

# Antiaircraft Journal

NOVEMBER-DECEMBER, 1954



UNITED STATES ARMY  
THE CHIEF OF STAFF

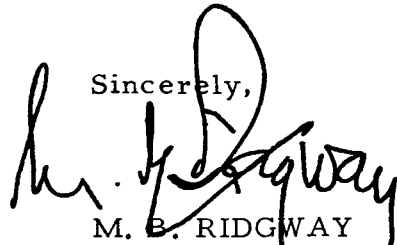
26 November 1954

Dear General Lemnitzer:

I am very happy to learn of the forthcoming merger of the Antiaircraft Association and the Association of the United States Army, and of the union of their respective journals. I believe that this merger will promote better understanding among the members of all elements of the Army, and that it will serve thereby to give us greater unity and strength.

I am confident that the talent and enthusiasm which have made possible the great contributions of the ANTIAIRCRAFT JOURNAL and the COMBAT FORCES JOURNAL in the past will, in combination, contribute even more to the benefit of the Army in the future. You have my best wishes for every success in your objective, which we all share, of making the United States Army a single instrument of great strength and readiness to shoulder whatever responsibilities our nation may place upon it.

Sincerely,

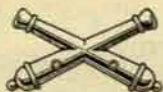


M. B. RIDGWAY  
General, United States Army  
Chief of Staff

Lieutenant General Lyman L. Lemnitzer  
President, United States Antiaircraft Association  
631 Pennsylvania Avenue, N. W.  
Washington, D. C.



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ANTI-AIRCRAFT  
ASSOCIATION



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*The purpose of the Association shall be to promote the efficiency of the Antiaircraft Artillery by maintaining its standards and traditions by disseminating professional knowledge, by inspiring greater effort toward the improvement of matériel and methods of training and by fostering mutual understanding, respect and cooperation among all arms, branches and components of the Regular Army, National Guard, Organized Reserves, and Reserve Officers' Training Corps.*

The JOURNAL prints articles on subjects of professional and general interest to personnel of the Antiaircraft Artillery in order to stimulate thought and provoke discussion. However, opinions expressed and conclusions drawn in articles are in no sense official. They do not reflect the opinions or conclusions of any official or branch of the Department of the Army.

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# Antiaircraft Journal

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BRIG. GEN. CHARLES S. HARRIS, USA, Ret., Editor  
M Sgt Fred A. Baker, Business Manager  
SFC James E. Moore, Jr., Editorial Assistant  
SFC Paul M. Plumly, Circ. Mgr.





# WE MOVE AHEAD

By **LIEUTENANT GENERAL L. L. LEMNITZER, U.S. Army**  
**President, U.S. Antiaircraft Association**

WITH this issue, the **ANTI-AIRCRAFT JOURNAL** will cease to exist as a separate publication. The merger between the Antiaircraft Association and the Association of the U.S. Army and their respective journals, overwhelmingly endorsed by the vote of the membership of our Association, has been consummated to the mutual satisfaction of the Executive Councils of both Associations. Beginning with the January 1955 issue, the *Army Combat Forces Journal* will be published by a combined Association comprised of what were the Infantry, Field Artillery, and Antiaircraft Associations, and will include members from all branches of the Army.

In the opinion of your Council, the terms of the merger (reprinted on page 54 of this issue), are equitable and just. Each member of the Antiaircraft Association will become a full-fledged member in good standing in the Association of the U.S. Army (AUSA). Your participation will be limited *only* by the extent of *your* active interest in *your* new Association. The nine members of our Council will become full-fledged members of the AUSA Executive Council and every member of the Antiaircraft Association will be eligible to hold any office or assignment within the new Association. In other words, we are now members of a larger and more comprehensive Association of the United States Army. You have the same rights and privileges as every other member.

Your subscription to the **ANTI-AIRCRAFT JOURNAL** will be transferred to the As-

sociation of the United States Army and you will receive the *Army Combat Forces Journal* for the unexpired portion of your subscription. In fact, for that period you will receive your Association magazine monthly rather than every other month, and at no additional cost to you.

General Harris, our editor, will serve as Associate Editor of the *Combat Forces Journal* and will strive to cover Antiaircraft matters as thoroughly as he did in the **ANTI-AIRCRAFT JOURNAL**. This responsibility is not his alone, however. The editors can publish good material only so long as you send it to them. I can assure you they are looking for good antiaircraft material right now and will always be seeking it. Here is your opportunity to discuss antiaircraft and guided missile matters with the members of other branches and to help them better to understand our problems and capabilities.

There may be some among the members of our Association who view this merger with nostalgia or misgivings. That is certainly understandable, but to them I would point out that what is happening does not mark an end but a beginning. It is another acceptance by us of our important role as an integral part of the Army combat team. It is not the end of our Association, but rather it is a new step forward in the development of a larger and much stronger Association, one that with our support can promote better teamwork and esprit among all elements of the Army.

In the same way, the merging of the journals should be regarded not as the



loss of our own forum but the gaining of a vastly greater audience. We will no longer be telling our story only to ourselves and thus convincing those already convinced. Instead we will now have a much greater opportunity to exchange ideas with members of all elements of the Army.

To fulfill its purpose successfully, a journal must be accurately attuned to existing circumstances and the needs resulting therefrom. We recognized this a few years ago when we changed our Association and JOURNAL from Coast Artillery to Antiaircraft. Now there is no longer a Coast Artillery Corps or even an Antiaircraft branch of the Army. Our officers are members of the Artillery. There is now only one Artillery career management section in the Department of the Army and, more and more, artillery officers are being cross assigned. In the near future all members of the Artillery will be familiar with the duties with any artillery weapon—be it surface-to-surface or surface-to-air guided missile or gun.

The day when Coast Artillery and Antiaircraft Artillery tended to function as entities more or less independent of the field army is long past. In World War II; in Korea; and in the U.S. Army throughout the world today, Antiaircraft Artillery has taken its place as a full-fledged member of the Army combat team. The great firepower, the flexibility and the accuracy of antiaircraft missiles and guns have proved their great value against targets on the ground as well as in the air and on the sea. The effectiveness of our weapons and the capability of our troops are fully recognized and highly regarded throughout the Army.

Therefore, in joining the Association of the U.S. Army, we are not only reflecting a tactical and organizational de-

velopment which has in fact already taken place within the Army itself, but we are doing our part toward making that development more positive and effective. We are placing ourselves in a much better position to learn more about the other branches of the Army, while at the same time making it possible for our colleagues throughout the Army to learn more about us.

I feel, therefore, that this merger is not only an adjustment to realities, but is an important advance toward the achievement of greater unity and teamwork within the Army. It is my hope, and I know that this feeling is shared by General Ridgway, the Chief of Staff, and by many other senior officers, that our action will encourage members of other branches to join with us in building a strong association that is truly representative of the entire Army. Such an association would not only promote teamwork and help bring branches closer together but would permit all members of the Army to speak with one voice when the occasion demands.

I would like to express for the entire membership our deep appreciation of the outstanding job done by Lieutenant General John T. Lewis as our President during the past two years. Our accomplishments during that period are largely due to his fine leadership and his great devotion to the Association.

Also, I would like to express the thanks of the membership to Brigadier General Charles S. Harris and his fine staff of Sergeants Fred A. Baker, James E. Moore and Paul M. Plumly for all that they have done for the Antiaircraft Association and JOURNAL.

Your Council has moved carefully in this matter because we wanted to be certain that all terms and details were worked



out to the mutual satisfaction of all concerned. Now we are confident that we have a sound basis upon which to consummate the merger. The agreement which we have reached with the Council of the Association of the United States Army is based on the principles of goodwill and mutual confidence. We are assured also, that this merger will prove popular with and receive the full support of all the arms, services and components of the Army.

The merger, however, will avail us little unless we enter it with spirit and the determination to give our combined Association and the *Combat Forces Journal* the same loyal support that we have given our own Association and *JOURNAL* in the past. That I am confident you will do both in membership and in the contribution of challenging articles in our fields of endeavor.

In conclusion, I believe that this merg-

er substantially furthers the interests of the United States Army. One of the great weaknesses of the Army has been its inability to speak with a single voice on any important issue. Too often our interests have been divided and much of our effort has been dissipated because it has been devoted to the narrower interests of branch, service or component. It must be apparent to all those familiar with present day problems confronting the Army that our future depends in large measure on our ability to close ranks promptly and effectively for the good of the Army as a whole rather than for separate elements thereof. I sincerely believe that this merger represents a long stride toward the accomplishment of that important objective. I hope that others will follow in a pattern through which we can attain the unity and strength that will best serve the interests of the United States Army in the future.

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## COMMENTS ON THE MERGER

The merger of the *ANTI-AIRCRAFT JOURNAL* with the *Combat Forces Journal* brings to a close a chapter in the story and the progress of Antiaircraft Artillery. In no sense is it a measure to be mourned. Rather, the merger is a forward step in keeping with the goal of all of us—to continually advance and grow. I am fully convinced that this action will assist greatly in presenting the real importance of our service and its effectiveness before the other arms and the people.

It is my sincere hope that the officers and men of the Army Antiaircraft Command will accept this merger as a challenge to stimulate them into even greater strides forward. There is so much to be written on the subject of Air Defense, Guided Missiles and Atomic Weapons that there should be a wealth of articles for your new journal.

Today we have, in the Antiaircraft Artillery, a component of the Army of which the American people can be justly proud. As a member of the team standing guard against attack from the air, our antiaircraft battalions are ready to protect our vital population and population centers. NIKE guided missile battalions are replacing or supplementing the standard 90mm and 120mm gun battalions. The Skysweeper adds new capabilities to the Army for the successful accomplishment of its vital mission.

We must now strive for the closest teamwork, not only with our sister services, but also with scientific and industrial leaders throughout the nation.

I feel in all sincerity that the Antiaircraft Artillery has the character and the capacity to give the nation just cause for pride. I am proud of the history which has been written in the pages of

the *ANTI-AIRCRAFT JOURNAL*. And now, as its final issue goes to press, I eagerly accept the opportunities offered by the *Combat Forces Journal*, and I am confident that the officers and men of the Antiaircraft Artillery will play a vital role in their new publication as they have in the old.

Best wishes to you in your new role with the *Combat Forces Journal*.

S. R. MICKELSEN  
Lieutenant General, USA  
Army Antiaircraft Command

I was very pleased to learn that at last our Association is joining with the Association of the U. S. Army and the *Combat Forces Journal*. General Lennitzer and all the others who have worked so diligently to accomplish this merger are to be congratulated.

As you know, I have always been a



strong advocate for one association to represent all of the officers of all of the Army branches. Ever since the integration of Antiaircraft and Field Artillery into the one branch, the need for a professional Journal embodying all of the combat arms has become increasingly evident. The development of new weapons and techniques and the growing importance of combined arms tactics also contribute materially to the need for a comprehensive and all-inclusive publication.

I must confess, however, to mixed emotions when I realize that the next issue of the AA JOURNAL is to be the last. Throughout my entire service, first in the Coast Artillery and then later in AAA, I have grown to esteem the JOURNAL for its excellent technical articles and for its intimate news of our AAA people and units.

Although we shall all miss the friendly camaraderie of the AA JOURNAL, there can be no doubt that the merger will greatly benefit us as individuals and create a better professional understanding between members of all branches of the Army.

I look forward with keen anticipation to the new and more extensive *Combat Forces Journal* and to a united Association of the U. S. Army.

PAUL W. RUTLEDGE  
Major General, USA

Commanding the AA & GM Center

Your news that the merger of the ANTI-AIRCRAFT JOURNAL with the *Combat Forces Journal* has been completed is received with mixed emotions. I am very happy that the job is done. . . . Certainly from the point of view of the integration of the two Artilleries and the desirable close association between the Artilleries and the other branches, this merger will be a long step in the right direction. . . .

On the other hand, . . . I am very regretful that our ANTI-AIRCRAFT JOURNAL comes to an end as a separate entity. . . .

MAJ. GEN. HOBART HEWETT  
Western Army AA Command

. . . I believe our merger is progress. We bring the *Army Combat Forces Journal* added strength and life. I have no fear that AA and GM affairs will be submerged. We are full-time members of the fighting forces and can hold

our own in all phases of joint activities. Even so, I can't witness the passing of an old friend without a feeling of sadness.

MAJ. GEN. N. A. BURNELL, II  
56th AAA Brigade

. . . So far I have been able to restrain my enthusiasm. . . . However, I can see the advantage. . . . Good luck! But get more Antiaircraft and Artillery in *Combat Forces*.

MAJ. GEN. JOHN L. HOMER  
USA Retired

I bow to the inevitable, but I still want to see a lot about the AAA in your JOURNAL. . . .

BRIG. GEN. HARRY F. MEYERS  
USA Retired

. . . There is no room for narrow or confined thinking in our complex Army, particularly in our Combat Arms; new weapons and weapon systems transcend branches or arms. Particularly in the Artillery, where we are adapting ourselves to a merged career pattern which includes both antiaircraft and field artillery assignments, I believe it is highly important that we have the bond of a common professional journal.

We should now be able to develop the most virile association we have ever had, with a better than ever magazine combining the outstanding features of both parents. If I may offer a suggestion, it is that we confine ourselves in our magazine to those topics peculiar to our specific professional interests, that is, matters of direct and probably exclusive concern to personnel of the combat arms. . . .

BRIG. GEN. T. W. PARKER  
Commanding  
45th AAA Brigade

. . . I believe the Antiaircraft Artillery members will now benefit by the action. I am also convinced that this is a step in the right direction toward the creation of a more unified spirit among the arms and services, and for united effort as a team, the United States Army.

BRIG. GEN. TOM V. STAYTON

I very much approve. It is high time that the various branches of the Army closed ranks into one association and published one journal devoted to the professional advancement of the entire Army and representative of its interest.

BRIG. GEN. LOUIS T. HEATH  
53rd AAA Brigade

It was with real regret that I learned of the passing of the ANTI-AIRCRAFT JOURNAL, even though we had been alerted to such a possibility. It is always a shock to learn of the passing away of an old friend, tried and true, such as our treasured AA JOURNAL.

Its place in our lives will be sorely missed—the personal orders concerning the movements and accomplishments of old friends and companions as well as the unit activity news which held the interest of all artillerymen and provided interesting and educational information of the trials, tribulations and the accomplishments of other AA outfits.

But most of all we will miss the stimulation and guidance of the technical or semi-technical articles with their down to earth explanations of new developments and techniques. These articles were always an inspiration and a "must" to every officer, young or old, but particularly so to the junior officers in their quest for more knowledge and artillery background. It is my sincere hope that sufficient space will be available in the new publication to carry on this valuable service.

I would also like to express the thanks and appreciation of myself and officers for your untiring efforts in promoting "our" JOURNAL. . . .

Best of luck in the new venture. I'm sure Delaware will rally to.

BRIG. GEN. JOHN B. MOORE  
261st AAA Brigade, Del. NG

With mixed feelings . . . On the other hand, . . . this merger will further assist in closing the ranks for a better understanding between the arms, . . . progress and a welcome change for the better.

In this connection the cross assignment and exchange of officers between FA and AA units is working in a gratifying manner and taken as a matter of course in the Eighth United States Army. This Brigade, in particular, has furnished many officers for FA assignments, and in turn, there is a large number of officers from FA units serving in an outstanding manner in our AA batteries and battalions.

COL. JOHN T. SNODGRASS  
Comdg. 55th AAA Brigade

. . . We in the 68th AAA Group, from a purely sentimental and selfish viewpoint, view the merger with some

(Continued on page 21)



# The First Year 36th AAA Missile Battalion

By CAPTAIN PAUL S. VANTURE

THE United States Army gained the first tactical Surface-to-Air missile unit in its history on 25 January 1954 when, at Fort George G. Meade, Maryland, the 36th AAA Gun Battalion hung up a new shingle on the front lawn of battalion headquarters. The new sign differed very little from the old: the lettering was still executed in artillery red and even the new emblem displayed retained crossed cannons. One would have had to look twice to notice that the word "MISSILE" had been substituted for "GUN," and the ceremony might have gone entirely unnoticed except for the fact that the sign-hanging detail consisted of Brigadier General Tom V. Stayton, CG of the 35th AAA Brigade, Colonel Stuart M. Alley, CO of the 19th AAA Group, Lt. Colonel Earl R. Gooding and Major Conrad O. Mannes, Jr., CO and Executive Officer of the 36th AAA Missile Battalion, respectively. The ceremony completed, the participants took a deep breath. Not twenty yards away, two sleek new Nike missiles, aboard their

special transporter trailer, lent authority to the fact that these distinguished gentlemen and their respective commands were in the "missile racket" in dead earnest.

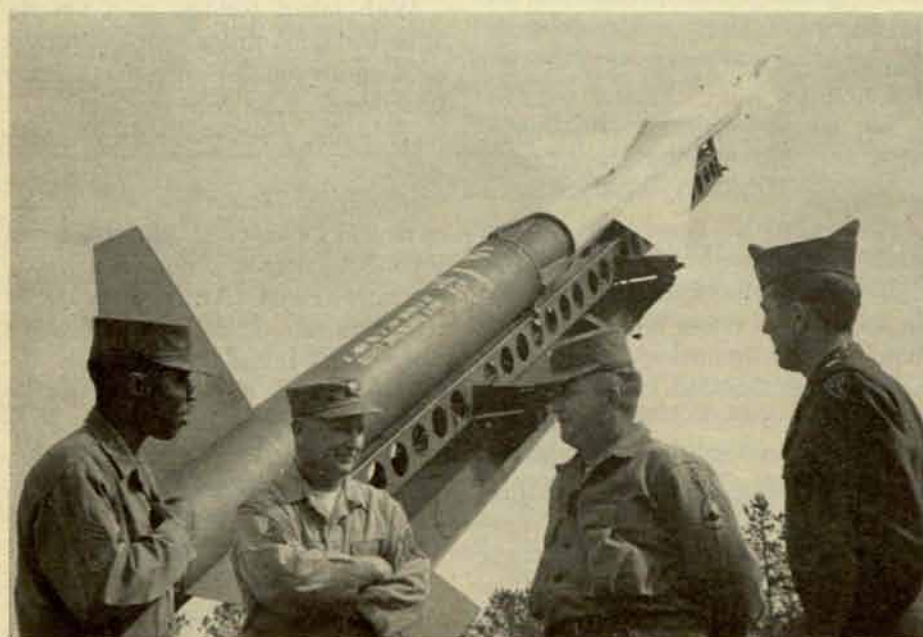
The hard facts are that hanging up a new sign isn't all it takes to make a missile battalion. The 36th Battalion would like to tell readers of the JOURNAL who may have an interest in such matters, specific details of what transpires to make a missile battalion out of a gun battalion. Security considerations will keep us from being over-helpful in these pages, but difficulties will be indicated which will become apparent to those essaying the task in the future.

One starts with a nucleus of officers and men, called a "package." These are brought together at Fort Bliss, Texas, under the command and administration of the 1st Guided Missile Group. An enterprising officer, such as the package commander, Major Conrad O. Mannes, Jr., later to become executive officer of the 36th, culls over the package personnel, carefully noting qualifications, ex-

perience, and expected length of service. He considers, too, special qualifications, and prepares a card file. When special skills are demanded—as they consistently are—consultation with the index discloses by name, rank, and serial number the plumber, painter, electrician, or heavy equipment operator sorely needed on a moment's notice. He interests himself greatly in talented outsiders expressing a desire to get "in" the package (e.g. expert generator repairmen). Access is gained to the missile graveyard at White Sands Proving Ground, and spare parts are collected. The card file yields a master machinist who is installed in a local machine shop to proceed making cutaways of sections for future on-site training.

FINAL battery rosters are completed and all package NCO's are assigned a definite slot by a job title. Equipment begins arriving, and is earmarked for each battery. The package repairs to the field for battery "proof tests": actual firings to shake down both men and equipment. Three batteries proceed to White Sands Proving Ground under Major Mannes. A fourth battery, under Major Victor J. Fadden, currently the battalion S3, goes 170 miles north of the Proving Ground in a desert vastness known as Red Canyon Range Camp, near colorful Carrizozo, New Mexico, a name that conjures up visions of Billy the Kid and Pat Garret shooting it out in dusty streets. Near here, the 1st Guided Missile Group has erected a tent city and installations necessary for battery proof tests. This enterprise is notable since for the first time AAA troops are undertaking the complete responsibility for missile firings.

Eight fresh-faced second lieutenants are dispatched by the 35th Brigade all the way to the New Mexican desert to assume the complex duties of launching and battery control officers. They are



Lieut. Rae Trimble (right) confers on 36th AAA Battalion Nike problems with Sergeants First Class Lonnie Morgan, James Hewett, and John Kent, all of whom have since been promoted to become warrant officers.



conducted to their areas and literally commanded, "Sink or swim!" Without exception they swim, some even displaying amazing speed in acquiring intricate knowledge necessary for the performance of their jobs.

Heroic efforts on the part of officers and men resulted in successful completion of battery proof tests. The package was pronounced qualified and ready to take to the field. A general exodus east followed the issuance of orders.

Arrival on site at Fort George G. Meade was anti-climactic for both package and the old battalion personnel they had come to convert. Having but recently surmounted numerous obstacles in proof tests in the desert, the former, a bit winded, were now faced with the equally formidable task of making its new organization completely operational—starting from scratch—by a stated deadline now being widely heralded in the nation's press. The latter were disappointed to see that the men from the desert eschewed space helmets and that there was a dearth of such expressions as "Blast off!" etc., frequently bandied between Captain Video and his stalwart crew. After giving voice to their mutual disapprobation, the old and the new banded together to form a solidly homogeneous group whose subsequent industry would have caused envy in a beaver colony.

Areas were allotted the battalion by Fort Meade for temporary site construction. A consulting engineer was supplied by 2d Army Engineers, who advised on special problems within his sphere of knowledge and saw to it that purchase of necessary construction materials was expedited. Further engineer support was enlisted from the 19th Combat Engineer Battalion, commanded by Major Denton, to furnish numbers of graders, dozers, and allied heavy equipment. Forests began to fall and hills to be moved. The Post Ordnance Officer generously surrendered a large shop in which was established the assembly and checkout section of the missile assembly site.

A BASIC plan evolved for the construction of launcher areas. Essentially it was a road net for a single section of launchers consisting of two interlocking road ovals. By extending the net length-

wise, an additional section could be accommodated.

To furnish firm footing, specially poured concrete blocks were imbedded beneath the jacks of all trailers and vans. For the radar tracking trailers, these block forms measured 2' x 2' x 1'. For vans, the forms were made 18" x 18" x 18".

Improvisation has become a byword in the 36th and will probably continue so. Some examples of this method of operation are demonstrated in solutions provided by the battalion when faced with the following problems:

**Problem:** A special concrete hardstand and fueling pad is needed for missile fueling operations. It is imperative that construction begin immediately to insure that no bottleneck will exist in the overall battalion operation. A bitter period of weather sets in: snow, rain, and freezing temperatures. The consulting engineer advises abandonment of the project until the onset of more favorable weather. Higher headquarters however advises that the battalion commander attain operational readiness immediately, despite all obstacles.

**Solution:** The battalion commander directs his assembly site officer to accompany him up and down the length and breadth of the post. After several strikeouts, the abandoned concrete floor of a dairy barn is discovered in a remote area. The assembly site officer

agrees that the floor can be modified to make the necessary hardstand and pad. One day of good weather will make possible the necessary shaping and gouging with a jackhammer and the pouring of new concrete on top of old. The engineer officer suggests only that the old surface be thoroughly clean and then doused liberally with water immediately prior to the pouring. The 36th Battalion now possesses an extraordinarily good fueling area.

**Problem 2:** Owing to your proximity to the village of Washington, D. C., and the fascination of your unconventional new weapon (well advertised in the press), higher headquarters estimates you will be receiving continuous streams of distinguished visitors. It is therefore directed that you locate a building capable of housing a security briefing, equip it with charts and demonstrations of a security nature, safeguard it properly, then renovate it to a degree that will preclude your being ashamed to receive ranking dignitaries therein.

**Solution:** Down the block from battalion headquarters is an area once housing hundred of POW's during World War II. One building is a maximum security cell block possessing peculiar merit. It is substantial and definitely secure. The Post Engineer happily accedes to your request for administrative control over the building. The exec's



Captain Vanture (right) and crew in "Men from Mars" costume prepare to pour acid from drum to missile tank.



magic file produces painters, plumbers, carpenters, and electricians who attack the ugly interior with great gusto, removing partitions, installing fluorescent lights, spotlights, and brightening up walls and floors with paint. Result is that to date countless dignitaries have spent an interesting and informative sixty minutes in the 36th's "hoosegow."

### Epilogue

**I**N a few more weeks, the 36th Battalion will mark its first anniversary in the field as the world's first tactical surface-to-air missile battalion. A fleeting look over our shoulder rewards us with a creditable appearing record of accomplishment: the officers and men of the battalion have brought into being four tactically operational firing batteries, complete in every impressive detail. A business which dealt exclusively in the realm of science fiction a few short years ago is now merely workaday routine to the personnel of this battalion, all of whom are confident in their abilities to launch missiles in defense against atomic attack if and when the occasion arises. This same conviction is shared by official inspection parties who have subjected the battalion to the minutest scrutiny and who have consistently awarded their highest approval to the accomplishments of this pioneering unit.

High ranking dignitaries and others who have visited us in a semi-official status have, in like manner, been impressed with the battalion and its new weapon. Even before the 36th had fully emplaced its equipment at Meade in the winter of 1954, a special briefing was caused to be prepared at battalion level under the direction of the S3 and from its inception has proved popular with no less than 1,200 visitors of all branches of service. Many come prepared to be skeptical but the uncluttered briefing, the informative tour, and above all the opportunity to question the men who man the equipment never fail to communicate the enthusiasm of the entire battalion for the new found potentiality of Nike. In short, they go away believing that the men of the 36th mean business, no nonsense about it.

A statistic which enlisted readers will no doubt be interested in is the number of top three graders of the original package of 116 men who have gained warrant officer appointments, MOS 1184 and 1185. At this writing, Lt. Colonel Gooding has pinned WOJG bars on 70 sergeants of the first three grades. The applications were screened and the applicants subjected to rigorous interviews but the success was all theirs. The men perhaps had one great advantage in that they were without peers in the field of tactical experience with the Nike I

guided missile. Regrettably, many of the newly commissioned warrant officers had to be surrendered to other Nike battalions forming in the field.

Other assistance has been given these last mentioned units by the 36th. One form has attracted considerable notice since its recent beginning. It is referred to simply as "Cross Training" and is a method whereby gun battalions anticipating conversion to Nike receive 176 hours of training under instructors furnished by the 36th Battalion at one of our battery sites here at Meade. In 176 hours the battalion S3 does not pretend to train maintenance men for the complex equipment; his desire to train operators however has to date been successful beyond original expectations. The burden of instructorship is placed on one battery at a time and one group of approximately 25 personnel from one gun battery are accommodated.

This task is proceeding and its success indicates its continuance for some time to come.

Summing up our year of tactical experience we can say that duty with a Nike battalion may be hard but certainly never dull. And we have the satisfaction of knowing that we have helped in some measure to enable the Army to gain a firm footing upon the threshold of a new era of antiaircraft defense, the era of the guided missile

## WHAT'S THE SCORE?

By **LIEUT. COLONEL EARLE MOUNTAIN**

**F**OR the past two months I have been in charge of an AA firing range. Under most any circumstances, this can be a harrowing experience, what with independent boatmen cluttering up the field of fire and stray fly boys wandering into the area from where the Lord only knows. And it did not simplify

my problem a bit when along came a few battalions of National Guard and ORC Antiaircraft units for summer camp.

At any one time there would be from three to five batteries waiting to fire, all anxious to complete their service practice. Then something would happen, the plane couldn't fly because his base was weathered in, or, he would arrive and we would lose radio contact and he'd go back to base, or, his sleeve cable reel jammed, and there would be no mission. There was always some-

thing. And then, there we would sit. A beautiful day, no ocean traffic, everything ready—but no plane. It was one of these typical days that an officer appeared at the main tower and introduced himself as the liaison officer between my section and a new ORC unit fresh on the firing line. I immediately made him my assistant, with the impressive title of Assistant Range Officer, and quickly outlined his duties as pertained to his units. His name was Major Bartlett, by the way, and at first this didn't mean anything in particular until

Lieut. Colonel Mountain, a regular contributor and formerly Inspector of Training, Eastern Army AA Command, now commands the 549th AAA Gun Battalion at Thule AF Base.



we started to talk a bit about the gunnery problems the units were experiencing. Then I remembered where I had heard his name. "Say, aren't you the Major Bartlett who has been writing articles for the ANTI-AIRCRAFT JOURNAL?" I asked.

"That's right," he said.

"Well, now, I've got just the problem for you to tackle."

Then I reviewed all the difficulty we had been having with the tow planes, the shipping and even the weather.

"What I want you to do, Major, is to come up with a workable solution that will enable us to get the units on the line through the required service practices with a minimum delay."

"Right! I'll have to do a little studying of the range records, but I think I can come up with an idea."

The next morning Major Bartlett appeared at my tent about an hour before the range was scheduled to open.

"Good morning, sir. About that little problem you gave me yesterday, I have some pretty definite ideas on how you can solve some of your difficulties."

JUST then the field phone rang and I had to interrupt him momentarily. It was the main tower reporting that the tow plane wouldn't arrive at 0830 as we planned because the field, some 30 miles away, was socked in by early morning fog. There would be at least a three hour delay, I knew by experience.

"Well, Major, I hope you have a solution, because here is a typical example of what I had in mind. The tow plane can't get airborne for at least two hours, then considering travel time and time required to let out the sleeve, at least another hour will elapse. There goes the whole morning shot to pieces. As you can see, there isn't a small boat in sight and the ceiling here is unlimited. Everything is perfect except for one thing—no airplane."

"From a study of the records available," replied Major Bartlett, "it was quickly apparent that over 70% of the time lost on the range is chargeable to just this same condition. Closely related is the loss of communication between the ground and the plane. In either case, the result, as far as the AAA troops are concerned, is the same—no shooting! Why don't you make more use of RCAT's?"

"Oh, we tried that, but it didn't work. When we had the RCAT down low enough for the O<sub>1</sub> and O<sub>2</sub> stations in the record section to see it, the troops complained because the low fuze numbers gave an unrealistic situation. Remember, these guns are supposed to be engaging an enemy plane at least by 25 fuze numbers, and with the RCAT in close for the record section we were ending up with 7 and 8 fuze numbers. It was unsatisfactory."

"Do you have the auto-pilots?" questioned the Major.

