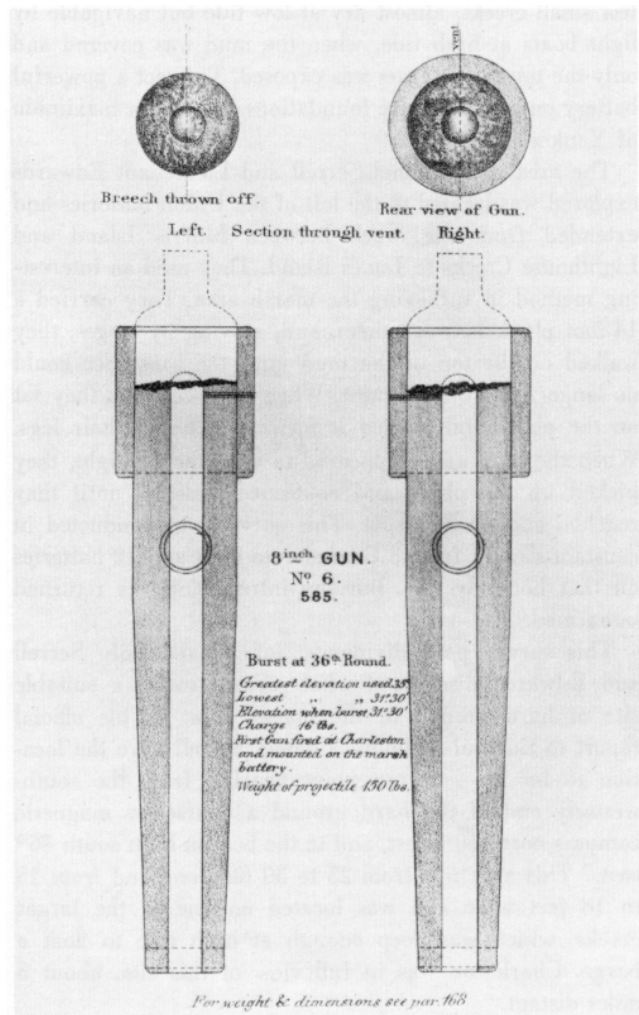
Charleston, South Carolina, had been considered a critical strategic target for the North from the outset of the Civil War. Here was the "Cradle of Secession," and here the opening rounds of the war had been fired. More important, if the Union forces could capture or destroy the city, they might deal the Confederate cause a mortal blow. The blockade of the harbor was difficult to enforce due to the peculiar coastline, and blockade runners favored Charleston above all other Southern ports. The impregnable harbor defenses made naval assault on the city impossible, as Admiral Du Pont had discovered in the spring of 1863. In June 1863, the Union forces stationed at Port Royal, South Carolina, had switched to a land strategy by landing at James Island and preparing to move inland to cut off Charleston on the land side. This attack was planned by Brigadier General Henry W. Benham, commander of the X Corps. However, Benham's forces were defeated at Secessionville and forced to fall back to James Island. Benham was relieved of his command by Major General Quincy Adams Gillmore, and it was Gillmore's frustrations with more conventional strategies that led to the episode of the Swamp Angel.

Gillmore was born in Ohio in 1825. In 1845, after teaching there for 3 years, he was given an appointment to West Point. He was graduated first in his class and was commissioned into the Corps of Engineers in 1849. Before the Civil War, he spent most of his time instructing at West Point and working on service projects at Hampton Roads and New York City. When the war broke out, Gillmore was appointed Chief Engineer of the Port Royal expedition. His greatest accomplishment prior to his assignment to the siege of Charleston was the artillery reduction of Fort Pulaski, which defended the water approaches to Savannah, Georgia. On 12 June 1863, Gillmore was given command of the Department of the

South and of the X Corps, with the mission of destroying Charleston's usefulness as a port and achieving its capture or neutralization.

After assuming command on James Island, Gillmore prepared a plan to accomplish this mission: First, occupation of the northern end of Morris Island near the harbor mouth by reducing Battery Wagner, which commanded the island's northern end; then, reduction of Fort Sumter with heavy guns; and finally, reduction of the harbor defenses to make it possible for the Union fleet to run by the other batteries and obstructions and reach the city with acceptable losses. The first goal of the plan—the capture of Battery Wagner—proved unexpectedly difficult. After landing forces on Morris Island on 10 July 1863, the Union troops required nearly 2 months to take the battery.

While the assault on Battery Wagner was progressing, Gillmore conceived the idea of constructing a heavy battery in the marsh area lying to the left of his position and



from which a gun powerful enough to reach the city of Charleston might be emplaced. On 13 July 1863, the general directed Lieutenant Peter S. Michie to examine the feasibility of such a scheme. Michie's favorable report led Gillmore on 16 July to send for Colonel Edward W. Serrell to find the most suitable location in the marsh area from which the city of Charleston could be fired upon. Already Gillmore's thinking was progressing toward a grim solution to the problem of Charleston.

The marsh was like many other salt marshes of the southern coast. It was made up of a bed of soft, black mud, from 16 to 18 feet in depth, overgrown with reeds. This mud was a jelly-like substance known locally as "pluff mud." Geologically the mud consisted of sedimentary deposits of the very finest particles, brought down by the fresh water streams, and was vegetable in makeup. Sand from the outer beaches was also mixed with this sediment. On top of the marsh grew a very coarse grass, which was 4 to 5 feet high. It did not form a sod, for the roots were shallow and fine. The bottom of the marsh was composed of hard sand. Through the marsh meandered a few small creeks, almost dry at low tide but navigable by light boats at high tide, when the mud was covered and only the top of the grass was exposed. To erect a powerful battery on such insecure foundations required a maximum of Yankee ingenuity.

The area that Colonel Serrell and Lieutenant Edwards explored was located to the left of the Union batteries and extended from the creek between Morris Island and Lighthouse Creeks to James Island. They used an interesting method in surveying the marsh area. They carried a 14-foot plank between them, and, moving by stages, they walked on the top of the mud until the substance could no longer bear their weight. When this occurred, they sat on the plank and pushed it forward between their legs. When the mud again appeared to bear their weight, they picked up the plank and continued walking until they reached another soft spot. This survey was conducted in constant danger from 3 Confederate forts and 12 batteries on that hot July day, but the intrepid officers returned unharmed.

This survey paid dividends, for unexpectedly Serrell and Edwards discovered what seemed to be a suitable site of hard ground in the marsh area. In his official report to General Gillmore, Colonel Serrell gave the location to be ". . . at a point bearing from the southwesterly end of the hard ground a course by magnetic compass north 40° west, and to the beacon-light south 86° east." This area was from 25 to 30 feet long and from 15 to 18 feet wide and was located on one of the larger creeks, which was deep enough at high tide to float a barge. Charleston was in full view of this site, about 5 miles distant.

Despite the firm ground, Serrell felt that a battery at this location would have to be made entirely of sandbags, with grillaged platforms. The term "hard ground" was relative, and expert engineering would still be required for a battery as powerful as that which Gillmore contemplated.

After completing his tests on the capacity of the site to support a battery, Colonel Serrell submitted his construction plans to the General. After receiving the report, Gillmore issued the orders that work begin for a battery for one 200-pound Parrott rifled gun. This was a heavier gun in weight than the gun that Serrell, in his first survey of the swamp, had recommended be used, but Gillmore felt that only a gun of this caliber could reach the city effectively.

Serrell's report shows that in the construction of the "marsh battery," as it was officially known, the following supplies were used: "13,000 sandbags; 123 pieces of 15-to 18-inch diameter yellow pine timber, 45 to 55 feet long; 5,000 feet of 1-inch boards; 8 tarpaulins, 18- by 28-feet each; 9,516 feet of 3-inch pine plank; 300 pounds of 7-inch and 200 pounds of 4-inch spikes and nails; 600 pounds of round and square iron; and 75 fathoms of 3-inch rope." This was only the material used in the building of the battery and did not include the material used in building the bridges and plank walk across the marsh, or the boom. To complete the work on the battery it required 91 man-days of the engineer officers, 1,384 days of the engineer troupes, and 7,390 days of the infantry troops. Most of the materials had to be brought in by boat. But by 12 August a plank over which both men and supplies moved, had been completed from Black Island to the battery.

To protect the battery from surprise attack, picket boats were placed on the streams leading to James Island and Charleston harbor. Two naval boats with bow howitzers were also stationed in the deep waters of the area by Admiral Du Pont. On 12 August, a boom of pine logs was laid across the creek to obstruct the passage of boats that might attempt to come down the river from Charleston harbor.

On the night of 17 August, the battery was ready for her gun and Lieutenants Wadlie and Parsons made the preparations to put the massive weapon in place. The timber parts were implaced first, then the iron barbette carriage. The Parrott was then brought in, first by barge and then by rolling it across the pluff mud on planks. At last the gun was ready to execute Gillmore's strategy of terror.

The 200-pound Parrott was to be manned by a detachment from Company D of the 11th Maine, under the command of Lieutenant Charles Sellmer. The crew had been brought to Morris Island from Fernandina, Florida,

and by the time they had taken up their duties, the gun had already received its famous nickname, the "Swamp Angel," by which Gillmore's Parrott would go down in history.

The bombardment that the Swamp Angel was about to assume required no great refinements of aim. The steeple of St. Michael's Church was a convenient aiming point. Sellmer took a compass bearing on the steeple and aimed just to its left. The gun then awaited only the command from Gillmore to fire.

The key to Gillmore's strategy was, of course, the Parrott gun. All Parrott cannons were basically of the same design. The Parrott was typically a long-tube, castiron piece with a wrought-iron reinforcing band over the breech. The band was made by coiling a wedge-shaped bar around a mandrel, then upsetting the coil and pounding the joints together until welded solid.

The Swamp Angel of Parrott design was a rated "200 pounder" that actually fired a 150-pound projectile. The gun's standard charge was 16 pounds of powder, but the Swamp Angel required a double charge of 20 pounds in order to reach the city at a range of 5 miles.

Before the general ordered the gun to fire on the city, he sent a message to General P. G. T. de Beauregard late on the night of 21 August. This ultimatum bears quotation, for it makes clear that the civilian population of Charleston would be the target.

*Headquarters, Department of the South
Morris Island, S.C., August 21st, 1863*

*Genl. G. T. Beauregard, Cmdg. Confed. Forces about
Charleston, S.C.:*

General, —I have the honor to demand of you the immediate evacuation of Morris Island and Fort Sumter by the Confederate forces.

The present condition of Fort Sumter, and rapid and progressive destruction which it is undergoing from my batteries, seem to render its complete demolition within a few hours a matter of certainty. All my heaviest guns have not yet opened. Should you refuse compliance with this demand, or should I receive no reply thereto within four hours after it is delivered into the hands of your subordinate at Fort Wagner for transmission, I shall open fire on the City of Charleston from batteries already established within easy and effective range of the heart of the city.

*I am, General, your obedient servant,
Q. A. Gillmore, Brig.-Genl. Comdg.*

When the note arrived at 10:45 P.M. at General Beauregard's headquarters, he was in the countryside inspecting fortifications. The threat the note contained was hard for Beauregard's staff to believe. They could not decide on the authenticity of the unsigned dispatch. They could hardly believe that a gentleman of Gillmore's

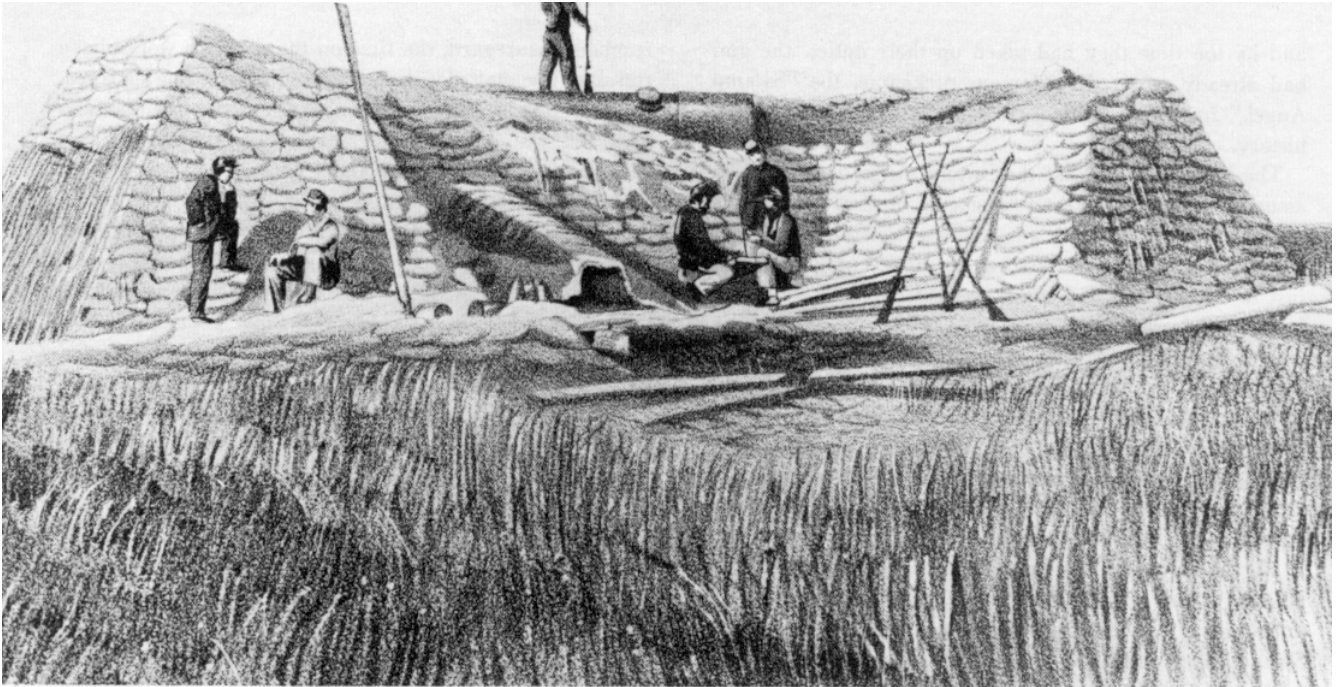
reputation would deliberately fire on a sleeping city filled with helpless women and children. Before a courier could have reached Beauregard, the time on the dispatch would have run out. The staff decided to stall. Under a flag of truce, the note was returned to Gillmore for further authentication. But just 3 hours after the original ultimatum had been received, the Swamp Angel launched her first thunderbolt against Charleston.

At 1:30 A.M. on 22 August, the Swamp Angel broke the stillness of the night by sending a shell smashing into Pinckney Street. After the second shot, the fire bells of the city could be heard ringing. Sellmer kept up the fire until the Swamp Angel had fired 16 shells, which inflicted considerable damage and spread growing consternation among the citizens of Charleston. But its citizens were to be spared by a defect of the gun. The firings had loosened the pintle holding the carriage, and after the 16th shell was fired, Lieutenant Sellmer felt that further firing would be too dangerous to the gun and crew. He ordered a cease fire. The pintle had to be tightened before the Swamp Angel could fire again, and Sellmer estimated that repair would take 48 hours.

Charleston was truly surprised and terrified by the firing of the Swamp Angel. There are many different accounts of what took place that night when the shells started to fall within the city. One war correspondent gave his account of what happened at the Charleston Hotel, where he was staying. The night was very hot, and, unable to sleep, he was reading when he heard first the distant rumble of the cannonade and then a noise that resembled "the whirr of a phantom brigade of cavalry galloping in mid-air," followed by an explosion near his window.

The hotel was filled with many people, for some blockade cargoes were on sale. With the sound of the first explosions, the corridors were filled "with these terrified gentlemen rushing around in the scantiest of costumes and wildest alarm." Pandemonium reigned, and everyone was cursing Gillmore; however, it was the correspondent's view that, had a shell fallen in their midst and "exterminated the whole race of hucksters," it would have been of great benefit to the South.

The Charleston Daily Courier carried a detailed account of the Swamp Angel bombardment in the issue of 24 August. It reported that 12 shells had fallen on the city, several in the vicinity of St. Michael's and others in vacant lots and roadways in the burned-out district on King Street. One shot did enter the warehouse of G. W. Williams & Co., at the corner of Hayne and Church Streets. The shell entered through the roof and exploded in the upper story, made a large opening in the brick wall of the medical purveyor's storehouse next door, and scattered items everywhere. Some loose straw or packing was set on fire by the explosion, and this caused the alarm bell to ring and brought out the firemen. The first fire



company to reach the scene was composed of free Negroes. All the time they were fighting the fire, they kept muttering "cussed bobolitionists" (abolitionists). Four shells fell in this area. One shell was picked up and was exhibited at the guard house.

After the first shells had fallen, most of the people in the lower part of the city awakened. People poured into the streets; the sick were carried out of their houses on mattresses and taken to places of safety. Women with children in their arms made their way to the upper part of the city. Still, not one person was killed or wounded. Only the morale of the city was shaken that early morning, but many Charlestonians were so shaken that they believed three or four Parrotts had fired on Charleston.

On Beauregard's return to his post, he dispatched to the Union general a message expressing his anger and sense of outrage:

Among nations not barbarous the usage of war prescribes that when a city is about to be attacked, timely notice shall be given by the attacking commander, in order that non-combatants may have an opportunity for withdrawing beyond its limits. . . . It would appear, sir, that despairing of reducing these works, you now resort to the novel measure of turning your guns against the old men, the women and children, and the hospitals of a sleeping city, an act of inexcusable barbarity. . . .

Gillmore's "act of barbarity" brought forth protest not only from the Confederates, but also from the British Consul in Charleston, who went out to talk to Gillmore

under a flag of truce. However, the General refused to see the Consul. The British sense of outrage was clearly expressed by a correspondent of the *Illustrated London News* who was in Charleston during the bombardment and who wrote: "The Federal General was guilty of that barbarity which disgraced him as a soldier."

Gillmore, despite the censure of his action, replied to Beauregard's message in a tone which suggested that his only error was in not assuring himself that Beauregard had received his original warning. "I shall suspend the bombardment until tomorrow (23rd)," he wrote, "thus giving you two days from the time you acknowledge to have received my communication of the 21st instant." In fact, the Swamp Angel would not have been ready to fire again before that time in any case.

Colonel Sorrell was sent again to the marsh battery to assist in the Swamp Angel's repair. After a general survey, he found the foundation, parapet, and everything else except the gun and its parts to be in perfect order. It appeared that someone had removed the stoppers designed to prevent the wooden platform from sliding on the gun deck. As a result, the gun and its carriage had slid to the rear some 20 inches. This was quickly corrected by spiking heavy cleats onto the gun deck. Also, the pintle was tightened. After these repairs were made, the Swamp Angel was again ready to rain down her fire on Charleston.

Gillmore was as good as his word. After a 48-hour period, he ordered the battery to resume firing on the city. The previous 16 shells fired had been ordinary

8-inch shells. However, in this new barrage, incendiary shells filled with a composition of "Short's Greek Fire" were used. This material was furnished in tin tubes, closed at one end, about 3 inches long and three-quarters of an inch in diameter.


By the time of the second firing, the Confederates had spied the batteries near James Island and opened fire on that location. The aim of the mortars was good, but the timing of the fuses was poor. As a result, all the shells landed in the mud and then exploded only in the pluff mud around the batteries instead of bursting in the air above them.

On Sunday evening, 24 August, the Swamp Angel, using "Greek Fire," resumed firing on Charleston. The switch to this ammunition was prompted by the hope that it would make Charleston an inferno. The gun started firing about 12 o'clock that night and continued to rain projectiles at intervals of about 15 minutes. Many of the shells proved to be defective and blew up in the barrel at discharge, but this caused no damage to the gun. After the sixth shot, the chief gunner reported to Lieutenant Sellmer that the gunner could not get the priming wire down into the vent. The gun had shifted in the jacket (that is, in the wrought-iron band around the breech) and might burst during any discharge. However, Sellmer's men continued risking their lives by firing 13 more rounds. Sellmer ordered his men outside the battery for better protection just before the 20th round was to be fired. The number four man, the firer, tied two lanyards together in order to fire the gun while standing behind the protection of a wall of sandbags. Then, as Sellmer gave the command to fire the 20th round of the night's bombardment, the whole battery burst into flames. The

force of the explosion had thrown the Swamp Angel off of its carriage, and it landed on the parapet. The Swamp Angel, its barrel burst, died like a soldier, facing its foe. The last shot from the doomed gun struck its target.

The bursting of its barrel doomed the Swamp Angel, and the 8-inch gun and its carriage were removed from the site. Gillmore ordered that the battery site now be reequipped with two heavy mortars, but the terror bombardment of Charleston was ended. The new weapons shifted their fire to join in the continuing bombardment of Fort Sumter. In August 1864, these mortars were replaced by a 4.2-inch Parrott gun mounted on a seige carriage, but it, too, fired only on the military target, Fort Sumter.

Gillmore wanted to destroy the morale of the population of Charleston and thereby induce them to bring pressure on Beauregard to surrender the works defending the city. On a larger scale, the more recent indiscriminate bombardment by guns and planes have had as their aim the undermining of military resistance by similar terroristic attacks on civilian populations. Both English and German populations experienced such bombings in World War II—England first, during the Blitz, and Germany, during the strategic bombing of Germany—and the United States has been accused of similar measures in prosecuting the aerial and artillery war in Indochina.

In conclusion, the episode of the Swamp Angel was, in modern times, the first time that the civilian populace was brought under fire with the intent of shattering its morale. With her firing on Charleston, a precedent was set for the indiscriminate attacks both in World Wars I and II and since. 

2LT Robert E. Dunfield graduated from the Citadel in 1972 as a Distinguished Military Graduate with a B.S. in History. "Swamp Angel" was written as his senior essay while at the Citadel. He was commissioned in Military Intelligence and completed the basic course at Fort Huachuca, Arizona. He is presently assigned to the HHC, 3d Battalion, 35th Armor in Germany.

Sergeant Missile Trophy Retired

The Sperry-Utah Trophy, awarded annually to the Army's best Sergeant missile unit, was retired to the Fort Sill Museum in memory of Lieutenant Colonel William B. Nolde, the last American soldier to die in action in Vietnam.

LTC Nolde, who was the only commander to receive the trophy twice, was killed in Vietnam shortly before the official cease fire took effect. The trophy is to be retired in his honor.

The ceremony retiring the trophy was held September 27, 1973 in Snow Hall auditorium. Mrs. Nolde and her sons, Brigadier General Robert J. Koch, the Assistant Commandant of the US Army Field Artillery School, and a representative of the Sperry-Utah Corporation, builders of the Sergeant missile were in attendance.

The trophy concept was developed in 1962. The Army accepted an offer by the Sperry-Utah Corporation, to present an award to the best Sergeant missile firing battery in the Army.

The awards were started in 1964, after the first Sergeant units were trained and sent to the field. Battery A of the 1st Battalion, 68th Field Artillery, was the first to win the trophy—a two-foot tall chromed bronze Sergeant missile on a dark wood base.

Later winners included Battery A, 5th Battalion, 30th Field Artillery; Battery B, 3d Battalion, 80th Field Artillery; and a battery of the 3d Battalion, 81st Field Artillery.

In 1970 it became a battalion level award, based on the composite scores of all the batteries within a battalion, and for the last two years of competition was awarded to the 5th Battalion, 30th Field Artillery, a Sergeant unit in Italy commanded by LTC Nolde.

With the wind-down of the Vietnam war and the rise of the Army's new Lance missile system, the last competition for the trophy was held in 1971. It seemed fitting to retire the trophy to the Fort Sill Museum, in memory of the man who won it twice.



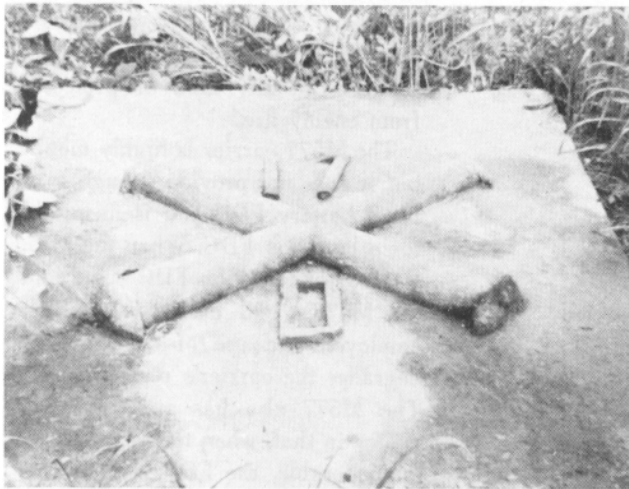
The Nolde family, BG Robert Koch, and a Sperry-Utah official observe the retirement of the trophy in memory of LTC William Nolde.



Citadel Cadets Ken Nelms (left) and Scott Waters (right), both Distinguished Military Students and winners of Army ROTC Scholarships, discuss plans in the Citadel display at the annual convention of the Association of the United States Army in Washington. Last year, 13 graduates of the Citadel in the class of 1973, including the Regimental Commander and two Company commanders, selected Field Artillery as their branch in the Army.

Morale And Esprit

LTC Davis Clark, Commander of the 1st Battalion, 3d Field Artillery, sent us pictures of a very successful live fire conducted in conjunction with a "Family Day" at Fort Hood. Dependent wives were involved in all aspects of the operation to include fire direction, firing battery, and mess operations. LTC Clark indicated that the wives learned a great deal about their husbands' duties, the training was good and esprit through all ranks was enhanced. Colonel Homer W. Kiefer Jr., Commander of the 41st Field Artillery Group and the Babenhausen Kaserne, has written to tell us that the kaserne guards now wear artillery red helmet liners and scarves and salute with a loud "REDLEG, Sir!" The new field artillery song is played three times a day over the kaserne loudspeaker system and there is a project underway to rename the kaserne streets with appropriate artillery titles, such as Artillery Road and Cannoneers Row.

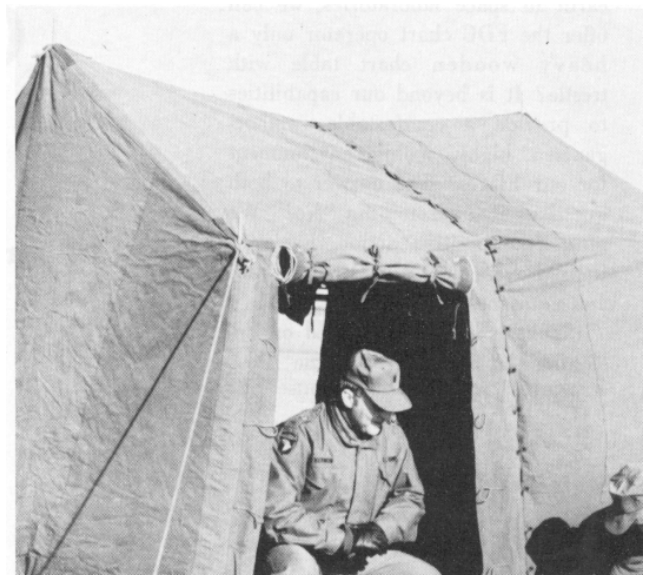


17th Insignia Found

While walking in a pine grove near his quarters at Fort Bragg, North Carolina, recently, LTC Herbert J. Hedrick stumbled over a very large piece of formed concrete. After clearing away the brush and sand he found that the slab had been embossed with the insignia of "D" Battery, 17th Field Artillery. LTC Hedrick notified LTC Henry Taylor, recent commander of the 1st Battalion, 17th Field Artillery, and a check of the unit history indicated that the battalion had been stationed at Fort Bragg from 1921 until 1929. The unit was unable to determine when and for what purpose the slab measuring five feet by six feet by 10 inches, weighing two tons, was poured. Perhaps some of the retired field artillerymen in the Fort Bragg area can enlighten us. Information should be forwarded to: Commander, 1st Battalion, 17th Field Artillery, Fort Sill, OK 73503.

XO Post

Adverse weather conditions not only create discomfort for troops in the field but also cause potentially hazardous situations for the personnel of the executive officers post. Wind can blow papers and rain and snow can obliterate records. Lieutenant Michael H. Vernon and SFC Charles R. Waldrop, of the 4th Battalion, 4th Field Artillery, Fort Sill, have come up with an idea that alleviates these problems. By lacing the vestibules of two general purpose small tents together and utilizing the poles from the tent, a shelter can be erected in approximately five minutes. Ample space is provided for three cots and a field table, thus allowing the battery executive officer, chief of firing battery and the recorder to be near the post, protected from the elements, day or night.



Space age technology has brought improvements and conveniences to many areas; however, the configuration of the field artillery fire direction center (FDC) has remained essentially unchanged for the past 10 years.