"Oh, sure, we've got them all right, but when we send the RCAT up to 13-14 thousand feet the controller can't see it and neither can the records section. How are you going to score a practice without observing the bursts?"

"I've got that figured out, sir."

This guy was getting my temper up a bit. He seemed to have all the answers. Who in hell did he think he was? We had been knocking ourselves out for a couple of seasons trying to solve this very problem and along comes this two-week wonder with a pat solution. Well, I'd soon find out.

"OK—let's hear it. We've got a couple of hours yet before the plane can arrive—go ahead—give me the commercial."

"Let's divide the problem into two main categories," he began. "Category One is the control of the RCAT. Category Two is the scoring procedure when using RCAT's."

"Now about controlling the RCAT. I notice that the battery on the line here from the regular AA units that are presently on-site as part of the CONUS Air Defense System is equipped with the FCS M33. That is a beautiful piece of equipment. Its capabilities are enormous. I've had some experience with the FCS M33 in an AAA unit near our armory and we have had several drill periods at the AAA site. Then on my last active duty tour I had an opportunity to be assigned for a short period to an organization that had the M33.

"Here is my suggestion for controlling the RCAT. Use any M33 that is on the firing line as the control station. On the horizontal range plotting board draw a line representing the course you want the RCAT to fly. This is located on the board normally in terms of range and azimuth from the directing point of a battery but, for control of the

RCAT, set in zero parallax on the computer dials and the boards will then show the course with relation to the M33.

"On the lower section of altitude plotting boards indicate the altitude you desire the RCAT to maintain.

"The RCAT controller will then launch his plane in the normal manner. He will bring it over the control FCS M33 and fly on a straight and level course until the tracking radar is 'locked on.' With a little practice and coordination this is a simple feat.

"Once the radar is 'locked on' the controller moves into the van and manipulates his controls to keep the RCAT flying on the predetermined course you have marked for him. The plotting pens on the horizontal and altitude boards show him exactly where the RCAT is with relation to the M33 and he can easily adjust his flight to bring the plane onto the selected course.

"So much for the control of the RCAT." At this point I interrupted him long enough to send for the RCAT Detachment commander and the S3 to join the party and give their reactions.

"On the Category Two problem of scoring a practice using RCAT's I have some very definite ideas, some of which may not exactly agree with your present thinking, but I'll state them anyway and let you make your own choice.

"I find that even when using a tow plane and a sleeve the record section has had difficulty in picking up the sleeve. This is particularly true when the plane is at either end of the course and is making his turn. Time after time, one of the flank stations will be on target while the O<sub>1</sub> station at the guns is frantically searching for the sleeve. Many passes of the sleeve are not fired upon because if the records section isn't 'on target' there can be no score and with no score there is no course. There's no use in banging out the rounds if the record section isn't on target. There is a stated amount of ammunition authorized for each practice based upon the yearly allowance and further allotted by the number of courses to be fired. Firing courses without obtaining any score from the record section is useless and adds little to the training of the unit.

"And why isn't the records section on target? Because the man on the observing instrument can't see the target.



That is, he can't visually 'see' the target. But here you have a marvelous piece of equipment, the M33, which, once 'locked on,' can electronically 'see' the target. Once in automatic track the radar sticks right with the target. Before firing you have checked the collimation of the radar and the periscope.

**T**HEN you can state that what the radar 'sees' electronically, the periscope allows the operator to 'see' visually. It isn't important that the operator actually be able to 'see' anything because he knows that the center of the cross hairs on the periscope represents the position of the target that is being tracked by radar. When the guns fire all the bursts should occur around the target; there's no argument there, I hope. In other words, all the bursts should be pretty close to the center of the optics in the periscope. All the records section has to do then is read the deviations of the bursts from the intersection of the cross hairs in the track periscope. As long as the bursts are visible and the radar is 'locked on' it isn't necessary that the target be visible. For all practical purposes, the target is the intersection of the cross hairs in the periscope. The observers from within the radar van can read the aboves and belows and the rights and lefts for each course. They will never be 'off target' and every course can be a firing course."

"Now just a minute there," I interrupted, "Let's drop back 5 yards and punt that around a bit. Your contention is that, once locked on a target, whether a plane, a sleeve or an RCAT, from then on the periscope is always pointed at the target and the target is carried right at the intersection of the crosshairs. Therefore, it is not necessary that the observer actually 'see' the target as long as he can 'see' the bursts?"

"That's right, sir. But remember now—I am making the assumption that part of the preparation for fire is to collimate the radar and the periscope. Really, that is no assumption either, because part of the preparatory phase score is based upon a present position check and in that check it will be possible to verify that collimation has been accomplished."

"That's true," I said.

"Then," he continued, "as far as the record section is concerned, deviations

in azimuth and elevation are read directly from the periscope reticles. The deviations are recorded, averaged, and scored in the normal manner according to TM 44-234."

"But what about range deviations?" I asked.

"That's the next subject," replied Major Bartlett. "But first let's analyze the basic gunnery problem a bit. In my early days as an AA officer we used to calibrate our guns. We would attempt to group them according to developed muzzle velocity. Then we would recalibrate and select a base piece. The other guns would be adjusted to hit the same spot in the sky as the base piece by using a fuze calibration correction.

"With better equipment like the M33 a unit can now fire velocity fire and determine an accurate muzzle velocity for each gun with a certain lot of powder. If all guns in a battalion fire with the same lot, then the commanding officer will have good data on which to base a re-grouping of his weapons. If everything works out right the guns will then be so closely matched that no fuze correction will be necessary. But, usually, one battery in a battalion will get stuck with all the left-overs. The theory is that it is better to sacrifice one unit in order that the organization, whether battalion, group or defense, may benefit as a whole."

"But what about this poor soul, this battery commander who inherits all the left-overs? What can he do about it?"

"In my day he would compensate for mismatched guns by fuze calibration corrections. But he was only kidding himself. Fuze calibration corrections affect time of flight to the burst point. In attempting to make the bursts occur at the same slant range from the guns we told the fast gun to explode the round earlier than the actual time the target would arrive at the selected point in the sky, while the slow gun would burst on line in range, but after the target had gone by. These guns have a small lateral error and with fuze corrections applied you haven't much chance of getting any hits. Consider also, that with the present fuze we use, we are going for a direct hit. Lateral errors caused by using fuze calibration corrections will reduce our probabilities of hits in combat to an unacceptable figure. I suggest you read paragraph

207.1 of FM 44-4 published in Change 1, dated 23 October 1952. 'It's in the book!'

"So now we are back to our poor soul, the BC with the mismatched guns. It's not his fault. It's not the battalion commander's fault either. It's just fate—and he is stuck with them. But comes target practice and our friend gets clobbered for score under the present system. The range score is divided into two parts. Range center of burst and range spread from center of burst. Each is worth 12 points or a total of 24 points for the range component.

"It would be quite possible for our friend to have his guns correctly O & S'd, his muzzle velocity exactly right, have no personnel errors, in fact no errors, period, and he would earn 12 points for his range center of burst on target and lose, note that, he could, theoretically get a minus 10 (-10) points for his range spreads from the average. And what caused this range spread? Why, the fact that he had all the 'dogs' in the battalion and, in accordance with FM 44-4, did not use fuze calibration corrections. Perhaps you think he should have fudged a bit and used the fuze correction, at least on the range. But notice this, he would then get whacked on his lateral score.

"This, gentlemen, is a revolting development. I would say that the morale in this unit would take a big drop. You know darn well that all the men may not know much about theory but they all do understand the final score. It is strictly unfair to penalize an excellent battery for following the best gunnery principles and that is what the range component of the present scoring system does.

"How do I propose to correct this? Again let us talk gunnery. Even with the guns grouped as well as possible we will rarely have all guns with exactly the same muzzle velocity. Thus, rarely will all guns in a battery ever burst exactly at the same point in slant range when we use the MT feature of the MTSQ 502 fuze. The most we can expect is that there will be an equal number of overs and shorts in range. For example there are four guns in a certain battery. The MV's are 2690, 2696, 2715 and 2720. The Battery MV used on the computer will be the average, or 2705 foot seconds. It is apparent



that two guns will be generally over and two will be generally short. Once locked on target however, dispersion will work in favor of the battery, causing an equal number of over and short bursts around the target. Thus, I claim that as long as this battery has an equal number of over and short rounds they have accomplished their mission and deserve full score in the range component.

"A battery that has the rounds all in one sense, either all over or all short, has not done a good job and should receive a low score. In between, there is room for the battery that has a preponderance in one sense. The score must be variable depending upon how much the total sensings vary from the ideal of an equal number of overs and shorts to the lowest score of all in one sense. Therefore, in my system measurement of the magnitude of the range, deviation is not necessary. Rather, we will need only the 'sensing,' expressed as 'Over,' 'Short,' or 'Hit.'

"We obtain this sensing from any of the 'A' scopes on the tracking console of the FCS M33. You will recall that the target makes a definite 'pip' on the 'A' scope. Also, you recall that the shell, en route to the target, also makes a definite 'pip' and you can actually see the shell travel out to the target.

"Any shell pip that explodes before it reaches the target pip will be called 'short.'

"Any shell pip that enters the target pip and doesn't come out on the opposite side is sensed as a 'Hit.'

"Any shell pip that goes past the target pip is sensed as 'Over.'

"You may argue that the observer will have a hard time picking out the sensings, especially if four guns are firing at once. My counter argument is that even with visual observation the records section was fortunate to get 75% of the rounds fired and then, in addition, there exists the very good probability that personnel errors are made in reading the mil deviations.

"All my system requires is the overall sensings of most of the rounds. We want to know if the battery obtained an equal number of over and shorts and if not in what sense did the majority of the rounds fall."

"How do you propose to determine a numbered score for the range com-

ponent, Major?" the S3 asked.

"My theory is to make use of a device that probably most of you never heard of. It was used in my early days as a range officer in a seacoast artillery battery. It was called the 'Bracketing Method of Trial Fire.'

"I have improvised somewhat the value to be assigned to the intersections on the chart. In general, I reasoned this way, that the total of the two range components, center of burst and spreads from center has usually amounted to about 18 points out of a possible 24. This means that I consider that if the range center score was a maximum of 12, a unit would rarely get below a minimum of 6 points for range spreads. Analysing many of the scores obtained here in the last month shows this has held pretty true. So I made my combined score a maximum of 24 points and minimum of 16 points.

"After recording the range sensings of a course, it will be necessary to replot them on this chart I have prepared in order to obtain a numerical rating. Hits are plotted on the diagonal, overs are plotted on the horizontal lines and shorts are plotted always downwards on the vertical lines. All plotting starts at the upper left hand corner. It makes no difference to the final score as to what order is used. For example 4 overs, 2 hits and 7 shorts will give a score of 24. So will 2 hits, 7 shorts and 4 overs. So will O-S-S-O-H-S-S-O-S-S-O-S-H.

"As I said previously, the ideal shooting is to have an equal number of overs and shorts. A hit is considered as equal to one over and one short. Thus, you will note that if a unit fires a course in which 12 rounds of the 16 were sensed, and these were all 'over,' the score is 16 points. That's like a score of 4 for center burst and a score of 12 for range spread. Obviously, the center of burst wasn't on target because they were all over. That's where my scoring system hits hard. You must have distribution around the target.

"My suggestion is that this afternoon we try it out in conjunction with the regular scoring system and let's see how it works. It will work as well on a sleeve as on an RCAT."

We agreed to give it a try that afternoon, I made sure that the Major had no knowledge of the scores obtained by

the record section based upon visual observation. In fact he stuck himself in the M33 and I didn't see hair nor hide of him until the range closed for the evening. I collected from him his scores on 14 different courses and then gathered up the records from the regular record section. I made a tabular comparison and I was amazed at the results. It was just about as he had predicted. His system helped those who had an equal distribution of rounds in range but penalized those who had a preponderance in one sense. I thought that the system was pretty well balanced when I considered that average of the variations between the scores obtained by his method and those obtained by the regular records section came out to zero.

**D**URING the balance of this time he was with me, we continued to run comparative tests and always with the same results. His system gave a unit a fair score and was valid for comparison with units that might be scored with the present method.

Now as I am preparing to close up my desk and shut down the range, I have been going over the study Major Bartlett made. It looks good to me. Certainly, it will save a lot of time on the range when the target is out of sight of the record section.

Maybe some of your JOURNAL readers could get it approved for target practice.

### Proposed Scoring System For AAA Target Practice

1. *Problem:* To devise a system of scoring of the firing phase of AAA service practices when utilizing RCAT's.

2. *Requirements:* The final system must be simple to operate, valid in results for rating, require no additional personnel or equipment, and be applicable on our firing ranges.

3. *Discussion:*

a. The components and maximum values used to arrive at a firing phase score, as given in Paragraph 41, TM 44-234 AAA Service Practice, are:

RGM	28
Lateral Center	12
Vertical Center	12
Range Center	12
Lateral Spread	12
Vertical Spread	12
Range Spread	12
<b>TOTAL</b>	<b>100</b>



b. No change in the scoring values is involved.

c. The FCS M33 is capable of "locking on" to the RCAT.

d. The RCAT controller can, in fact must, control the RCAT from within the radar van utilizing the plotting board and automatic plotting feature of the radar to determine the present position of the RCAT, in both the horizontal and the vertical plane.

e. The records section cannot record bursts because they cannot visually see the target at the horizontal range the RCAT must fly.

f. The radar can see the target electronically and, once locked on, the target is always in the center of the optical telescopes. It is not necessary that any operator actually visually see the target. The center of the telescope is always the target.

g. The radar scopes are graduated in mils, both vertically and laterally. Therefore, lateral and vertical deviations of the bursts can be obtained from within the radar van itself, once locked on target.

h. The tracking console of the radar has three A scopes. On each A scope is presented the target pip in relation to the range from the radar. The target pip is carried in a 100 yard notch when the radar is tracking automatically.

i. It is possible to see the shell trace move across the A scope and note where it burst with relation to the target pip. If it bursts before entering the target pip, it is short in range. If it goes into the target pip and doesn't appear on the other side, it is a hit; if it enters the pip and then reappears on the opposite side, it is over in range. The error in calling hits is approximately  $\pm 50$  yards.

j. An analysis of past target practices indicates that the record section is able to obtain deviations on approximately only 75 per cent of rounds fired on any course.

k. The sensing method using the A scopes will obtain somewhat less, but will indicate the general pattern of the range center of burst as over, short, or hit.

l. To compensate for not computing

range spread of the individual rounds, the score for the range center of burst will be increased to 24 points. This implies that as long as a unit obtains an equal number of overs and shorts in range, they have accomplished their mission. Fuze calibration corrections, which would tend to make all rounds burst at the same range, are not considered sound gunnery. Therefore, any variation in muzzle velocity between guns now acts to give the unit a poor score because of range spread between the weapons. Once guns are grouped as well as possible based upon muzzle velocity determination, there is nothing more the unit can do to increase or decrease score for range spreads. This component is no longer valid. Thus, under this proposed system, more weight is given to getting the range center of burst on target.

4. Solution:

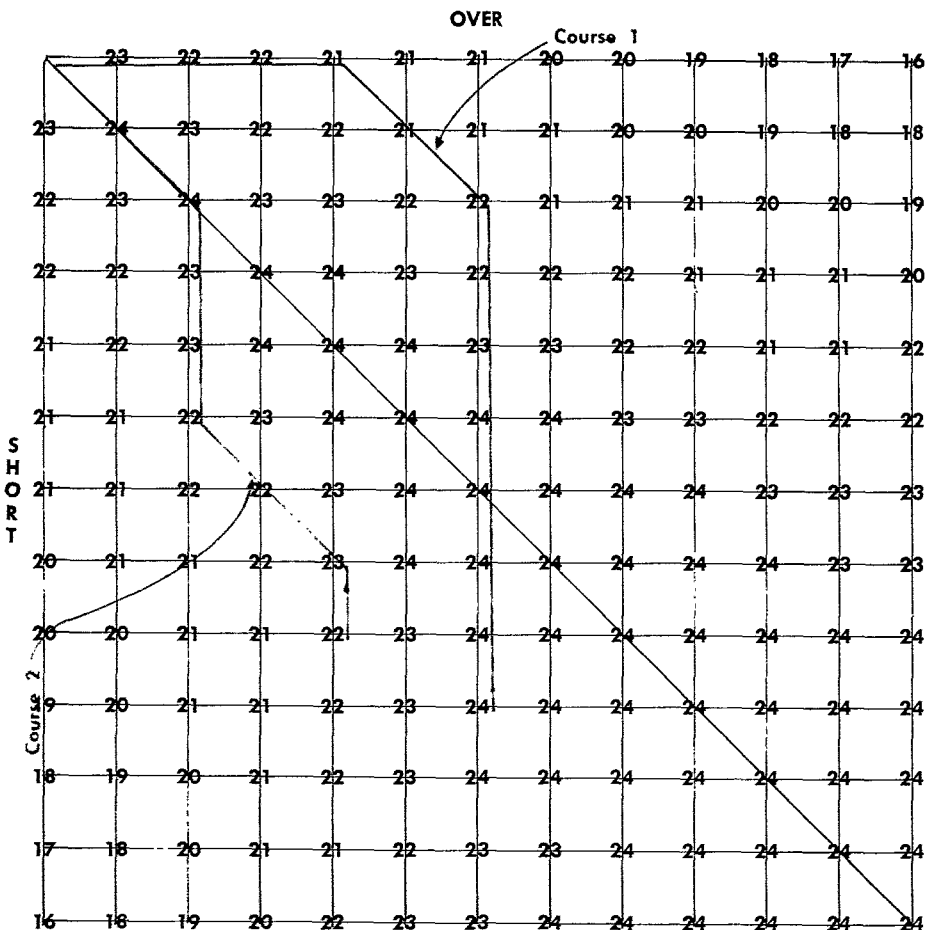
a. Control the RCAT from within an M33 radar van. It may be the radar of the unit firing or an adjacent radar.

b. Once the radar is locked on target, the operators at the tracking console become observers for the purpose of calling out deviations:

- ▶ The elevation operator observes vertical deviations and calls the bursts as so many mils above or below.
- ▶ The azimuth operator observes lateral deviations and calls the bursts as so many mils right or left.
- ▶ The range tracker observes the shell trace in the A scope with relation to the target pip and calls the round as Short, Hit, or Over.
- ▶ The record section furnishes the necessary recorders.

c. The scoring of the course is as presently outlined in TM 44-234 except for range deviations. Range deviations will be re-plotted on, and the score obtained therefrom will be used as the component score for range deviations.

Course 1 represents plot for following reports of shots: O-O-O-O-H-H-S-S-S-S-S-S-S; score, 24. Course 2: H-H-S-S-S-H-H-S; score, 22.



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# THE TIPSY

## (Radar Set AN/TPS-ID)

By LT. COL. LEONARD M. ORMAN



Lt. Col. Orman

ONE of the most widely used radar sets in the U. S. Armed Services is the Topsy. Despite its wide use, it is one of the most maligned and misunderstood pieces of electronic gear that the Army has. Because of its disrepute its maximum potential is not being achieved. After being closely associated with the testing of this set, I am convinced of two things.

- (1) That it will do its job, and
- (2) It is not difficult to maintain, comparatively speaking.

This article is written with the hope that some of the misunderstandings may be clarified and the Topsy may begin to take its proper share of the AA defense as a respected member of the team.

The belief that the AN/TPS-14 will do its job is supported by the results obtained by OCAFF Board No. 4, and

Colonel Orman, formerly a member of AFF Bd. No. 4 at Fort Bliss has recently transferred to the Ordnance Corps with station at Aberdeen Proving Grounds, Md. For years a regular contributor to this Journal, and recently a visitor in Holland, he reports his great pleasure in finding himself recognized there among the AAA officers and engineers for his articles in the Journal.

by similar agencies in the Navy and Air Force. Using units in some AA installations blessed with radar personnel who understood the set have also realized the maximum potential of this radar.

The main difficulties appear to have been:

- (1) An inadequate generator
- (2) A lack of spare parts and test equipment
- (3) Some technical limitations
- (4) Improper siting
- (5) A misunderstanding of the capabilities and limitations of the set
- (6) A lack of skilled maintenance men

Some of these difficulties have been or are being overcome. The PU-104 generator is being replaced by the larger, better PU-107. (In Europe a 7.5 Kw diesel generator is being used. For the purpose, it appears superior to our PU-107.) The Signal Corps is vigorously pursuing a program which is aimed at getting spare parts and proper test equipment into the user's hands. A list of the more important of these items follows:

### Test Equipment

a. *The Signal Generator TS-419/U* is used to measure the radar receiver sensitivity and bandwidth.

b. *The Tube Tester TV-3/U* is satisfactory for testing most of the tubes used in the AN/TPS-ID. The tubes which could not be checked with this tester were the 371B (rectifier), 5C22 (hydrogen thyratron), 5CP1-A (cathode-ray tube), 7BP7-A (cathode-ray tube), 1B27 (TR tube) and the 5J26 (magnetron).

c. *The Crystal Rectifier Test Set TS-268/U* is satisfactory for testing the AFC and signal mixer crystals (1N21B).

d. *The variac* is used to age the radar magnetrons.

e. *The Echo Box TS-172/UP* is satis-

factory for measuring the transmitter frequency and checking the overall radar performance.

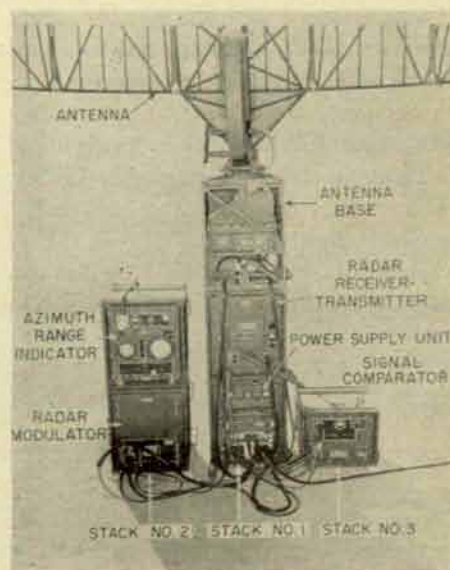
f. *The Radar Test Set AN/UPM-30* is satisfactory for determining the transmitter pulse frequency spectrum and measuring the transmitter frequency.

g. *The Wave and Power Meter Set TS-107/TPM-1* is satisfactory for measuring the radar RF transmitter power, and the built-in detector is satisfactory to detect RF signals for measurement purposes.

h. *The Directional Coupler AN/TPS-ID* is satisfactory for use in checking the transmitter frequency RF power, transmitter pulse shape, transmitter frequency spectrum and receiver sensitivity and bandwidth.

i. *The Dummy Antenna TS-235/UP* is satisfactory for dissipating the RF energy of the AN/TPS-ID.

Most of the technical limitations which earlier models of the set had are believed to have been overcome in later models or by the application of Field Changes 1 through 8 which are designed to bring earlier models up to the level of



Radar set AN/TPS-ID.

later sets. A list of these Field Changes follows:

1. Duplexer Change.
  2. Replacement of reflex Klystron local oscillator by lighthouse triode.
  3. Addition of spare magnetron.
  4. Modification of antenna drive to allow the antenna to be rotated in wind velocities up to 60 mph.
  5. Replacement of 1B27 TR tubes by 6322 TR (tunable over on wider range of freq.).
  6. Modification of power supply to provide correct B voltage for lighthouse triode.
- 7 & 8 Changed various parts of the L.O. cavity and improved the suspension of the L.O. assembly. AFC Tuning circuits eliminated. The overall performance of the radar, especially the Moving Target Indicator performance, was greatly improved as a result of these changes.

### Siting

Despite these improvements—improper siting continues to handicap the set. The best siting advice that can be given is—*try a few*. In this respect we are fortunate. The Topsy is small enough so that it can be mounted on a 2½ ton truck and operated from the truck itself. Several units in the field have done this. Some recent articles in the *ANTI-AIRCRAFT JOURNAL* have described details of putting wheels under this set. One forthcoming improvement of the Topsy (except for Conus units) is Electronic Search Central AN/GSS-1. At present a tent is issued with the set. As recent *ANTI-AIRCRAFT JOURNAL* articles have noted, the tent does not meet all requirements. The need for greater mobility and a better shelter has resulted in Electronic Search Central AN/GSS-1. This item is the Topsy mounted in an enclosed, lightweight, cabin-type shelter which can be carried on a flatbed truck, cargo, 2½ ton, 6 x 6 LWB, M35. In addition to the radar the unit contains a Plotting Board, PT 171/TPS, a gasoline heater, mounting brackets for 2 radios, and chairs for 4 operators. It can be used as an emergency battalion command post. The Topsy can be operated in the shelter or can be taken out. It is advisable to leave it in the shelter. The entire shelter can be re-

moved from the truck if desired. The GSS-1's use is justified when it is desired to provide mobility comparable to fast moving units.

### Misunderstandings

Unfortunately an aura of mystery still continues to hang over radar and all electronic equipment. Some officers have made no effort to learn even the most rudimentary facts about radar capabilities and limitations. One does not need to be an electrical engineer or even a graduate of a radar maintenance course to know what to expect from his radar sets. The inability to trace an electron's path through a complex circuit should not keep battery and battalion commanders from trying to learn a little about this vital tool of AA defense. A recent inspection of an AN/TPS-1D surveillance station disclosed that although the antenna was rotating, the PPI scope was totally dark and the operator was asleep in his bunk. The set had been inoperative for days. No attempt was being made to repair it after initial effort had proved ineffectual. The battery commander believed the set to be operating because the antenna was rotating.

One unnecessary difficulty which supply channels caused Topsy performance was recently uncovered. The set consists of six units. When factory checked the system was aligned as a single unit. It was believed that the units were completely interchangeable between sets. It has now been found that the Topsy performs better and has less maintenance problems if the units of an individual set are kept together. Steps are being taken to implement this policy.

Tests show that performance is always less than normal in clutter free areas when MTI is used. This effect increases as a function of range. Hence, if interested in detecting targets at maximum range MTI should not be turned on until needed.

The set has a pencil beam antenna. Coverage is not solid. Like all long range sets it has nulls. A target flying at constant altitude will be detected and be lost in the nulls only to be redetected as it passes into the beam again. The width and number of these beams is a function of several variables. An operator who remains in one location long should gain a firm idea of where they may be expected. For a fuller discussion

of this effect see the article "Surveillance Radars," in the Jan-Feb 1954 issue of the *JOURNAL*.)

The six major units can be stacked into a single tower 14.5' high to support the 4' x 15' antenna. The only advantage to a single stack is the increased antenna height. The set is much easier to tune, adjust and maintain if it is assembled into three stacks.

### Maintenance

The Topsy is not a complicated set. In fact it contains less than ⅓ the number of tubes in an AAFCS M33. The principal difficulty has been in the maintenance course. There hasn't been one. In an effort to reduce the number of separate courses the course for the AN/TPS-1D was combined with other courses at the AA & GM Branch of The Artillery School. The theory was that if an operator knew one radar well he should be able to pick up another radar easily. In some cases a man got as few as four days tacked on to the end of an M33 course, almost as an afterthought. The student was eager to leave after a tough nine month grind. He probably had orders in his pocket. Chances were only about one in five that he would be assigned to a Topsy. Now changes have been made at the school which should produce better maintenance men for these radar sets. Ideally, what we need is to build up within the Army by using career soldiers a solid background of experience in this field. Even though a career soldier did not possess the qualifications of a two year man, the prospect of long experience makes him a better candidate for these radar courses.

### Summary

Battery commanders interested in Topsy's performance should take the following steps:

1. Make certain that all spare parts and test equipment are available.
2. Try to expedite the Field Changes, particularly Numbers 7 and 8.
3. Be careful in choice of sites. Try the most promising sites before making a final selection. Keep line of site clear of obstruction.
4. Learn as much about capabilities and limitations of radar as possible. Know what to anticipate in performance.
5. Encourage career soldiers to enter the radar maintenance field.



# MOBILE AN/TPS-1D

By **CAPTAIN JAMES C. SAMPLE**

S2, 71st AAA Battalion

A CONVERTED mobile AN/TPS-1D radar set and repair van combined has been constructed for the 71st AAA Missile Battalion by WOJG Eugene Johnson and his men of the 7th Signal Detachment. It has been used to great advantage because it not only is capable of replacing the inoperative AN/TPS-1D on site but has the radar repair crew and spare parts available at the same time in one complete mobile unit.

The AN/TPS-1D is installed on and in the standard M109 or M34 2½ ton Ordnance repair shop type truck and includes the use of one standard one ton type trailer for hauling the PU 107/U generator with extra oil and gas.

The major modifications and steps for conversion are as follows:

1. An inverted "7" shaped frame is constructed from 3" scrap angle iron for support of the antenna mount and antenna base and is bolted to the truck frame and front van body as shown in photograph.

2. Leveling jacks in antenna mount

are used as in a ground installation.

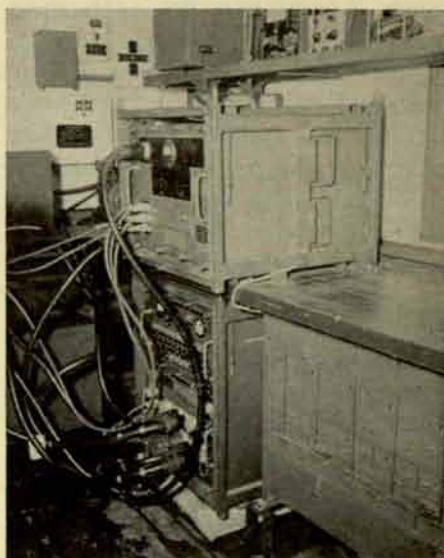
3. The supporting rack from the antenna mount is extended in diameter at least 12" to form a *walk* for the maintenance personnel to work from.

4. Positions of individual units in the van are so grouped towards the front, left and right side of the van to permit cables to be extended through the front van port hole for antenna base connection. These units however, can be arranged to suit the installers particular desire.

5. Cables W-7, W-10 and W-11 are extended to necessary length to enable proper hook up.

The overall conversion, without removal of or damage to any parts of the existing equipment, makes it much more desirable than any such converted mobile unit in use today and varied uses of this mobile unit range from evalua-

tion of new sites to rapid and efficient expansion of existing radar networks.



Interior view of converted AN/TPS-1D showing power supply and signal comparator.



Interior view of the converted AN/TPS-1D showing Indicator, Modulator and Receiver Transmitter.



Converted mobile AN/TPS-1D radar set and repair van, 71st AAA Battalion.



# Preparatory Fire Procedures For The AAFCS M33

By LT. COLONEL DAVID B. McFADDEN

AT the present time there is confusion within AAA units as to proper preparatory fire techniques to be followed with the AAFCS M33. The purpose of this study is to present the feasible techniques of preparatory fire, apply these techniques on the basis of the situation at hand, and give an evaluation of their worth and effectiveness.

When the AAFCS M33 was first received by the AA & GM Branch of TAS in early 1951, a system of preparatory fire (trial fire) called the Bell Laboratory System was outlined in the associated manuals and operating instructions. This particular technique was designed to be used in conjunction with a portable unit chronograph which would measure the muzzle velocity of each round fired during the preparatory fire phase. At the completion of the problem, the average velocity was to be applied to the computer and corrections to the meteorological message were then made by manipulation of the per cent fuze, density, wind, azimuth and wind speed dials of the computer. There have been many variations of this procedure suggested in an attempt to derive more valid corrections to the met message.

As the chronograph was never developed for this system, that omission led to the development of the modified Bell Laboratory System of preparatory fire. This system recognized the nonavailability of a unit chronograph; therefore, a complete reversal of basic assumptions was made, namely, that the density as recorded on the met message is considered valid, and muzzle velocity being unknown would be manipulated until the time of flight equalled the measured

time-to-burst. In addition to the muzzle velocity dial the wind azimuth and wind velocity dials on the AAFCS M33 computer correction panel are also adjusted to make the firing elevation, firing azimuth and time of flight servos read the original pointing data obtained before firing the trial fire problem. Also the d% F (fuze spot) is varied until the fuze servo dial again indicates the recorded value which it registered during trial fire. These values will normally have to be adjusted once the problem rounds have been fired and average deviations obtained, as the radar must be repositioned on the center of burst in azimuth, angular height and slant range.

After approximately a year's use of the modified Bell Laboratory procedure, the School developed, in 1952, a further preparatory fire technique known as velocity fire. This system is based upon the principle that, given a valid and current met message, a properly prepared gun and range platoon, a valid velocity can be determined. The computer is, in effect, merely a universal firing table which when given certain basic ingredients will produce a resultant provided the laws of mathematics are adhered to. Therefore, it may be employed to solve for an unknown such as velocity provided known conditions have been applied. The only unknown recognized in the velocity fire procedure is velocity. All other elements have been determined; therefore, the computer can solve for the unknown velocity. Velocity fire recognizes that the major factor for all prediction within the computer is time of flight, and since time of flight is directly affected by change in muzzle velocity (among other factors), this setting is vital. The real solution of the AAA gunnery problem is dependent upon passing a projectile through the future position of the target or causing a shell to burst at that future position, concurrently with the arrival of the target. If the gun and ammunition develop a velocity different from that set on the computer, the projectile

will not arrive at this future position simultaneously with the target, in addition to other deficiencies.

The time-to-burst integrator incorporated within the AAFCS M33 has made it possible for the AAA to measure accurately with organic equipment, the time it takes a projectile to travel a given distance. With a known time obtained from the time-to-burst integrator, and an accurate range obtained from the trial fire indicator for that time, the preparatory fire procedure of velocity fire can be employed to determine an accurate velocity. Further refinement of velocity fire resulted in development of procedures for determining corrections for VT or PD fuzed rounds. This meant that a unit could conduct preparatory fire with all types of fuzes in its basic combat load of ammunition. This was an extremely important development because all other techniques up until that time were dependent upon securing readings on an MT burst. It is now known that the exterior ballistics of VT fuzed projectiles are different from those of MT fuzed projectiles; therefore it was essential to secure corrections for VT or PD fuzed rounds. Another technique, which no doubt has been employed in the field, has been the application of conventional trial fire procedures as used with the SCR 584 M9 or M10 combination to the AAFCS M33.

A FURTHER procedure employed to detect gross errors within a fire unit is that of verification fire, commonly known as a burst problem. This is a very simple procedure in which lateral, vertical, and range deviations from the TSP are determined, and if time permits, eliminated through rechecks of preparation of gun and range platoon. If engagement is imminent, normal procedure has been to apply spots for these deviations. This particular procedure naturally can be used to verify to a certain extent, corrections secured from the above preparatory fire techniques.

Lieut. Colonel McFadden, Citadel graduate and an airborne AAA veteran of WW II in the Southwest Pacific, has just completed a three year tour as an instructor in the Gunnery Department of the AA & GM Branch of the Artillery School. He is now a member of AFF Board No. 4 at Fort Bliss. His sound and timely article bears the stamp of approval of the School.



Up to recent years another technique known as calibration fire was employed to resolve individual gun differences in order to make them shoot at the same range, azimuth and elevation with a fuze correction to compensate for muzzle velocity differences. However, it was finally realized that this fuze correction affected the time-to-burst of the projectile, therefore a lateral, or along course error still existed when engaging a moving target. In other words, although it was feasible to cause the projectile to pass through the predicted point, it was not possible to cause the projectile to pass through that point simultaneously with the target. In addition, a fuze correction to compensate for muzzle velocity differences is a flat correction and will be valid only for the particular altitude and range at which it was determined. Firing at longer ranges results in an under correction, and at shorter ranges in an over correction. Since calibration corrections to fuze to compensate for MV differences of guns upset the vital time of arrival factor, this technique was discarded and will not be discussed any further in this study.

THE following factors must be considered when making a choice of a preparatory fire technique to be employed with the AAFCS M33.

a. Since time is of the essence, the technique must lend itself to rapid completion with the minimum amount of effort and consumption of time.

b. It must produce corrections which are valid for considerable periods of time. It should secure corrections hours and even months before, which will remain valid in fire for effect at some later date.

c. It must be a system whose use is feasible under restricted firing conditions such as in large metropolitan areas under ARAACOM, where unrestricted trial shot problems cannot be fired.

d. It must be a simple procedure which can be accurately performed by inexperienced personnel when necessary. For example, it should not be too dependent upon experience of the individual performing it. It should not require a knowledge of "hip-pocket gunnery" to be used successfully.

e. The technique should exploit to

the maximum the capabilities of the matériel provided the fire unit. For example, all components of the M33 which lend themselves to securing corrections should be put to full use when they are in proper operative condition.

f. It must produce data which is valid, not only for the selected point at which the preparatory fire was conducted, but throughout a full 6400 mil area about the battery, from minimum to maximum ranges, and from minimum to maximum altitudes of engagement.

g. To be acceptable it must be able to produce corrections which are valid for each combination of shell and fuze. Any technique which is limited to use only with MT fuze cannot be a fully acceptable technique and must be regarded as an emergency method only.

h. Procedure selected should lend itself to solution employing the computer of the M33. A technique which requires the construction of trial shot charts is certainly time consuming and less desirable than one where the solution can be secured from the computer itself, as well as being replete with opportunities for error.

i. The technique selected should be a cut and dried one which the range officer can follow step by step, and one which two or more individuals can employ and obtain the same corrections based on identical raw data.

j. Any technique, to be fully acceptable, must be one which recognizes the extreme importance of time of flight of the projectile to, and hence time of arrival at, the predicted point.

k. It should be a procedure which clearly delineates velocity from other external ballistic factors.

l. It should possess the maximum amount of flexibility in order to permit its application to a variety of situations and conditions.

m. It should eliminate the requirement for succeeding preparatory fires. It should permit on-site units who are not allowed to conduct preparatory fire in position, to displace and conduct this fire elsewhere employing rounds from their basic combat load of ammunition. Following this preparatory fire the unit should be able to return to their on-site location with valid corrections which will enable them to enter fire for effect

without further conduct of preparatory fire.

n. It should not be dependent upon visual observation of bursts.

With the above requirements in mind let us examine the following feasible techniques of preparatory fire:

### **Trial Fire Procedure as Outlined in Current FM 44-4**

This is a well established procedure which is currently applied to the SCR 584 M9 or M10 combination and can be applied to the AAFCS M33. However, there exists an erroneous concept that the trial shot problem is conducted for the purpose of determining corrections for unknown, undiscovered and indeterminate errors in the system. This concept has resulted in many attempts to shoot out errors in meteorological data. It must be emphasized that trial fire is an acceptable procedure for units not equipped with a means of determining time of flight; however, the concept of using this form of preparatory fire as a means of determining corrections for undiscovered, indeterminate errors has developed through a misconception of its purpose. In the conduct of trial fire, units were prone to ignore the accuracy and validity of met messages. Furthermore, this procedure encouraged "sloppy" preparation in that some hoped to eliminate errors due to improper level, orientation and synchronization by this procedure. The proper concept is that trial fire is employed primarily to determine the muzzle velocity for guns with particular lots of ammunition in units not equipped with an accurate means of determining time of flight. In order to determine an accurate velocity by means of trial fire it is necessary that an accurate and valid concurrent met be available. Since the met is valid and errors in fuze running time may be minimized by selecting a TSP at a range and altitude where the effect on slant range of fuze running time errors is at a minimum, it is possible to interpret all the range deviations as being due to muzzle velocity. It will be noted that nothing was said above about determining corrections which will compensate for unknown, undiscovered, or indeterminate errors. This particular technique contained in FM 44-4 could be applied to the M33. However, it has the following objectionable features:

(1) It fails to make use of the time-to-burst integrator system.

(2) It is a time-consuming technique which requires the construction of a trial shot chart.

(3) Since it is dependent upon reading on a burst, its use is limited to mechanically fuze rounds with their fuze running errors as well as errors of observation.

(4) Its solution is not accomplished on the computer.

(5) The TSP must be observed visually.

(6) Corrections determined are good for only one point in the sky. If the corrections determined are large it may be expected that major deviations will occur after corrections have been applied and shots are red at other points in other quadrants.

The trial fire solution for muzzle velocity, as was pointed out above, did contain fuze running time errors; however it is reasonably accurate for the determination of muzzle velocity when used in conjunction with valid met data. Accuracy is greatly improved when a sufficiently large number of trial shot problems are fired, and the TSP is selected at a range and altitude where fuze running time errors are at a minimum. It is recognized that trial fire has a secondary purpose under certain conditions, in that it may be conducted to determine corrections of the moment immediately prior to firing for effect when valid met data is not available. The corrections thus obtained and applied to the computer will assist in placing the center of burst on the target only when fire for effect is conducted at the range and altitude at which trial fire corrections were determined. This procedure is not a satisfactory one to follow with the M33 for the reasons above. In the case of a fire control system in which the time-to-burst integrator system is not working, this preparatory fire technique could, in an emergency, be employed to gain corrections which would give reasonably accurate fire for effect. However, this is strictly an emergency technique.

### **Bell Laboratory System for Trial Fire**

This particular procedure presupposes the availability of a chronograph to determine the muzzle velocity but no

such chronograph is available. It presupposes incorrect and invalid met data, and corrections to firing data are determined in terms of density, wind azimuth and wind speed. This procedure has the following favorable characteristics:

(1) It permits a *rough* derivation of a met message, *but only* for the zone in which the trial shot point is located.

(2) It makes use of the computer of the M33 to solve the trial shot problem.

It is considered that this procedure is not a fully acceptable one for the following reasons:

(1) It fails to exploit to the maximum the capabilities of the M33 in that it does not make use of the time-to-burst integrator system to determine a velocity for a combination of guns, propellant, projectile and fuze. It must be pointed out that no requirement for an external chronograph ever really existed since the M33 itself can and does function as a "giant" chronograph.

(2) It fails to produce corrections which are valid throughout the field of fire. This cannot be denied because corrections to the met message are determined only for the altitude zone in which the trial shot point lay. A study of met records shows that there may be material changes in met conditions between adjacent or close altitude zones. This is particularly true in the case of wind velocity and wind azimuth. In order to derive satisfactory corrections employing this technique, it would be necessary to repeat this preparatory fire throughout a number of zones. Furthermore, it produces corrections which have range and altitude effects due to air density error and rear wind error intermixed, unless wind azimuth is known and direction of fire selected accordingly. However, the system presumes an inaccurate met so wind azimuth is unknown.

(3) This is not a simple procedure. It requires considerable skill on the part of the individual solving the problem to successfully perform the complicated manipulations of the muzzle velocity, wind velocity, wind azimuth, and % fuze dials of the computer. A considerable amount of "hip-pocket gunnery" is required to arrive at a solution.

(4) It is time-consuming in that after the six rounds are fired at the trial shot point, it is conceivable that as many as

nine additional manipulations are required to solve the problem on the computer.

(5) Range and altitude effects due to density and range wind cannot be separated; therefore, an accurate met message cannot be derived from the computer except by accident.

(6) One of the greatest deficiencies in this procedure is that it will not secure corrections which are valid for all combinations of shell and fuzes. It requires the use of the MT fuze round. It is not feasible for the VT fuze round since azimuth and elevation deviations cannot be determined unless a burst occurs in the vicinity of the trial shot point. It is known that differences in fuze weights exist and produce a marked change in time of flight and the time of arrival at the predicted point. There being no bursts, the Bell Laboratory System will not detect these time of flight differences for VT fuzes, and unsatisfactory fire will result when VT fuzes are used in fire for effect.

(7) This technique is not considered to be a simple one which will enable two or more individuals to obtain the same corrections from identical raw data. One individual will manipulate one dial to a greater extent than another individual. Again, this points to the complicated nature of this entire procedure.

(8) Since this procedure is based upon firing immediately before an attack to determine met conditions, corrections secured are good only in a limited area and only for the moment. Hence, there is a requirement for a succeeding preparatory fire and a recurring expenditure of ammunition.

(9) It does not lend itself to securing valid corrections for a fire unit at an off-site position, such as the firing range, which could be used when the unit returns to its on-site location.

(10) This procedure lends itself to the encouragement of improper preparation of the gun and range platoon. Individuals are prone not to check out minor errors in level, orientation, and synchronization since they hope that in the solution of the trial shot problem these errors will be compensated for. It is entirely possible that a portion of corrections charged to met conditions would really be chargeable to inaccurate level and orientation and synchronization.



## Modified Bell Laboratory System of Preparatory Fire

This procedure was developed to take care of a situation where a chronograph was not available. The technique presupposes the existence of errors in the met message and determines corrections in terms of muzzle velocity, wind azimuth and wind speed. This procedure does use, to a certain extent, the computer in solving the trial shot problem, and does determine time of flight to the TSP. It does not correct the met message to the extent that the Bell Laboratory System did, since no attempt is made to correct density. It must be borne in mind that it is extremely likely that a considerable portion of the correction to time of flight is required because of a density error, yet the correction is made in the form of a muzzle velocity correction.

## Velocity Fire System of Preparatory Fire

The AAA gunnery problem is solved through careful and accurate preparation of fire. This preparation of fire includes preparation of personnel, preparation of matériel (level, orientation, synchronization, and necessary equipment checks and adjustments), and preparation of firing data to include computation of ballistic corrections based on accurately obtained met data. However, even though the guns and fire control have been meticulously prepared and ballistic corrections applied, inaccurate fire will result if the muzzle velocity setting on the computer does not reflect the velocity being developed with the guns, propellant, projectile and fuze. The projectile and the target will arrive at the predicted point simultaneously only when all of the requirements of preparation for fire are met. Velocity fire is a procedure which provides a simple method of obtaining an accurate velocity for use in fire for effect. Since velocity fire is conducted with concurrent and valid met data, and time of flight deviations are accurately determined in conjunction with the time-to-burst integrator system of the M33, it is possible to make corrections in terms of muzzle velocity. This permits an accurate derivation of the actual developed velocity for the gun-propellant-shell-fuze combination. It is considered that the following are favorable characteristics of velocity fire.

(1) The technique lends itself to rapid completion. In actuality, just as soon as one round has passed through the trial fire indicator, the succeeding round may be fired. In practice, a well trained unit can complete a velocity fire problem, including its solution on the computer, within approximately five minutes.

(2) It produces velocity corrections which are valid until further firing has worn the tubes to the extent that a new velocity determination is indicated. Employing this technique, on-site units may displace their guns to the firing point and conduct velocity fire with their combat ammunition. Then, upon return to site, and with a valid met message, they are ready to enter fire for effect without further preparatory fire. This is a simple procedure which can be accurately performed by relatively inexperienced personnel following a step by step check list. It does not require a knowledge of "hip-pocket gunnery" to be used successfully.

(3) It exploits to the maximum the full capabilities of the AAFCS M33. It is pointed out that by means of velocity fire, the system is exploited beyond the intent of the designers in that it is now being used as a "giant" chronograph, whereas Bell Laboratories thought that a chronograph would have to be made a part of the system.

(4) Velocity fire produces corrections which are not only valid for the selected point at which the preparatory fire was conducted, but are valid as well throughout a full 6400 mil area about the battery, and from minimum to maximum ranges of engagement. It is recognized that the above statement is true only when a valid met message is available.

(5) This is the only method of preparatory fire known by which the velocity of VT or PD fuzed ammunition can readily be determined by a fire unit itself. It gives better practical results than a chronograph, since velocity fire records the shell's behavior from the muzzle to the trial shot point, whereas the chronograph studies its behavior over a short distance close to the muzzle. The round fuzed with the heavier VT fuze may show little difference at the muzzle from the MT fuzed round. However, this difference results in a different time of flight generation, and this time

of arrival difference at the TSP is easily and vividly detected by the velocity fire procedure.

(6) The velocity fire solution is rapidly completed on the computer of the M33 without the construction of trial shot charts, wind component charts, or involved manipulations of various dials. The computer solution is simply a turning of the muzzle velocity dial to make the time of flight, as read on the time of flight servo, agree with the average time of flight of the six valid rounds fired in the problem.

(7) Velocity Fire is set up on a simple step by step procedure easy to follow. Two or more individuals can solve the problem on one or more computers and obtain the same corrections when the fire control system has been carefully prepared and a check made to insure that the computer is receiving the proper radar range.

(8) Velocity fire is based on recognition of the extreme importance of time of flight to, and hence time of arrival at, the predicted point.

(9) The techniques employed in velocity fire clearly delineate velocity from other external ballistic conditions provided no errors exist in met data or preparation.

(10) The velocity fire procedure is flexible and lends itself to various situations and conditions of equipment.

(11) The TSP need not be visible to the fire unit.

(12) The procedure eliminates the requirement for succeeding preparatory fires until the wear of the gun tubes affects the muzzle velocity. A change in combat ammunition would not necessarily cause additional velocity firing, since it is possible to transfer comparative velocity determinations between lots of ammunition from fire unit to fire unit. For example, one unit might have expended all of Lot X, and would be issued Lot Y, on which it has no velocity data. However, another unit might have velocity fired both Lot X and Lot Y and obtained comparative velocity data between the two lots. All that would be necessary in this situation would be the transfer of the comparative data from one fire unit to another.

There is, however, a mandatory requirement for current and valid meteorological data. That demands more em-

phasis on the training and supervision of the met station crews.

**P**ERHAPS the merits and drawbacks of the various techniques of preparatory fires can best be presented by creating certain situations and pointing out which techniques yield the best solution.

**Situation No. 1:** The fire unit, by means of prior velocity firings, knows the velocity of its combat ammunition, it has been furnished with a valid met message, and trained personnel have properly prepared the fire unit.

**Solution:** The solution in this situation is the principle of velocity fire. All elements of data to be applied to the computer are known, and when applied the unit is ready. A sharp range officer will have prepared computer settings for all altitude zones of expected attack, and hence will be ready to change such settings promptly if necessary.

**Situation No. 2:** A known velocity, a valid met message, some reason to suspect that the gun platoon and/or the fire control platoon have not been properly prepared.

**Solution:** Verification fire is considered the solution for this situation in that a rapid check may be made for the existence of any gross errors within the fire unit. When time is available the real solution is to eliminate inaccuracies by a series of careful checks of preparation.

**Situation No. 3:** An unknown velocity for ammunition to be employed in fire for effect, a valid met message, and an accurately prepared fire unit.

**Solution:** Execute a velocity fire problem. This problem will derive a velocity which will be applied to the computer prior to entering fire for effect.

The continuation of current and valid met messages enables the units to enter subsequent fires for effect without any further conduct of preparatory fire. The time consuming and complicated nature of the Modified Bell Laboratory System has eliminated it from any consideration as a solution in this situation. Furthermore, since a current valid met message is available, there is no requirement to attempt to correct the met message. Old trial fire procedure has been eliminated since it obviously does not make full use of the capabilities

of the M33 system. If the fire unit commander feels that he has sufficient time prior to entering an engagement, he could conduct verification fire following velocity fire if he so desired.

**Situation No. 4:** An engagement is imminent, an accurate velocity is known for both the combat ammunition and MT fuzed ammunition based on prior velocity fires, the fire unit has been accurately prepared and checked, however, a valid met message is *not* available.

**Solution:** In this situation it is felt that the most rapid emergency technique which would provide accurate corrections for the expected point of engagement is the proper one. It is necessary to determine corrections for the unknown met conditions. The answer in this situation is still velocity fire even though valid met is not available. Briefly, the technique to be followed is conduct of a modified velocity fire problem wherein range deviations and time of flight are determined by means of the time-to-burst integrator system of the M33, and lateral and vertical deviations are determined by means of optical spotting. By employing a modified velocity fire technique the human error in ranging is eliminated in that time of flight over a known distance is accurately determined as in the case of normal velocity fire. An MT fuzed round would be employed with the fuze hand cut at the range to the TSP. By ranging with the time-to-burst integrator system, fuze running time errors would be eliminated; however, the burst would be necessary in order to secure lateral and vertical deviations. Corrections resulting would be in the form of an  $E_r$  correction, an azimuth correction, and a muzzle velocity correction. The procedure to be followed would be to correct time ( $t$ ) with muzzle velocity, then correct elevation with an elevation spot so as to equal original  $E_r$  minus the vertical deviation in mils, and finally apply an  $A_r$  spot to correct for the converted lateral deviation. It is realized that this muzzle velocity correction would be an erroneous one resulting from unknown met conditions and, furthermore, that these corrections would be valid only in the neighborhood of the trial shot point. Upon receipt of a valid met message, the above erroneous corrections would be immediately stripped from the com-

puter and corrections based on the accurate met applied in lieu thereof. In order to secure corrections for VT fuzed ammunition, it would be necessary to have comparative velocity data available for both MT and VT fuzed ammunition. The lateral and vertical corrections derived from the MT fuzed rounds would be employed with the VT fuzed rounds in conjunction with the comparative velocity data. It must be recognized that the Bell Laboratory procedure (unmodified) could be applied to this situation. Since velocity is known on the basis of prior velocity fires, and it is necessary only to correct the met message, it is felt that the procedure would provide fairly accurate corrections which would remain valid in a "doughnut" area about the fire unit. Likewise the Modified Bell Laboratory technique might be employed; however, its choice would be a poor one since in the situation we have stated that velocity is known. On further analysis, it is obvious that none of the above procedures really provide valid corrections which will hold all about the battery. If the actual altitude, range, and direction of attack were different from that at which these preparatory fires were conducted, the accuracy of the firing corrections would probably drop.

**Situation No. 5:** Neither an accurate velocity nor a current and valid met message is available to the battery. It must be pointed out that this is a situation of the worst order and one which should certainly not exist at any on-site unit. To further complicate the situation, the assumption can also be made that the state of training of personnel is not up to the standards required, thus errors in preparation could exist within the fire unit. It is also presumed in this situation that engagement is imminent and that corrections must be secured as quickly as possible.

**Solution:** The modified velocity fire techniques as outlined under situation No. 4 seem to offer the most rapid solution and would be followed for both MT and VT fuzed ammunition. It is apparent that in this solution velocity errors would be intermingled with errors resulting from unknown met conditions. Time of flight to the TSP would be corrected by means of the muzzle velocity dial, and lateral and vertical deviations corrected in the form of  $E_r$



and azimuth corrections, as pointed out in situation No. 4. The Modified Bell Laboratory procedure could of course be applied to this situation, but would require more time to complete. Both techniques fail to provide corrections which would remain valid all about the battery.

**Situation No. 6:** The time-to-burst integrator system of the AAFCS M33 is inoperative, an accurate velocity for the combat ammunition is not available, the met message is not current and valid, however, the trial fire indicator is functioning properly.

**Solution:** Since the time-to-burst integrator is not functioning it is not possible to secure time of flights to the TSP; however, it is possible to secure reasonably accurate corrections by ranging with the trial fire indicator and spotting the bursts through the optics. The graphical "Trial Fire" solution technique would be employed to secure the above corrections. Obviously the above technique does not eliminate fuze running time errors, and it is open to human error in ranging and spotting bursts. Also there would be marked intermingling of corrections due to velocity errors and corrections required by met conditions. Corrections so derived would certainly only be valid within very narrow transfer limits about the trial shot point. Also this procedure cannot be used to determine corrections for VT or PD fuzed rounds.

**Situation No. 7:** The time-to-burst integrator system of the AAFCS M33 is inoperative, an accurate velocity is not available for combat ammunition, the trial fire indicator is functioning properly, and a valid current met message is available.

**Solution:** The solution as outlined for Situation No. 6 is applicable to this situation. However, since the problem is fired with a knowledge of meteorological conditions, it is possible to derive a reasonably accurate velocity for MT fuzed rounds. (Lesson Plan No. 2008, AA&GM Br, TAS, Jan 54 gives details of this technique.) Since a fairly accurate velocity was derived for MT fuzed ammunition, and a current and valid met message is available, fire for effect would be accurate all about the battery rather than within narrow transfer limits.

## Conclusions

a. One of the most important conclusions to be drawn from this study is the fact that valid meteorological data is essential both to antiaircraft preparatory firings and to effective AAA fire for effect. Any system of preparatory fire which presumes a lack of knowledge of current met conditions cannot be a fully acceptable one since it cannot produce corrections which will permit effective fire for effect throughout the field of fire. Since this knowledge of met conditions is so essential for the delivery of antiaircraft fire, then it is mandatory that AAA units be provided with current and valid met.

b. The only technique of preparatory fire which is fully acceptable with this fire control system is that of velocity fire. This conclusion is based on the following factors.

(1) This procedure best fulfills the computer requirements for settings which will permit it to develop gun laying data which is accurate throughout the spherical field of fire.

(2) It is the only system of preparatory fire which takes fully into account and corrects for the major error in antiaircraft fire, namely: the failure of the projectile to arrive at the predicted point simultaneously with the target. Other methods will enable the fire unit, with a reasonable degree of accuracy, to place the projectile at a predicted point; however, they fail to place the projectile at this point at the time the target passes through the point. This is a vital factor for high speed targets. The M33, which may be used as a "giant" chronograph, will measure the time of flight accurately to the TSP. Furthermore, it will measure the slant range to the TSP with a high degree of accuracy, thus permitting the derivation of a valid velocity.

(3) It is the only method which can be used to secure valid corrections for VT or PD fuzed rounds.

(4) The velocity fire procedure eliminates the errors of visual observation which exist throughout all other forms of preparatory fire.

(5) The velocity fire procedure is the only technique of preparatory fire which does not demand recurring firings. It gives valid corrections that will hold for

today, tomorrow, next month.

(6) Velocity fire is simple in application and does not require a lot of "hip pocket" gunnery.

c. All other preparatory fire procedures, including modified velocity fire procedures, are only emergency methods since they do not produce corrections which will hold throughout the spherical field of fire of a battery. None of these procedures are acceptable as a primary method of preparatory fire for the AAFCS M33. Techniques in this classification have the serious failing of making corrections of the moment and in most instances these corrections are valid only within narrow transfer limits from the TSP.

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## Comments On The Merger

*(Continued from page 5)*

regret. To quote Lt. Colonel Pentecost, Commanding Officer of the 96th AAA Bn, "I have been reading the *ANTI-AIRCRAFT JOURNAL* and its predecessor, *The Coast Artillery Journal*, for twenty-five years. It's almost like one of the family." However, we believe that the merger will be of great benefit to the readers, and that . . . it should help in broadening the professional knowledge of the Antiaircraft officer. . . .

*The Combat Forces Journal* has been doing a fine job. We all look forward to some excellent material in the future. . . .

COL. GEORGE F. PEIRCE  
68th AAA Group

. . . I kind of hate to see our old *JOURNAL* merge with the *Combat Forces Journal*, but I believe in the long run it will be better.

COL. THOMAS F. MULLANEY  
374th AAA Group, USAR

. . . We extend to you and the *ANTI-AIRCRAFT JOURNAL* a sincere salute. . . . Am sure that the spirit it imbued will never die. . . . Consider the merger with the *Combat Forces Journal* emblematic of our continuing efforts to make our nation's fighting forces unified. . . .

COL. H. S. TUBBS  
Comdg. 65th AAA Group

. . . In professional interest the combined magazine will insure broader coverage and be of wider interest. . . .

COL. ARTHUR ROTH  
Comdg. 31st AAA Brigade

*(Continued on page 60)*

# The Staunton Artillery at Henry Hill

By LT. COL. JOHN B. B. TRUSSELL, JR.

**B**ATTLES may be fought by armies, but they are won or lost by individuals. Over and over again throughout military history, the determination and valor of the men of a single small unit, holding their ground at the crucial place and at the crucial moment, have provided the extra margin of strength which tipped the balance toward success for their side. Naturally, no single organization can justly claim credit for victory in battle, but sometimes the action of such a unit, even a small one, has been the factor which made it possible for an army as a whole to win. And American artillerymen can take pride in the fact that frequently the unit which has made the difference has been some artillery battery.

Partly, this has been true because cannon have always been important symbols to men in combat—the loss of guns is an index of defeat, the capture of enemy pieces a measure of the scope of victory. Especially in the wars of the past century—when shorter ranges meant that the batteries were, for all practical purposes, on the line of contact itself—some of the most deadly fighting took place as the tide of battle surged back and forth across some battery position, the men fighting desperately to take or hold the cannon.

Artillery's great firepower has sometimes given even a small unit an impact out of proportion to the unit's numerical strength. On occasion, the steadfastness of three or four gun crews in the face of an enemy assault has broken the force of that enemy attack, allowing the defenders to seize the opportunity to launch a counterattack and drive the enemy from the field, win the battle and the campaign and thereby influence the whole pattern of history.

A clear example of such a case was provided by Captain John D. Imboden's battery, the "Staunton Artillery," at the First Battle of Bull Run in July, 1861.

Bull Run was the first real test of the Union and Confederate armies in

the Civil War. It took place at a time when both sides, their armies still unblooded, were overconfident. The columns of the newspapers were filled with bombast and boasting and their extreme claims were echoed by every orator, of whom there were many. The rank and file in the armies were as cocksure as the rest of the population.

The military leaders on both sides knew better. Only a small leavening of experienced soldiers was available in either of the armies, however; the vast majority of the forces, while willing and enthusiastic, were without experience and virtually untrained.