Much of the equipment now authorized by Army TOE's is antiquated and is not made of modern materials (fiberglass, plastics, etc.). We have failed to keep pace with new concepts for shelters, such as expandable vans with built-in communications and electrical power circuits. For the most part, we in the Field Artillery are living in the "stone age" in terms of FDC furniture and equipment. It is true that TACFIRE is on the horizon and does make use of the S280 shelter; however, questions remain to be answered about TACFIRE, including whether or not the system requires a manual backup at battalion and/or battery level. Until the requirement for a manual FDC is eliminated, we must continue working toward its improvement.

It is time for the Field Artillery to stop sitting around waiting for these improvements to happen. Is it possible that, in an era when men travel to the moon and orbit the earth in space laboratories, we can offer the FDC chart operator only a heavy wooden chart table with trestle? It is beyond our capabilities to provide a comfortable, well-organized, highly mobile environment for our FDC's? The answer to both questions is a resounding "No!" We must take positive action, however, if improvements in FDC furniture and equipment are to be initiated.

Emphasis should be placed on designing replacements for the TOE structures that currently house our

M O D U L A R F D C

by
CPT Earl W. Finley

FDC's (small general-purpose (GP) tent, M577 carrier, and M109 van). With the exception of the M577 carrier, the FDC shelters we are now using are essentially the same as those we had in World War II. Anyone who has ever had to erect a small GP tent at night or in the rain will affirm that "there must be a better way." Once the tent has been erected, all the FDC equipment must be carried into the tent and set up. On the command MARCH ORDER, the FDC must be dismantled, equipment must be carried to the vehicle, and the tent must be lowered. The small GP tent does not provide the fire direction center the responsiveness necessary for modern warfare, nor does it provide fire direction personnel with any kind of protection from enemy fire.

The M577 carrier is highly mobile, but it does not provide enough space for a battery FDC and is unsuitable for a battalion FDC. When the M577 is used for battalion FDC operations, the M577's tent extension must be employed and use of the extension degrades the carrier's responsiveness. The M577 also has a serious deficiency in that, when the prime mover is inoperable, the FDC loses its mobility. The M109 van, although cramped when used as a battalion FDC, does provide certain advantages, but this van has the same serious deficiency as the M577. It should also be noted that the M109 is being deleted from our TOE's.

I have mentioned only a few of the faults of current FDC shelters. Aside from the fact that these shelters are outdated, the main problems result from the fact that not one of these shelters was designed primarily to house an FDC; instead, the shelters must be adapted for this use.

We in the Field Artillery need structures designed specifically to house an FDC—structures that are FDC-oriented from concept formulation to full fielding. Consideration should be given to "plug-in" facilities to speed up the process of becoming operational or of displacing, to include quick and easy hookup not only for communications and lighting equipment but also for computer power and lightweight, efficient heating and air conditioning equipment.

In any new setting designed for an FDC the maximum amount of fire direction furniture and equipment (chart tables, computer tables, equipment racks, etc.) should be built-in to permit quick and easy setup and stowage. At the same time, these structures must be lightweight and mobile, which will necessitate a more extensive use of materials such as plastics, aluminum, and fiberglass.

Designing settings such as those mentioned above will not be easy. Determination of the best type of structure for the FDC of a particular unit, the construction materials to be used, the exact placement of critical components, etc., will take a great deal of thought, planning, and testing. The first questions to be answered are, What form will the FDC structure take for a particular unit, and how large (of what dimensions) should it be? Forms to be considered are vans and shelters (expandable and nonexpandable), airmobile pods, and pop-up trailers.

The M109 is the only van currently in use as a technical fire direction center. As mentioned earlier, the M109 van is rather cramped for a battalion FDC operation. An expandable van such as the 5-ton expandable van M820A1 would solve this problem, since the body of this van is retracted for traveling and expanded for operational purposes. This type of structure could be set up to allow limited FDC operations in the more cramped retracted mode; then, as time allowed, the van could be expanded for full FDC operation. Why not develop an FDC van similar to the self-contained motor homes (Winnebago, etc.) currently so popular as recreational vehicles? The spacious interior design of these vehicles gives some indication of the vast potential of such vehicles for FDC use.

The shelter is another structure to be considered if for no other reason than that the CONEX, a jury-rigged FDC shelter, was used so successfully in Vietnam. The only limiting factor is that the shelter should be airmobile—the rest of the design characteristics would be "up for grabs." The shelter could be designed for placement in the bed of a military vehicle as well as for independent operations. Placing the shelter in the bed of a vehicle would transform the vehicle into a van without the serious deficiency of space mentioned earlier. In the event that the prime mover failed, the shelter could be moved (by wrecker, etc.) to another prime mover and FDC mobility could be

maintained. A carrier with a flat bed designed to accept the FDC shelter could be developed to provide the mobility required in armored and mechanized infantry divisions. The desired shelter might be in the form of an airmobile pod similar to those used with the CH-54 Skycrane. A shelter of this type could be lowered into position for ground movement and raised for air movement. The possibilities of shelters are unlimited—all that is required is that we determine the capabilities we desire.

Another idea for an FDC structure that may have merit is a militarized (ruggedized) version of the commercial pop-up camping trailers that are so popular today. The trailer would be retracted for traveling and expanded for operations. Equipment would necessarily be built so that it could rapidly be folded, dropped, or retracted for traveling. With this type of structure, the prime mover could be changed with minimal effort and great flexibility could be maintained.

There are numerous promising possibilities for modern FDC structures; however, these structures will not fall into our laps. We must decide what we want and then push to get it. Otherwise, in the future, we will find ourselves stuck with the same outmoded settings that we now have.

A quantum jump can also be made in the area of furniture and equipment to be placed in the FDC structure. The currently authorized chart table with trestle, for example, is heavy, bulky, and hard to set up. The chart operator's equipment (range-deflection protractor pins, plotting scale, etc.) must be stored separately, since the chart table provides no storage space. A much more efficient table could be designed along the lines illustrated in figure 1. This table would be made of aluminum with a lift-up cork and aluminum lid and folding aluminum (expandable) legs. The top of the lid would be the surface on which the firing chart would be placed. Underneath the lid would be a storage area with a molded plastic form providing space for each piece of plotting equipment (fig. 2). Similar designs would be developed for the computer tables, and other FDC furniture. We should be moving ahead toward furniture and equipment of a type that is lightweight, is easy to set up, and makes efficient use of the space available. Once again, we in the Field Artillery must come forth with what we want and need and then push to see it developed.

Bringing about major advancements in structures and furniture/equipment for the FDC will take time. There are things we can do immediately, however, to increase the efficiency of the FDC and the responsiveness of artillery fires. First, we can design the minimum required amount of lightweight furniture and basic equipment that can be fabricated locally for incorporation into the

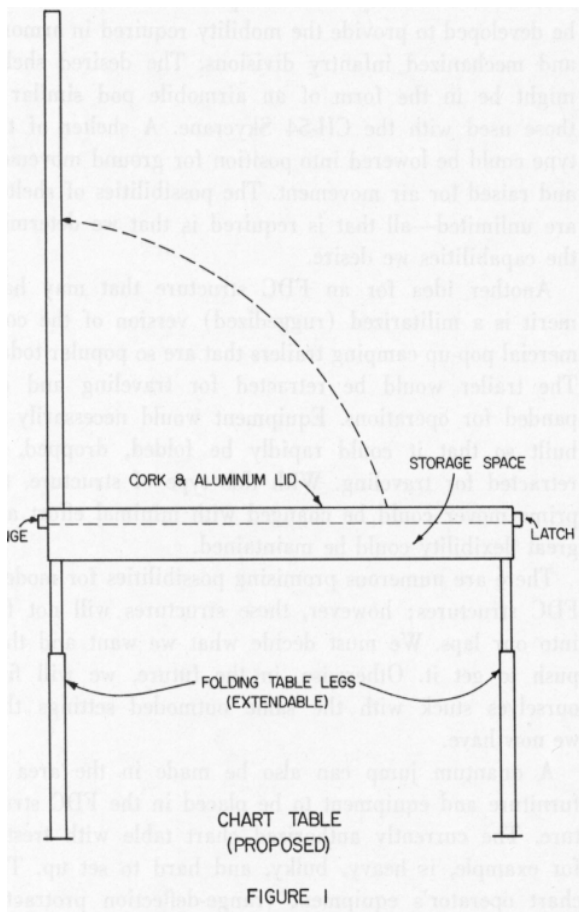


Figure 1. Proposed chart table.

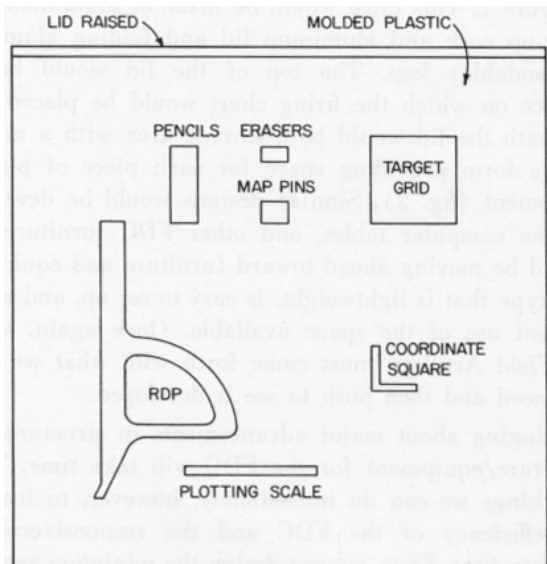


Figure 2. Chart table storage area (viewed from above).

currently authorized FDC shelters (M577 carrier, small GP tent, and M109 van). An improved, wooden computer's table shown in figures 3 and 4 is representative of this type of improvement. Many units have developed workable locally fabricated FDC furniture and equipment—the problem is that these units do not "share the wealth." The successful efforts of one unit/individual should be widely disseminated.

Another way we can quickly increase the efficiency of our FDC's is to optimize the physical arrangements of personnel and equipment. It is evident that practically no two FDC's are laid out in the same manner. Enter one battery FDC (M577) and you will find the FADAC in the right rear corner; enter a sister battery's and the FADAC will be in the left front corner. The layout of the FDC certainly affects its efficiency, and obviously some layouts are more efficient than others. Input must be gathered and tests must be conducted to determine the layout that is the most efficient for each type of unit and each type of shelter. The important thing is to gather good ideas to test—the only limit to the possibilities is one's own imagination. For example, figure 5 shows a layout (not to scale) of a battalion FDC in an M109 van. This layout's uniqueness comes from the fact that all four of the battalion FADAC's have been consolidated in one FDC. This scheme does have disadvantages (primarily, placing all of our FADAC eggs in one M109 basket), but it also has certain advantages. Suggestions like this one for layouts that do not fit a prescribed mold are necessary to insure that our failure to think imaginatively and differently does not cause us to disregard layouts simply because they are unconventional.

I have talked about improving the FDC. What is needed to bring about such improvements is a coordinated program to develop, test, and implement ideas and suggestions for the FDC.

Input from the field will be vital to the success of any such program. Ideas and suggestions for FDC improvements will be needed in the following areas:

1. Physical shelter designs.
2. Equipment and furniture designs.
3. Construction materials.
4. Optimum physical arrangements of personnel and equipment.
5. Changes to TOE's.

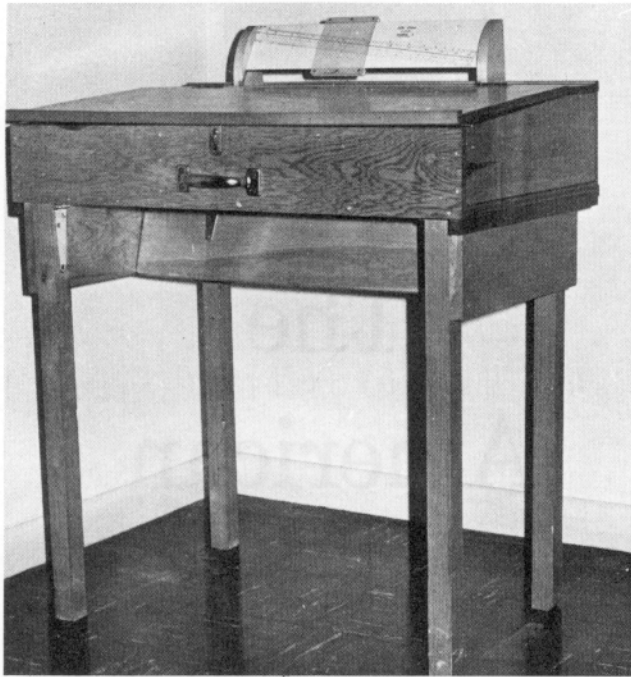


Figure 3. Improvised FDC table standing.



Figure 4. Improvised FDC table with lid open.

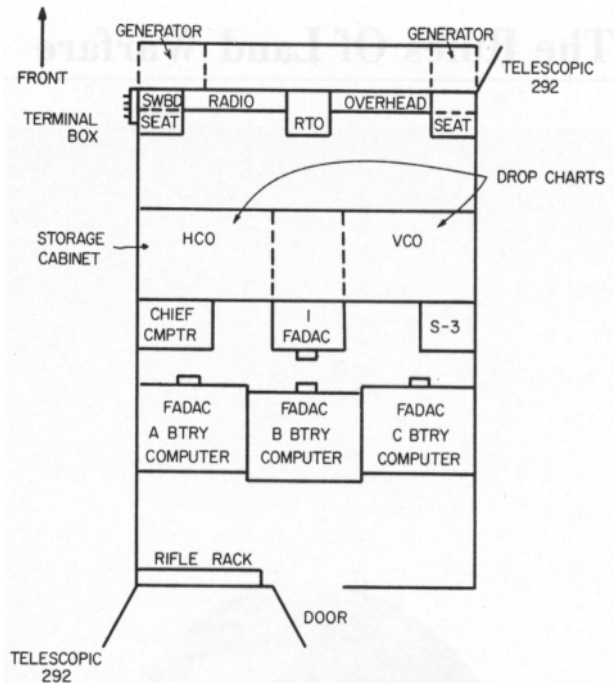



Figure 5. Battalion FDC with four FADAC's in an M109 van.

Suggestions submitted should be specific to include sketches, diagrams, photographs, and dimensions. The responsible agency for this program is the Gunnery Department, USAFAS. Suggestions should be sent to:

Commandant
 US Army Field Artillery School
 Gunnery Department/ATSF-G-OP-A
 Fort Sill, OK 73503

Our goal as field artillerymen should be to develop the finest fire direction center possible and thus enable the Field Artillery to better support the ground-gaining arms. Any contributions you make toward this end will benefit field artillerymen for years to come. 

CPT Earl W. Finley was commissioned in Field Artillery in 1966. He graduated from the University of Massachusetts with a B.S. in Mathematics and received an M.A. in mathematics from the University of Michigan. He has served in Germany and Vietnam. Presently, he is assigned to the Gunnery Department at the Field Artillery School, Fort Sill, Oklahoma.



The American Soldier And The Law Of War

by
CPT Roger G. Darley

A thorough review and discussion of the rules of land warfare with emphasis placed on potential problems of field artillerymen.

INTRODUCTION

The law of land warfare is one of the most important and, at the same time, one of the most difficult concepts that modern commanders face. It is *important* because unless the commander insures scrupulous compliance with the law of land warfare, he runs the serious risk of compromising the overall interests and objectives of the United States in the conflict to which he is a party. It is *difficult* because compliance with the law of land warfare may, from time to time, require the commander to do things that he perceives as being against his own best interests or against the interests of the United States as he sees those interests.

Yet it is undeniable that he is bound to follow the Conventions and insure compliance on the part of his subordinates. (See Manual for Courts-Martial United States 1969 (revised edition) paragraph 14a-b; also FM 27-10, The Law of Land Warfare.) The premise of this article is that the key to compliance with the law of land warfare is an intelligent understanding of the law. Granted that it is a potentially "unpopular" law with those upon whom the brunt of the fighting falls; nevertheless, compliance is much more certain if soldiers understand the "how" as well as the "why" of the Conventions.

Americans in general seem to be willing to follow even those laws that they do not like and that they feel operate against their own interests, so long as they understand the laws. An example is the Internal Revenue Code, which requires Americans to pay income taxes. The average middle-income American resents the income tax law, because he sees it as operating unfairly against him. He sees the poor paying less than their fair share through special tax relief and direct Government subsidy, and he sees the rich paying less than their fair share through tax loopholes enacted for special interest groups. Yet the average middle-income American voluntarily pays his income taxes with surprisingly little "fudging." This same phenomenon will also apply to American soldiers and the law of land warfare. If they have an intelligent understanding of the law, even though they may not like the law, they will probably comply. Such is the nature of Americans.

Our purpose in this article is to impart an intelligent understanding of the law of land warfare. Only if the commander has a clear understanding of the law itself and of the implications of the law, will he be able to satisfy his soldiers as to the "rightness" of compliance with the law in difficult combat situations.

We will approach the problem of understanding the Conventions in two parts. First, we will look at the specific rules that constitute the law of land warfare. And then, we will look at some of the whys of the rules of land

warfare. Part I—THE RULES, is in this edition, and Part II—THE WHYS, will be featured in the next edition.

Part I - The Rules

An initial examination of the specific rules that constitute the law of land warfare is essential to an understanding of the Conventions. There is no "general" concept of legality or illegality in war. The law that governs our conduct in warfare is very specific, with very specific rules. We cannot resolve any question of legality or illegality of acts committed in wartime without reference to the specific rule or rules governing that area of conduct in wartime. The rules may be grouped into five categories—targets, enemy property, weapons, tactics, and prisoners of war and civilians. We will examine each of these categories in turn.

Targets

The first of the five categories of rules deals with what kinds of targets we may attack. The basic rule in this category is that any military target may be attacked with whatever force is necessary to accomplish the military mission with regard to that target so long as the minimum force necessary to accomplish the mission is used.

What is a military target? It is something with military significance: an enemy soldier, troop emplacement, tactical position, supply complex, or command post. Also, a military target is an enemy supply capability that directly feeds the war effort, such as a harbor or the industrial capability of a city, if the industrial capability directly supports the war effort.

A military target may be attacked so long as only the minimum force necessary to accomplish the military mission is used. If more than the minimum force necessary is used, a war crime may be committed. For example, if the military mission is to destroy an enemy OP located in a heavily populated area and if direct fire weapons would be sufficient to accomplish that mission, then the use of all available artillery to wipe out the OP, and coincidentally members of the civilian population in the immediate area, would be illegal. Since there is no need to use artillery, its use would constitute more force than is necessary and would result in *needless* killing and destruction in the surrounding civilian community. If, for some reason, available direct fire weapons would not suffice to destroy the OP and the only way to accomplish the mission was to use artillery, then the use of artillery would be legal as the minimum force necessary to accomplish the mission, even though civilians were thereby killed.

The question must always be approached in two ways: First, what is the mission? Second, what is the minimum force necessary to accomplish the mission? If, in the preceding example, small-arms direct fire would have been sufficient to destroy the OP, then the use of artillery would have constituted more force than was necessary and would have been illegal. The needless destruction caused the surrounding area would have been a war crime.

We have thus far seen that we may attack and destroy military targets. Now we must go a step further and define a protected area. A protected area is a place of no military significance, such as an undefended village, a hospital, a church or a school, or a place occupied by members of the civilian population. The rule may be stated simply: Protected areas may not be attacked.

What if, however, an enemy force occupies a protected area? A church is clearly a protected area, but may we attack an enemy OP that has been located in the church steeple? The answer is "yes," and the reason goes back to the definition of a protected area: It is a place of no military significance. The church gains military significance when the enemy uses it as an active OP, and thus it becomes a military target and may be attacked with whatever minimum force is necessary to neutralize the OP. (We shall see later that the act of occupying the church, and thus stripping the church of its protected status, is a war crime by the enemy.)

How do we treat a military target located right next to a protected area? For example, what would we do about an enemy ammunition dump located 50 feet from a church? We know that we may not attack the church, but we know that the ammo dump is a military target and may be attacked and destroyed. But the church is so close that if we destroy the ammo dump, the church is sure to be destroyed also. The rule is that the ammo dump may be attacked and destroyed. So long as the minimum force necessary to destroy the ammo dump is used, inadvertent damage to or destruction of nearby protected areas is legal.

It should be noted here that the rules limiting the kinds of targets that may be attacked in wartime do not place any restrictions on the legitimate use of a nation's warmaking power. The rules say that a military force may attack a military target but may not attack an area of no military significance. And in attacking a military target, whatever force necessary to accomplish the military mission may be used so long as it is the minimum force necessary to accomplish the mission. To those who cry that these rules "tie the hands" of a military force, we would have to ask what legitimate reason could there be to attack a place of no military significance? And what legitimate reason could there be to use more force than is necessary to accomplish the military mission? If there is military significance to an area, then it may be attacked.

(The exception to the rule is an enemy hospital. Hospitals, so long as they are actually being used as *bona fide* hospitals, are protected areas even though they support enemy combat operations.) And if a given level of force is not sufficient to accomplish the mission, then more may be used. The conclusion must be that these rules do not limit the war-making power of a military force, and we shall see that most of the rules of land warfare likewise do not limit this power. The overall intent of the rules is only to keep the suffering and destruction inherent in war to the minimum consistent with legitimate prosecution of the war effort.

Enemy Property

The second category of rules deals with the seizure and destruction of enemy property.

It would seem that any property belonging to the enemy should be subject to seizure or destruction by friendly forces. The rule is, however, that enemy property may be seized or destroyed only when seizure or destruction of the property is demanded by the necessities of war. If there is no military necessity for destroying the property, then the opposing military force must leave it alone.

This again is an example of a rule that seems restrictive on the surface but actually places no limit on the legitimate exercise by a military force of its war-making powers. For example, if a friendly force is fighting in enemy-owned territory, then all property that the force comes upon is, by definition, enemy property. Even under these circumstances it would be illegal for the force to tear up clothing belonging to the civilian population, smash dishes, and burn books. Confiscation of "souvenirs," such as art objects belonging to the enemy civilian population, would also be illegal.

But, on the other hand, destroying caches of enemy uniforms and equipment, ammunition and arms, and other items of military significance is proper, because the seizure and destruction of the property is demanded by the necessities of war. It is only property that the seizure or destruction of which is not necessary to the legitimate prosecution of the war that must be spared.

Weapons

The law of war outlaws the use of weapons that are designed or used so as to cause unnecessary suffering. This is the third category of rules, and again it is a set of rules that do not limit the legitimate prosecution of war by a military force. They are aimed only at keeping the suffering inherent in warfare to the minimum.

There are two aspects to determination of the legality

of a weapon: First, the design of the weapon, and, second, the use of the weapon. We will first examine the design aspect of weapons.

A weapon is illegal if it is designed to cause unnecessary suffering. This is a highly subjective standard, because nobody pretends that the weapons used in war do not cause suffering. The intent of the rule is to prevent the designing of weapons for the explicit purpose of causing suffering in excess of that reasonably required to accomplish a military mission.

Examples best illustrate the rule. A projectile filled with glass is illegal because it will always cause more suffering than is necessary. There is no case in which a projectile filled with glass will neutralize an enemy more effectively than will a metal fragmentation projectile, because the only effect of the glass will be to make the already incapacitating wounds from metal fragmentation projectiles dirtier and sometimes impossible to treat. Our objective is not to maim enemy troops but to sufficiently incapacitate them (to include killing them) so that we can overcome them in battle. We need not *design* weapons for the additional purpose of causing those who survive a lifetime of pain.

Another example of a weapon illegal by design is the dum-dum bullet. A dum-dum is a bullet with a flat tip that is designed to mushroom upon impact and cause gross destruction of tissue. Such a bullet is illegal because there is no case in which a dum-dum will incapacitate an enemy soldier more effectively than will a nonexpanding round. It merely incapacitates him more grotesquely, and this is not necessary. There is no legitimate use in war for causing the kind of suffering inherent in the glass-filled projectile and the dum-dum bullet because other means

are just as available to accomplish the same military purpose but cause less suffering.

Conversely, the law of war does not require that a capacity to inflict suffering be designed out of weapons that are created to accomplish some legitimate tactical purpose. An excellent example here is the M16 rifle. It is sometimes stated that the M16 was designed to cause a bullet, when fired, to tumble in flight and cause a gaping wound and that it is therefore illegal under the rules that we have just stated.

There is no question that the M16 bullet is unstable in flight and that it will tumble if it is deflected by a twig or branch on the way to its target. But to suggest that the designers of the M16 created the weapon system for the purpose of introducing into warfare a bullet that tumbles is ludicrous. Have these weapon designers never read that a bullet that tumbles has dramatically decreased accuracy? Would a weapons command spend millions of dollars on a weapon system that gives up any degree of accuracy in order to enable it to inflict a degree of suffering and destruction that is not necessary to accomplish the military missions for which it might be employed?

A much more rational explanation for the M16 weapon system is that by use of a drastically smaller round, the ammunition that can be carried by a combat division, and therefore the firepower immediately available to the division, could be increased severalfold, with a corresponding decrease in ammunition logistical operations. This is at least one rationale for design of the M16, although there are others. The fact that this particular design of bullet does tend to tumble when deflected is an unfortunate technical characteristic of the weapon system and is considered unfortunate not only by those who are hit by a



tumbling round but also by the designers who are concerned with accuracy. The law of war, however, does not require that this characteristic be designed out of the system.

The second aspect of legality of weapons deals with the use of the weapon: Any weapon may be illegal if it is used to cause unnecessary suffering. A good example is the bayonet. The bayonet is an unquestionably legal weapon—probably one of the oldest conventional weapons used in warfare—so long as it is used in the manner for which it was designed. But can the bayonet be used in such a manner that it becomes an illegal weapon? If, instead of being used to jab or slash an opponent, the bayonet is used to inflict the "death of a thousand cuts," then the bayonet becomes an illegal weapon.

The same rationale may be applied to fire weapons, such as napalm. Napalm is a legal weapon by design because it was designed as an antimateriel weapon and as a device to evacuate oxygen from otherwise inaccessible bunker complexes. The problem with the legality of napalm is with its use. We know that napalm is sometimes used against troop concentrations in the open, even though it was designed for other purposes. Whether or not this use of napalm against troops is illegal under the law of war depends upon whether it causes more suffering than is necessary in accomplishing a military mission. If the ground commander has the choice between fragmentation bombs and napalm in neutralizing an enemy force in the open and if he chooses napalm, he will commit a war crime. But if, for some reason, there are enemy troops in the open, and the military mission demands that they be neutralized, and there is no fragmentation bombs or HE rounds or direct fire weapons which can do the job, but there is *only* napalm, then by definition the use of napalm causes no more suffering than is necessary because there are no other means to accomplish the mission, and its use would be legal under the law of war.

The same analysis can be used in discussing the use of white phosphorus (WP) artillery airbursts against exposed enemy troops. WP is not designed as an antipersonnel weapon, but as a marking round and an antimateriel weapon. Thus, it is clearly not illegal by design. Its use against troops may be legal under the law of war if a certain military mission requires that exposed troops be destroyed and if there is *no* way to destroy these troops short of using WP because, for example, there are no HE, air, or direct fire weapons that can do the job.

Most of the time, of course, other means that would cause less suffering are available to accomplish the mission. As a practical matter, HE could always do this job, and it is available 99 percent of the time. For this reason, ground commanders in the Vietnam conflict promulgated rules of engagement prohibiting the use of

WP airbursts over exposed troops. The rationale of the commanders was that, although it is possible that this use of WP could be legal under the law of war, 99 percent of the time it would be illegal because there would be some other means to accomplish the mission short of using WP. Therefore, the command policy was that in 100 percent of the cases, there *will* be HE rounds or some other means available. Even though possibly legal under the law of war, this use of WP was precluded by the rules of engagement promulgated by US commanders.

Note again that this is another category of rules that do not limit the ability of the military force to conduct legitimate military operations. If a certain degree of suffering is necessary to the accomplishment of the military mission, then that degree may be legally imposed.

Tactics

The law of war generally places no restrictions on the tactical options open to a military commander, but it does prohibit what the Geneva and Hague Conventions term as "treacherous acts." A treacherous act is one that, over the long run, will cause harm that far outweighs any immediate tactical advantage that might be gained from the act.