General P. G. T. Beauregard, the Confederate field commander in northern Virginia, and General Irvin McDowell, the commander of the Federal troops around Washington, would have liked most of all to put their commands through an extensive period of unit training. But neither could ignore the threat posed by the other. With the capitals of the United States and the Confederacy lying only a hundred miles apart, and in view of the widely held conviction that the capture of a capital city by the opposing army would end the war, Beauregard had to maneuver to guard Richmond and McDowell felt compelled to protect Washington.

This reasoning led the Southern general to concentrate his troops east of Manassas, an important rail junction about 25 miles southwest of Washington. There he could protect the most direct approach to Richmond and at the same time threaten Washington. On the Virginia side of the Potomac, McDowell held a line of defenses running from the Chain Bridge north of Washington to Alexandria on the south, and kept his troops busy in an unending program of training and drill.

## Rail Movement Concealed

**T**HESE were not the only significant concentrations in the area. The Con-

federate General J. E. Johnston had about 9,000 troops at Winchester, some forty miles northwest of Manassas, and these were supposedly being watched by 18,000 Union soldiers under General Robert Patterson.

Knowing that his men were far from combat-ready, McDowell did his best to stave off the growing demands in the press and from politicians and the public that the Army attack the Confederates. But the pressure groups put forward a strong argument—the enlistments of many of the short-term Volunteers who made up the bulk of McDowell's force were about to expire, and further delay would soon leave him with only a shadow of the strength he now mustered. Accordingly, on July 16, 1861 the blue columns headed out from the Washington defenses toward Centreville, about seven miles northeast of Manassas.

Between Manassas and Centreville, however, lies a rolling area of wooded hills and farmlands, cut by a number of streams. Of these, the most formidable is Bull Run. It was along the west bank of this stream that Beauregard deployed his troops, in position to hold each of the crossings, from Union Mills Ford, almost due east of Manassas, to the Stone Bridge, on the north, where the Warrenton Turnpike crossed Bull Run. There were other fords still farther upstream, but Beauregard dared not cover them also for fear of spreading his strength too thin.

At the same time that his brigades began moving into position, Beauregard made good use of a new military tool—the telegraph. Reporting McDowell's move to Richmond, he asked for reinforcements. President Jefferson Davis immediately telegraphed orders to Johnston at Winchester to move to join Beauregard, and Johnston, also making use of a strategic innovation, put the bulk of his command on the nearest train and moved it by rail to Manassas. To screen his movement from the Federal cover-



ing force he detached cavalry under J. E. B. Stuart, who was so successful that Patterson was completely unaware of the Confederates' departure. But as extra insurance against the chance of a Union pursuit, Johnston detailed a force to function as a rear guard, moving by road so as to be able to fend off any enemy follow-up.

Part of this rear guard was the Staunton Artillery, a component of the brigade of General Bernard Bee. Bee was a veteran officer and West Point graduate who had learned his trade on the Western frontier. Imboden, commanding the Staunton Artillery, had no military experience but he had inherent qualities of leadership, and before the end of the war he was to wear the wreathed stars of a Confederate general. His 140 cannoneers, too, were a superior group. They were young, keen, alert and vigorous, and they were spoiling for a fight.

Their march toward Manassas must have had something of a picnic air. They had no idea of the bloody realities they went so gaily to meet, and to make the picnic atmosphere even more complete, they halted at a town on the way to eat a meal set for them by the townspeople. It was the last food any of them would eat until after the battle.

Johnston's men began pulling into Manassas on July 20, and as fast as a unit arrived it was put into position to support the forces already on the line. Imboden's battery reported at one o'clock on the morning of July 21 and bivouacked near Manassas Junction.

Meanwhile, the Federals had moved closer. On July 18 they had reached Centreville. From there, McDowell had thrown a detachment forward to test the defenses, only to have it driven back in some disorder. Rather than make a frontal assault, therefore, he decided to go around the Confederate flank. While one element made a demonstration against the Stone Bridge, McDowell himself would lead the main striking force northward along the east bank of Bull Run. At Sudley Springs, well beyond the Confederate left, he would cross the stream and then drive southward to strike the Southerners' flank and rear. It was a good plan, if somewhat ambitious for such inexperienced forces.

While the blue masses were moving

out of Centreville, Imboden's men were sunk in exhausted sleep. But hardly three hours after they had bivouacked they were suddenly awakened by the sound of a loud explosion—a round from a Federal battery had struck close by. Almost immediately they were ordered to move to the Stone Bridge to help cover the left flank. The infantry of Bee's brigade would follow.

While the Confederate gunners were marching, the Federals on the Warrenton Turnpike east of Bull Run were having their troubles. The column which was to make the secondary attack against the Stone Bridge was still on the road when the column under McDowell began to move. Since McDowell's force had to follow along the Turnpike until it reached a point where it could branch off to the right, its march was delayed until the leading column cleared the road, and by the time McDowell reached Sudley Springs he was two hours behind schedule.

To make matters worse, the Federal attack at the Stone Bridge was being pushed so halfheartedly that the Confederates quickly suspected it of being the diversion which it was. The commander of the left-flank unit of the Southerners' line, Colonel Nathan Evans knew that any serious threat which would develop would be from his left. Accordingly, with the right of his unit serving as a hinge, he drew back the remainder of his force so that it faced northward. Now the Confederate line as a whole took on the shape of a hook as its left flank element curved westward from the Stone Bridge.

It was a courier whom Evans had sent back to report the new developments who, as he raced past along the Sudley-Newmarket Road, shouted to Captain Imboden and the Staunton Artillery that the whole Yankee Army was marching north up the other side of Bull Run. Spurring to the top of one of the nearby hills, Imboden looked out over the rolling countryside. Wherever the thick vegetation did not block his view, he could see Federal troops moving. At once he reported to General Bee. Leaving the battery behind, Imboden and the brigadier galloped forward to the next hill. A quick look at its steep approaches and its nearly level top, and Bee told Imboden that where they

stood was the battlefield. The Captain must go back to bring up his guns quickly. Bee would pick out a good position.

### Artillery Battle

WITHIN twenty minutes, with horses straining to make the hill, the battery came up. Imboden galloped on ahead to find the General. Waving his sword with his cap on its point, he signalled to the cannoneers to show them where to go.

The site Bee had chosen was in fact a very good one. Imboden unlimbered his four brass six-pounders on a gentle reverse slope near the northern side of the hill's flat top, about a hundred yards north of a house belonging to a family named Henry. The crest of the rise which gave them cover broke at a point about fifty yards to the front. Moving at the double, the cannoneers sprang to their positions and began ramming home powder and shot.

It was none too soon, for not quite a mile away, across the Warrenton Turnpike, Captain James B. Ricketts' Battery I of the 1st Artillery of the Regular Army had unlimbered and was beginning a wicked counterbattery fire. Ricketts had six Parrott rifles, which for range and accuracy could easily outshoot the Staunton Artillery's smoothbores. But the Confederate guns, their rounds clearing the crest in front of them by less than a foot, were protected by their defilade from much of the Federals' flatter-trajectory fire.

Hardly had Imboden's first rounds been fired when a new threat developed from Captain Charles Griffin's Battery D, 5th Artillery, considerably closer and from farther to the left. Griffin not only had six rifled cannon but—far more dangerous to the Confederate gunners—he had two twelve-pounder howitzers as well. Nevertheless, the Staunton Artillery stood fast, trading shots with the two Union batteries and also delivering a telling fire against the masses of Federal infantry which were advancing toward the Confederate position.

In the meantime, having ordered Imboden to hold on where he was, General Bee had joined his brigade and the troops under Colonel Francis Bartow with Evans' force and had marched northward across the Turnpike to strike

the enemy approaching on the right front. In the fighting which developed there, the Confederate infantry was driven back, hopelessly outnumbered, but it retired stubbornly and very slowly.

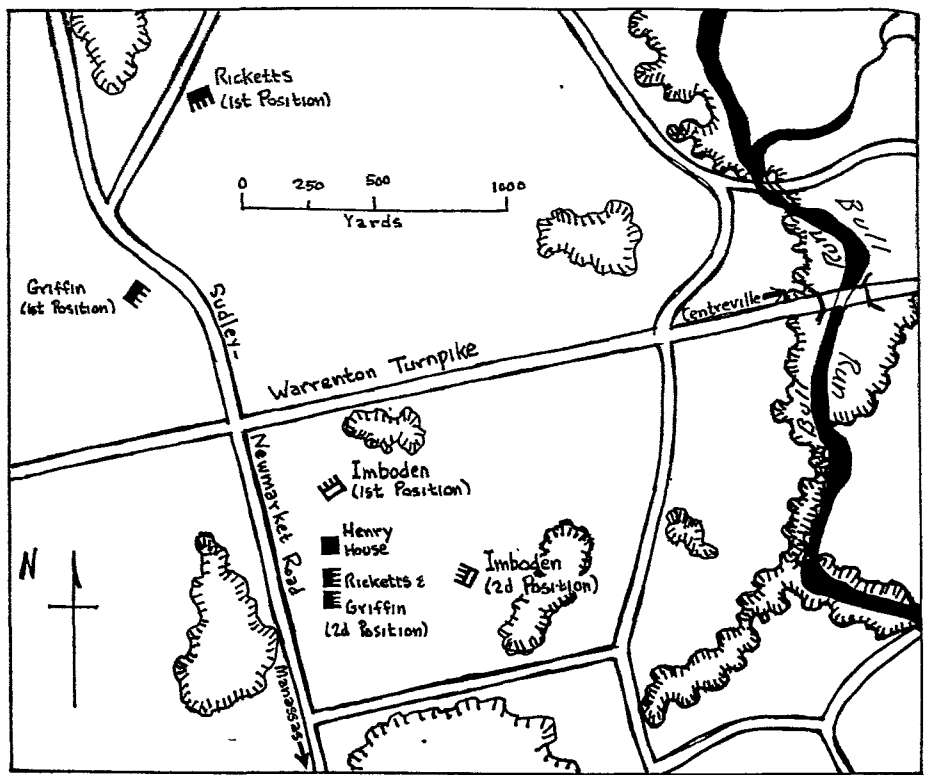
Still other Federals were driving down from the left front. There was nothing to keep them from overrunning Henry Hill, bypassing Bee's force completely—nothing, that is, but Imboden's four six-pounders and the 140 sweating, determined men of the Staunton Artillery. Alone and unsupported though they were, the gunners stood their ground. For more than three hours a continuous storm of cannon fire burst around them. Although the rise to the front masked all but the heads of the crews, casualties mounted rapidly. One piece was disabled by a Federal round. Before long, more than half of the horses were down. But still the Southern cannoners held on.

Trying to peer through the dense clouds of smoke, Imboden moved well to the front, failing to realize that he was beside the muzzle of one of the guns. The blast from its discharge knocked him down and deafened him, but he was on his feet again in an instant, urging the men on to fire still more heavily.

In spite of the deadly effect of the Staunton Artillery's shooting, the massive blue lines drew steadily closer. Still there was no word from Bee, so Imboden stood firm. The Southerners' firing was so steady and so rapid that after a time the tubes of their guns became too hot to be loaded without danger of bursting the breeches. By this time only three rounds were left in the ammunition chests. With the Federal infantry now less than five hundred yards away, Imboden ordered his men to fall back to the right rear with the three undamaged pieces.

### Jackson Forms Stone Wall

WHILE Bee, Bartow and Evans had been stubbornly resisting the Union advance on the right front and Imboden had been holding back the attackers on the left, Thomas J. Jackson and his brigade had been given time to come up. They took position a few hundred yards to the rear and waited in reserve. As the Staunton Artillery reached this line in their withdrawal, Imboden protested



angrily and with profane feeling to Jackson about the lack of infantry support for his cannon. Jackson, the devout churchman, rebuked the Captain for his language. But Jackson was an old artilleryman himself. "Unlimber right here," he said; "I'll support you." Then, as other batteries came up, Jackson told Imboden to check the laying of their pieces and the cutting of their fuzes.

By this time, Bee's force had fallen back to a point only a few hundred yards to the front of Jackson's line. They had been marching since before dawn and fighting hard for several hours. They had reached the point of maximum endurance and were beginning to break. It was then, when Bee saw the lines faltering and about to disintegrate, that he shouted, "There's Jackson, standing like a stone wall. Rally on the Virginians!" Bee was soon to fall mortally wounded, but his words lived on as the sobriquet of one of America's greatest military commanders.

Hard fighting still lay ahead. The Union troops whose advance Imboden had so stoutly resisted were reaching the flattened top of the hill. Ricketts and Griffin, their guns combined into a single large battery, had moved to the western edge of the hilltop itself. But the counterattack of Jackson's fresh troops swept the Federals back. The fighting swirled to and fro around the

two Union batteries. Ricketts, gravely wounded, was taken prisoner. Finally the Union forces gave up. Without disorder, they began to withdraw down the hill, working their way toward the Turnpike.

It was only later, when their avenue of retreat was blocked by a wagon overturned on the bridge across one of the branches of Bull Run, that the Federal troops were seized by panic and their withdrawal degenerated into a demoralized rout. The Confederate forces, however, were too exhausted and the situation was too confused for a vigorous pursuit to be possible.

The Staunton Artillery had little part in the final stage of the battle. With its ammunition virtually all expended, the battery was ordered to the rear. But Imboden's cannoners and their four smoothbores had played a vital part in making possible the final Confederate success. If it had not been for their steadfastness and determination, Henry Hill would surely have fallen quickly to the Federal columns approaching along the Sudley-Newmarket Road. The delay which Imboden's battery imposed upon them bought precious time for Jackson's brigade to move into the position from which it was able to strike so decisively at the crucial instant. The gallantry which kept the artillerymen in position until the last possible moment was certainly of the highest order. In



justice to Bee, it should be pointed out that he never intended to abandon the battery, and in fact sent word for Imboden to fall back as the infantry withdrew from the Turnpike. But the courier who bore the message, struck down by enemy fire, never reached the battery's position.

The influence of the First Battle of Bull Run on the course of the war was

considerable. If the battle had ended differently, with a Federal victory over troops who made up the bulk of the Southern forces then in Virginia, it is possible that Richmond might have been taken soon afterward. Whether the loss of their capital would seriously have affected the Southerners' will to resist is, of course, open to question, but the war would certainly have developed along

considerably different lines. In any event, the contribution of Imboden's battery to the outcome of the battle and therefore to the whole shape of the war is undeniably significant. And in the essence of this unit's deed—in the courage, the determination and the gallantry which it displayed—there is inspiration and just cause for pride for all American artillerymen.

# EVERY MAN AN ARTILLERYMAN

By **CAPT. JOSEPH F. LOFTUS**

*753rd AAA Gun Battalion*

CORPORAL Joe Doakes, assigned to the 753rd AAA Gun Battalion Personnel Section, carries a primary MOS appropriate to the position he occupies, and he is considered to be an alert, conscientious and thoroughly competent specialist in his area of assignment. Now, if he can be classified as an expert in his job, if his personal conduct is good, and, if he shows enthusiastic interest in his work, what more can his battalion commander ask from Corporal Doakes?

Battalion SOP Section 300-1 published 31 December, 1953, outlines the additional requirements that Corporal Doakes and all other personnel of the organization must meet if they are to qualify now as completely successful members of this AAA battalion. On that date Corporal Doakes could demonstrate on a moment's notice that he was a well trained, thoroughly able personnel specialist, and at that time he logically enough thought of himself and referred to himself as a "personnel man."

On 16 March, 1954, our young non-com still performing expertly as a member of the Personnel Section, if asked to do so, could have discussed intelligently, and with evident first-hand knowledge, the capabilities and characteristics of the SCR 584; he could have demonstrated his knowledge of stoppages and immediate action in the case of the caliber .50 machine gun, which weapon he also could have disassembled and assembled, naming correctly all groups and parts; he could have furnished accurate information relative to the effect on range, altitude and slant range of

conditions that affect the artillery projectile in its flight; and he could have indicated his complete familiarity with elements-of-data symbols, and, by diagram, could have located a fixed point in the horizontal plane, in the vertical plane and in the horizontal and vertical planes combined. He could, in fact, have given a good practical demonstration of his full qualification as a Second Class Artilleryman.

Why the big change? Although the desirability of complete training as an artilleryman for each man assigned to an AAA battalion has long been recognized, the battalion headquarters man has sometimes squirmed, wriggled, begged or alibied his way out of meeting any such requirements. To him artillery qualification is a matter for firing battery personnel. And besides he is a specialist. This same attitude has also reached down in a lesser scale to some of the personnel in firing batteries. The battery clerk is a clerk; the cook is a cook; and the supply sergeant is a supply specialist.

So, it required a bit of firm, emphatic and talented indoctrination on the part of the battalion and battery commanders to put over the idea that a member of this particular antiaircraft battalion was, therefore, an antiaircraft artilleryman. His status as an artilleryman, his level of achievement, of expertness, depended entirely upon himself. Regardless of grade held he was a basic artilleryman until by authorized examination he demonstrated, in order, that he was a qualified Second Class, First Class and Ex-

pert Artilleryman. The battalion commander amplified the SOP about artillery qualifications. Promotion to the next higher grade must be dependent not only on a time-spent factor but also on the extremely important requirement that the soldier be *qualified* for the next higher grade as an *artilleryman*.

PRIOR to promotion to the grade of E4 the private first class must have qualified as a Second Class Artilleryman; for advancement to the grades of E5 or E6 the status of First Class Artilleryman must have been attained; and the master sergeant must be an Expert Artilleryman. During the first six-month period of the program there have been authorized exceptions to these requirements, particularly when an individual, through circumstances beyond his control, has not had an opportunity to complete all sections of the required examination. However, in each of these cases the artilleryman had already demonstrated some appreciable progress in completing the examination.

What's the score to date? How did the originally reluctant artilleryman take to the program once it was put into motion? The early birds, facing facts, soon made their bids, and on 9 February, 1954, battalion special orders announced the qualification of two headquarters battery men, including a tracked-vehicle mechanic, as Second Class Artillerymen; 10 artillerymen in A Battery had earned the badge, and more from all other batteries. Twenty-five qualified

Second Class Artillerymen had been added to the Battalion's ranks.

Most of the original six-month period was devoted primarily to the examining of Second Class Artillerymen candidates for an obvious reason. FM 44-19, *Examination for Antiaircraft Artillerymen*, lays down the requisite that the candidate for the first-class examination must have qualified previously as a Second Class Artilleryman, and the potential Expert Artilleryman must be a qualified First Class Artilleryman. By the end

of March the battalion had qualified a total of 206 Second Class Artillerymen. That number has now climbed to 335. Not all who had gained the first distinction would take the next step, qualifying as First Class Artillerymen, but those who were noncommissioned officers and those who were to be the future noncommissioned officers were already training for the next event.

The emphasis on gunners instruction and qualifications originated with Brigadier General Eugene F. Cardwell, Com-

manding General, 40th AAA Brigade. Procedures for the examinations have been prescribed and lesson plans for most of the instruction courses have been carefully applied.

At the present time the examinations for First Class Artilleryman are proceeding full blast, and Corporal Doakes, who at this time has passed four sections of the first class examination, is still a "personnel man" performing competently. But he is also something more; he is a qualified artilleryman.

## GEOGRAPHICAL STATUS BOARD

By **CAPTAIN JAMES R. FUSSELL**

*32nd AAA Battalion*

**I**N its mission of air defense an automatic weapons battalion is, of necessity, often deployed to widely separated areas. The problems of operational control and balanced defense become more difficult. A few weapons out of action by enemy action or otherwise might seriously impair the balance and effectiveness of a defense.

The 32d AAA Bn (AW), commanded by Lt. Colonel H. G. Cummings in the air defense of Japan, has evolved a method whereby its commander and his staff may tell at a glance what the defense is in any area at any time.

Formerly the status board in the battalion AAOC indicated the number of weapons in action in each defended area and also by position number what weapons were out of action. This was not on a map and it was not easy to determine how or where the area defenses were unbalanced without referring to a map or overlay of the defense.

After months of experimentation we have settled upon a status board which

portrays geographically the current status and distribution of weapons. This board shows scale drawings of each defended area together with weapon sites by number, type of weapon and fields of fire. This status board is constructed of plexiglass and internally lighted. All drawings are done in grease pencil on the front of the board. The best colors to use on the board are pastel shades. Walls behind the board are black. This combination of colors makes the drawings and plots on the status board stand out. Sites out of action are cross-hatched on the back of the board with a white grease pencil.

The Battalion Commander or Operations Officer can determine immediately from the status board the disposition of all weapons in the battalion and what sites are effective. He can direct movement of weapons to constantly insure balance. He can also note balance or imbalance in the primary fields of fire of the weapons. The status board can also be used to assist the Battalion S3

in checking the effectiveness of operations. By plotting on the status board aircraft approaching a defended area from a certain direction, that will indicate what weapons should track or fire at the approaching aircraft. If the reports do not conform, he can start immediate check. Or, if the reports do conform, he has the pleasure of noting the splendid results at once.

The status board is used in conjunction with plexiglass situation and operation boards. The boards are mounted vertically adjacent to each other and, with the exception of the status board, are used in the standard manner. The remainder of status, to include AAOO, weather and conditions of the sun and moon are shown on another board. Since all plotting is done in grease pencil, there is no need for issued tables, raid stands, arrows and other plotting equipment. A similar board has been developed in each battery AAOC for its particular defense and is used in the same manner.

## THE VERSATILE M33

By **CAPT. HARRY E. WIDING and LT. COL. DANIEL F. GORMAN**

*502nd AAA Battalion*

**U**NTIL the Skysweeper, T-38, is equipped with a time-to-burst integrator, gun battalions will occasionally be called

upon to furnish an AAFCS-M33 when it is desired to determine the velocity of a lot of ammunition and the 75mm

gun. All gun battalions that have been called upon for assistance know that besides furnishing the radar and crew,



they must become involved in a rather lengthy and somewhat complicated set of mathematical computations.

The usual procedure is for the Skysweeper personnel to prepare their equipment and to furnish the Skysweeper pointing data,  $A_o$ ,  $E_o$ , and  $D_o$ , to the M33 personnel who take the Skysweeper pointing data, determine the parallax from the gun to their radar, and then figure the M33 pointing data,  $A_o'$ ,  $E_o'$ , and  $D_o'$ , in order to point the M33 at the same position in the sky.

Take the following example:  
Skysweeper radar pointing data:  $A_o$  6100 mils;  $E_o$  284 mils;  $D_o$  3640 yds;  
Parallax, Skysweeper to M33: West 40, South 85, Up 3;  
Required: M33 pointing data,  $A_o'$ ,  $E_o'$ ,  $D_o'$ .  
The AA&GM Branch prescribes a mathematical solution by standard survey methods.

All of the long computations indicated can be eliminated by using the M33 computer to solve the problem. The following procedure is recommended:

1. Set the M33 computer to "LOCAL" and "TRACK TEST."
2. Position the M33 track antenna at the Skysweeper radar pointing data which in this case are  $A_o$  6100,  $E_o$  284. The azimuth and elevation servo dials at the M33 computer should read  $A_o$  6100 mils and  $E_o$  284 mils.

3. Set the M33 track range computer at the Skysweeper radar value for slant range,  $D_o$  3640 yards.

4. Set the parallax into the M33 computer in the reverse sense. Parallax for this problem was figured to be S 85, W 40, U 3. The M33 computer parallax dials should be set at N 85, E 40, and D 3.

5. Record the fuze, azimuth, elevation and time of flight on the servo output dials of the M33 computer which in this case are: F 4.195, A 6118, E 278, T 4.06. The azimuth and elevation values are two of the three elements of the required M33 pointing data.  $D_o'$  is represented at this point by fuze and time of flight. The value of  $D_o'$  will now be determined. (Note: An M33D was used for this problem. The C Model used with 90mm guns will give different values for fuze and time of flight. Of course, the values which appear on the F and T servos of the M33 model being used are the ones to use in solving the problem.)

6. Remove the parallax that was set into the M33 computer.

7. Reposition the M33 track antenna so that it is pointing at the azimuth and elevation obtained in step 5. The azimuth and elevation at the M33 computer should now read  $A_o'$  6118 mil and  $E_o'$  278 mil.

8. Observe the fuze and time of flight

dials at the M33 computer and operate the track range handwheel until these dials return to the values recorded in step 5 above. The M33 track range computer dial will now read  $D_o'$  which for this problem worked out to be 3707 yards.

9. The AAFCS-M33 is now pointing at the trial shot point.

A number of problems were solved by the authors mathematically and using the method outlined above on 3 different M33Ds. The values of azimuth and elevation always agreed to the mil and range was in agreement within an average of 1 yard. During actual firing with 2 Skysweepers the echo received from the 75mm shell was large and clear and the time-to-burst integrator was stopped by every round.

[From the School we get the following comment: "The mathematical solution should be used when time permits because of possible errors if the M33 is not properly trimmed. . . . In utilizing the velocity fire technique with Skysweeper the gun should be laid by gunner's quadrant. The velocity fire problem as conducted with the M33 will provide an accurate time of flight. However, the solution for velocity must be accomplished with the Skysweeper computer. Tolerances in the computer are such that variances of from 20 f/s to 40 f/s may be experienced."—ED.]

# BATTERY EFFECTIVENESS

## Assessment of Comparative Performance

By DR. FRANCIS H. PALMER and CPL. THOMAS I. MYERS

EVERY artilleryman knows that there is a difference between the operating potential of a radar gun system and the system's actual performance when men are operating it. The vital point is the size of the difference. In a sense the job of the commander, whose mission can be fulfilled only through use of such a system, is to develop the skill of the men he has available so that the machine potential and the man-machine potential of the equipment differ as little as possible.

The commander cannot shoot higher or farther or with greater accuracy than

his equipment system permits. He can develop the efficiency of his men to levels where they approach the maximum potential of the machine.

Just what are the personal elements that contribute to the differences between potential and actual performance? This problem is being studied under the sponsorship of the Chief of Army Field Forces. Extensive observations of leadership techniques and administrative practices, along with their relation to the performance of units, are being made in this general research program.

This article is the first of several on

the AAA studies. The research is being performed by Human Research Unit No. 2, OCAFF, Fort Ord, California.

In any effort to determine what factors influence the performance of a group of people, one of the first considerations is how to measure that performance, accurately and in meaningful ways. The problem of developing such measures exists in all sciences and is commonly referred to as the "criterion" problem—usually the toughest question in any research design. If you are interested in studying the personalities of outstanding combat riflemen, you must first identify

the actions essential to outstanding combat performance and, on the basis of these actions, single out the men to be studied. If you are interested in studying the characteristics of a good antiaircraft battery, you must determine what performances are essential to the fulfillment of the unit's mission, and then develop techniques with which those performances can be measured.

This article describes the first step in such a program: that is, the development of realistic measures which can identify highly efficient and less efficient antiaircraft batteries. A second purpose will be to discuss the extent to which the several measures of performance are related—to see, for example, if a unit which is highly proficient in artillery maintenance is likely to be as successful in radar pickup and other essential activities.

IN the early spring of 1953, the research staff discussed the project with Colonel Walter Murray, 30th AAA Group; Colonel Adam Buynoski, 2d AAA Group; Colonel Darwin Martin, 19th AAA Group; and Colonel Warren Spann, 18th AAA Group; as well as Lt. General John T. Lewis and Brigadier Generals Robert W. Berry and Harry F. Myers. In each case staff members, representative battery commanders, and operations center personnel were included in the conferences. The aim of these discussions was to identify the activities which a battery must perform successfully in order to accomplish its mission.

The military advisers on the research reached general agreement that the essentials for satisfactory battery performance were these:

1. A battery should be able to pick up incoming targets on its radar at a range commensurate with the maximum potential of its equipment.
2. A battery should be prepared to engage an incoming target when the target comes within gun range.
3. A battery should maintain its equipment in a manner which insures its being prepared to fire on a few minutes' notice.

In addition, several commanders pointed out the importance of some measure which would reflect the extent of a unit's adverse personnel actions. The environment of the on-site battery in the ZI is sufficiently complicated by such factors

as relations with civilian communities that a measure of this sort seemed justified.

When these critical activities had been identified, the researchers worked out methods of evaluating units on the elements of performance implied. These measures were:

1. Range of Radar Pickup
2. Firing Range Scores
3. Radar Maintenance
4. Artillery Maintenance
5. Defense Commander's Rating
6. Adverse Personnel Actions

These six activities were measured in the following manner.

**Range of Radar Pickup.** A large number of tracking missions were flown under the direction of the operations officer of the defense concerned. The strikes composing these missions were flown at an altitude of 15,000 feet or higher. Units were not scored for strikes where masking significantly interfered with possible pickup. For each strike the battery concerned reported the time, coordinate, slant range, and azimuth at the point of locking-on with the track radar of the M33. These reports were checked against the track maps of each strike developed by the AAOC, and the battery was scored for each strike. Battery performance over the many strikes was averaged out so that an individual score of average pickup was available for each unit.

**Firing Range Scores.** Firing range scores were decided upon as the best approximation for a direct measure of battery preparedness for engagement. The last official score the unit had received during range firing was used. Such a score is of course not completely adequate as a measure of preparedness. However, the ratings necessary to ascertain specifically whether a unit was prepared to engage at maximum fuze would have been uneconomical in terms of personnel and time. For the purposes of the study, then, the range scores were accepted.

**Radar Maintenance.** Three methods were worked out to evaluate radar maintenance. In the first method, the ordnance team responsible for each unit's radar was asked to examine its job orders for the three previous months. Each job order was judged, in the presence of a supervisory technician, with regard to whether the repair had been made necessary by inadequate maintenance or by

fair wear and tear. When a repair was attributed to inadequate maintenance, further judgments were made about the seriousness of the repair and the extent of poor maintenance. The scores for this measure, then, were made on the basis of judged relationships between poor maintenance and repair incidents.

The second method also was based upon the job orders. The orders were counted, without reference to the conditions precipitating the repair. This score therefore indicated how often ordnance had worked on each set.

The third method used the AAOC records and the unit repair reports to evaluate maintenance. Each day the unit was considered out of action because the radar was inoperable was tallied, and a score for each unit determined.

**Artillery Maintenance.** Artillery maintenance was scored by a method similar to the first method listed for scoring radar maintenance. The ordnance team responsible for the unit's equipment made judgments about the precipitating causes of repair, and a battery score was determined.

**Defense Commander's Rating.** The defense commander instructed his staff to keep records for several activities over a three-month period. The ten activities specified were: S1 functions, S2 functions, S3 Artillery and Operations, S3 Training, S4 Food Service, S4 Supply, communications, generators, vehicles, radar.