An example of a treacherous act is pretending to surrender as a trick to engage the enemy under more favorable conditions. This rule does not have anything to do with a soldier's duty to resist capture to the very end and to attempt to escape if he is captured. But it does require that gestures of surrender be made in good faith—in other words, when a soldier raises his hands or a white flag as if to surrender, he must have, at least for the moment, ceased to resist. Violation of this rule can be illustrated by the familiar story of an 8-man patrol whose members detect a 50-man enemy force approaching to the front without being detected themselves. The patrol leader positions two or three of his men at the base of the horseshoe in a surrender attitude and hides the rest of the men along the sides of the ambush. When the enemy force approaches to take the "prisoners," the prisoners drop to the ground prone and the ambush opens up on the enemy force.

This may at first sound like good tactics, but consider the results of this sort of an ambush. At least one of the enemy will probably escape the ambush and report back to the enemy force. The word will be spread among the enemy force that friendly surrender attempts may be, or will probably be, ambushes. And the next time that friendly troops are in a position where they must surrender or perish, they will probably be summarily killed rather than taken alive by an enemy force expecting

another trick.

The effect, therefore, of friendly forces using the surrender trick is to deprive soldiers who might need to surrender, after all means to resist are exhausted, of the right to surrender.

Another example of a treacherous act is the use of protected areas, areas of no military significance, for military purposes. Recall from our discussion of targets earlier in this article that if a protected area, such as a church steeple, is occupied by an enemy force as an OP, then it ceases being a protected area and becomes a military target, which may be legally attacked and destroyed. The act of the enemy force in occupying the church, and thereby stripping it of its protected status, is a war crime.

Prisoners Of War And Civilians

The rules in the final category deal with the treatment that must be accorded prisoners of war and civilians who fall into the hands of a military force. The basic rule is that they must be accorded humane treatment. They must be given food, shelter, medical care, and clothing. They must be protected from harm and removed from the battlefield as expeditiously as possible. The basic tactical mission with regard to prisoners of war is summed up as "the five S's": segregate, search, silence, safeguard, and speed to the rear.

Once an enemy soldier becomes a prisoner of war—that is, once he comes under the physical control of a hostile military force—his status under the law of war changes. As an enemy soldier, he was a military target, but as a prisoner of war, he is a protected person. He may not be harmed, and the capturing force must protect him from further harm. To some extent a PW enjoys a higher status on the battlefield than do our own friendly troops, because our own troops are required to continue to engage in battle whereas the PW must be protected from harm that might come from the battle.

Most people find this a difficult proposition to accept. They tend to take the position that an enemy soldier is an enemy soldier and that we should have no obligation whatsoever to protect him. Most people, in fact, initially find the concept that PW's must be protected to be totally unacceptable.

The concept of protecting prisoners, however, is deeply rooted in our own society. For example, if the civilian police in the United States apprehend a person and place him in confinement, we expect the jailor to protect the individual while he is in confinement and unable to protect himself. We expect the jailor to protect the prisoner from violence by cellmates, from the effects of untreated disease or injury, and from the effects of cold and hunger. In short, we expect the jailor to turn the

prisoner *out* of the confinement, when the period of confinement has run its course, in at least as good a condition as he was in when the jailor took the prisoner *into* custody, regardless of whether he is to be released back into society or turned over to a public executioner for imposition of a death sentence. Our society demands this measure of protection for all persons who are in custody. Even after 10 years, in some parts of our society, feelings still run strong over the peculiar circumstances that resulted in Lee Harvey Oswald's being shot by Jack Ruby while Oswald was in police custody after the assassination of President Kennedy. It should not be a mystery why the law of war accords this same measure of protection to prisoners of war, who are manifestly NOT criminals or accused criminals.

The law of war permits interrogation of prisoners of war but absolutely prohibits the use of torture in interrogation. There are very strong practical reasons why PW's should not be tortured for information by frontline troops. An interrogator using torture is likely to be told anything that he wants to hear, but what he wants to hear and what he does hear as a result of torture may have little relation to the facts as they actually exist. Information gained through the use of torture is always of very questionable reliability.

United States forces have trained interrogators, in rear areas of combat zones, whose sole function is to obtain reliable and accurate information from prisoners of war. These interrogators do not rely on torture to get information, and they will tell you that attempts at extracting information by the use of torture by frontline troops merely increase the resistance of the prisoners and make effective interrogation more difficult once the prisoners are evacuated to the rear.

The final important point regarding prisoners of war is that they may not be killed. For all practical purposes, this is an absolute rule. Generally, there are only two circumstances under which a prisoner of war can legally be killed: one, when a prisoner has been sentenced to death by a judicial forum recognized under international law and the death sentence has been approved and, two, when a prisoner attacks a captor with a deadly weapon and killing the prisoner in self-defense is necessary to preserve the life of the individual against whom the attack is directed.

In other words, a prisoner of war may be killed only under the same circumstances as those under which a fellow friendly soldier may be killed.

There is a dangerous feeling among many combat troops that this rule doesn't really mean what it says—that there are some circumstances in the field, other than the two detailed, under which it would be legal to kill prisoners. This is dangerous because it is wrong. The

killing of a prisoner of war is murder, in clear violation of the criminal laws and of the public policy of the United States. The United States has time and time again demonstrated its intent to treat the killing of prisoners as murder by prosecuting those against whom cases could be made, but still many soldiers seem to think that it is all right under some circumstances or that the brass will look the other way if there is a "good reason" for the killing. Any soldier who believes that a PW may be killed as a field expedient to enhance accomplishing some assigned task is a prime candidate for a murder conviction.

In order to illustrate the issues involved in killing prisoners, we will detail an example. Let us assume a five-man patrol behind enemy lines. The mission of the patrol is to move to the rear of the enemy combat zone and free an American prisoner. If this prisoner is not freed within 48 hours, he will be tried on trumped-up spying charges and then will be either executed or sent to life imprisonment in the enemy homeland. The members of the patrol are properly trained and equipped to effect the rescue and evacuation of the prisoner. They are on radio silence and must avoid contact or detection by the enemy. If the enemy suspects the presence of the patrol, the American prisoner will be killed immediately.

When the Americans are 24 hours into the mission, passing quietly through an area heavily infested with enemy soldiers, they suddenly stumble upon a listening post occupied by a lone enemy soldier, who immediately jumps up with his hands in the air. Even though under orders to avoid taking prisoners, they now have a prisoner of war, and we must help the patrol leader decide what to do with him.

The first answer that comes to mind, since we are discussing the killing of prisoners, is that we should kill him and continue with the mission. But we know that the rule prohibits our killing him, and we must find other solutions.

One other solution would be to take him with the patrol and continue with the mission. This is a sound tactical and legal solution to this problem. But let us say that for *this* mission and under *these* circumstances we cannot take him with us because he will slow us down and we do not have the people to guard him nor the supplies to support him. So in this particular case, taking him with us will not work.

Another solution would be to send a guard back to a friendly position with the prisoner. This is another generally sound tactical and legal solution to the dilemma. But, again, let us say that for *this* mission and under *these* circumstances we cannot do this because it will take two members of the patrol to guard him and keep him quiet on the way back to friendly lines and,

although we might be able to spare one member of the patrol, we cannot accomplish our ultimate mission minus two people. So we must look for another solution.

We might radio back for a helicopter to pick up the prisoner, but, again, we are on radio silence and the presence of the helicopter would probably give our presence away to the surrounding enemy.

Why not simply disarm the prisoner and let him go? This is an excellent procedure to be followed in some cases, but, unfortunately, if we do that in this case, he will immediately tip off the surrounding enemy units to our presence and we will be discovered.

May we then simply tie him up and leave him behind and continue with our mission? This is a lawful solution to the problem and many times it will make tactical sense, but in this particular case there are so many enemy soldiers in the area that he would probably be found within 6 hours and our mission would be given away. It would even be legal to tie him up and hide him so that he would not be readily found (although if this procedure amounted to killing, e.g., hiding him at the bottom of the lake, it would again be murder), but, again, let us say that even that procedure in our case will not give us a reasonable chance to proceed undiscovered.

We have now come to the point in the discussion of the example where there seems to be no alternative but to kill the prisoner. All the measures suggested thus far are perfectly proper, and in 99.99 percent of real-life situations, one of these options will be open. But in our example we have systematically eliminated these options until the only solution to the dilemma seems to be to kill the prisoner and save the friendly soldier.

But we may not kill this prisoner. If there is no way to accomplish the mission without killing the prisoner, then we must abort the mission. United States soldiers are repeatedly told that the mission always comes first, but they also need to be told that this *assumes* the mission can be accomplished in conformance with the law. If completion of a mission requires that a murder be committed, then it needs to be clearly stated that the mission is of secondary importance to compliance with the law. And in the example that we are using as a basis for this discussion, no matter how compelling the circumstances seem, the killing of this prisoner of war would be murder. Prisoners of war must be protected. They may not be killed.

Upon first hearing this example, most military men rebel and refuse to accept either (1) that it is the law or (2) assuming that it is the law, that the law has any rational basis whatsoever. In order to get an insight into the rationale behind this law, let us go back to our original example and modify it slightly.

We have the same five-man patrol operating with the same mission and under the same tactical circumstances. But in this variation of our example, instead of the patrol's inadvertently taking an unwanted prisoner of war, one of the members of the patrol steps on a concealed punjistick, which penetrates his boot and emerges from the top of his instep. When he falls, he breaks his other ankle. It would be possible for us to go on and complete the mission with only four men, but what do we do with the hurt soldier? We can't take him with us because he will slow us down and compromise our secrecy. We can't send him back to our own lines without sending at least one other member of the patrol to help him travel, but we cannot spare one more man and still accomplish our mission. We cannot leave him behind because, even if we hide him, the enemy in the area is sure to find him within a matter of hours and our mission will be compromised.

We now find ourselves in the same relative situation as that in the previous problem: We must decide whether to kill the person who is a burden to the patrol and bury his body so that the patrol can get on with the mission and save another life. The answer is obvious in the restated problem: We do not kill the wounded comrade. If we are unable to find an alternative between killing him and aborting the mission, we abort the mission, even at the cost of another American life. In this example, killing the wounded soldier would be premeditated murder.


The point of the pair of illustrations is this: Before you can logically conclude that the prisoner of war should be killed, you must conclude that the wounded comrade should be killed. Under the law, prisoners of war are "protected persons" and must be accorded *at least* that measure of protection accorded our own soldiers. Until we are willing to kill our own man, we cannot logically

even consider killing the prisoner.

This thought process will lead to the right answer about killing the prisoner of war because in 99 percent of cases even the most cynical observer of the law of war will agree that it would be murder to kill the wounded comrade and that, therefore, it would also be murder to kill the prisoner.

We should state that it is very unlikely that the situation would ever arise in which a soldier would have to make a choice between killing a prisoner and saving friendly lives or declining to kill a PW and aborting a mission. There are always alternatives open. Several were suggested in the example, but they were all ruled out. It is important to note, however, that they were not ruled out to make the problem conform more closely to real life. They were ruled out in order to force the kill/abort decision that we have been discussing. Not only will there be alternatives to killing the prisoner or aborting the mission, but the alternatives will be found. The training that every soldier at every level gets is aimed in part at making him able to react flexibly to tactical situations so that the alternative ways will be found and properly used.

This concludes our brief discussion of what the rules of law of land warfare are. It is of vital importance that commanders understand these rules because it is by reference to these rules that all questions about the legal propriety of acts committed in war are judged.

The second half of this article, which will appear in the next issue of **The Journal**, will provide a further basis for understanding the rules by presenting a rationale for compliance beyond the basic mandate for all US soldiers to obey the law. 

Captain Darley is a 1964 graduate of the University of Texas Law School. From 1965-1968 he was in the US Marine Corps, and served in the legal office of the 3d Marine Division in Vietnam. Since transferring to the Army in 1969, he has served as Post Judge Advocate at Fort Sam Houston, a Law Instructor in the Field Artillery School, and is presently a Deputy Staff Judge Advocate of Fort Sill.

The F O



Takes Command

by
Major Holland B. Coulter

The latest revision of FM 6-40, now scheduled for submission to TAG on 6 November, includes a section on the new registration procedure referred to as the ABCA registration.

The ABCA countries—Australia, the United Kingdom (Britain), Canada, and the United States (America)—have agreed on the standardization of certain procedures that will be used in joint operations. These agreements are referred to as Quadripartite Standardization Agreements (QSTAGS).

QSTAG-225, Call for Fire Formats, ratified by all ABCA countries, became effective 12 April 1973. This QSTAG satisfies the requirements for a common language, consisting of standard calls, terms, and procedures, that will enable an observer, a unit, or a formation headquarters of one nation to call for fire from the cannon of another nation. Use of this common language will lessen the risk of misunderstanding and decrease response time.

Among the procedures included in QSTAG-225 is the ABCA registration procedure. This procedure is the result

of compromise, testing, and evaluation that began in 1967 and continued until February 1971. At that time, the Commandant, United States Army Field Artillery School, approved the ABCA procedure as an alternate registration procedure to be used at the discretion of US Army field artillery commanders and in joint operations with other ABCA countries.

This procedure was evaluated at Fort Sill by means of comparison firings. It was also evaluated by selected field artillery units worldwide. Comments from these units were generally favorable, the major concern being that the conduct of precision fire could possibly rest entirely with an inexperienced observer.

The ABCA registration procedure is simple and compatible with FADAC. The limited data available indicate that it is only slightly less accurate (15 meters or less) than current registration procedures and could result in a 38-percent savings in ammunition. The ABCA procedure also is faster; however, it is sensitive to the observer's ability to spot the required 25-meter bracket.

The ABCA registration procedure is identical to the current precision registration procedure in the adjustment phase. Fire for effect begins when a 100-meter bracket is split.

At the fire direction center, the fire-for-effect phase of the ABCA registration amounts to nothing more than a continuation of the adjustment procedure, either by computing the observers corrections in FADAC or by moving the pin on the firing chart according to the observer's corrections. Adjusted data are determined from the observer's final correction. Use of the ABCA procedure eliminates present FDC precision registration requirements for a ½ S table, a spotting table to convert spottings from the OT line to the GT line, a record of precision fire, and a formula or table to compute adjusted elevation.

In plain English, the FO runs the registration. For this reason the majority of the new procedures occur at the FO level. The observer's objective is to obtain a bracket consisting of two overs and two shorts fired at the same data or at data 25 meters apart. The following annotated call for fire demonstrates the ABCA registration procedure:

EVENTS	REGISTRATION OBSERVER'S CORRECTIONS
1	Observer's identification.
2	FIRE MISSION, ONE GUN. (a)
3	REGISTRATION POINT 1.
4	DIRECTION 1240.
5	REGISTRATION.
6	ADJUST FIRE. (b)
7	RIGHT 70, ADD 200.
8	DROP 100.
9	ADD 50. (c)
10	ADD 25.
11	REPEAT.
12	DROP 25.
13	RECORD AS REGISTRATION POINT 1 AT ADD 10. (d) (e)
14	TIME REPEAT. (f) (g)
15	UP 40.
16	3 ROUNDS, FIRE FOR EFFECT.
17	RECORD AS TIME REGISTRATION POINT AT DOWN 10. END OF MISSION.