Evaluations were based upon a score of 4 for superior, 3 for excellent, 2 for very satisfactory, 1 for satisfactory, and 0 for unsatisfactory. The unit's score was an average of its scores in the ten inspection areas. The range of average scores for the batteries was from 3.41 to 1.00.

**Adverse Personnel Actions.** This measure was based on episodes expressed by General Courts Martial, Special Courts Martial, Summary Courts Martial, and entrances in the battery punishment book during the previous three months. The seriousness of the offense was weighted on a 4-3-2-1 scale. The resulting score might be called a "punishment score." A separate analysis was also made on number of AWOLS.

These six measures were applied to AAA units of three defenses—San Francisco, Seattle, and New York.

For each defense the batteries were



ranked from high to low, according to their scores on each of the measures. Relationships between the batteries' rankings on every possible pair of measures were evaluated by methods of statistical analysis known as the "correlation technique." These procedures were used to determine the presence and extent of any relationship or co-variation of the batteries on the various measures; they also permit identification of measures upon which the same battery tends to score high or low.

By using this means of analysis then, the following relationships or co-variations were identified.

▶ When the battery rankings for *range of radar pickup* were paired with the ranking for the other measures, range of radar pickup proved to be related to the *defense commander's rating*. Range of radar pickup was also related to *radar maintenance* when maintenance was measured by either the second method (total number of job orders) or the third method (days out of action because of radar failure) but *not* when it was measured by the first method (repairs judged by ordnance personnel to have been necessitated by inadequate maintenance). Range of radar pickup was not related to firing scores, artillery maintenance, adverse personnel actions, or AWOL rate.

▶ *The defense commander's rating*, when paired with the other measures, did relate to *range of radar pickup*, and to *radar maintenance* as measured by the second and third methods. In addition,

the *defense commander's rating* was related to the AWOL situation, in that the greater the number of AWOLs, the poorer the rating given the unit by the commander. It did not relate to any of the other measures.

▶ *Artillery maintenance, personnel actions, and firing scores* did not relate to radar maintenance, radar pickup, or commander's rating. AWOL did not relate to any measure other than commander's rating.

Thus three ratings—radar maintenance, when measured with certain procedures, range of radar pickup, and the defense commander's rating—are related, in that when a battery is high on one it is likely to be high on the other. With the exception of AWOL, the other measures do not show any relationship to these three, nor do they relate to each other.

The relationship between defense commander's rating and AWOL is particularly interesting when one considers that the AWOL rate did not relate to any of the operational measures. It suggests that a commander considers AWOL rate when making a unit's composite rating, but that AWOL is not one of the factors determining the unit's actual operational performance.

Analysis of the techniques of leadership and administration in the units should clarify the lack of co-variation or correlation between some of these measures of performance. Data on leadership

and administration practices were collected while battery performance was being evaluated, and practices which identify highly efficient units and inefficient units will be described in subsequent reports now being prepared.

Results of this phase of the study may be summed up thus:

▶ Available measures for comparison of the performance of antiaircraft units have been shown to be reliable and accurate.

▶ In regard to efforts to predict unit efficiency, this point has been established: The fact that a unit rates well on one performance measure does not imply that it will have a high rating on all such measures. A degree of generalization is justified from range of radar pickup to radar maintenance and the way a commander ranks his units. There is nothing, however, to suggest that a unit which ranks high on these three measures will rank high on range firing scores, personnel action indices, or maintenance other than radar.

Future evaluations of unit performance should take these findings into account. A "good" unit is a composite of many attributes; often a unit may have some of these attributes and not have others. Performance of any given type should be evaluated by observing that particular activity. For the most part, a separate measure should be used for each activity which a commander considers important for assessment.

# AA ENGAGEMENT IN FORWARD ZONE

By CAPTAIN B. B. SMALL

THE experiences of Korean combat are already fading rapidly from our memory. In some cases that may be just as well, for some of those experiences only developed or emphasized cer-

tain bad habits which that peculiar war allowed us.

There the AA found itself a much used and respected ground combat arm. During our actions we learned many things about our strengths and about our weaknesses too. Generally, we made the same mistakes of field soldiering that every other arm did; we tended to ignore our facility for mobility; we disregarded camouflage and concealment; we often sought the complex solution rather than the simple one. We knew

these things were wrong but we could get away with them and so the bad habits persisted. The AA also learned some new things the wrong way; we accepted the eminence of our fire power and began to ignore other considerations in its application, tending rather to substitute a brash aggressiveness for tactical subtlety. Most of our ground support operations were run as if we were auditioning for the lead arm in a training film. We drove out in our half-tracks, pulled up in a roughly jagged

Captain Small, formerly a frequent contributor to these pages from the 82nd AAA AW Battalion (SP) with the Second Infantry Division, has recently graduated at the AA & GM Branch, TAS, and is now stationed at the Air Force Missile Test Center, Patrick AF Base, Fla. In this article he presents his own personal views.

line in direct line of sight some several hundred to a thousand yards from the enemy positions, turned on our power chargers and blasted loose with our multiple mounts for the duration of the operation. If we got shelled in return it was a shock and distressing to our plans, something we had not fully anticipated. As a result, we usually completed our missions against odds greater than they needed to be.

There were also some things which we did not learn at all. Among these is at least one basic operational error in the conduct of our AA operations—an error which is now becoming too deeply rooted in doctrine. This error was in the clearance procedure for antiaircraft firing by AA units in the forward combat zones—the definition and application of our “rules for engagement” of hostile aircraft.

We did not fire at many aircraft in Korea. The Air Force’s interception program kept the enemy far north of the battle lines and few AA opportunities occurred. Those that did occur, arose at night in the rear areas, where single harassing enemy planes scattered around a small amount of relatively ineffective explosives and then quickly retired. The city of Seoul received the large percentage of even these. Operating at night, the “bed check” planes were seldom seen, their hostile identity usually only indicated by electronic means or by the failure of their flight plans to check out with known friendly flights. Their identity was usually confirmed by the collection and identification of ordnance fragments at the scene afterwards. Thus, the average divisional SP battalion AA-man probably spent his entire tour in Korea without ever seeing, let alone shooting at, an enemy aircraft. The AW battalions up front with the infantry divisions added their share to the National Debt with the millions of rounds of .50 caliber ammunition fired by their M16’s, but aside from the service practice sessions at the Incheon AA Range outside Seoul, very few of these millions of rounds were fired at anything but ground targets.

SOME experience in firing at high performance aircraft would have been interesting and valuable, both in battle experience and as a reminder of our

lagging equipment development. For anyone who has seen a low-level jet roar overhead with a sound somewhat similar to an incoming artillery shell and with about as much warning, there begins to stir some doubt as to whether any AA fire would be effective against such a target—especially if the plane is using its own fire power.

The present SP equipment available for use is almost solely the improved, but basically decade-old M16, and barring some miracles in weapons development, it or something similar will continue to be the mainstay of the AW battalion designed for a dual ground and AA mission. Based upon three years of Korean experience, the M16 has been confirmed as a dependable and effective weapon in ground actions (even though we admit it is a little too high and has no overhead cover), but the question of the equipment’s serviceability in its primary antiaircraft mission remains not only unanswered, but perhaps dangerously ignored, considering the speed of today’s war planes. The continuing emphasis upon the SP’s ground employment success, only increases the misfocus.

It is traditionally military to doggedly retain a comfortable old procedure or weapon simply because it is familiar and has been useful. The English kept their longbows down into the early seventeenth century after the wide adoption of firearms on the continent. “Old” soldiers in our army can still be found who commend the ’03 Springfield rifle over the M1. If we are to progress against such inertias, at least a large percentage of us must be prepared to slough off any outmoded technique or equipment without sentimental reservation, and all of us must be able to accept and master the new ones as fast as they are developed.

Accordingly, it appears that we AA-men should do some thinking about the procedures under which the AW units tried to accomplish their antiaircraft role in the forward combat zones of Korea.

There, self-propelled battalions adhered to rules of engagement established in the interest of preserving the Air Force against accidents of mistaken identification. Because of the friendly air superiority, it was highly unlikely that an enemy aircraft would appear.

Consequently, AA units were not allowed to fire at aircraft merely upon local identification as enemy, nor were they allowed to fire at *attacking* aircraft if they appeared to be friendly. Generally the rules allowed engagement only after two requirements were met. First, the aircraft had to commit an hostile act; second, the aircraft had to be identified as not a friendly type. Thus the friendly climate of the air situation and the restricting rules of engagement combined to produce a perhaps realistic, but certainly undesirable, attitude in the AA-men—they relaxed. Knowing that they could not fire until after some positive hostile act, and even then only after some negative identification was made, inaction or indecision rather than action was their usual response to an aircraft overhead.

THE rules of engagement might have changed if the likelihood of air attack had been greater, but as it was thousands of AA-men with Korean experience were conditioned to inaction in air defense situations. Now with present-day aircraft speeds, the first sighting of a plane is likely to be the last chance the AW crew will have to get their weapons on target, and so they must be ready to begin engagement at that instant.

Of course it is important to protect friendly aircraft, but to enforce this rule takes too much engagement time away from the defending AA. In the front-line areas, there isn’t any time for discussion or indecision. The only rule for AA engagement should be that an aircraft has begun a fly-over at a prohibited (*i.e.* low-level) altitude, or that its flight path indicates such an intention. Identification should not even be a consideration for the forward area AA fire unit commander.

Anyone at this point disturbed by visions of the friendly air support fighting its way through friendly as well as enemy ground fire into its close support targets should relax, for that situation will not follow at all. What is proposed is to remove from the forward area AA fire unit commander the unreasonable and time consuming responsibility of identification. This can be managed by two simple procedures. First, the Air Force should observe flight paths over forward areas at non-menacing altitudes.



Second, when this is not desirable for operational reasons, we should be given advance warning of the flight paths they will take. This latter could be in the form of temporary hold-fire commands for certain AA sectors.

Formerly, the field artillery used a similar system of hold-fire plans to suppress their time fires, or all of their fires as necessary, when friendly tactical aircraft were operating through the range of their weapons. Likewise, when friendly aircraft are making close support strikes within our range, that information could be flashed to our units and our fires could be suppressed by these temporary hold-fires, imposed and lifted by the authority controlling the aircraft. At all other times, we shoot any aircraft within range. This appears perfectly reasonable with existing communications and organization. Nothing needs to be changed but the procedures.

Some persons will argue that if there had been any serious enemy air threat in Korea the AA would have had less restriction in firing. They feel that the rules of engagement *must* change along with the situation. The thesis here is that the rules for engagement should *not* change, that they must remain the same wherever there is a commitment of strength to AA defense. If there is no possibility of enemy air attack, then remove the AA fire units. If there is a need for AA defense, then give that defense force the means for its efficient employment.

**T**HERE will be no excuse for any wild uncontrolled spraying of the air by irresponsible fire unit commanders. Already we allow the decision of fire to rest with the fire unit commander. Only now we make his job so difficult of decision, that a reasonable man would hesitate to take any initiative. There are sixty-four fire unit commanders in the divisional SP battalion. In Korea each one of these men had the responsibility separately of making an identification—and also of making an error. Would it not be simpler to centralize this identification task back in the rear somewhere in a single authority where it can be more reliably controlled?

Surely this suggested procedure is possible. Already in the division's light aircraft operations, the liaison pilots fly

out to their observation sectors through certain prescribed routes, returning over others. In the defense of the continental United States, the Air Force requires all air traffic to adhere to certain prescribed paths in altitude, location and time, allowing very little deviation to cause a very large suspicion. The adherence to similar rules by the friendly Tac Air in the zone of operations would greatly increase the anti-aircraft artillery's effectiveness there.

Thus, there are controlling reasons for removing the requirement of forward area identification before engagement. The first of these is that if the AW AA is to become effective, it must be allowed to immediately engage targets at the first opportunity, and this must not be under certain conditions and circumstances, but under all.

A second fact is that the instances of erroneous attack by friendly aircraft against friendly ground locations is rare, and so there would be few instances of friendly aircraft likely to be damaged by the ground fire of friendly AA units. Therefore, why negate the AA in order to secure against a remote possibility?

**I**N Korea, some pilot errors did occur, mostly when aircraft were operating without "Mosquito" control. The pilots evidently believed they were attacking targets far into the enemy rear areas where Air Control Party coordination was not required. By actual experience these were rare. To be fair to the pilots, it was not always their fault. Improper reports of locations by the ground units, incorrect directions being given by the ACP, improper marking of targets by the "Mosquito" controller or by the artillery, and a few other reasons caused some of these unfortunate accidents.

But the basic question is not of who-did-what-to-whom in such cases. It is simply a matter of tactical efficiency for the divisional AA weapons to be ordinarily "guns free" during active operations. Any planes at a low level in the forward areas must be suspect in the interest of accomplishment of the AA mission. It is conceivable too, from past experience, that the enemy will make use of our own types or similar appearing types of aircraft, as the Germans did during World War II. Then too, at present aircraft speeds, visual iden-

tification from a stationary ground post is not extremely reliable as the sole basis for judgment of their status. These reasons make it desirable to place the burden of identification somewhere else besides the engaging fire unit.

If we are to secure the maximum effect from our weapons, we must be allowed to train for immediate engagement of all aircraft acting in an hostile manner. No confusion, a single simple rule—track all targets and fire when they are in range unless their appearance has been previously cleared.

Evidently, intelligence assurance were strong enough in Korea to make it safe to restrict AA engagement in the manner it was. However, because of this, thousands of our AA crewmen were trained to an improper hesitating response. To shoot down modern planes we must put up every round we can fire with the greatest accuracy we can muster. Under the rules we observed in Korea we were in effect forbidden to do this.

[The author's controversial proposal merits study for its application in forward areas. However, let no one for one moment underestimate the absolute necessity for strict and effective AAA fire discipline. It is imperative to gain and hold the confidence of our friendly Air Force units, and other ground force units, too.]

When the Tenth Army made the assault upon Okinawa in 1945 we had veteran Army AAA battalions from Leyte with the XXIV Army Corps and likewise veteran Marine AAA battalions with the III Marine Corps; however, these units had not worked together before as a team. In the bay and on the beaches Naval gunners also manned thousands of anti-aircraft weapons on the main vessels of the fleet, transports, LST's, LCI's, other landing craft, and what have you. They were veterans, too, but they fired with a vengeance, and few were squeamish about range or low angle of fire. Also there was still another anti-aircraft force ashore that had sprung up like Topsy. In the supporting air and ground units, beach parties, Seabees, Engineers, Port companies, *et al*, men had corralled machine guns and mounts and they fired them with no control and little regard for identification.

The first enemy air attack drew a ter-

rific and indiscriminate volume of fire, most of it completely out of range and so much at low angles that life, work, and the pursuit of war ashore and above ground became unbearable. Shortly after that, two Marine pilots were shot down in a sad and demoralizing fiasco. One gunner opened up and others herd-like followed suit. And it didn't alleviate matters because the disasters were

obviously due to troops other than regular AAA. Antiaircraft commanders at all levels took the responsibility and the authority to control the fire of all anti-aircraft weapons in their areas. With persistent efforts antiaircraft fire discipline was soon established.

Soon the Marine fighters had the situation well in hand so that seldom did any Japanese pilot succeed in get-

ting through to the AAA defense in daylight; so we were not perturbed much about the daylight rules of engagement. By night, however, the defense was largely the responsibility of the AAA. We persisted and secured rules of engagement to permit unrestricted fire, except when specifically ordered otherwise.—Ed.]

## THIS CONCERNS YOU—

By MAJOR GENERAL JAMES C. FRY

THE *Army Journal* offers the means by which a great deal of information of vital importance to officers can be disseminated around the world. Questions concerning schools, promotions, stabilization, category renewal, transfers, concurrent travel, and a multitude of similar personnel problems reach the Career Management Division almost daily. In the next year we will endeavor to concentrate answers to most of the questions that are uppermost in officers' minds. I shall in this article touch lightly on a few subjects that will be handled in more detail later.

Eligibility for and probability of attending military schools account for many communications. An officer will attend only one of the five senior schools. The National War College, The Army War College, the Industrial College of the Armed Forces, the Naval War College, and the Air Forces War College are all on the same educational level. Graduates of these schools all receive equal consideration for promotion and assignment.

Selection for military schools beyond the advance Branch Course is competitive, Career Management making the selections based on an evaluation of each officer's record in the zone of con-



Major General Fry

sideration. An officer's efficiency, combat record, troop duty, command duty, staff duty (all types) and instructor duty are all weighed and totaled to determine the final qualification score which determines relative standings.

Too much emphasis is being given in the field to attendance at top schools. Less than 45% of Regular officers and only a token percentage of Reserve officers can attend the Command and General Staff College. Only a fraction of that number will go on to attend the five senior schools. Eligibility does not qualify a man for attendance, nor does graduation insure promotion. There are many general officers who have never attended any school except their branch school.

REPRESENTATIVES of the Career Management Division will visit each Army Area on the average of once every

three months. They are familiar with all policies and procedures involving personnel and can supply answers to practically every personnel problem.

Many officers seem to think that the way to secure preferential treatment is through influential friends. This rarely results in other than routine action. If officers will contact their Career Branches, they will receive courteous and prompt consideration and exactly the same assignment as if they had sought intercession by friends. A current and carefully prepared Preference Statement is the best type of communication. It is always considered before orders are issued. Don't be afraid to spell out the exact reasons that are responsible for requests.

The term, "Career Management," has a strange appeal and there is indication that many officers feel Career Management is at fault if they fail to receive the promotion or assignment which they seek. It should be remembered that the primary mission of the Career Management Division is to insure the smooth and efficient operation of the Army through the wise assignment of appropriately qualified officers to all increments of the Army.

World-wide assignments cannot be run from a duty roster as a first sergeant supplies kitchen police. The reasons are obvious—the qualifications needed for each job are different. Another point generally overlooked is that money has a great influence on every move that is made. The moving of officers' dependents and household goods must be justified on the basis of Army requirements.

I cannot stress too much the impor-

General Fry finished up World War II in the Mediterranean theater in 1945 as assistant commander of the 88th Infantry Division. Since then he has commanded the Tactical U. S. Forces in Austria in 1951 and the 2nd Infantry Division in Korea in 1952. In between time he has worked in two tours with the Army General Staff in the Pentagon, where he is now Chief of the Career Management Division, TAGO, and an authority in that field.



tance of command experience. There is always room for the officer who seeks responsibility and who is anxious to demonstrate possession of command qualifications. There is no type of human endeavor where it is so important that the leader understand all phases of his job as that of the profession of arms. A military commander is vested with a high degree of authority which extends into matters normally considered individual and personal. Everything concerning a soldier's existence, ability, potentiality, professional knowledge, as well as those matters which influence his personal life such as his food, clothing, comfort, promotion, and in time of war his very life, depends upon his commander's knowledge and appreciation of the importance of all phases of his work. The ability to command is always weighed heavily in every personnel action—particularly promotions.

I would like also to emphasize the need for accurate and detailed descriptive comments when efficiency reports are prepared. The implication of the absence of a clear word picture in the space reserved for descriptive comments

is that the reporting officer didn't consider the officer rated of any special importance. Descriptive comments on efficiency reports are generally the determining factor in selecting officers for promotion and are of invaluable assistance in making appropriate assignments. It is unfortunate that many officers fail to take the time to give a clear and concise description of the qualifications and potential of officers who have served them loyally and efficiently.

It should be clearly understood that the Career Management Division can only influence officers' careers when they are changing stations. This is very little in comparison with the opportunities available to commanders in the field. Department of the Army policy as spelled out in TM 20-605 specifically makes commanders responsible for developing officers by rotating them through their staffs and through command assignments. The chief of every staff section in every headquarters has an opportunity to assist and urge compliance and appreciation of such policies. Some commanders are reluctant to give opportunities to officers who have not al-

ready qualified for a new duty assignment. This is basically why at the beginning of World War II we found substantial numbers of officers who were qualified to perform only one assignment and could not meet the broad organizational and administrative demands of war. Men grow and develop with added responsibilities and if selected for an assignment on the basis of indicated potential, few mistakes will ever be made.

MY closing comments are that the Department of the Army requirements remain paramount and able officers are needed to supply the needs of MAAG's, Missions, and troop assignments in 74 different nations. A man's career is generally in his own hands. He should seek good assignments, avoid prolonged pleasant tasks at the expense of opportunities to demonstrate command and organizational ability, and turn in a pattern of performance of duty on every assignment that will insure a good report, regardless of what or where the job may be.

## A NEW PRIME MOVER FOR THE 120?

By 1st LT. A. R. MATTHEWS, USAR

FOR the past few years moving the 120mm gun has presented constant headaches for various reasons. The most predominant trouble has been its prime mover, especially where road and weight restrictions are imposed.

The M6 tractor (38 tons), presents not only a problem in size, but also requires extensive maintenance for minimum operation. Various wheeled vehicles are capable of pulling the 120, though not over difficult terrain, and of these, only the M20 (12 ton 6 x 6) is available in sufficient numbers for issue to units. In addition, these vehicles are slow and difficult to handle. It would seem, then, that the answer to the problem would be a prime mover, wheeled to allow travelling on improved roads, and powerful enough to pull the mount over rough terrain for short distances. Such a vehicle has been designed and two prototype models produced by the Mack Manufacturing



Corp. This vehicle has been designated Truck, Cargo, 10 ton, 6 x 6, M125 w/winch (see picture). This vehicle is presently being considered for use as a prime mover for heavy artillery where tracked vehicle operation is not advisable. What better prime mover for the 120mm gun, where travel by improved road is necessitated by the characteristics of the fire control system van?

The M125 is powered by an overhead valve, V type, 8 cylinder, water cooled engine developing 296 h.p. at 2600 r.p.m. and manufactured by Le-Roi. The transmission is manufactured

by Mack, and has five forward speeds. A transfer and power-take-off are also provided. Here the designers have returned to completely manually operated controls, even to include front wheel drive. Although the driver does all the shifting himself, air brakes and power steering simplify control of the vehicle, making it almost as easy to handle as the 5 ton now used to pull the 90mm gun. An interesting component of this vehicle is its front-mounted 45,000 lb. winch. In addition to the standard drum and roller assembly, it has a level wind device to roll the cable properly on the drum, and a cable tensioner to keep the cable tight. Two functions formerly performed manually are now controlled by the winch itself. [The author's plausible views are presented to arouse thought and discussion. In the WW II amphibious war in the Pacific D8 bulldozer was the favorite AAA prime mover for the 90mm guns.—Ed.]

# UNIT ACTIVITIES

## HQRS. ARMY AA COMMAND

*Lt. Gen. S. R. Mickelsen, Comdg.*

Integration of Army AA Command activities into the Continental Air Defense Command has proceeded almost unnoticed, since in actuality the creation of CONAD merely formalized a working arrangement which actually was already in force.

Lieut. Gen. Stanley R. Mickelsen, Commanding General, Army Antiaircraft Command, has been active in furthering the Army's support of the accomplishment of the mission of air defense of the United States. He is planning a series of field inspections to AA units in the near future.

Four key officers of the ARAACOM staff have been placed on duty in CONAD Headquarters. They are: Col. R. S. Dingle Jr., Col. Leslie J. Staub, Lt. Col. Marcus L. Parsons, and Lt. Col. Lawrence H. Tyree. Successors have not been announced, but Lt. Col. Sanford J. Butler has been acting G1 and Col. Fred Dixon acting G2.

New arrivals to ARAACOM include Lt. Col. Arthur B. Chapman, Jr., from Fort Bliss, Ordnance Officer; Major P. Genero, from Iceland; Major Milo Igersheimer, from Fort Bliss; Capt. Wallace N. King, from Germany, and Capt. Jesse J. Mayes, from Fort Bliss. The latter four have been assigned to the G3 section.

CWO James W. Wallin, senior old-timer at ARAACOM, will be assigned to Panama in January.

## CENTRAL ARMY ANTI-AIRCRAFT COMMAND

*Col. Donald J. Bailey, Comdg.*

Our headquarters is now located at Grandview AF Base, Mo., 12 miles South of Kansas City. There we are located with the headquarters of our joint team partner, the Central Air Defense Force. Our responsibility extends over the vast 26-state central and southern region ranging from North Carolina to Arizona in the South; from Wisconsin to Montana, in the North.

The command now includes the 531st AAA Battalion at Ellsworth AF Base, South Dakota, and the 546th AAA Battalion at Carswell AF Base, Texas. Both of these Skysweeper battalions have arrived during the year and have been very busy building up their sites and facilities for living and also in establishing friendly relations with their new neighbors.

Projected for the near future, the command will be reinforced by Nike and gun battalions, more Skysweepers, and group headquarters.

In point of continued service our commander, Colonel Bailey, is the senior officer in the Army AA Command, having joined early after the command was formed in 1950. Other key staff officers include: Lt. Col. Joseph P. McElligott, S3; Captain Guy J. Marzari, S4; and CWO Albert E. DeParis, S1.

## 531st AAA Battalion

*Lt. Col. John B. Maynard, Jr., Comdg.*

The Battalion has recently completed its second service practice at the Scenic Badlands Bombing Range, S. D. Battery A took top honors with a score of 94.05.

The 531st has demonstrated great resourcefulness and energy in all its tactical constructions. Troop labor has been used due to delay in obtaining Engineer contract labor and to the early onset of winter weather. Fifth Army, Fort Carson, and the Engineers have helped with construction equipment and survey teams. Operating its own "logging camp" for foundation pilings, the battalion is busy from dawn to dusk erecting prefab hutments, access roads, battery streets, gun sites, and shelters for radars and generators.

Lt. Col. Phillip J. Gundlach, the original commander, has left for Germany. After temporary command by Major Charles E. Murello, now Executive, Lt. Col. John B. Maynard has arrived and taken command.

Other key officers include: Maj. Armond M. Kolesar, S3; Capt. Charles M. Beckwith, Adj.; Capt. Lincoln E. Ost,

Radar O; and Battery Commanders: Hq, Capt. Enis H. Pike; A, Capt. James C. Moore; B, Capt. Wendell E. Franklin; C, Capt. William J. Connors.

## 546th AAA Battalion

*Lt. Col. Wm. A. Brinkerhoff, Comdg.*

The 546th arrived at Carswell Air Force Base, Fort Worth, Texas, last July, after completing its training at Fort Bliss. Some trouble was anticipated in getting all the gun sites there, due to the density of population and housing in that area. However, because of the open-arm reception the battalion received from the Fort Worth and Dallas citizenry, the outstanding public relations activities of the battalion and the unanimity of the property owners, all of the sites were acquired without any condemnation proceedings.

Colonel Brinkerhoff and the entire battalion have been outstanding in establishing friendly relations with their neighbors. Recognizing this, Lt. Gen. Mickelsen, Army Antiaircraft Commander, sent Colonel Brinkerhoff a letter of commendation for his public relations efforts. In part, the letter said, "Large segments of the American public do not fully understand the Army's role as an instrument of National Defense. As soldiers stationed in the back yard of our civilian neighbors, Army Antiaircraft Command is in a position to honor and preserve a high heritage by being good neighbors, by being exemplary soldiers and by informing the community of its role."

The battalion is now conducting an experiment in air movement.

It is shuttling its skysweeper guns and crews, one battery each week, by SAC's huge C-124 aircraft 600 miles from Carswell Air Force Base to Fort Bliss, Texas, for its first service practice since joining this command. Since there is no suitable AA range near Carswell, it was necessary to move the battalion to Fort Bliss. So, arrangements were made with SAC to try the air movement. Two skysweeper guns (weight, 19,500 pounds each) and crews were loaded



into each C-124 at Carswell and unloaded by the 546th Battalion's advance party at Fort Bliss. Battery C's six skysweeper guns and crews were flown to Fort Bliss on 8 November. After finishing its practice on 14 November, the battery will be airlifted back to Carswell on 15 November where the three C-124's will pick up Battery B's guns and transport them to Fort Bliss. On 20 November, Battery B will be returned to Carswell and Battery A will be transported to Fort Bliss. It is planned to finish the target practice on Friday, 26 November, and airlift Battery A back to Carswell on that date.

The 546th, like the 531st AAA Battalion, has been actively engaged in an ambitious troop construction project. It has moved the guns to their on-site positions and is in the process of erecting prefabricated buildings at each site, constructing revetments and ammunition caches for the guns and improving access roads leading to the positions. The 546th is also active in training, including a comprehensive Integrated Fire Control School for all its fire control personnel under the supervision of the Sperry Engineers attached to the battalion.

Other key personnel in the Battalion are: Major Emory L. Goggans, Jr., Executive Officer; Major William J. Johnston, S3; Major Hjalmar L. Standal, S4; Captain Carl C. Campbell, Adjutant; Lieutenant Robert C. Lutz, Jr., Hq Btry; A Btry, Capt. Cyrus E. Garland; B Btry, Capt. Samuel A. Miller; and C Btry, Lieutenant Dennis L. Norell.

### **31st AAA Brigade**

*Col. Arthur Roth, Comdg.*

*By Capt. William E. Hewes*

Colonel Arthur Roth recently assumed command of the Brigade which is headquartered at McChord AFB, Tacoma, Washington. Colonel Roth came to the command from duties with G3, Department of the Army.

The Brigade is staffed by Colonel Robert A. Claffee, Executive; Lt. Colonel Clinton Feeney, S3; Lt. Colonel Edward Strongin, S4; Major Leonard O. Peterson, S2; Major Martin A. Small, Jr., Signal Officer; Captain William D. Reich, MTO; Captain Frederick A. Gadwell, S1; Captain Solomon W. Slaughter, NIKE Project Officer; WOJG Leroy W. Homer, Assistant S4; WOJG Bruce

A. St. Clair, Meteorological Officers; and CWO James A. Killebrew, Personnel Officer.

Currently attached are Lt. Colonel Arthur E. Holt, Western Army AA Command Liaison Officer to 25th Air Division and Major Albert H. Beebe, Western Army AAA Command Liaison Officer to the newly activated 9th Air Division at Spokane, Washington.

### **10th AAA BN (LT(75MM)MBL)**

*Major R. L. Sweeney, Comdg.*

Lt. Col. Samuel May, who has commanded the 10th AAA Battalion since December, 1952, recently left for overseas duty. He will be succeeded by Lt. Col. Stockton D. Bruns, who is now at school in Fort Bliss. Major Robert L. Sweeney is the present commander.

Major Albert H. Beebe, former Executive, is now the Western Army AA Command Liaison Officer for the 9th Air Division at Geiger Field, Wash.