Notes:

(a) Some ABCA countries use more than one gun when registering. United States procedure is to always use one gun.

(b) A PEr of 25 meters or more will be reported to the observer. Fire for effect is begun when a 200-meter bracket is split.

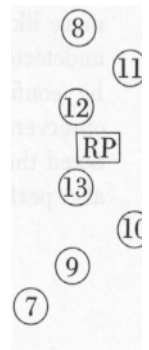
(c) The observer now obtains a verified 25-meter bracket or bracketing rounds unless a report has been made up by FDC/CP that the PEr is in excess of 25 meters (see

(b) above) when a verified 50-meter bracket is used. A verified bracket consists of four rounds fired at the same data or at data 25 meters apart and bracketing the registration point, i.e., two rounds over and two short. A target hit or range-correct spotting may be considered equivalent to two rounds fired at the same data and bracketing the registration point. Corrections for deviation are made after the split of the 50-meter bracket only when a shift is necessary to obtain positive range spottings. Deviation corrections for rounds fired at the same data should be made with respect to their estimated mean point of impact. When a deviation correction requires that a second round at one end of a 25-meter bracket be fired at data different from that at which the first round was fired, an additional round should be fired at the new data to verify the bracket.

(d) A verified 25-meter bracket has been established by observation of the rounds corresponding to events 10, 11, 12, and 13 as shown below.

EVENTS OBSERVER'S CORRECTIONS

7	RIGHT 70, ADD 200.
8	DROP 100.
9	ADD 50.
10	ADD 25.
11	REPEAT.
12	DROP 25.
13	RECORD AT REGISTRATION POINT 1 AT ADD 10. (d)



(e) As the registration point is equidistant between the four rounds of that established the 25-meter bracket, the registration point is recorded at the midpoint. If the registration point lies nearer the last round fired, this information is recorded without command. If the registration point lies nearer the two rounds establishing the other end of the 25-meter bracket, this information is recorded by ordering ADD 25 or DROP 25, as appropriate. A final refinement in deviation may be made, if necessary, to move the mean point of impact of the adjusting rounds over the registration point.

(f) On the order TIME REPEAT and with the predicted fuze setting, a round is fired at the data recorded to the registration point but with the elevation increased by the equivalent of 20/R.

(g) The fuze setting is adjusted by ordering corrections to the height of burst (HOB) until the mean point of burst (MPB) of four rounds fired at the same data is

20 meters above the registration point. The rules for the adjustment of the fuze are as follows:

(1) If a graze burst is obtained, the HOB is raised 40 meters. This is repeated, if necessary, until an airburst is obtained.

(2) Three additional rounds are then fired at the same data. If three airbursts are obtained, the HOB of the MPB of these three rounds and the previous round is assessed and a correction is ordered to bring the HOB to the correct height; i.e., 20 meters. If two airbursts and one graze burst are obtained, the HOB is assumed to be correct. If two graze bursts and one airburst are obtained, the HOB is correct at UP 10. If three graze bursts are obtained, the HOB is correct at UP 20. Corrections to the HOB are ordered to the nearest 10 meters.

Before using the ABCA procedure as an alternate to the current procedure, the artillery commander should consider the following:


Forward observer ability and judgment: With the ABCA procedure, precision fire is controlled by the observer. In comparison to the current procedure, observer errors due to poor judgment or inexperience are more likely to result in an invalid registration and to go undetected by the S3. The commander, therefore, should be confident in the ability and judgment of forward observers who will use these procedures. It should be noted that forward observers of the other ABCA countries also perform many of the functions of our S3/fire direction officer. Normally, these observers are experienced field artillerymen of proven

ability.

Spotting conditions: Where the condition of difficult terrain, limited visibility, or a large angle T increases the probability of misspottings, the risk of an invalid registration is greater with the ABCA procedure.

Air observer: Since the air observer normally spots and corrects on the GT line and observes from a vantage point well above the terrain, the ABCA procedure should consistently provide satisfactory results.

In summary, the ABCA registration procedure has been ratified by the United States in a QSTAG agreement for use in joint operations with other ABCA countries, and it has been accepted and tested in the field and at Fort Sill. It is an alternate procedure that, in some cases, may require less time and ammunition and provide results comparable to present precision fire procedures.

The ABCA registration procedure will be included in the new FM 6-40 and is being taught as an alternate registration procedure to students attending the Field Artillery Officer Advanced Course. 

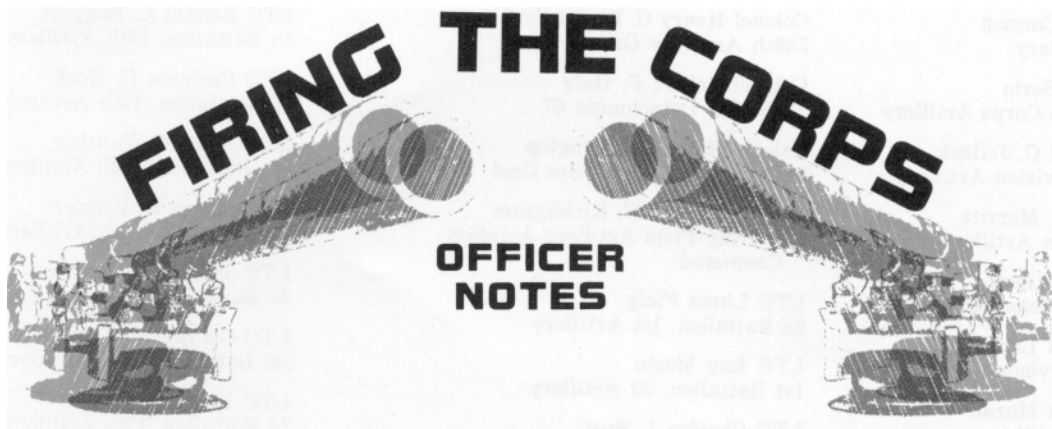
Major Holland B. Coulter was commissioned in Field Artillery from the Military Academy in 1961. He has served in Germany, Korea, and Vietnam. He has a B.S. from USMA and an M.S. in mathematics from RPI. He is presently assigned to the Gunnery Department of the Field Artillery School, Fort Sill, Oklahoma.

THOUGHTS WORTH REMEMBERING

The following is an extract from a graduation address delivered on 19 October 1973 by Colonel D. W. McConnell, Fort Sill Inspector General, to the Field Artillery School Officer Basic Course Class 2-74:

As the Inspector General, I conduct seminars with young men of the tactical units at Fort Sill to find out what they are thinking—how they feel about things. And we invite a couple of people from your OBC class to come and sit in on these seminars in order to learn first hand, and perhaps share with you, some of the problems and attitudes they will encounter when they get to their units and deal with their men. The last one we had was particularly interesting. I deliberately led the conversation along the road to: "What do you young men" (these were all privates and SP4's) "look for and expect in a brand new officer who comes to your unit?" Let me tell you what they told us.

First of all they said, "He's got to be honest, he's got to keep his word. . . . The young officer who comes here must have integrity. . . . He's got to understand us, so that we feel that he's not putting us on. . . . I must be able to trust him. . . . We can't expect a rip-off." Now remember, this is *not* me talking—these are privates. "If he promises me something, I've got to expect that he will keep his word. . . . He must know his job, but if he doesn't know it all, I can live with that, if he'll take the trouble to learn and not be afraid to ask questions." Now, if you place these things these privates said against what we teach as the attributes of leadership, you see how they match up. Privates may not have the formal schooling on leadership, but they instinctively recognize it when they see it and recognize the lack of it when they do not.



As a service to our readers and in coordination with FA Branch, OPD, we are publishing a list of Field Artillerymen who were occupying command positions as of November 1973, with an update in December. We plan to run a complete list annually and in succeeding issues publish the changes as they occur. We would urge unit adjutants to check their particular unit and let us know if there are any corrections to be made.

SENIOR FIELD ARTILLERY COMMANDERS

Command Selection: An element of the Officer Personnel Management System (OPMS) is the centralized Command Selection Board. Major factors of the selection system are:

a. Department of the Army command selection boards will select officers under separate lists and criteria as troop commanders, logistics commanders, and as district engineers.

b. Separate boards will be convened for the combat arms, combat support arms, and logistics.

c. The combat arms troop command selection board will select officers to fill both branch troop and aviation troop command positions. Qualified aviators will be considered for aviation troop commands in addition to branch troop command, but will be selected for only one or the other.

d. Previously, officers desiring to command were restricted to two years consideration by the appropriate board. Current policy stipulates that an officer retains eligibility as long as he remains in the grade of LTC for battalion level command and Colonel for brigade level command, provided he expresses a continuing desire for

command duty.

The Colonels Command Selection Board convened on 26 Sep 73 and has adjourned. Results were published in DA Circular form on 15 Dec 73.

The Lieutenant Colonels Command Selection Board is tentatively scheduled to convene 2d quarter, FY 75, with officer assignments to commands beginning on 1 Jul 75.

Brigadier General William W. Palmer
V Corps Artillery

Brigadier General Charles C. Rogers
VII Corps Artillery

Brigadier General Milton E. Key
56th Arty Bde

Colonel James T. Heathcock
I Corps (ROK/US) Group

Colonel James Cannon III Corps Artillery	Colonel Henry C. Evans, Jr. 559th Artillery Group	LTC Ronald L. Baggett 3d Battalion, 13th Artillery
Colonel Frank Serio XVIII Airborne Corps Artillery	Colonel Robert F. Daly TUSLOG Detachment 67	LTC Carleton C. Nock 1st Battalion, 14th Artillery
Colonel Howard C. Jelinek 1st Infantry Division Artillery	Colonel Robert Harrington 3d Armored Division Spt Cmd	LTC Louis C. Fancher 6th Battalion, 14th Artillery
Colonel Jack N. Merritt 1st Cav Division Artillery	Colonel Gerald W. Kirklighter US Army Field Artillery Aviation Command	LTC Harry D. Penzler 1st Battalion, 15th Artillery
Colonel Albert Akers 2d Armored Division Artillery	LTC Linus Fiely 2d Battalion, 1st Artillery	LTC Townsend VanFleet 3d Battalion, 16th Artillery
Colonel Richard Livermore 4th Infantry Division Artillery	LTC Ray Morin 1st Battalion, 2d Artillery	LTC George M. Krausz 1st Battalion, 17th Artillery
Colonel Clayton Moran 9th Division Artillery	LTC Charles J. Buel 2d Battalion, 2d Artillery	LTC Leroy C. Bell 2d Battalion, 17th Artillery
Colonel Maxwell Thurman 82d Airborne Division Artillery	LTC Davis Clark 1st Battalion, 3d Artillery	LTC Clifford Jones, Jr. 3d Battalion, 17th Artillery
Colonel David Hampton 101st Airborne Division Artillery	LTC Robert N. Waggoner 2d Battalion, 3d Artillery	LTC Gordon Walsh 1st Battalion, 18th Artillery
Colonel Paul Pearson FA School Brigade Fort Sill, OK	LTC Charles Teeter 2d Battalion, 4th Artillery	LTC Donald R. Ellis 2d Battalion, 18th Artillery
Colonel Talbott Barnard 9th Field Artillery Missile Group	LTC Dennis H. Boerner 4th Battalion, 4th Artillery	LTC Eddie H. Jones 3d Battalion, 18th Artillery
Colonel Harvey Williams 75th Field Artillery Group	LTC Harold Luck 1st Battalion, 5th Artillery	LTC William B. Amend 1st Battalion, 19th Artillery
Colonel John P. Cooper 212th Field Artillery Group	LTC Robert Leard 2d Battalion, 5th Artillery	LTC Harry Helmuth 2d Battalion, 20th Artillery
Colonel Robert H. Forman 214th Field Artillery Group	LTC Ronald L. Coffman 1st Battalion, 6th Artillery	LTC Bill C. Giallourakis 3d Battalion, 21st Artillery
Colonel Ed O'Connor 1st Armored Division Artillery	LTC Jack O. Bradshaw 2d Battalion, 6th Artillery	LTC Edward J. Stein 1st Battalion, 21st Artillery
Colonel Ben Doty 3d Armored Division Artillery	LTC John J. Stewart 3d Battalion, 6th Artillery	LTC R. B. Chapman 1st Battalion, 22d Artillery
Colonel Eugene S. Korpál 3d Infantry Division Artillery	LTC William Cody 1st Battalion, 7th Artillery	LTC Kenneth Kleypas 1/25th Target Acquisition Battalion
Colonel Charles Gorden 8th Infantry Division Artillery	LTC Harvey L. Adams 1st Battalion, 8th Artillery	LTC Dennis Greene 1st Battalion, 27th Artillery
Colonel Homer Kiefer 41st Field Artillery Group	LTC Robert Cottle 3d Battalion, 9th Artillery	LTC Robert Fairchild 2d Battalion, 27th Artillery
Colonel Richard Boyle 42d Field Artillery Group	LTC James P. Cason 6th Battalion, 9th Artillery	LTC Stephen A. Glick 2d Battalion, 28th Artillery
Colonel John E. Baker 72d Field Artillery Group	LTC Rodney E. Dodge 1st Battalion, 10th Artillery	LTC Charles N. Fields 1st Battalion, 29th Artillery
Colonel Alvin Cade 210th Field Artillery Group	LTC Curtis F. Hoglan 2d Battalion, 10th Artillery	LTC Maurice Krause 1st Battalion, 30th Artillery
Colonel Phil Kinney 2d Infantry Division Artillery	LTC R. T. Smith 6th Battalion, 10th Artillery	LTC Ronald E. Little 2d Battalion, 30th Artillery
Colonel Frank Palermo 4th Missile Command	LTC James Covert 1st Battalion, 11th Artillery	LTC Joseph E. Ecoppi 1st Battalion, 31st Artillery
Colonel William E. Carlson 25th Division Artillery	LTC Jack L. Van Pool 2d Battalion, 11th Artillery	LTC Charles Crawford 1st Battalion, 32d Artillery
Colonel John C. Bowden 558th Artillery Group	LTC Edward Hackney 1st Battalion, 12th Artillery	LTC Thomas A. Austin 2d Battalion, 32d Artillery