1st Lieutenant Russel F. Thommen, Assistant S3, has been supervising the practice loading of a C-124 "Globemaster" with a 75mm Skysweeper and other mobile equipment in cooperation with the plane crew and detachment from Larson AFB, Wash.

Two former prisoners of war received awards recently. They were: Sgt. Alfred A. Goforth, BSM, and Pfc Gene R. Patton, Commendation Ribbon.

1st Lieut. Richard A. Ehlert, B Btry Commander, has been advised that his Gun Section No. 1 has been selected as the "Best 75mm Gun Section of the 31st AAA Brigade" for the month of October, 1954. Sfc. Rollo I. Overholt and his gun crew have now won this award for the third consecutive month.

### **30th AAA GROUP**

*Col. P. H. Wollaston, Comdg.*

The U. S. Weather Bureau and the Army have joined to expand the services of the U. S. Weather Bureau at Metropolitan Oakland International Airport.

Formerly, both the Weather Bureau and the Army had been sending aloft radiosonde balloons and pibal balloons, the latter used for determining wind direction only, at about the same times each day.

Army meteorologists of the 30th Antiaircraft Group, previously based a short distance away on Government Island,

Alameda, have now moved to the Weather Bureau station where all upper air data is collected jointly.

The result is that the number of radiosonde observations available to each service has been increased from two to four daily. This provides upper air data on temperature, barometric pressure, dew point and humidity, as well as wind direction through tracking with radio direction finder equipment.

The Army provides automatic radio direction finder equipment, which eliminates the need for tracking the balloons manually. The radiosondes are sent aloft each day at 1 A.M. and 1 P.M. and 7 A.M. and 7 P.M. The information is transmitted to forecast centers throughout the nation, and to the armed forces.

E. P. Norwood, meteorologist in charge of the Oakland station; Col. Wollaston, Commanding Officer of the 30th AAA Group; Major Joseph Stoltz, operations officer of the 752nd AAA Battalion; and Warrant Officer Paul Chong worked out the details of the plan.

### **5th AAA GROUP**

*Col. William H. Vail, Jr., Comdg.*

*By Major Alfred J. Roman, PIO*

Colonel William H. Vail, Jr., has assumed command of the 5th AAA Group vice Lt. Col. Gersen L. Kushner, who is now Executive Officer.

Lt. Col. Arthur E. Holt, former Executive, has been transferred to the Western AA Command with duty at Headquarters, 31st AA Brigade, as Liaison Officer with the Air Force.

Major Ellery R. Rogers has been assigned as Group S3, following the reassignment of Major Donn C. McCann to Europe. Major Rogers comes to Group from the 67th AAA Battalion, where he was S3.

Captain Ellsworth Rhodes has been assigned as Aviation Officer.

Captain Lester B. Leigh and M/Sgt. Howard Bolton were honored at retirement ceremonies at Camp Hanford, 24 September 1954.

The personnel of the 5th AAA Group stood "fall" for the inspection made by Colonel Arthur Roth, 31st AA Brigade Commanding Officer, recently.

The personnel of the 83d Missile and the 519th Gun Battalions gave 108 pints of blood to the Yakima Regional Blood Center when their Bloodmobile

visited the forward area at Camp Hanford.

The personnel of the 83d Missile Battalion have been kept busy showing the Nike missile to the public at the Sea Fair in Seattle; Central Washington Fair at Yakima; Air Fair at Walla Walla; Benton-Franklin County Fair, Kennewick; and the Fire Prevention Parade in Richland, Washington. Lt. Col. C. F. Coffey is the Battalion Commander.

A Basic CW Operators School has been initiated by 5th Group under the capable direction of 1st Lt. Troy D. Hopson, Commo Officer and M/Sgt. James J. Cravens, Jr., Group Commo Chief.

Battery B, 518th AAA Bn, was awarded the Best Gun Award from both Group and the 31st AA Brigade for the month of September, while Battery A, 519th AAA Bn won the Best Radar Award from both Group and 31st AA Brigade.

Members of the 519th AAA Battalion are now sporting a bright new red and green fourragere on their left shoulder of the dress uniform. This decoration was given by the Belgian Government for the meritorious defense of the City of Antwerp and Antwerp Harbor against the V bomb blitz in World War II. Having been awarded two Croix-de-Guerre, the Battalion wins the Fourragere. The Battalion motto, "To Hold The High Road," sprang from that historic defense.

Lt. Col. Edward W. McInnis is the Battalion Commander. Major Robert K. Routh is Executive and Major Frederick M. Daly is S3. The 519th has recently returned from the Yakima Firing Center where all batteries achieved Superior scores. Battery A was high with a score of 97.87, and Battery D only a fraction behind.

## 45th AAA BRIGADE

*Brig. Gen. T. W. Parker, Comdg.*

The Brigade Headquarters now functions also as Headquarters 5th AA Regional Command, in which capacity it controls all the AAA units in the Fifth Army Area.

Work has begun on the establishment of the AAA defense for Milwaukee, Wisconsin. Mayor Zeidler and General Parker held a meeting recently in the Mayor's Office, which was attended by the military officials involved and the



18th AAA Battalion on the firing range at Camp Claybanks, Mich.

city and county officials. Steps are under way to procure the necessary sites.

Colonel A. J. Cooper, Jr., has departed for Headquarters Fourth Army and was succeeded by Lt. Col. Lee H. Burnham as Executive. Major Harry J. Taylor, Jr., became S3.

Recent arrivals at Brigade Headquarters include Major Ralph H. Cross, S4, and Captain John H. Hoffman in the S3 Section.

The 734th AAA Battalion under Lt. Col. Theodore W. Panneck recently completed a fine target practice season at Camp Claybanks, Michigan. Battery A led with an overall score of 98.5.

## 28th AAA GROUP

*Col. Walter C. Conway, Comdg.*

*By Capt. Edmund C. Jones, Adjutant*

All battalions of the 28th AAA Group have completed successfully the Army Training Tests as well as Service Practices while at Camp Claybanks, Mich.

The 99th AAA Battalion is currently leading with an overall battalion average of 97.3% in the firing phase of their Service Practice. All batteries were above 97% with scores as follows: Battery A, 97.5; Battery B, 97; Battery C, 97.5; and Battery D, 97. This sets a high goal for the other units to surpass during their practices this fall.

The accomplishments of our units at the range are proof of the success of the

28th AAA Group Transition School mentioned in the September-October issue of the AAA JOURNAL. Between classes on artillery subjects, courses in Methods of Instruction for non-commissioned officers are being conducted. This is a one week course with 36 hours of instruction and 4 hours of student classes.

Between Service Practices the 18th AAA Battalion has qualified 112 men as 2d Class Gunners, 18 men as First Class Gunners and 5 men as Experts. The 99th AAA Battalion has qualified 176 2d Class Gunners. The 504th AAA Battalion has qualified 103 2d Class Gunners, 65 1st Class Gunners, and 3 Expert Gunners. The battalions are presently conducting examinations in Expert, 1st and 2d Class Gunners with the ultimate goal of qualifying all 1st three graders as Expert, all corporals as 1st Class and all privates and privates first class as 2d Class Gunners.

New officers who have joined the Group are: 28th AAA Group Headquarters—Lt. Col. Stanley R. Kelley, Project Officer; Captain John Fabrick, Asst S3; and CWO Charles Jackson, Asst S4; 18th AAA Bn—2d Lt. William Pearson; 99th AAA Bn—2d Lt. Hinman; 504th AAA Bn—Lt. Col. Rolland D. Appleton, Capt. Henry C. Aslin, and 2d Lt. Beck; 516th AAA Bn—Capt. Strong, returned from GM School, and CWO Blanks.

Capt. Henri Wroblewski, 504th AAA Bn and Capt. William D. Cox, 516th AAA Bn have returned to civilian life.

Brigadier General T. W. Parker, CG 45th AAA Brigade visited units and sites of the Group in September.

28th AAA Group awards were presented as follows: "Equipment Maintenance Award" to 18th AAA Bn, "Safety Award" to 516th AAA Bn, "Best Mess" to C Btry, 99th AAA Bn, "Driver of the Month," to Cpl. Donald Miller, Hq Btry, 99th AAA Bn.

### 35th AAA BRIGADE

*Brig. Gen. Tom V. Stayton, Comdg.*

Lieutenant General Stanley R. Mickelsen, commanding the Army Antiaircraft Command, visited the Brigade headquarters and units in defensive positions in late October.

Colonel E. A. Chapman, commanding the 17th AAA Group in Catonsville, Md., has been ordered to the Army War College.



*Left to right: Brig. Gen. Tom V. Stayton, CG, 35th AAA Brigade; Capt. Fred T. Colhard (rear) 71st AAA Missile Bn; Ass't. Sec. of the Army Frank H. Higgins; Col. Harrison A. Gerhardt, CO, 19th AAA Gp.*

Major George H. Kimball, recently returned from England, is now Radar Officer vice Captain Murray L. Richman, who is now the assistant.

Major Richard H. Betts, recently from Korea, is Brigade S2.

Major Arthur J. Ward, recently from Germany, is now assigned to the 35th AAA Battalion in the 17th Group.

Recent winners of awards for meritorious service in Korea:

Bronze Star Medal: WOJG Paul Langgle, Personnel Officer, 17th AAA Group.

Army Commendation Ribbon: Sgt. Alexander Howath, Battery C, 35th AAA Battalion; Cpl. William Keagy, Hq Battery, 602nd AAA Battalion.



*Lt. Gen. Mickelsen speaking with SFC Otto Kuapp of Btry C, 14th AA Gun Bn, as 1st Lt. David Lacy, BC (center) looks on.*

### 19th AAA GROUP

*Col. H. A. Gerhardt, Comdg.*

The 19th AAA Group has played host recently to Assistant Secretaries of the Army Frank H. Higgins and Charles Finucane, Lieut. Gen. S. R. Mickelsen, Brigadier Generals O. H. Kyster and T. V. Stayton, and twenty-one officers of the Mississippi National Guard.

The Big Picture telecasting film, "Steel Ring," has been used extensively by units of this group. The showing, made public, is accompanied by an officer who is available to answer questions raised

by the public. This has been an outstanding contribution enhancing unit and community relationship.

Units of the 19th AAA Group were included in a telecasting film entitled "The Defense of Washington" to be released in the very near future by the Big Picture.

Lt. Col. Reed J. McCracken assumed command of the 14th AAA Gun Battalion vice Major John H. Norton who departed for duty in Europe.

The 14th AAA Gun Battalion, for the sixth time in eleven months, won the Group Battalion of the Month Plaque.



*SFC Woolfolk, 14th AAA Battalion, instructs a group of Virginia Guardsmen of the 125th AAA Battalion in the operation of the 120mm AAA gun in the defense of Washington.*



The 14th AAA Gun Battalion has undertaken the task of aiding the 125th Virginia National Guard AAA Battalion in maintenance and training as they work together in the defense of Washington.

SFC Herman E. Miller, Hq. Battery, 14th AAA Gun Battalion was selected as the outstanding soldier of the Military District of Washington. He wins, among other privileges, a complete issue of the new Army Blue Dress Uniform.

Lt. Col. Earl R. Gooding and his 36th AAA Missile Battalion observed Organization Day recently with a barbecue beef and pork roast for members of the Battalion, their families and guests.

This battalion became the first tactical Missile Battalion in the United States Army last January.

Lt. Col. William E. Barkman is now the Commanding Officer of the 70th AAA Gun Battalion.

Battery D, under the Command of 1st Lt. Robert B. Brown, recently registered a 97.1% score in the seasonal service practice firing at Bethany Beach, Delaware.

The 75th AAA Gun Battalion, under command of Lt. Col. Frederick C. Stanford, on 4 November, 1954, was officially redesignated the 75th AAA Missile Battalion. Lt. Col. Stanford has made numerous successful appearances in connection with the public showing of the telecast film, "Steel Ring."

Lt. Col. Emery E. Bellonby, CO, 601st AAA Gun Battalion, served temporarily as Group commander during Colonel Gerhardt's absence.

Major Jack T. Harmon is now Executive 601st AAA Bn., having replaced Major Robt. V. Marye, Jr., who departed overseas.

The 601st and the 75th have already started the scheme of paying twice each month.

Major Sam L. Davies is now Commanding Officer, 71st AAA Missile Battalion. The battalion baseball team won the Fort Belvoir Championship for the second consecutive year under 2d Lt. Michael A. Davis, coach.

1st Lt. James C. Sample, S2, was recently promoted to captain and Eugene J. Estes exchanged his stripes for warrant officers bars.



Mess Hall, A Btry, 450th AAA BN.

### 3rd AAA GROUP

Col. M. G. Weber, Comdg.

By Pvt. H. A. Dawson, Jr., PIO

Through the courtesy of Admiral Jerand Wright, Commander in Chief, Atlantic Fleet, a few officers and men of the Group will be selected for the privilege of going on 5-day cruises with the fleet on either a battleship or cruiser.

A return invitation for personnel of the Navy to spend some nights on the alert detail at our sites has not met with the same enthusiastic response. However, many Navy personnel, from Admirals down, visit our sites for quick tours.

Brigadier General R. L. Tilton, former Coast Artillery commander at Fort Monroe, is now the Civil Defense Coordinator in Hampton, Virginia.

CWO Edward J. Fosse, 56th AAA Battalion Adjutant, recently won the \$1,000 First Prize in a Chicago Safety Slogan Contest. His slogan: *The greatest safety device in every car is the driver.*

Private Francis A. Devine, Hq. Battery, 56th AAA Battalion, recently gave his 40th pint of blood to the Red Cross at Fort Monroe.

#### Courses of Instruction on AAFCS M33

Captain Donald S. Judkins, the Group radar officer, has instituted a self study plan for officers on the M33 in order to enable them to accomplish this study on site. This self study course comprises twelve lessons. Nine of the lessons have written work sheets and three lessons practical exercises, to be accomplished as the study assignment is cov-

ered. The course serves as a basic course for those officers who have not gone to Fort Bliss and as a refresher for those who have.

A somewhat more extensive course has been conducted for all Warrant Officers and selected key NCOs, in order to qualify them to operate the AAFCS M33 and supervise the firing of a gun battery.

As a post graduate part of this training these qualified men are given the opportunity to fire a trial shot problem and one course on the firing range. This phase of the training is being accomplished by staging an additional day on the range.

The additional day at the range is also utilized to permit men of the gun crews to gain experience during firing in various alternate positions. Also men like cooks, supply people, etc., participate in the firing as cannoneers.

The Group Headquarters and the 179th Opns. Detachment are now busily preparing buildings on the Norfolk Naval Supply Center as the future Group site. We hope to move in by Christmas.

Lieut. Col. Christopher B. Cushing, Jr., former executive, has departed for Europe. Major Edward J. Sterken, Jr., is the Group S3.

Major Milto D. Kert is the new Executive of the 56th AAA Bn. Captain Frazier M. Conway has been assigned as S3 of the 56th. Captain David C. Bergeron is the new S3 of the 550th Bn., and Captain Edward M. Jordan is the new S3 of the 38th Bn.

## 56th Trains National Guard

The 56th AAA Battalion, Lt. Col. William Y. McCachern, commanding, has begun giving weekly training to the 710th AAA Battalion, Virginia National Guard, commanded by Lt. Col. George C. Wiatt. Each battery of the National Guard Battalion conducts training with its "sister" battery of the Regular Army. The full benefits of this program are expected to be realized later on when the 710th takes over the gun sites as we convert to NIKE.

We were visited recently by Brigadier General J. W. Squire, Commanding General, 107th AAA Brigade, and Colonel Shepherd Crump, Assistant Adjutant General of the Virginia National Guard.

Two of the battalions of this Group are still firing 90mm gun service practices at the Bethany Beach Range. The 550th just concluded another round of firing. This battalion, Lt. Col. Frank E. Terry commanding, turned in a battalion average score of 97.7. Average battery scores as follows: Able Battery, 1st Lt. Clifford T. Herzberger commanding, 98.3; Baker Battery, Captain John L. Murphy, Jr., commanding, 97.7; Charley Battery, 1st Lt. James P. Beck commanding, 97.4; and Dog Battery, 1st Lt. Edmond J. Wells commanding 97.3.

In April Colonel Terry's battalion achieved an average battery score of 97.9.

In May the 56th AAA Battalion under Lt. Col. Mark Selsor, Jr., achieved an average battery score of 98.1. We think that is about tops for any Group.



Virginia Guardsmen of the 710th AAA Gun Bn get some fine points from Sfc Parker, 56th AAA Bn.

## 52d AAA BRIGADE

*Brig. Gen. W. H. Hennig, Comdg.*

*By Major William N. Kenney, Jr., PIO*

The AAOC, manned by the 511th Operations Detachment, has recently been completely revamped. Major Leonard Hawk, commander, and his men have been commended by the Brigade Commander for their work. The new arrangement utilizes a large vertical plotting board constructed of lucite. Vu-graphs have been eliminated by the installation of a new communications system.

During the past two months, seven batteries, Battery "A," 98th AAA Battalion, Batteries "B" and "D," 737th AAA Battalion, Batteries "A" and "B," 69th AAA Battalion, and Batteries "B" and "C," 12th AAA Battalion, completed service practice at the Montauk Point range. Battery "D," 737th AAA Battalion, commanded by Captain Francis R. Stephenson, attained a score of 95.6, the highest score recorded at the range during the past year.

In connection with a review held at Fort Wadsworth on 4 October, General Hennig presented a Commendation Ribbon to M/Sgt. Albert E. Lewis, Operations Sergeant of the Brigade, for outstanding service in the 55th AAA Brigade in Korea.

On 19 October a review was held at Fort Wadsworth honoring Colonel Henry M. Spengler, departing 80th AAA Group Commander. Colonel Spengler has been assigned to Washington.

Colonel Douglas B. Murray has arrived from his station in the Pentagon and has assumed command of the 80th AAA Group.

For the third consecutive month, the 749th AAA Battalion, commanded by Lt. Col. George Kenna, was selected as the Best Battalion of the Month in the 52d Brigade. Because the 749th won the trophy three times in succession, it will retain the Battalion of the Month trophy permanently.

## 53d AAA BRIGADE

*Brig. Gen. Louis T. Heath, Comdg.*

*Lt. Edmund F. Flannery, PIO*

The biggest news here concerns our recent move. On 8 September, the Brigade Headquarters Battery moved from Swarthmore, Pennsylvania, to its new station at Ravenna Arsenal, Apco,

Ohio. The Arsenal is an Ordnance ammunition assembly plant turning out, among other things, 90mm rounds. After much searching, most of the married personnel have found homes, but they are widely scattered around the countryside.

The new facilities, just completed, consist of two single story buildings which provide living quarters for the enlisted personnel, day room and messing facilities, together with offices and supply room. The new living quarters are quite sharp; each man has a separate room, all floors are covered with linoleum, and the mess hall has complete new equipment including 4-man tables. Needless to say, the men are quite happy with their new home.

Concurrent with the move, reorganizational changes occurred within the Brigade. Command of the 24th AAA Group (Philadelphia) was turned over to the 35th AAA Brigade and the 2d AAA Group (Niagara-Buffalo) was picked up from the 56th AAA Brigade.

Planning for the Cleveland defense is still going forward.

Colonel Kenneth I. Curtis, former Executive, departed for the Army War College in late August. He had been with the Brigade a long time and his cheerful presence will be missed. His able replacement is Colonel John Lockett, up from Legislative Liaison in the Pentagon.

Lt. Colonel Robert S. Reilly, former CO, 74th AAA Battalion, recently joined the Brigade staff as Planning and Construction Officer for the Cleveland defense.

Major Robert G. Tippet, Jr., former CO, 513th Operations Detachment (Philadelphia), is now Radar Officer.

Captain Joseph T. Dommer, just back from the 32d AAA in England, is now Motor Officer.

## 34th AAA BRIGADE

*Brig. Gen. F. C. McConnell, Comdg.*

Colonel Julian S. Albergotti, Brigade Executive Officer, has departed for a stateside assignment at Fort Bliss, Texas. Colonel Albergotti came overseas with the 34th AAA Brigade as Executive Officer in 1951, and has served over three years in this capacity. A farewell ceremony with honor guards from the 62d and 95th AAA Battalions and the 33d Army Band was held in the vicinity of

the Mannheim Officers Club. Upon conclusion of the ceremony, a cocktail party in honor of Colonel Albergotti was held at the Mannheim Officers Club. Lt. Col. Eric A. Rundquist has assumed duties as the Brigade Executive Officer after serving as the Commanding Officer of the 91st AAA AW Battalion.

Recent changes of battalion commanders include: Lt. Col. Paul A. Harmon, assuming command of the 27th AAA AW Battalion from Lt. Col. Oliver J. Helmuth; Lt. Col. L. C. Brown is the new CO of the 7th AAA AW Battalion. Lt. Col. Matthew J. McGuire, former CO of the 7th AAA AW Battalion, has joined the brigade staff prior to departure for the ZI. Lt. Col. B. G. Brown, formerly stationed at Fort Bragg, North Carolina, has been assigned to the 8th AAA Group but is currently on temporary duty at Brigade Headquarters as the Brigade Reenlistment Officer in conjunction with the USAREUR Recruiting drive. Other new arrivals include Lt. Col. Fred D. Bendler, Jr. assigned to the 1st AAA Group and Lt. Col. Alexander A. Zaresky assigned to the 12th AAA Group.

Lt. Col. Richard W. Owen, Commanding Officer of the Brigade's Toden-dorf AA ranges on the Baltic Sea, and former Associate Editor of the *ANTI-AIRCRAFT JOURNAL*, was named Historical Officer of the Seventh U. S. Army.

Through the cooperation of the Education Adviser at the Sullivan Barracks Education Center, a class in conversational German has been started at the Brigade and nearly all officers are attending. It is believed this schooling will aid in carrying out the duties of officers and aid materially in German-American relations.

The major field training activities for the 34th AAA Brigade in 1954 were completed with the VII Corps exercise "West Wind."

From January through October, units of the brigade devoted more than one-quarter of their training time to field work. This includes tactical field exercises at each echelon from the battalion up to the Field Army, and also the trips to the AAA firing ranges. Toden-dorf, the 90mm range, as an example of the distance traveled, is situated on the edge of the Baltic Sea and the round trip mileage is close to 1,000 miles.

Some of the major maneuvers and CPX's were, "CPX Summertime," conducted by Seventh Army, exercise "Falling Leaf" conducted jointly by 12th Air Force and 34th AAA Brigade, exercise "Indian Summer," conducted by V Corps and the VII Corps exercise "West Wind."

The diversification represented by the above type exercises has insured training in all phases of antiaircraft operations in the field and all units are imbued with the fact that they can operate under any and all combat conditions and give a good account of themselves if called upon to engage in actual combat.

## 1st AAA GROUP

*Col. Walter M. Vann, Comdg.*

The Group has just completed a very active field training period through the early Spring, Summer and Fall. This headquarters gained a lot of experience in 51 days and nights of tactical field problems participating in Army, Corps, Brigade and Group exercises.

Home station defense exercises have also been conducted several times monthly when the Group and battalions were at their kasernes. They gave particularly valuable detection phase tests.

Improvement over last year has been noted in the Army Training Tests of all units, with special mention rated for the 67th AAA Gun Battalion in its firing phase and for the 302nd Operations Detachment and the Group Hq Battery in their tests.

The 45th Gun Battalion and the 27th AW Battalion have been transferred to the 12th Group.

Major W. J. Coonly, Group S1, and Major F. O. Hayward, S3, have departed for the States.

The following have joined the Group staff: Lt. Col. Winston S. Brooks, S3; Major John J. Glutch, Jr., S1; Major Roy O. Enemark, Asst S2; Captain Sidney Blum, Radar; and Major Brown Rolston, CO, 302nd AAAOD.

## 8th AAA GROUP

*Colonel Lauri J. Hillberg, Comdg.*

The Group staff now includes Lt. Col. Frank J. McCabe, Executive Officer; Major Thomas A. Dorrough, Jr., S1; Major Roy R. Carpenter, S2; Major Louis S. Francisco, S3; Major Thomas T. Rutter, S4. The Communications

Officer is Major Nelson B. Carey and the Radar Officer is Captain James R. Jess.

Units comprising the 8th AAA Group are the 509th AAA Opns. Detachment, commanded by Major John P. Bodkin; the 5th AAA AW Bn, commanded by Lt. Col. Norman E. Fisher; the 40th AAA Bn (Gun 90mm), commanded by Lt. Col. William H. Hubbard; the 63d AAA Bn (Gun 90mm), commanded by Lt. Col. Elwood G. Schwartz; and the 443d AAA Bn (AW) (SP), commanded by Lt. Col. Raymond J. Raffaelli.

The 8th AAA Group has conducted schools for Radio CW Operators for the past two and a half years to fill the requirements of the battalions. Enlisted personnel successfully completing the 11 weeks of instruction are fully qualified CW Operators, the majority qualifying as intermediate speed operators upon graduation. The problem of training radio operators is a continuous one. Just now Class Number 8 is in the 8th week of study.

The 8th AAA Group Provisional Band, organized to provide music for Group military functions, has proved itself a great morale factor during its two years of existence. Its services are frequently requested by Air Force and Naval units within the area. In addition to providing music for parades and military functions, the band provided scheduled entertainment for the patients of the Army and Air Force hospitals in the area and its excellent combo is in constant demand for dance engagements.

All battalions of the Group have successfully completed their ATT firing for the year, the 5th AAA AW Bn being the last battalion to return from the firing range.

The 40th AAA Bn fired a superior score on its ATT firing phase at Toden-dorf. This was the unit's first trip to the Baltic range with the M33 equipment. Lt. Col. Hubbard expressed the sentiments of the command, "A good start; next time, let's get shooting!"

The 63d AAA Bn is at present being changed over to the M33 system. The battalion has traveled over 2,000 miles in the past five months while participating in maneuvers and training.

The 443d AAA Bn (AW) (SP) has just returned from the Antiaircraft Range at Grafenwohr where it fired the



M42 (Duster) for the first time in its Army Training Test. Although the Battalion has not completed the change-over from the M15 halftrack to the M42, training has progressed rapidly. It fired an excellent score of 88.11 with M15, M16 and M42. The M16's of the battalion compiled a score of 94%, which is highest to date of any unit in the 34th AAA Brigade. Upon return from the firing range the battalion received its annual Command Maintenance Inspection by Seventh Army.

### 40th AAA BRIGADE

*Brig. Gen. E. F. Cardwell, Comdg.*

*By Major John R. Walker, PIO*

At our last writing the 40th AAA Brigade was celebrating the winning of the Central Command Baseball Championship. Now, we have just calmed down after the celebration climaxing the capture of the Army Forces Far East Championship. Our team swept through the tournament, unseating last year's champions, Ryukyus Command, and added another trophy to our ever growing collection.

Recently we have added two battalions, the 30th AAA AW Battalion and 76th AAA AW Battalion, transferred from Korea, to the Japan Antiaircraft defenses. The Northern Provisional Group has assumed the numerical designation of 29th AAA Group which was transferred from Korea.

Sayonara has been bid to Captains Cedric E. Towne and Lester W. Pierce, Jr.

Colonel Charles C. Hanson was welcomed at a reception in his honor as the new Brigade Deputy Commander. Major Dean R. Jeffs, upon his transfer from Korea, took over the Heavy Gunnery Department of the FEAAASS from Major Herbert J. Childress who is now Assistant Commandant of the School.

Major Frederick W. Hall, Signal Corps, is the new Signal Officer and Major Lawrence J. Howard is the Radar Officer.

The FEAAASS having been completely geared to cover instruction of the M33 Fire Control System and Sky-sweeper is turning out graduates of these courses.

The 40th AAA Brigade is sponsoring the party for artillery officers and families in this area. Approximately 300 persons have expressed their intention to attend the Far East Artillery Officers

Ball, at the Golden Dragon in Yokohama on the 19th November. Evidently it will become a popular annual event.

### Brigade Radar Award

*Captain Richard H. Surles, Comdg.*

Battery D, 753d AAA Gun Battalion, won the 40th AAA Brigade's "Best Gun Laying Radar Performance Award" for the month of August 1954. This award is given as the result of a highly competitive analysis of gun-laying radar performance between all gun batteries of the Brigade over a period of one month.

Battery A of the 753d, commanded by Captain George A. Morris, also received a 100% performance award, but lost out to D Battery because of the latter's longer range pickups.

The 753d AAA Gun Battalion, commanded by Lt. Col. John T. Browne, was part of the Northern Provisional AAA Group under Colonel William E. Johnson, Commanding. The Group, now designated the 29th AAA Group, continues to provide the AAA defenses for Northern Honshu, Japan.

### 9th AAA GROUP

The 9th AAA Group and the 53rd AAA Gun Battalion passed in review before their new commander, Lt. Col. Jack H. Brubaker, who assumed command on 1 September 1954. Major Wm. R. Dixon is the new executive officer of the 53rd AAA Gun Bn., and Major Eugene Tedick is the new Group S3. They replace Major Wm. R.

Scruggs and Major Randolph C. King who are stateside bound.

In the 327th AAA Opns. Detachment Major Paul A. Davis replaces Major Douglas W. Stanton, Jr., who is also stateside bound.

### 138th AAA GROUP

*Colonel Myron B. Tauer, Comdg.*

The Group recently acquired the 76th AAA Bn (Light) (75mm) (Mobile). The 76th, while being redeployed from Korea, got caught in the middle of two typhoons and had a rather rough trip over. Lt. Col. Ned E. Ackner is the battalion commander.

Captain Alden W. Hibbard has departed group headquarters for the ZI, and 1st Lt. Floyd Wirthlin is now in the 97th AAA Gun Bn. Capt. Paul W. Beckage, a new arrival in Group, has taken over the duties of Communications Officer and Radar Officer, temporarily replacing Capt. Hibbard and Lt. Wirthlin.

Toyoumi Firing Range has a new commander, recently promoted Major Robert D. Baker. Capt. James C. Mundy, formerly of the 64th AAA Gun Bn, is Maj. Baker's new assistant.

### BATTERY B, 37th AAA GUN BATTALION

*By Captain Wm. J. Rodgers, Comdg.*

#### A Model Communications Center

We are proud of our Communications Section. The men have made the bat-



Battery B, 37th AAA Gun Battalion

tery comm-center a smart and efficient unit. All wire lines coming into the unit terminate at an old faithful BD 72. The radio setup is a little different from the usual AA battery, because the battalion AN/TPS 1-D is located here. For an AN/TPS 1-D the SCR 543 radio is used. In addition we have three AN/GRC 9's, one for Operational Control, one for Radar Report and the other a back up spare. We have an AN/GRR-5 for Intelligence for both the Battery and the Tipsey. All radios are remoted to either the Battery CP or Tipsey.