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1st Battalion, 33d Artillery

LTC Robert L. Dinkins
2d Battalion, 33d Artillery

LTC Frank Wasko
2d Battalion, 34th Artillery

LTC James F. McCarthy
3d Battalion, 34th Artillery

LTC Paul G. Polk
3d Battalion, 35th Artillery

LTC Edward J. Burke, Jr.
1st Battalion, 36th Artillery

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1st Battalion, 37th Artillery

LTC Freddie O. Ryder
2d Battalion, 37th Artillery

LTC L. E. Toreson
2d Battalion, 37th Artillery

LTC Thomas F. McMorro
6th Battalion, 37th Artillery

LTC Francis Waskowicz
1st Battalion, 38th Artillery

LTC Robert E. Hunter
3d Battalion, 38th Artillery

LTC Kelvin H. Hunter
1st Battalion, 39th Artillery

LTC James D. Sprague
2d Battalion, 39th Artillery

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1st Battalion, 41st Artillery

LTC Ronald B. Stevens
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1st Battalion, 73d Artillery

LTC James C. Ferguson
2d Battalion, 73d Artillery

LTC Jesse B. Wilkins
1st Battalion, 75th Artillery

LTC Richard Torretto
2d Battalion, 75th Artillery

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1st Battalion, 76th Artillery

LTC William Schneider
1st Battalion, 77th Artillery

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4/77 Aerial Field Artillery Battalion

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1st Battalion, 78th Artillery

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1st Battalion, 81st Artillery

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2d Battalion, 81st Artillery

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3d Battalion, 81st Artillery

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1st Battalion, 82d Artillery

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2d Battalion, 83d Artillery

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3d Battalion, 84th Artillery

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LTC Uri S. French, III
1st Battalion, 319th Artillery

LTC Robert D. Manhan
3d Battalion, 319th Artillery

LTC Rudolph N. Pataro
1st Battalion, 320th Artillery

LTC Paul Gentry
2d Battalion, 320th Artillery

LTC Elmer W. Naber, Jr.
1st Battalion, 321st Artillery

LTC Bobby Godwin
2d Battalion, 321st Artillery

LTC Gerald R. Holland
1st Battalion, 333d Artillery

LTC Alexander Cipriano
512th Group

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557th Group

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Fort Sill, OK

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2d Training Battalion
Fort Sill, OK

LTC John Stice
4th Training Battalion
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LTC Ray L. Spence
5th Training Battalion
Fort Sill, OK

LTC Jon E. Porter
Officer Student Battalion
Fort Sill, OK

LTC Daniel L. Butler
1st FA Avn Bn
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LTC Donald R. Ley
14th Avn Bn
Fort Sill, OK

LTC Robert L. Ragains
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Fort Ord, CA

LTC Les S. I'Hara
1st Battalion, 1st Brigade
Fort Ord, CA

LTC Howard E. Malone, Jr.
2d Battalion, 1st Brigade
Fort Polk, LA

LTC James W. Clark
1st Battalion, 2d Brigade
Fort Polk, LA

LTC Clarence H. Woliver
Officer Student Battalion
Fort Rucker, AL

LTC Malcolm Rixon
3d Battalion, 3d Brigade
Fort Leonard Wood, MO

LTC Orville W. McNatt
2d Battalion, 5th Brigade
Fort Leonard Wood, MO

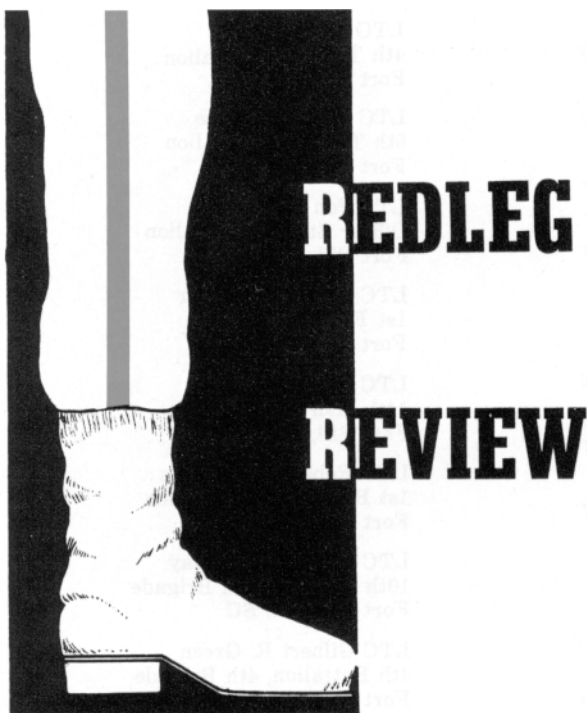
LTC Donald R. Drumm
3d Battalion, 5th Brigade
Fort Leonard Wood, MO

LTC Donald R. Bausler
11th Aviation Battalion

LTC Robert W. Newton
2d Aviation Battalion

LTC Thomas J. Roth
6th Ordnance Battalion





AMERICAN DEFENSE POLICY, Edited by Richard G. Head and Ervin J. Rokke, The John Hopkins Press, Third Edition, Baltimore, Maryland, 1973. \$6.50.

In the late 1950's several startling events, such as the launching of Sputnik and the reemergence of the Quemoy-Matsu problem, led to a general questioning of the efficacy of American defense policy and generated an interest in the study of military policy at several American universities. One of the problems involved in the study of American defense policy, however, was the extreme dispersion of necessary student research material. In 1965, to cope with this difficulty, Colonel Wesley W. Posvar and Captain John C. Ries of the United States Air Force Academy published *American Defense Policy*, an edited compilation of articles and book extracts that provided basic reference material at the undergraduate level covering the (then) nascent field of military policy. By 1968, new developments in research techniques, changes in conduct of American defense policy, and the high acclaim and popularity of *American Defense Policy* led Major Mark E. Smith III and Lieutenant Colonel Claude J. Johns, Jr. to publish an expanded and updated edition of the volume. The second edition of *American Defense Policy* was also very well received and, in June 1973, for much the same reasons as existed in 1968, Majors Richard G. Head and Ervin J. Rokke published a third edition of *American Defense Policy*.

Like the previous editions, the most recent edition contains a collection of current scholarly readings that discuss some of today's more relevant defense issues. This concentration on contemporary issues, however, has resulted in a fundamental change of focus from the previous editions. The first two editions centered on the roles of nuclear weapons and national interest in American defense policy, and most of their readings were selected to develop student appreciation for the impact of these key factors on defense policy. The evolution of national military strategies, the multifarious roles of defense policy influences, and the issues of general war, limited war, arms control, and civil-military relations were then examined within the context of the two key factors.

Although the third edition briefly treats the linchpins of the previous editions, it is most concerned with variables that are most frustrating to the military today. Thus, the central threads of Head and Rokke's edition are the growing domestic influence on military policy, as described in Henry Kissinger's essay "Domestic Structure and Foreign Policy," and the increasing multipolarity of the international system with the accompanying recognition of the limits of military power, as shown in Stanley Hoffman's article, "The International System Today." Both of these major themes are approached by the selection included in the third edition of *American Defense Policy*, but Head and Rokke fail to give a very complete picture of either—an accomplishment one would expect in an introductory text such as this.

The portion of the book containing articles on domestic influence on defense policy suffers from overconcentration on bureaucratic politics and the military institutional structure. Thus, while there is an excellent collection of readings on the intragovernmental politics of the portions of the executive branch involved on defense policy making and on the analysis of structure and personnel problems of the military now and in the future, there is a noticeable deficiency in the lack of discussion of the role of Congress, industry, scientists, public interest groups, and other governmental and nongovernmental organizations that directly influence defense policy-making and the size, shape, and form of the military as an institution.

The portion of the book that deals with the application of military power in the current international system presents an excellent discussion of the theoretical limits of military power but fails to establish the context or environment which determines the limits.

The one drawback that the Head and Rokke edition of *American Defense Policy* has in common with the first two editions is the failure to adequately describe and evaluate the defense strategies being practiced at the time the volume was published. The third edition includes a very good collection of original source material depicting

the intentions of the originators of the various American defense strategies, but the description and evaluation of how these strategies worked out in practice is conspicuously absent.

The shortcomings of the third edition are basically those of omission and not commission. The deletion of those sections of the second edition that provided the theoretical framework for the issues dealt with in the third edition necessitates the use of supplemental sources to obtain the background information needed to make the most out of the Head and Rokke collection. Taken together, the second and third editions of *American Defense Policy* complement each other and form one of the finest single sources on the topic and should be studied by all military officers.

CPT William Kale, CPT Stanley Mozden, and MAJ John Mussels, Command, Leadership and Training Department USAFAS.



WAR THROUGH THE AGES, Lynn Montross, Harper and Row, Third Edition, New York, 1960. \$12.95.

War Through the Ages is the current text in use by officers enrolled in the Field Artillery Officers Advanced Course Military History Elective Program. Several copies of this excellent work were presented to the Morris Swett Technical Library as the class gift of Field Artillery Officer Advanced Course Class 6-73.

Writing a history of warfare is no easy task. Few 20th century historians have made efforts in this field, and the list of those who have produced works that stand up under fire can be limited to the late Mr. Montross, David Zook, Robin Higham, and the late Major General J. F. C. Fuller (it took Fuller three volumes).

The scope alone is often sufficient to cause most historians to limit their efforts to particular periods or personalities. The real problem, however, is not just in the chronological recitation of the development of the military art but the tying together of all the factors that have sent innumerable armies marching across the face of the earth since the dawn of man.

The development of political thought, the contributions of the school of philosophy, the religious ideologies that repeatedly upset existing balances, the continuing struggle of man versus his environment—these are the problems that face the historian. How does he make all this fit into a comprehensive yet concise account of man's recurrent attempts to destroy his neighbor?

Mr. Montross found the solution. Beginning with an analysis of the emergence of the Greek city-states, *War Through the Ages* contains the perfect blend of politics, economics, religion, and warfare necessary to provide the student of history with a solid foundation in the study of Western civilization and the concurrent evolution of the art of war. From the Greek phalanx to the atomic bomb, the reader is treated to a comprehensive yet penetrating study of warfare. The empire of Cyrus the Great, the conquests of Alexander, the bitter struggle between Carthage and Rome, the age of the Caesars, and the Barbarian migrations establish a base for the study of the ensuing 1500 years of almost constant conflict. Mr. Montross recounts the decline of the military art during the Dark Ages, the impact of technology (gunpowder) on warfare during the later years of the 15th century, the origins of the balance-of-power concept, and the struggle of empires as Europe discovered that the world was round and rich.

He continues with a perceptive account of the effect of the machine age on both technology and tactics and the resulting transition from limited to total war. His chapters on Cromwell, Marborough, Frederick the Great, and the Napoleonic Wars are extremely lucid with one exception: Bias, the downfall of many authors, makes a covert appearance and is possibly the one weakness of the book.

Mr. Montross voices a distinct taste for the emerging Prussian state, and this anti-Germanism tends to reappear in chapters covering the late 19th century and the 20th century. His indictment of "Prussian militarism" is indeed strong; however, it is for the reader to judge the validity of his argument.

The account of the slaughter of 1914-1918 is treated for what it was—a needless waste brought on by unrealistic national policies and irresponsible uses of power by the nations which could have prevented the holocaust that dragged them all down. The first edition published in 1944, provided a surprisingly objective study of the period 1919-1939 as well as the author's declaration that "Germany won the peace of Versailles." The second (1946) and third (1960) editions rounded out the work with excellent chapters on the triumph of the short-lived "Grand Alliance" of 1941-1945, an appraisal of the military question marks of the nuclear age, and the advent of "limited wars of national policy."

Possibly the strongest point in favor of Mr. Montross' effort is the readability of the book. It is not just another history book. It is an enjoyable, enlightening, tragic yet sometimes humorous analysis of man's successes and failures throughout recorded time.

Captain Samuel W. Floca, Jr., Instructor of Military History, USAFAS.

Command In The 70's

by

LTC Thomas L. Kelly

There are those in today's society who would have you believe that old values and beliefs are outdated. The "now generation" is forcing upon us a new set of standards and mores. The coin, of course, has two sides, and on the other side we hear those who plead for "sanity," holding to a conservative approach to change. All about us are the day-to-day pressures which force us to make decisions on vital contemporary issues of life. Nowhere in society is this more true than in the military. We are faced with problems of drug abuse, racial competition, moral instability, lack of creditability, social inequities, poor communication, educational inequities, and the staffing of the defense forces of the nation. Add these relatively new problems to the age-old ones, those of insuring adequate and proper training to accomplish ever-expanding mission responsibilities, morale, discipline, resource management, and effective maintenance, and it is understandable why command at all levels is such a challenge. How effectively we as commanders solve these problems will greatly affect our job satisfaction. Additionally, our effectiveness in these matters will influence public opinion on the true value of a peacetime military community.

My purpose in this article is to suggest ways in which today's problems can be handled successfully. It would be

presumptive on my part to believe that the ideas are original or that they present some new truths of leadership hitherto unexplored. Leadership is an art, much overdone and little understood. Simply stated, leadership is the act of getting others to do what the leader wants done. Listing the traits of a good leader or distinguishing between a leader and a manager would serve no purpose and will be left to the philosophers and academicians. Although we have all seen successful commanders who have been depicted as poor leaders, what we really want to know is how to be good commanders while coping with the problems of the 70's.

The three major problems that we will deal with are the desire for the satisfaction of self-realization, correction of social ills, and communication. All three of these are people-centered, and herein lies the key to success or failure in command. The secret, tried and true today, as in the past, is "Take care of your people, and they will see to the proper attainment of the desired goals of the organization."

Self-realization is a feeling that all of us have to varying degrees, a feeling which cries out for recognition of our individual worth. This realization must be awakened

in some people whereas in others its manifestation borders on excess. Self-realization desires acknowledgement and must be rewarded with sincere approval. Reward for poor performance or reward without justification does more harm than good in most cases. Self-realization occurs when members of an organization are allowed to make meaningful decisions and participate in the solving of problems. The essence of participatory management is the fulfillment of self-realization through the encouragement of decision making and problem solving. Today's commander must understand group and individual motivation and skillfully weave participatory management practices into the fabric of traditional military authoritarianism.

How can the leader maintain this balance between participation and rigid obedience while allowing members of his organization to make meaningful decisions? The simplest approach is to realize that there are a limited number of decisions that can be made in any organization. A successful military manager will delegate a sufficient number of decisions to his subordinates for them to develop their decision making talents and thereby realize their own sense of responsibility. Supervisors must train their subordinates in proper decision making techniques, provide the most up-to-date information, and critique both good and poor results. Close attention by the commander to such decisions will greatly enhance confidence or provide a basis for further training. Good leaders must accept responsibility for all decisions regardless of the outcome. This supportive concept of decision making must be made known to all members of the command. Commanders who reserve to themselves the final decisions of only the most critical problems and who encourage and support their subordinate's decisions will have a smooth-running, effective organization.

Self-realization is also furthered through problem solving. Like decision making, problem solving is difficult to limit and define. The two are closely related. Problem solving should be encouraged at the very lowest level in any organization. Leaders must develop in their subordinates a determination to solve their own problems but at the same time not encourage them to be reluctant to admit failure and to ask for help from the "boss" when it is necessary. Successful problem solving must be rewarded. Care must also be exercised in chastising or withholding praise for failure to solve problems. Everyone in an organization is likely to find at some time that he is faced with what appears to be an insoluble problem. When that happens, subordinates must know that they can take their insoluble problems to their superior without fear of criticism or embarrassment. The commander, in such cases, must be the "Old Man with the big stick" who can get things done—when no one else can. Balance here is

critical for a commander. This role must be played with caution; only after his staff has exhausted every means at its disposal shall the commander resolve the problem. A commander who is too eager will soon find that far too many subordinates will take advantage of this easy way to solve their difficulties. Censure of subordinates, then, should be reserved for situations in which problems are covered up, forgotten, or improperly referred to the boss. Timely identification of unsolvable problems to the commander is the loyalty a subordinate owes his organization, and responsive action on a problem is the loyalty a leader owes his subordinates. In the final analysis, problem solving is a satisfying and rewarding experience. Individuals at the lowest level in an organization should be allowed every opportunity to develop this important skill.

Two methods of increasing self-realization have been discussed. It is equally important that people in an organization be treated fairly and that they and their dependents be properly cared for—within the capabilities of their organization and commander. What is meant by "caring for people" in this instance is the correcting of social ills that exist in a military community. Proper communication is of vital consequence in solving problems arising from social ills. The contemporary issues or social ills that will be discussed are characterized by but not limited to the following: racial disharmony and drug abuse.

Minority groups must, above all, be treated fairly. Great strides have been made in the past 20 years in creating an integrated military force. We cannot rest on this claim; in the decade ahead we must push for greater equality among all races. Fair treatment for the minority at times appears to mean unfair treatment for the majority. An effective commander must be carefully attuned to the total environment of his organization and insure fair treatment for all its members. He must not correct inadequacies at the expense of another group or overcorrect to make up for past deficiencies. Maximum use should be made of the Department of Defense Race Relations School, school-trained personnel, and race relations councils. Commanders should attend the DOD or local Race Relations School, insure that their personnel are adequately trained, and then work with their councils.

Many uncomplimentary comments have been made about race relations councils. There are many in the military who feel that these councils are unnecessary, serve no useful purpose, and are ineffective. It has been my experience that these councils are as effective as their leadership. Personnel selected for council membership must be, above all, honest. Their views must be representative of the minority groups found in an organization. Commanders must not be afraid to select militant minority representatives who are outspoken in their beliefs. When

a race relations council is called on to investigate claims of racial discrimination, an honest, militant-flavored group will have more credibility with their races than a more moderate group.

Commanders can solve their racial problems by sensibly using all the tools available to them; for example, equal opportunity personnel, schools to train council members, and race relations councils. Success will be achieved when a commander uses these tools properly and insures that he and his organization deal fairly with racial matters.

Drug abuse, which includes alcohol abuse, is a problem in the service today and will more than likely remain serious throughout the 70's. Commanders will find again, as in the case of race relations, that their installations will have many facilities available to assist them in working with drug problems. These facilities and trained personnel will provide education and treatment at the unit's request. The commander must find these services and insure that his men make use of them. As far as direct involvement is concerned, a commanding officer will find his role more useful by finding those in his organization in need of treatment, preventing the use of drugs, and helping users rehabilitate themselves to a normal useful life.

Urinalysis testing is giving good results in identifying drug users. Future testing will no doubt be more sophisticated and more accurate and more positive identification can be expected. All available means should be used to detect users of drugs. The use of marijuana dogs and unannounced searches are invaluable detection methods. Legal advice should be sought prior to employing these techniques so that court-martial convictions may be obtained. A strong program of prevention will make the "exemption" policy much more effective. Exemption allows a user to declare that he uses drugs, in return for treatment, without fear of punishment for possession and use. Again, advice should be obtained from military lawyers on the specifics of exemption, as crimes resulting from drug abuse are not exempt from prosecution.

For the observant commander, there are certain indicators which may point to individuals with drug or alcohol problems. Barracks thefts may be an indication that users in an organization are using this means for paying for their habit. Bad debts may point to personnel with drug problems. Broken marriages, AWOL, etc., are likewise red flags that should receive the attention of the commander that the real trouble may in the drug area. A frank discussion at the earliest indication of trouble may prevent serious complications at a later time. A leader's knowledge of the professional assistance available and his interest and concern are essential in curbing drug problems.

Rehabilitation of drug offenders, the other side of the


drug problem, is equally difficult for the commander and requires his full attention. Administrative discharge of drug users should be used only after all rehabilitative efforts have been exhausted. Many reasons, such as pressure at home or on the job, personality problems, or boredom, may cause a person to turn to drugs. Because of the many reasons for drug abuse, it is imperative that the counsel of skilled professionals in the medical field be utilized in the rehabilitative efforts of a commander. At times, strict discipline may be prescribed, whereas in other cases, understanding or a change of jobs is required. Good personnel management must assign drug abusers to organizations in which they will receive the most help, but there is no single way of dealing with such individuals. To the extent possible, a commander should deal with drug abuse as an illness without stigma, treat fairly the people involved, and show a humane interest in their welfare.

The third problem area is that of communication. The art of communicating has all but been lost these last few decades while the science of communication has reached its apogee. Contradictory as this may sound, a clue to the problem may be found merely by looking up the definition of the word communicate: its primary meaning is to transmit; its secondary meaning is to give and receive. Too many managers use communication only in its primary sense; they feel that they are communicating whereas in fact they are only transmitting. Effective results can be expected only when communication becomes a two-way process—when the commander transmits information to and receives information from his troops. The value and uses of proper communication are so varied that for the purpose of brevity only the most important aspects will be touched on.

The most significant purpose of a military unit is to achieve its objective; therefore, it is important that the commander be able to receive and retransmit exactly the desires of his superiors. However, accurate transmission of information from superiors is only the beginning, he must also accept the part of originator and sell and defend his orders as if this plan from higher headquarters were indeed his very own. There are times when he may act only as a transmitter—when the urgency of action can allow no delay. Other times and other circumstances may permit the commander to participate in determining the most successful course of action or in framing a proposed alternative for consideration by his superiors. Whenever possible, men need to know which conditions they are working under and why. This is communicating. Lateral communication at all levels of a military structure is vital to allow cross-pollination of ideas and concepts. The master communicator must adopt and adapt the ideas of others; when necessary, however, he may use standard operating procedures to assure uniformity. The effective

leader is one who serves as the link between his men, on the one hand, insuring that their ideas are heard and acted upon, and the higher headquarters, on the other, whose plans he must carry out. His ultimate reward will be commensurate with his efforts.

Today's commander is faced with a military environment in which he must deal with the problems of a new generation. Mix these problems with the old standards and it is then quite understandable why command at all levels is such an interesting assignment and such a rewarding experience. The way in which we as commanders blend together the ingredients of problem solving, decision making, solving social ills, and communicating human concern will to a great degree determine how well we manage our scarce and precious commodities of men and

material. These results will determine in the end the final indicator of success—*mission accomplishment*. 

LTC Thomas L. Kelly was commissioned in 1955 and attended the Air Defense Basic Course. He has had assignments in Korea, Hawaii, and Vietnam. He is a graduate of the Field Artillery Officers Advanced Course, Armed Forces Staff College, and the Air War College. He has a B.S. in agriculture from Texas A & M and an M.S. in political science from Auburn University. Presently he is executive officer, 2d Armored Division Artillery, Fort Hood, Texas



letters to the editor

(continued from page 5)

The maneuvering of troops on jungle trails made it necessary to add a platoon of mountain guns, packed on mule-back, to each of the light batteries in the field. The first guns so employed were the 1.65 inch Hotchkiss mountain guns, which when broken down were carried by two mules. Ammunition chests were carried as side loads on additional animals.

With the adoption of the regimental system by the field artillery in 1907, two of the six regiments were organized as pack or mountain artillery. These regiments being the Second Field Artillery, organized from batteries in Cuba and at Fort D. A. Russell, Wyoming, and the Fourth Field Artillery formed with batteries in the Philippines and at Vancouver Barracks, Washington, and Fort Sheridan, Illinois. These regiments were armed with the Vickers 2.95-inch mountain gun, each carried in four loads on mules saddled with the aparejo and the necessary artillery loading hangars. There were six firing batteries to the regiment, or twenty-four guns, each battery being self-sustained by a pack train of fifty

cargo pack mules of its own.

In 1914, the 4th Field Artillery was transferred to Texas from its home station at Fort D. A. Russell, Wyoming. The second battalion accompanied the Vera Cruz Expedition of that same year, and the first battalion was among the first troops to march into Mexico with the Punitive Expedition in 1916.

In 1917, the 2nd Field Artillery, then in the Philippines, turned over animals and equipment to the 24th Field Artillery of the Philippine Scouts and sailed for France. After crossing both the Pacific and Atlantic Oceans, the regiment arrived at a French port after the Armistice and was sent back to the United States, to lose its identity as pack artillery.

The 4th Field Artillery remained divided, the second battalion becoming a part of the original garrison of the Panama Canal Zone, and the first battalion returning to Texas from Mexico. In 1927, the Panama battalion was redesignated the 2nd Field Artillery Battalion (Pack), and the battalion in Texas became the 4th Field Artillery Battalion (Pack). Both units were re-armed with the 75mm pack howitzer carried in six

loads or pulled in tandem by two mules, and the aparejo was replaced by the Phillips pack saddle.

Living up to its motto, "The Second First," the Panama battalion was the first artillery to take to the air, flying a battery across the Isthmus on a firing problem in 1930.

The Second lost its mules during World War II, but the Fourth trained three pack battalions for combat, the 97th, 98th and 99th Field Artillery Battalions. The Fourth retained its mules until 1957 when it became the last tactical unit in the United States Army to dispense with animals, being redesignated the Fourth Field Artillery Firing Unit (Helicopter).

R. K. McMaster
MAJ. FA (Ret)
El Paso, TX

Major R. K. McMaster (Ret.) served with U.S. 2nd Field Artillery, Horsedrawn and Portée and Pack, from 1926 until 1931. It is always good to hear from our retired redlegs. Editor.

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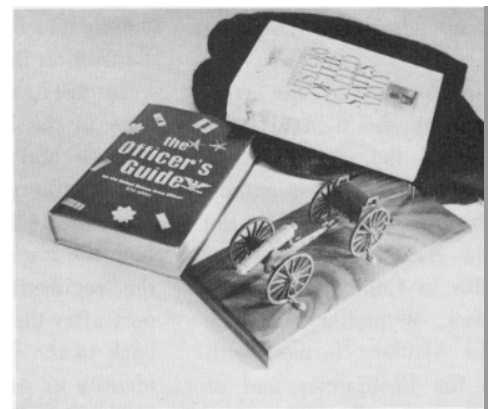
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The following anecdote was taken from a facsimile reprint of the United States Military Magazine published by Colonel William M. Huddy and Peter S. Duval from 1839 until 1842.

The following anecdote has been furnished us by Mr. J. R. Smith, artist of this city, (Philadelphia) to whom it was told in Boston, in 1810.

Soon after the end of the Revolutionary war, the different states were engaged in adopting their charters, constitutions, etc., to the new state of things, which involved special privileges, grants, etc., etc. Among other corporations, a military company appeared in the streets of Boston, composed of officers of various regiments and companies, of all kinds of dresses and colors, which attracted the attention of the populace as something entirely new. This was natural enough, as the company had not had an opportunity, on account of active service, of meeting during the war. After parading for some time, some young bloods, whose lips had scarcely borne the down of opening manhood, and whose gold lace had never been dimmed by the bivouac or the midnight march, questioned the veterans' right to appear duly officered and equipped as a company of the Massachusetts Guards. The Ancient and Honorables pleaded an old charter as their platform, but it being observed that they were all officers, both rank and file, it was deemed too aristocratic a body for old Massachusetts. The excitement now became very great, and the legislature, to whom the matter was referred, after a long debate sent a deputation to Congress on the subject. The petitioners also sent their committee, among whom was Horace Binney, Esq., the legal Hercules of our city.

On arriving at Philadelphia, where Congress then held its sittings, the committee proceeded to business. The merits of the case were discussed in Congress and then referred to a special committee, which, after hearing all the arguments, pro and con, reported in favor of submitting the matter to General Washington for his decision. Upon Washington's arrival at Philadelphia, the day for hearing the voice of the chartered company was fixed. Both parties, at the specified time, repaired to his quarters. After listening for some time to the arguments on both sides, his aide-de-camp, General Lincoln, entered the council in his full dress; after the customary salutation had passed between the commander-in-chief and his aide, Washington, who had been walking to and fro during the discussion, turned to Lincoln, and said: "Do you know such an institution as the Ancient and Honorable Artillery Company?" "I do," said General Lincoln. "Well, what kind of a concern is it?" asked Washington, rather impatiently. "I can only say," said Lincoln, smoothing his plume with his hand, "that I have the honor of being a private in the Corps." "What," said Washington, "you a private in that company? Lincoln, surely you joke." "No, General," said Lincoln, holding out his waving plume, "I claim the honor of being a private in the Ancient and Honorable Artillery, and pride myself upon it as the brightest feather in my cap."

Washington walked immediately to the table. "Give me a pen," he said. "That cannot but be a noble institution, deserving of the protection of our country, in which General Lincoln claims the honor of being a private." And bending his noble form, he wrote upon the parchment scroll that gave them a being: "Approved, George Washington."

The Ancient And Honorable Artillery Company