The control panel was designed by SFC Alex Hume. There are a few innovations on this panel. The board is set away from the wall approximately three feet, to leave room in the rear for maintenance. There is a small door on the left side to allow access to the rear. When this door is opened a buzzer is sounded and a red light goes on in front of the operator on duty. This is to remind the operator that there is someone behind the panel and radio transmissions are not made at that time. As the panel took shape other gadgets appeared such as a switch to turn the commercial radio "on" or "off," a rheostat to control the volume of the PA system in the comm-center, two alarm switches (we have two sirens, one on commercial power and the other is operated from local source), power ring-er, auxiliary telephone light alarm, cigarette lighter and two clocks (Item time and Zebra time).

There is a small room directly in back of the panel, in which linemen equipment, head and chest sets, spare parts, tools, etc., are stored. In this room the glitter is the first thing that meets the eye. It appears that everything is chromed. This naturally is not true, but parts that tend to rust easily are chromed. This may sound like a wasteful expenditure, but it has been found that the maintenance problem is lessened considerably. The inevitable question asked by an inspecting officer is "Where are the tools that are used every day?" Actually he is looking at them. The chromed tools take only a wipe with a clean rag to make them look like new. We have gone so far as to chrome the springs in the battery wells in the EE 8A telephones, which guarantees no rust.

As for training of the communications personnel, they receive not only

battery training, but two hours a week in centralized training at battalion headquarters. Radio operators have one hour CW drill daily and one hour of voice drill. This is in addition to the normal communications training scheduled for all Battery personnel.

Every inspection brings favorable comments; so, can you blame me for again saying "We're proud of our Communications Section."

## AID TO INCREASED RATE OF FIRE FOR THE 90MM GUN

By 2d Lt. Burton W. Shoemaker  
37th AAA Gun Battalion

A misfire may easily reduce a unit's score during a service practice. Only by rapidly recocking and successfully firing the weapon may the gun platoon keep up its RGM (Rounds per Gun per Minute) rate.

A large per cent of the score during the actual firing phase is given to the RGM. A high RGM rate is a good indication of a well trained gun platoon.

My unit is "D" Battery of the 37th AAA Gun Bn. Our service practices are conducted on the beach at the 138th AAA Gp Firing Range at Toyoumi, which is about 40 miles northeast of Tokyo.

Before departing for the Range, we had put emphasis on rapid recocking when necessary because in the past, despite the earnest efforts of the gunners, they had lost too much precious time when a misfire did occur.

We found that the regular cocking lever arm is short and hard to depress. It is also close to the breech ring and difficult to reach. Thus the problem was resolved into two parts, to increase the leverage applied and to improve access to the lever.

Our solution was to devise a cocking lever with a long arm for easier operation and with a larger handle, offset to make it quicker to grasp and use.

The new lever requires a lot less effort to operate. By being out in the open, the handle insures quicker use.

We used  $\frac{3}{8}$ " thick scrap iron for our cocking levers. The levers were shaped from 1" wide where they fasten onto the hand cocking lever shaft to  $\frac{3}{8}$ " square for the handle. The part where the lever fastens onto the hand cocking lever shaft was fashioned exactly as the old style.

Our last service practice results proved to us that our new cocking levers helped us to obtain a high RGM score.

## 64th AAA GUN BATTALION

Major Alexander J. Napier, Comdg.

The battalion with the "We Aim High" motto is once more moving to the range. Its officers provided one of the key review acts at the September "Sayonara" party at Johnson Air Base, at which time the following departees received as "presentos" freshly hewn miniature honeybuckets: Lt. Col. and Mrs. Arthur H. Booth, former battalion commander; Capt. and Mrs. Carl E. Fleming; CWO and Mrs. Ralph Smith; and WOJG Hubert Gaskin.

Reassignments and new arrivals include: Major Alexander J. Napier, former executive officer, now battalion commander; Major Eugene D. Mason, from Korea, now the executive. The Staff consists of Major Roy C. Erwin, S3, Capt. Byron C. Ray, Asst S3, Capt. James C. Mundy III, Asst S3; Capt. James W. Bogart, S4; 1st Lt. Delta B. Berry, Comm and Radar; Chaplain Robert N. Trapnell; Capt. Claude Saleeby, Motor Officer. Battery Commanders are Headquarters Battery, Capt. James C. Neil; Battery A, Capt. John Dynia; Battery B, Capt. George J. Lahey; Battery C, 1st Lt. Fletcher A. K. Aleong; Battery D, 1st Lt. Clifford R. Matthews.

## 97th AAA GUN BATTALION (120MM)

Lt. Col. Karl W. Dittrich, Comdg.

On 8th October the Battalion celebrated its thirteenth birthday with an honor guard, a parade, a barbecue dinner and a program of competitive contests. Activities were held at the Showa Sub-Base of the Far East Air Matériel Command located at Showa-mae, Japan.

Brigadier General Eugene F. Cardwell, commanding general, 40th AAA Brigade, guest of honor, was the reviewing officer for the ceremonial parade. Major Andrew T. Soltys, Executive, and Captain John W. Fordyce, Adjutant, were in charge of the arrangements.

Awards were presented during the day to Batteries B and D for artillery proficiency and to a number of individuals for professional and athletic prowess.

## 507th AAA BATTALION

*Lt. Col. James A. Laing, Comdg.*

The 507th recently returned from the Misawa AAA Range B, where it spent the month of September in service practices with its new Skysweeper weapons. The new RCAT launching site was in operation enabling the battalion to conduct practices against maneuvering RCATs as well as the towed targets. All elements of the Battalion had a strenuous period of activity, particularly the maintenance crews.

## 29th AAA BN (AW) (SP)

*Lt. Col. Jules M. DuPare, Comdg.*

*By SFC Edward C. Tomaselli*

For the first time since its activation, the 29th AAA Bn (AW) (SP) is stationed in one camp, in a consolidated area. In the recent redeployment of the 1st Cavalry Division the 29th AAA Bn has been stationed at Camp Haugen, on Northern Honshu alongside the 7th Cavalry (Custer's Garry Owen). While quartered in quonset huts the troops are surrounded by acres of green lawns, a rare sight after the bleak dusty area they occupied in Hokkaido.

The 29th moved by LST from Hokkaido to its new station. Just two days after arrival, Division conducted a command inspection of troops at Haugen. A few days later the Battalion engaged in a practice alert. The next day after that Btry D was off on the Battalion's first field problem in this area, an RSOP in the Misawa area.

M/Sgt. Thomas H. Male, Bn Sgt. Major, and SFC Daniel Adrian, Bn Personnel Sgt. were awarded the Army Commendation Ribbon at a Battalion retreat parade on the 17th day of September 1954.

## 97th AAA GROUP

*Colonel William F. Spurgin, Comdg.*

The Group will soon be saying "Sayonara" to the 85th AAA Gun Battalion. This battalion will be inactivated on 13 November, 1954.

The Group continues its Air Defense Mission round the clock. Successful service practices were conducted at Bolo Point by all units of the Group during the second half of 1954. The 85th AAA Gun Bn was on the range in July; the 22nd AAA Bn (AW) in August; and the 65th AAA Gun Bn in October and November. Each battalion normally completes three service practices each year.

Presently on the Group Staff are Lt. Col. David Y. Nanney, Executive Officer; Captain Norman L. Glozer, S1; Major Forrest A. Thoms, S2; Major Emil M. Ulanowicz, S3; Major Frederick A. Lingner, S4.

Battalion Commanders are Lt. Col. William H. Bornscheuer, 22nd AAA Bn (AW) (SMB); Major Temple C. Smith, 65th AAA Gun Bn; Major William F. Wangerien, 85th AAA Gun Bn. Captain John E. Singleton is CO of the 507th Opns. Detachment.

1st Lt. Alfred Gore, Jr. is now CO of the 37th RCAT Detachment vice Captain Jerome L. DeVore who is now Assistant S3 in the 65th.

## 55th AAA BRIGADE

*Col. John T. Snodgrass, Comdg.*

Col. John T. Snodgrass assumed command of the 55th AAA Brigade in August, 1954; after a tour of duty as Chief of Operations with the U.N. Military Armistice Commission at Panmunjom.

At the present time the training em-

phasis in units assigned to the 55th Brigade is on the conduct of Army Training Tests. Since the Brigade must maintain a constant readiness to perform its primary mission, and since the ranges, maneuver areas and tactical positions are widely separated, it is not possible to conduct the required phases simultaneously. Also in order to maintain the defenses at a high percentage of operational readiness it was decided to conduct the Detection phase at the tactical positions. This added to the realism and gave the units an idea of the actual effectiveness of the fire control equipment as presently sited.

The Firing phase was conducted by all units as a part of the second annual service practice. Then came the tactical phase which consisted of a ninety-six hour field exercise under the direction of a maneuver director appointed by this headquarters from units within the Brigade. The director was responsible for preparing the tactical exercise for the units.

Each Battalion during the tactical phase was required to establish the AAA Defense of simulated vulnerable areas.

Emphasis is placed on insuring that every battery obtains a 100% accurate PPC, daily, on a flying aircraft. Unexpected spot checks to verify this are constantly being made by officers from the battalion, group and brigade levels. Further, each battery always fires settling rounds immediately upon returning to position from the range or field problems and every battery fires a TSP weekly and a monthly calibration from its battle site. These requirements have really paid off in confidence. As a consequence, when a battery goes to the range, preparation for service practice firing is almost routine, the practice only an incident and the results are truly remarkable.

Col. Robert W. Harnett, Lt. Col. Andrew M. Lundberg, Major Ernest K. Gillespie, and Major Edgar A. Kneese have departed for assignment with the 40th AAA Brigade in Japan. Lt. Col. Francis J. Pallister recently in command of the 398th AAA Bn has been assigned to G2 Section Hq. Eighth United States Army.

During September the following officers arrived and were assigned to the units shown. Lt. Col. Claude D. George to the 68th AAA Bn; Lt. Col. Alfred T.



Men of the 29th AAA Bn (AW) (SP) at a mounted review at their new station, Camp Haugen, Japan.



Floyd to the 933rd AAA Bn; Lt. Col. Henry N. Clanton to the 398th AAA Bn; Major Claude C. Clark to the PIO and TIE Office for the Brigade; Major John M. Hinman to the 50th AAA Bn; Major John H. Matthews to the 398th AAA Bn; Major Robert T. Coneybeer to the 739th AAA Bn; and Lt. Col. George B. McCauley and Major Robert J. Bareckman to the 24th AAA Bn.

Lt. Col. Gerhard E. Brown, Brigade Executive, has returned to the States.

Brigadier General Eugene F. Cardwell, AA Officer for AFFE, visited the Brigade in September. On the 21st, General Cardwell, together with Colonel Snodgrass and the Inspection party visited the 7th AAA Group, the 865th AAA Bn, the 68th AAA Gun Bn, and the 515th AAA and the 525th AAA Bn, ROKA. The 933rd AAA Bn and the Inchon Range were visited on the 22nd. A tour of Seoul followed.

On the 23rd, the General and his party visited the units of the 10th AAA Group, including the 78th AAA Gun Bn, the 739th AAA Gun Bn, the 398th AAA Bn, and the 50th AAA Bn.

A dismounted Group Review Ceremony, marking the completion of their unit training, was held in honor of the 515th and the 525th ROKA AAA Battalions (SP), 14 October, 54 at Seoul City Stadium. In addition to the two ROKA units, the 68th AAA Gun Bn (90mm), the 865th AAA Battalion (AW) (SP), and the Eighth United States Army Band also participated in the parade under the command of Lt. Col. Raymond C. Ball, 7th AAA Group Commander. The 865th was the sponsoring battalion for the activation and training of the two new ROKA Battalions.

The reviewing party included Brig. Gen. Dwight E. Beach, 8th Army Artillery officer; Maj. Gen. Lim Poo Taek, ROKA; Col. Snodgrass, Brigade Commander, and other distinguished officers.

## 26th AAA GROUP

Col. N. A. Skinrood, Comdg.

By Capt. Oliver A. Michels, Adjt.

Major General Walter E. Todd, Western ADF Commander, and Major General Hobart Hewett, Western AAA Commander, have just completed an inspection of the Group in the air defenses of Seattle.

They inspected the 20th AAA Bat-



L to R: Major T. A. Payne, Col. Norman Skinrood, Col. Arthur Roth, Brig. Gen. Romulus Puryear, 25th Air Division, Maj. Gen. Hobart Hewett, and Maj. Gen. Walter E. Todd inspect guided missile station.

talion, commanded by Lt. Col. Robert E. Butts, and the 513th AAA Battalion, commanded by Major Guysbeit B. Vroom, Jr., finding the gun site positions a credit to the troops.

The party also visited Nike guided missile stations in temporary positions ready for operation and also permanent stations under construction.

Washington National Guard units supplementing the Group defense already man positions on a "reduced basis," but ready for action in a short time.

Lt. Col. Charles F. Ottinger is the Group Executive. Other key staff members include Major Robt. I. Knight, S2; Major Thomas A. Payne, S3; Captain Francis I. Johnston, S4; Captain A. G. Brewington, Radar O; Major John Sweryda, CO 512th Opn. Det.

## 76th AAA BN (LT) (75MM) (MBL)

Lt. Col. Ned E. Ackner, Comdg.

The Battalion was reorganized to man the Skysweeper in September and moved from Korea to Japan. All equipment not needed under our new T/O&E was turned in; the remainder was loaded and secured on trucks which the battalion would retain. On 3 September 1954 the advanced party of five officers and twenty-five EM left by air for Camp Drake. On 8 September four officers and 180 EM left by motor convoy with the battalion equipment for Inchon, where they boarded an LST for Yokohama. The LST was forced to seek

shelter at Masan, Korea, and Kobe, Japan, to avoid two different typhoons, June and Lorna. What was planned as a five day trip actually took fourteen days; the LST arrived at Yokohama on 21 September.

The main body of the battalion left Inchon 11 September aboard the troopship *General Walker*. On 13 September an unexpected change in the predicted course of Typhoon June caused the *Walker* to be caught in the full force of the typhoon for twenty hours off the southern tip of Japan. Waves over sixty feet high were encountered; wind velocity approached 100 mph. At one time the roll of the ship was as much as 43 degrees. Almost all the troops aboard were sick during the typhoon, the worst the ship's captain had seen in nearly forty years of sailing.

The battalion debarked at Kobe on 15 September and left the next day for Tokyo by troop sleeper, arriving at Camp Drake on 17 September. The primary mission of the battalion is training while at Camp Drake. On 9 October the battalion underwent a command inspection by 40th AAA Brigade, Brigadier General Cardwell, Commanding.

Major Edward F. de Leon is now executive officer, and Major Donald R. Queen is S3. Captain Duncan S. Boughner is Electronics Officer, CWO Elmer H. Losch S1, 1st Lieutenant Ashley C. Speir, Jr. S2, Captain William W. Ford, S4, 1st Lieutenant Gene C. Dishman, Motor Officer, and 2nd Lieutenant Theodore Miles, Communications Of-

ficer. Battery Commanders are: Captain James B. Gregory, Headquarters; Captain Basilio S. Salinas, Able; 1st Lieutenant Francis D. Crain, Baker; and 1st Lieutenant Donald H. Smith, Jr., Charlie.

### 15th AAA AW BN (SP)

Lt. Col. Jack C. Evans, Jr., Comdg.  
By Capt. Michael G. Collins

Recently the 15th AAA AW Bn (SP), organic to the 7th Infantry Division in Korea, has undergone an intensive training program in preparation for ATT44-3.

To prepare for the AAA Firing Phase of the test with so many new men, Lt. Col. Evans devised a plan to use a second M18 sight, mounted adjacent to the primary sight on the M16 sight bar, as a means of checking each gunner's ability to use "image spin" in tracking aerial targets.

To mount this sight an additional bracket is placed on the sight bar 1/2" to the left of the primary sight bracket with the machined clamp up. The auxiliary sight is then rotated upward and to the rear before being inserted into the bracket. Normal procedures are then employed to orient the primary sight and to boresight the guns. Following orientation, the hub of the primary sight is placed upon the orienting point and the auxiliary sight is then oriented on the same point by use of the orienting cam screws and locking bolts until the auxiliary sight is oriented with both the primary sight and the guns.

The gunner is then instructed to track

the aerial target employing "image spin" to gain proper line, correct lead. The instructor is enabled to check each gunner and verify that he is employing the proper techniques by means of the auxiliary sight.

This system provided a rapid and effective means of training the gunners, and the improvement was reflected in the AAA Firing conducted at Inchon in September.

### 80th AAA BN, 40MM, ABN

Lt. Col. Gerald W. Davis, Comdg.

The 80th AAA Battalion 40mm Airborne (organic to the 82nd Airborne Division at Fort Bragg, North Carolina) has completed its reorganization under a new tentative TO&E. A fourth firing battery was constituted. Each battery has three platoons and the battalion mans a total of 24 M42s and 48 M55s. We move by motor to Camp Stewart, Georgia to take the Army Training Test in January.

In October, 288 men of the Battalion made a test jump from C-124 Globemasters. A ten plane night jump is scheduled for late November.

Small arms qualification was completed in October with 88% qualifying on the M1 rifle.

In November, a hand picked platoon will represent the Battalion in a demonstration jump, including heavy drop, at Fort Bliss, Texas.

Key officers include: Maj. Bob G. Olsen, Executive; Maj. Joseph Gates, S3; 1st Lt. Charles C. Sperow, S1; Capt. Lewis C. Huckaby, S2; Capt. Earl Smith, S4; Capt. Henry C. Norcom, LNO; Capt. Marion P. Chaplesky, Asst. S3; 1st Lt. Harry E. Montroy, Hq Btry; Capt. Jesse J. Branch, Btry A; 1st Lt. Blethen Cobb, Btry B; 1st Lt. Charles Drake, Btry C; Capt. Charles R. Bushong, Btry D.

### 549th AAA BATTALION

Lt. Col. Earle Mountain, Comdg.

The 549th AAA Battalion, a member of the Northeast Air Command and the world's northernmost AAA unit, has just completed a rigorous training program in the short summer season at Thule, Greenland. During the period of 24 hours daylight all members of the command took part in two service practices, an Army training test and an IG inspection. A lot of the men also helped

to unload the cargo ships which arrived at Thule during the abbreviated summer shipping season.

Another activity after the Arctic winter was the rebuilding of all revetments. This gave the unit fortifications that are among the finest to be found in AAA units.

The 428th and 429th AAA Batteries, assigned units, participated in all of the battalion's activities and had the opportunity to fire at aerial targets and to practice their field artillery capabilities.

Some of the officers now serving with the 549th are Major Edward L. Smith, executive officer; WOJG Joseph E. Pelland, S1; Captain Lorenzo F. Luckie, S2; Major Henry R. Cooper, S3; Major Thomas A. Worrell, S4; 1st Lt. Lee C. Snidow, Hq Btry; Captain Henry C. Watts, A Btry; Captain Francis J. Gramlich, B Btry; Captain Mehl M. Logan, C Btry; Captain William R. Wright, D Btry; Captain Michael B. Kaminski, 428th AAA Btry; Captain John Popovics, 429th AAA Btry; Lt. Col. James E. Gentle, 177th Operation Det.

### THE 4th AAA GROUP IN ALASKA

Col. E. B. Hempstead, Comdg.

"It is not the guns or armament  
or the money they can pay.  
It's the close cooperation,  
That makes them win the day,  
It is not the individual  
Or the army as a whole,  
But the everlasting teamwork  
Of every blooming soul."

J. MASON KNOX, *New York Times*

The 4th AAA Group has now completed three long and hard but successful years in strategic location on the "Top of the world" since its activation September 1, 1951, at Ladd Air Force Base, Fairbanks, Alaska.

The primary mission is to provide AAA protection for the Ladd and Eielson Air Force Base area. The 11th Air Division, based here, is responsible for the protection of the Continental United States from land, sea or air attack by the Arctic route.

During the past three years through excellent leadership, cooperation, and intensive training, the 4th AAA Group, now commanded by Col. E. B. Hempstead, has made genuine progress.

Col. Hempstead has recently arrived from McChord Air Force Base, Wash-



Captain Collins shows the use of an auxiliary sight in the 15th AW Bn.

ington, where he commanded the 31st AAA Brigade.

Lt. Col. McLauchlin is the Executive. Other staff officers include Majors John E. Clark S1, Nicholas J. Bruno S2, David J. Moore S3 and Luther E. Ford S4.

The first battalion to arrive in the northland was the 502d AAA Battalion (120mm) now commanded by Lt. Col. Daniel F. Gorman. It was reactivated at Fort Bliss, Texas on November 18, 1948, where it underwent specialized training and finally arrived at Eielson AFB, 17 April 1950.

The next battalion to arrive was the 450th AAA Bn, which was recently reorganized as 75mm Skysweeper unit. Battery A arrived at Whittier in September, 1950, but the other units did not arrive at Eielson AFB till the summer of 1951. Lt. Col. Geo. W. Shivers is the present commander. Under his able direction all batteries have been busy in mastering the art of operating and maintaining the Skysweeper. The batteries are already engaged in their first target practices.

The 93d AAA Battalion, reactivated in California in May, 1952, was composed of elements of the 746th AAA Bn, California National Guard, which was returned to state control. It arrived at Ladd AFB 1 August 1952. Lt. Col. Bob B. A. Haenel is the present commander; Major Hugh M. Wendle, Executive; Major Theodore W. Peterson, S3.

### Communication Troubles

During their first winter in Alaska the Communications section of Headquarters Battery, 4th AAA Group, learned that open-bed trucks introduced a problem in transporting personnel for the maintenance of approximately 250 miles of wire in and around Ladd Air Force Base. Some of the Arctic temperature problems are:

- a. Keeping personnel warm enough to work.
- b. Difficulty in making a splice with heavy Arctic mittens.
- c. The plastic coating on wire (WD-1TT) becoming brittle and difficult to manage.

The Communications section is supplied with personnel carriers which are the standard 2½ ton truck modified with an issued kit which is a heavy insulated

cover and accessories over the body and a gasoline type personnel heater fastened to the bed of the truck. This personnel carrier is used to transport wire crews and equipment when servicing the lines. When arriving at the trouble site the wire is brought into the personnel carrier so that the necessary splicing can be performed under more ideal conditions. It has been necessary to leave sufficient slack when laying this wire so that it may be removed from its hangars.

### Arctic Accomplishments

The following report of one battalion is typical of all.

It was under rugged circumstances four years ago that the 502d AAA Battalion undertook the task of conquering the elements, the mosquitos in the summer and the frozen waste in the winter, to build the foundations of an AAA defense for Eielson Field.

Out in the areas where batteries were to be emplaced and the quarters for the men were to be set up, tons of dirt, rock, and shale had to be filled in to depths of 4 feet and greater. Hundreds of yards of shale and rock were blasted out of nearby hills and mountains and hauled to the positions by trucks over roads that had to be built before anything heavier than a dog team could have access to them. Slowly but surely, out in a vast expanse of permafrost, muskeg and tricky tundra, foundations were built, positions began to take shape, buildings were placed, lines of communication were set up. It was a slow process, to be sure. Months of toil went into the construction of the sites, with the battalion undertaking the major part of the building.

But man never defeats nature without a struggle. And ever since that first load of earth was dumped, inaugurating the establishment of the 502d as a local institution, nature in the form of freezing water supplies, iced communication wires, and shifting foundations has been out to claim its own. Construction, then, is to the 502d a continual process of repair and improvement, which is just as important to the combat effectiveness of the organization as the proper functioning of one of its 120mm guns.

Much time is spent in perfecting the revetments surrounding the guns. During the past summer, for instance, every

120mm gun revetment was taken down, leveled with the ground, and an entirely new, more functional emplacement built. Made of earth-filled fifty-five gallon metal drums with tons of earth re-enforcement forming an embankment, the revetments are further strengthened by hundreds of sandbags that do honor to the men that made them. So many sandbags have been made by the personnel of the battalion that the men have perfected the task to such an extent that one wonders, when viewing their work, if the revetment is not made out of concrete blocks instead of sandbags.

The construction of the new gun revetments was begun while Lt. Col. Paul Maline was commanding officer of the 502d, and completed under the command of Lt. Col. Daniel F. Gorman, who assumed command of the battalion in June, 1954.

Besides rebuilding the gun pits, it was also necessary to reconstruct the warm-up rooms, which are a necessary part of any gun emplacement in the Arctic. New concrete brick warm-up shelters were built into each gun revetment. Already, as the early winter sets in, they have proved themselves far superior to the old type of wood and earth.

Another improvement which the battalion has accomplished this past summer is the construction of new power plants at each of the batteries. Wood constructed, strengthened by gravel-filled salvage 55 gallon oil drums and back-filled with earth, the revetments, which house the generators for the tactical equipment of the battery, provide permanent blast protection as well as adequate frost barriers. In the new generator revetments a central fueling system has been set up for the generators, using obsolete three hundred gallon wing tanks as the central source.

Taking advantage of the 24 hour days which are common during the summer in "The Land of the Midnight Sun," the 502d was able to carry on an extensive improvement program which included not only the work in the gun parks of the battalion, but also the housing areas, the mess halls, and day rooms. The quonsets, which are used exclusively at the sites, were painted white, trimmed in green; day rooms were re-decorated, and oil paintings done by amateur artists in the battalion were



framed and hung to present a more homelike atmosphere.

In the areas of Btry A and Btry C, central fuel systems were installed in the housing areas, by using obsolete three hundred gallon wing tanks piped in series. Before this improvement was made, each quonset's oil supply came from two fifty-five gallon oil barrels, which during winter had to be refilled every other day.

Realizing that a program of improvement of position must always be supplemented by individual improvement of military skills, detailed attention was given to the fitness and skill of each man through extensive training activities. Special courses in such subjects as Arctic indoctrination, preliminary rifle instruction, space heater instruction, surface gunnery, and CBR, were conducted by battalion committees composed of qualified instructors. In the case of the CBR classes, a portable gas chamber was used, thus allowing the committee to give instruction at each of the battery gun sites.

Classes in Arctic indoctrination gave attention to the protection of the individual soldier, briefing the men on how to wear the latest and best in Arctic clothing. Learning the symptoms and treatment of frostbite is another part of necessary Arctic indoctrination, in an area where the temperature falls lower than at the North Pole itself.

Special attention is also given to the important subject of fire prevention. Major Lee R. Sumpter, Jr., Battalion Executive, is also the Fire Marshal.

Small arms qualification and familiarization firing are conducted twice during the warm months with much interest.

But the major achievement of any training program in the Arctic is the service practices which are held tri-annually. Moving to nearby Dike AAA Gunnery Range operated by the 4th AAA Group, the batteries of the 502d completed three service practices, where the 120mm Guns, as well as each battery's M55 machine guns fired for practice and record at towed targets. On site firing was conducted at each of the batteries when the units had returned to their permanent positions upon completion of the service practices.

With the summer months in the Arctic at an end and winter well on

its way, improvement of position will be hampered to the extent that hardly any outdoor work will be carried on, but winter will see an energetic expansion of the battalion's training program.

Working long hours throughout the long days of the summer, the men and officers of the 502d AAA Battalion have met squarely and overcome the challenge of the Arctic.

## **65th AAA GROUP**

*Col. H. S. Tubbs, Comdg.*

*By Maj. R. F. Taylor, PIO*

With the notification of the arrival of "Skysweepers" for the AA defense of the Panama Canal, the Group S3 section consisting of Major Victor DeStephanis, and Captain Bruce W. Mosley, plus Major Frank Riordon, S3 903d, and Major David Dickenson, S3 764th, started the reconnaissance for positions in the surrounding jungle. The positions now occupied by the present weapons of the battalions were not suitable for the tactical deployment of the "Sweepers." Covering many miles, up and down hills and into World War II positions, the recon party encountered the jungle in full rainy season growth. Some hard top roads could only be located after extensive "bolo" work. Finally the positions have been selected and the job of clearing and the construction of buildings and roads has been turned over to the engineers.

A "Skysweeper" school is being run for both the 903d AAA Bn., commanded by Lt. Col. V. Blekaitis and the 764th AAA Bn., commanded by Lt. Col. R. Speltz. Instructors at the school are: Lt. William T. Cathell and Lt. Joseph Wisnack. The first class, consisting of 29 students, was graduated 4 November, 1954.

The students of the school fired a demonstration attended by the Commanding General of USARCARIB, Maj. Gen. L. C. McGarr, and members of his staff, other officers of the AAA Group, and officers from Brazil and Bolivia attending the Latin American School, Fort Gulick, C. Z. The shoot was a huge success and all personnel viewing the demonstration or participating were enthused over the accuracy of the weapons.

On 26 October, 1954, the Disaster Council in the Canal Zone staged "Jackpot III," a disaster exercise which en-

compassed all of the Canal Zone. All Army, Navy, Air Force, Marines, dependents of same, and civilian workers participated. The exercise lasted approximately five hours with the 65th AAA Group carrying on their AA mission as well as operating as a Post Staff and a Disaster Zone Staff. The Zone staff operating during the disaster had the following artillerymen: Zone commander, Col. H. S. Tubbs; Executive, Lt. Col. G. M. McKelvy; Asst. Executive, Major A. Shelley; Adjutant, Maj. V. A. Gray; Maj. R. F. Taylor, S2; Maj. V. DeStephanis, S3; Disaster Control Officer, Capt. Wm. F. Millard; and Maj. Geo. B. Powell, S4.

## **68th AAA GROUP**

*Col. Geo. F. Pierce, Comdg.*

Major Dayle R. Lantz, Group Comm O, and Captain Walter Reynolds recently arrived from the States. Major Ralph V. Naples, S1, also recently arrived.

The 96th AAA Battalion (120mm Gun) is presently undergoing its record service practices and annual Armt Training Tests, firing both on RCATs and towed sleeves. Hq Battery presently holds the Fort Richardson Best Mess Award. Chaplain C. W. Gjedde has returned to the States. Captain Donald C. Fox, Asst. S3, and Lieutenants R. D. Huxley, D. D. Bond, R. L. Grossman, have recently joined.

The 867th AAA Battalion has recently established a school to train Skysweeper fire control specialists. The first graduates are already getting a good test during the battalion service practices and training tests. Major W. A. Sineath, recently promoted, has been transferred to the G3 Section, 71st Infantry Division. 2nd Lieutenants A. J. Diesu, H. M. Jones, F. F. Butkiewics, and G. E. Jones have recently joined.

## **104th AAA BRIGADE, MASS NG**

*Brig. Gen. Vincent P. Coyne, Comdg.*  
*By Major Philip R. McTiernan, PIO*

The 104th AAA Brigade is forging steadily ahead in the establishment of the AAA "On-Site" program in the Metropolitan Boston area. Scheduled for occupation in early 1955 are three of the sites now occupied by units of the Regular Army 15th AAA Group. It is contemplated that these first three sites will be taken over by the 704th



At the close of summer camp Col. H. M. Spengler presents to Col. John S. Mayer, the officers and men of the 305th AAA Group USAR, a certificate of honorary membership in the 80th AAA Group, Fort Wadsworth, N. Y.

AAA Bn (Gun 90mm), Mass NG. As sites are to be occupied in the future, the 772nd AAA Bn (Gun 90mm), Mass NG, stands ready.

In preparation for this important mission, all units of the 104th AAA Brigade have been putting in long hours of training. Firing batteries have not only trained at their home armories, but have spent many week ends training with Regular Army AAA batteries in the Boston area, in this way becoming fully familiar with the sites and equipment which they will soon occupy on a permanent basis. In addition, the 211th AAA Group, Mass NG, has set up at Camp Curtis Guild, Wakefield, Mass., the State small-arms firing range, a complete two-gun firing battery. The firing units of the 211th AAA Group have spent many week ends training on this equipment. The 102nd Fighter-Interceptor Wing, Mass ANG, has been most cooperative in providing tracking missions on these week ends so that full utilization of the fire control equipment may be obtained.

Since the "On-Site" mission calls for sixteen trained personnel to man the AAA site on a 24-hour basis, the training of technicians has also gone rapidly forward. Eleven officers have completed the AAFCS course at Fort Bliss and there are three officers not at Fort Bliss attending the AAFCS course. One officer, who has completed the AAFCS course, is now attending an advanced electronics course at Fort Monmouth. Two other officers, who have completed

the AAFCS course, are back at Fort Bliss taking advanced electronics courses. By the time that the first sites are ready for occupation, the Brigade will have forty highly trained radar technicians ready to step into position and function effectively.

Meanwhile, the Brigade and Group Headquarters have been bending their efforts toward qualifying for their respective "M-Day" assignments. A most important phase of this training was accomplished during the past two field training periods. Hq/Hq Btry 104th AAA Brigade, in 1953, trained hand-in-glove with the 52nd AAA Brigade at Fort Wadsworth, Staten Island, New York. In 1954, the Brigade trained with the 56th AAA Brigade at Fort Totten, Long Island, New York. During both field training periods, the S3's of the National Guard and Regular Army Brigades produced a coordinated training program designed to fully acquaint all National Guard personnel, both officer and enlisted, with the duties they will be expected to perform when activated. The bulk of the training during these past two periods was accomplished by "buddying-up" the National Guard personnel with their opposite number in the Regular Army.

In a similar vein, Hq/Hq Btry 211th AAA Group in 1953, and Hq/Hq Btry 220th AAA Group in 1954, accomplished the same "buddy-up" procedure with the 15th AAA Group at Fort Banks, Winthrop, Massachusetts.

Group Headquarters and Hq Battery have now attained full enlisted strength with a total of 15 officers and 63 EM. Two men are on a waiting list. The success of the recruiting campaign is credited to 1st Sgt. Oswald Gasser and 2nd Lieut. Emmett L. Allen.

### SUBSCRIPTION NOTICE

This is the last issue of the *ANTI-AIRCRAFT JOURNAL*. The January issue of the *Army Combat Forces Journal* will be mailed in December to all of our subscribers and thereafter monthly for the full period of the unexpired subscription.

Our Association members also become members of the Association of the U. S. Army.

Our readers may now enter, renew, or extend their subscription at our \$3.00 per year rate. This privilege is extended in the States until January 10, 1955; for APO addresses, until February 1, 1955. Please send your check or Money Order with the subscription to the *ANTI-AIRCRAFT JOURNAL*, 1529 18th Street, NW, Washington 6, D. C.

Mail address changes and other communications to the *Army Combat Forces Journal*, 1529 18th Street, NW, Washington 6, D. C.



The RHINO amphibious vehicle shown here climbing upgrade in loose sand, traverses mud flats, marshes, rough terrain and also cruises in water, according to C. Alfred Campbell, Vice-President of Marmon-Herrington, builders of the RHINO. It has a huge pair of hemispherical hollow spun aluminum wheels in front, plus a smaller pair in the rear. For highway operation, only a narrow rubber tread touches the road. This five-ton prototype is powered by a 110-horsepower Ford engine.

# Fort Bliss News



From the left: Generals Dahlquist, Mickelsen, Rutledge, Meyer and Hendrix.

## Dedication Ceremonies for Hinman Hall

Dedication ceremonies were held on November 23rd to name the new AA & GM Branch School building in honor of the late Brigadier General Dale Durkee Hinman.

General Hinman was an early advocate and leader of antiaircraft artillery and during World War II the well known AAA commander in the Los Angeles defenses and later at this station.

General John E. Dahlquist, commander of the Army Continental Command, delivered the dedication address. Lieut. General S. R. Mickelsen, Army Anti-aircraft Commander, and Major Gen. Ralph Meyer, Retired, another former Bliss commander, were among the distinguished guests.

Major General Paul W. Rutledge, Commanding General of the Antiaircraft Artillery and Guided Missile Center, entertained the distinguished guests at dinner at the Officers Club on the evening of November the 23rd.

A full day of activities were scheduled to mark the dedication.

Brigadier General Raleigh R. Hendrix, Assistant Commandant of the School was chairman of the committees in charge of the arrangements. Other chairmen included: invitations, Col. Wm. H. Bach; ceremony, Lt. Col. Robt. J. Tolly; entertainment, Lt. Col. Clif-

ford L. Miller, II; decorations, Lt. Col. Chas. E. Henry; airborne, Lt. Col. E. F. Boomer; firings, Lt. Col. Nelson J. Burge.

## Air Demonstration by 80th AAA Abn Bn.

A special Airborne drop was conducted at the Dona Ana Dry Lake bed. The drop was staged by the 80th AAA Airborne Bn., a unit of the 82nd Abn. Division, stationed at Fort Bragg, N. C.

A total of 55 enlisted men and five officers participated in the drop. Different colored parachutes were used for the heavy equipment drop, which included 40mm AA Guns, 50 caliber machine gun mounts, jeeps,  $\frac{3}{4}$  ton trucks and other weapons.

In the afternoon antiaircraft firings with the 40, 90, and 120 millimeter AA guns as well as with the caliber .50 AAA machine guns were scheduled on the Hueco Firing ranges. Guided Missile displays were also included.

A dinner sponsored by the El Paso Chamber of Commerce climaxed the day's program.

Recent distinguished visitors at Fort Bliss have included the Honorable Charles E. Wilson, Secretary of Defense; the Honorable Robert T. Stevens, Secretary of the Army; Major General George E. Back, Chief Signal Officer; Lt. General Augustin Munoz Grandes,

Minister of the Army of Spain; and Assistant Secretary of the Army, the Honorable Hugh M. Milton.

## Fort Bliss Replica Declared A Museum

The Replica of Old Fort Bliss has been officially declared an Army museum. The Replica, one of the landmarks at the AA and GM Center, has housed an Army equipment display for several years.

The little thick-walled adobe fort, a faithful reproduction of the Fort Bliss of a century ago, was presented to the Army by citizens of the City and County of El Paso, during the post's 100th Anniversary Celebration in 1948. It has been modernized sufficiently to allow for housing of an exhibit of anti-aircraft weapons, guided missiles, and related equipment.

A mecca for tourists, school children, and soldiers' relatives visiting the post, as well as for the troops themselves, it attracts thousands of sightseers each year.

The chapel wing of the Replica is being turned into a bona fide chapel, with specially-designed pews and altar and a 6-foot wrought-iron screen dividing the worship area from the entrance area in the chapel. Standards of a dozen of the most famous military units that have served at Fort Bliss will be displayed in this entrance area.

The south wing of the Replica, which is built on three sides of a square, will house exhibits pertaining to the first 100 years of Fort Bliss history. The east wing will contain displays showing the evolution of antiaircraft weapons from their early forms in World War I and World War II periods to the conventional AA weapons of today. North wing of the Replica is to shelter exhibits of guided missiles and other displays of the atomic age.

Adding to the picturesque appearance of the Replica, grounds around the little fort have been landscaped with native Southwestern desert plants, including the century plant, yucca, and ocotillo and other types of cactus.

## AA and GM Center

Brig. Gen. Earl W. Heathcote, Deputy Commanding General of the AA and GM Center who had also been serving as Center Chief of Staff, was relieved of



the latter duties by Col. Roy A. Alford. Col. Alford was G4 before being made Chief of Staff.

Colonel Earl M. Corothers, formerly Chief of Staff, U.S. troops in Trieste, has arrived to take over his duties as G4.

Asst. G4 is Lt. Col. Earl N. Forsyth, just returned from the Far East.

Colonel Arthur B. Powers is the new Center G1. He succeeds Lt. Col. F. L. Martz, reassigned to overseas duty.

Colonel Roy K. Kauffman, G3 since 1952, has been reassigned to command the 2nd Antiaircraft Artillery Group at Fort Niagara, New York. Succeeding him as Fort Bliss G3 is Lt. Col. Thomas H. Barfield.

Lt. Colonel Charles J. Brandt, PIO since 1952, has been appointed deputy chief of staff. He is succeeded by Major Patrick L. Klein, who has been serving with Hqrs RTC.

Major Henry M. Buchan, Fort Bliss I & E Officer, has transferred to the AAA RTC. Taking his place as I & E Officer is Capt. Leo F. Shikoski.

### **AA and GM Branch, TAS**

Colonel Arthur Kramer, Director of the Electronics Department, has been assigned to command the 45th AAA Brigade, Fort Sheridan, Ill.

Colonels Julian S. Albergotti and Ralph H. Pryor have been assigned to duty with the School and are expected soon.

Colonel Joy T. Wrean, Director of the Department of Gunnery and Matériel, has been reassigned to duty in Izmir, Turkey.

Other losses included: Lt. Col. Charlie E. Meadows, Department Assistant Director, to CO, School's Officer Student Detachment; Lt. Col. David B. McFadden, to Army Field Forces Board No. 4; and Major Antonio J. Bolduc, to the Far East.

New arrivals in the Department were Lt. Col. John T. H. Spengler, Acting Director, and Major Charles W. Hope.

In the Department of Electronics, Major James H. Lloyd, new arrival, was assigned to Basic Electronics Section. Three officers were recently promoted: Major Earl W. Jones, Major Hugh Q. McGinty, and Major Jack W. Warner.

Lt. Col. Arland E. Bigelow joined and was assigned as Chief, Publications and Training Aids; Lt. Col. Kyle F.

Davis, from Headquarters AFFE, assigned to the School as S1; Major William V. Smith from Taegu, Korea, is now Field Printing Plant Officer for the School; and Major Arthur F. Tait, from 2nd Division, Korea, is now CO, the Enlisted Student Detachment in the School.

Newly-assigned officers for the Coordinator of Instruction in the School include: Lt. Col. James C. Parker, Maj. William Y. Pennington, and Maj. Holly W. Dinkins.

Lt. Col. Arland E. Bigelow has joined the Coordinator of Administration Department. Maj. S. G. Richard transferred from Training Aids to William Beaumont Army Hospital.

In the Guided Missiles Department of the School, a new arrival was Maj. Leo M. Blanchett, Jr.

In the Tactics and Combined Arms Department, Maj. Walter O. Wade was transferred to Camp Kilmer, N. J.

### **1st GM Brigade**

Major James L. Brashear and Major Claude F. Curtis joined the Brigade Headquarters.

Major James H. Batchelder transferred from 495th FA Battalion to Headquarters of 1st GM Group.

Major Patrick G. Wardell joined the 495th AAA Battalion as Executive.

Major William A. Youngberg, is the executive officer of 3rd Battalion, Major Kenneth V. Deans, Group Assistant S3, and Lt. Col. Edwin H. Druley, Group executive officer in the 2nd GM Group.

Lt. Col. William W. Hill, Jr., is CO, 246th Field Artillery Missile Battalion.

Major Edward L. Kisten and Major Robert W. Snyder have joined the 5th Ordnance Battalion.

Col. Thomas J. Badger, CO, 46th FA Group, Major Carl D. Patterson, Jr., Major Witt Barker, and Lt. Col. W. B. Foster, have been assigned to 46th FA Group but not yet on duty.

Major Milo Igersheimer has been transferred to Headquarters Army AA Command, Ent AFB, Colorado. Major Richard L. Patirck has been relieved from active duty.

### **AAA RTC**

The following officers have been ordered to school on temporary duty: Lt. Col. Valentine T. Terribile, to The Artillery School; Lt. Col. Joseph H. Doyle,

to the C & GSC; Major Herbert C. Byrd, to The Infantry School.

Former AAA RTC commander, Colonel Arthur B. Powers, has been named G1 for the AA and GM Center.

Colonel Joseph H. Twyman now commands the 2nd Group.

New executive officer for the RTC is Lt. Col. Samuel Durschnitt, who formerly commanded the 2nd Group.

Lt. Col. John B. Beatson is now executive for the 1st Group, succeeding Major Martin W. Dettmer who has been re-assigned to the AA and GM Branch of The Artillery School. Lt. Col. Carl W. Fuller is now CO, 9th Battalion.

Major George C. Meyer, Jr., is now CO, 15th Battalion; Major Pete D. Pavick, is now CO, 14th Battalion; and Major Edward J. Bohannon is now CO, 12th Battalion. Major Lloyd H. Adams has left for the Far East.

### **6th AAA Group**

Gains included: Major Robert H. Gray, assigned to the 33d AAA Battalion as executive and adjutant; Major Paul Capron, Jr., assigned to the 168th AAA Battalion as adjutant; Major Edward D. Hrdlicka, assigned to Hq. 6th Group as S3; and Major Francis P. Rudnicki, assigned to Hq. 6th Group as S2 and executive.

Major Edwin O. Nichols was transferred from the 195th AAA Bn to the AAA RTC.

The 195th AAA Battalion (SP) completed its Army Training tests early in November and has since moved to Fort Hood, Texas, to join the 4th Armored Division. The battalion was reactivated here last June.

Lt. Col. Alva J. Moore is the 195th's commanding officer. Battery commanders include Capt. Donald W. Turner, A Battery; Capt. Thomas M. Beckham, B Battery; Capt. James W. Muhlbaier, C Battery; and Capt. Byron A. Falk, Jr., Headquarters Battery.

### **AFF Board No. 4**

Lt. Col. Raymond S. Isenson, head of the Light AAA Group, has received orders to the 8th Infantry Division, Fort Carson, Colorado.

Lt. Col. John P. Tawes, recently returned from Germany, has joined as head of the Heavy AAA Group Test Section.

Major Emmert R. Carr has resigned.



## Fort Bliss Awards

### Bronze Star Medals to

M/Sgt. Wiley W. McGill  
Sfc. Robert L. Armstrong  
Sgt. Lorenzo Aguilar

### Commendation Ribbons to

Capt. Dennis M. Blanton  
Capt. Scott T. Porterfield

Capt. Buford B. Semmes  
Capt. Russell L. Wells  
Lieut. Leonard C. Morgan, Jr.  
Lieut. Herman F. Puckhaber, Jr.  
CWO Lester P. Rider  
M/Sgt. Bonifacio G. Punla  
M/Sgt. Robert Glassman  
Sfc. Robert C. Walls  
Sgt. Ralph Dearman

# News and Comment

## General Lewis Honorary President

Lieutenant General John T. Lewis, upon his retirement in September, resigned as President of the Association. In accepting the resignation the Executive Council elected General Lewis as an Honorary President of the Association in recognition of his outstanding contribution to the Association and the JOURNAL.

Lieutenant General Lyman L. Lemnitzer, Association Vice President, was elected President to succeed General Lewis. Major General William F. Marquat was elected Vice President and Major General Bryan L. Milburn was elected as a member of the Executive Council.

Members are urged to note the Association ballot on page 54, and to send in their vote.

## The Antiaircraft Mission

In the September-October JOURNAL we were pleased to note in General Lewis' farewell letter to the members of his command his reference to the strict demands of duty on site in the Antiaircraft Command. This is a matter that has given both General Lewis and General Mickelsen great concern and one that we do well to study in search of a better solution.

The problem of training for, developing and maintaining an effective readiness to meet a sudden and surprising enemy air attack is a matter of key importance to the antiaircraft battery. Few batteries are able to achieve it until after they have undergone an actual

attack. The enemy delivers the attack with such speed, surprise and variety, and with tactics so different from the stereotyped target practice approach that the commander, fire control operators, and the gunners of an untried battery are left dumfounded and literally waiting for the sleeve. However, the commander with battle experience and with enough imagination and realism to anticipate the possible enemy tactics can achieve genuine progress. This objective is truly a challenge to able leadership.

Then there is the wearing problem of maintaining the constant readiness for such sudden and surprising enemy air attack hour after hour, day after day, year after year. It is not new. Those officers and men who stood such guard in World War II and on the East or West coast, in Alaska or Iceland, know how trying the ordeal can become. It is no slur on the American Soldier to recognize that he tires of such a watch, particularly when he can see no results. Indeed the morale problem was far simpler at Anzio or Leyte where the enemy did come with frequency.

To alleviate the trying hours and to improve the efficiency of the watch, we employ radar and other elements of an early warning system. But that is not always enough. Eventually the watch will fail unless there is some talented guidance from the high command where intelligence reports are available from far flung sources—political, diplomatic, and military.

In those long idle periods of waiting the commander requires intelligence and

intuition to know when to relax the watch and courage to carry it out. But it must be done if we wish to maintain battle efficiency. The troops need to move out for target practice and rugged mobile training, preferably by battalion. The individuals need relaxation and diversion, too.

So, it behooves us to stop and appraise our exact requirements. Do we require a constant 5 minute readiness day after day now? Or do we require more a long continuing readiness for the years to come?

We have highly trained young officers and men in the batteries, with a high order of loyalty and patriotism. But we cannot close our eyes to the fact that entirely too many of our key officers and men are terminating their AAA service when they get the opportunity. This is extremely expensive to the service and unfortunate. So it is paramount to improve the conditions for morale and esprit.

For the past two years in the Antiaircraft Command the troops have been exceedingly busy in building up their barracks, grounds, and site in general. In itself this has kept them occupied and happy. Now they will require more variegated training, more athletic activity, and more recreation.

We can hardly hope to give them the amount of liberty enjoyed by a member of a city fire department, but we need to give serious thought on how to make this service more attractive and more conducive to high esprit.

One effective step in this direction was taken early in World War II by the late Major General William E. Shedd, Antiaircraft Commander in Panama, when he required only one-half of the batteries to maintain immediate readiness each day. The other half were allowed to leave site for training or to have liberty with some freedom.

When the situation requires all batteries in readiness all the time, then we need to borrow a leaf from the fire departments and get enough personnel to do the job without the severe restrictions on site.

## New TO&E For Airborne AAA

In the July-August, 1951, ANTI-AIRCRAFT JOURNAL, Lieut. Col. Page E. Smith and Captain H. W. C. Furman in separate articles reported that there



was a need for a change in the weapons then provided for the AAA airborne battalion. The main criticism was that the 40mm towed AAA gun was unsuitable.

Evidently others have concurred. At any rate a new TO&E for the airborne AAA battalion, prepared in accordance with recommendations of both the 11th and 82nd Airborne Divisions has been approved. This provides four firing batteries instead of three. Each battery will

be equipped with six M42 twin 40mm armored mounts and twelve M55 quad fifty M. G. turret mounts.

The 80th Airborne AAA Battalion at Fort Bragg, N. C., has been reorganized and re-equipped already and will conduct a series of tests soon. The commanding officer, Lt. Col. G. W. Davis, is preparing an article on this reorganization which we shall hope to publish in *Combat Forces Journal* soon.

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## Resume on the Journal

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In 1892 our nation was expanding, growing and witnessing the early days in this age of machinery. The Army was beginning to arouse itself after a long post Civil War sleep. The Artillery was one arm of five regiments, each of 12 batteries, of which two in each regiment were horse or field; the rest were foot, seacoast, or siege artillery. Batteries were scattered generally in small posts along the seaboard, most of them along the Atlantic.

While the gunners on the parapets still practiced their art on muzzle-loading smooth bores mounted on boiler-iron carriages, leaders at the helm in the Artillery and the Ordnance could foresee the dawn of modern artillery.

Breech-loading rifled cannon and disappearing carriages with a degree of precision were under development. Smokeless powder was being introduced to completely alter the conditions of seacoast artillery firing by facilitating the continuous pointing at moving enemy ships under fire.

The artilleryman was confronted with important problems which demanded exploration and solution. There was an obvious need for the exchange of information and experience. In that setting the JOURNAL of the United States Artillery was founded. Lieutenant John W. Ruckman (later Brigadier General) who served as the first editor recounted it thus:

"In the fall of 1891 active steps were taken by a few officers at Fort Monroe to produce a magazine which should satisfy the requirements of the service; and through their efforts, and favorable circumstances, the JOURNAL came to life."

The small group of officers at Fort

Monroe who interested themselves in this project studied ways and means of production. Minimum cost was essential. This meant publishing the paper at the Artillery School, since the school had its own press. Some feared that independence of action and speech would be restricted by the school authorities, rendering the publication useless, a fear that "proved to be wholly imaginary."

Personal letters were written to individual officers stating the terms of the project and asking a contribution of \$2.50. This netted subscriptions from 160 of the 288 officers then in the artillery, thereby assuring \$400 for the first year. Evidently there was some opposition as well as indifference. General Ruckman continued: "With these data, Lieutenant Willcox and the writer visited the Commandant of the School, Colonel Royal T. Frank, at his house, and outlined a plan of procedure. At first he wished to call the officers together for a general discussion, but was persuaded to proceed to business. A general discussion at a meeting of officers at that time would certainly have killed the scheme and postponed action for several years. When he was informed that the manuscript for the first number was on hand, he said 'Turn it in and we will start.'"

The first issue, published in January 1892, marked an auspicious beginning. Scholarly and scientific articles by Captain James Ingalls, the ballistician, and Lieutenants Ruckman and H. C. Davis served to arouse the efforts of Lieutenants Erasmus Weaver, Garland Whistler, Willoughby Walke, and many others later to become famous, to write for the JOURNAL.

Other lieutenants among the charter

subscribers included Arthur Murray, Tasker Bliss, M. F. Harmon, Wm. Lasiter, Wm. J. Snow, P. C. March, H. D. Todd, Jr., Adelbert Cronkhite, and Thomas Ridgway.

Though it was then 15 years before the Coast Artillery and the Field Artillery separated, the JOURNAL was from the beginning essentially the *Coast Artillery Journal*, a name it did not adopt until 1922. If the Coast Artillery interest were in Civil War Rodman or Dahlgren guns, or rifled guns and disappearing carriages, that interest was reflected in the JOURNAL.

When that interest shifted in World War I to railway, mobile, trench, and antiaircraft artilleries, the JOURNAL was in the forefront with description, discussion, study. From the telescope to the range finder, to radar; from the plotting room to the director the JOURNAL was closely integrated into the life and *esprit* of the Coast Artillery. And so it continued until 1950 when the Coast Artillery Corps ceased to exist. Before that, however, the Coast Artillery people had become the Antiaircraft Artillery. In 1948 the name of the JOURNAL had been changed to the ANTI-AIRCRAFT JOURNAL. And so it marched on without any perceptible change in purpose or loss of spirit.

For their outstanding support of the JOURNAL down through the years we may well refer to the contributions by leaders like Major Generals Andrew Hero, Jr., John W. Gulick, Joseph A. Green, and Charles E. Kilbourne and Lieutenant Generals Stanley D. Embick, LeRoy Lutes, and John T. Lewis. However, we could also mention hundreds of others equally loyal. Because the JOURNAL became a part of the Coast Artillery and it drew a warm support from the entire officer corps, Regular, Guard, and Reserve.

From its inception the JOURNAL achieved distinction for its scientific explorations and development in the fields of artillery interest; first in ballistics, gunnery, ordnance matériel, and position finding; later in power, electronics, and communications. It helped to establish in the Coast Artillery a high standard in precision. And always when we have been keen enough to maintain a balance in that precision we have been on solid ground indeed.

At times the JOURNAL may have erred,



but it has usually been progressive and constantly striving to find and publicize a better way to do the job next time. Whenever we learned to shoot the guns straighter, or to maintain the equipment better, or to defend the installation more effectively, or to support the Navy, the Air Force, or other Army elements better, we have gone to the JOURNAL to publish it. When our troops distinguished themselves in battle, as they last did so well in Korea, the JOURNAL took the lead in extolling their achievements.

Thus, as the JOURNAL completes 63 years of service contributing to the interest, zeal, *esprit*, and combat efficiency in our arm of the service, the Association has a strong, loyal membership fully determined to carry on its efforts toward a strong national defense.

Now the members have decided that our interests will best be served by merging with the Association of the U. S. Army and to join in the publication of the *Combat Forces Journal*. This decision they reached freely not because there is any less need for the ANTI-AIRCRAFT JOURNAL, but because there is a more compelling need for a strong association dedicated to the interests of the Army as a whole and to the promotion of mutual understanding, teamwork, unity, *esprit* and strength in the Army. We hope that you will take into that effort the warm loyalty you have given to the Antiaircraft Association and its JOURNAL.

We shall give up some journal features like the personal news of our Antiaircraft comrades. However, we propose to continue the professional articles in the fields of antiaircraft, guided missiles, and artillery in vigorous fashion. To this end we appeal to our able AAA officers for such articles. Those articles with an interest and appeal to the other arms will reach the greater audience; however, there will also be a need for technical articles that are written primarily for antiaircraft members.

In this effort we can rely on the utmost in cooperation from those at the helm in the Association of the U. S. Army. Lieutenant General George H. Decker, Comptroller of the Army, is the Association President. Colonel Arthur Symons, Artillery, USAR, formerly Associate Editor of the *Coast Artillery Journal*, is the publisher and manager of the *Combat Forces Journal*. Mr. John B. Spore, a

key member of that staff for years, is now the editor.

## The Following Colonels Retired

30 September 1954

King, Edgar W., Ft. Sam Houston.  
Merkle, Ernest A., New York, New York  
Townsend, Harry F., USAH, Ft. Jay, N. Y.

31 October 1954

Jaccard, Paul A., Ft. Sam Houston

## Recent Assignments

### COLONELS

Chapman, E. A., S & F Army War College.  
Gallagher, F. F., Rome, Italy.  
Harvey, T. H., USMA.  
Joseph, H. B., X Corps, Ft. Riley.  
Kauffman, R. K., 2nd AAA Group.  
Kramer, Arthur, 45th AAA Brigade.  
McLamb, N. A., Washington NG Adv. Gp.  
Meinert, F. E., to USAFFE.  
Porter, G. W., to Western AAA Command.  
Priest, P. B., to NATO Def. College, Paris.  
Romlein, J. W., Fontainebleau, France.  
Russell, M. R., to 17th AAA Group.  
Starner, J. V., Izmir, Turkey.

### LIEUTENANT COLONELS

Ahrens, A. M., to AA & GM Br TAS, Bliss.  
Ball, R. C., to Hq 6th Army.  
Bellamy, P. E., to 5th Armored Div.  
Brinkerhoff, Wm. A., to Izmer, Turkey.  
Brooks, W. S., to S & F TAS, Ft. Bliss.  
Brown, G. E., to Ofc of TIG, Washington.  
Burt, R. E., to NY AR Adv Gp. Jamestown.  
Butts, R. E., to Stu Asso C, C&GSC.  
Byrd, C. B., to AFF Bd 4, Ft Bliss.  
Chavis, T. N., to S & F TAS, Ft Bliss.  
Coe, K. C., to AAARTC, Bliss.  
Dahe, A. P., to Va NG Adv Gp., Richmond.  
DeFusco, M. P., to Stu Asso C, C&GSC.  
Eckstein, P. A., to ROTC, Notre Dame.  
Franson, P. O., to Ofc Ch PsyWar.  
Fulk, H. A., to Stu Asso C, C&GSC.  
Germell, J. D., to OCAFF, Ft Monroe.  
Gorman, D. F., to S & F, TAS, Bliss.  
Greco, Frank, to Stu Asso C, C&GSC.  
Gregory, Clyde, to Saigon, Indochina.  
Grogan, J. B., to 4054th ASU, Bliss.  
Hammond, H. C., to 5th AAA Reg. Unit.  
Hannah, P. V., to Stu AFSC, Norfolk.  
Herb, F. H., to Hq 1st Army.  
Hodgson, J. A., to Stu Asso C, C&GSC.  
Ingraham, H. S., to Raleigh, N. C.  
Isenson, R. S., to 8th Inf. Div.  
Jordan, R. E. to Hq ASA Trng Ctr, Devens.  
Lanterman, J. V., to 75th AAA Bn.  
Lutz, C. G., to Stu Asso C, C&GSC.  
Maline, P. J., to S & F TAS, Bliss.  
Martz, F. L., to Saudi Arabia.  
McCaffery, Benj., Jr., to Ft Baker, Calif.  
McGrath, D. B., to Stu Asso C, C&GSC.  
McGuire, M. J., to AAARTC, Bliss.  
Merchant, M. H., to S&F AFSC, Norfolk.

Nanney, D. Y., to AAA Comd, Colorado.  
Nelson, W. L., to S&F TAS, Ft Bliss.  
Pringle, H. E., to S&F TAS, Ft. Bliss.  
Pulley, A. H., to S&F TAS, Ft. Bliss.  
Reeves, C. W., to 2nd AAA Regional Unit  
Reiman, L. N., to Stu Asso C, C&GSC.  
Ringgold, C. L., to New Orleans.  
Roberts, S. A., to Hq 1st Army.  
Saberhagen, H. A., G2, Washington.  
Sigley, W. W., to OCAFF, Ft Monroe.  
Smith, Eugene, 18th Abn Corps.  
Stacy, R. S., to 1st AAA Regional Unit.  
Theisen, G. L., to 77th AAA Bn.  
Thorkelson, W. L., to TAS, Ft Bliss.  
Tilson, G. E., to TAS, Ft Sill, Okla.  
Tison, G. J., to Stu Asso C, C&GSC.  
Twyon, D. E., to G2, Washington.  
Van Gundy, D. F., to S&F TAS, Bliss.  
Wadsworth, C. Q., to 513th AAA Bn.  
Wainhouse, E. R., to Stu Asso C, C&GSC.  
Warfield, B. H., to AFF Bd No. 4, Ft Bliss.  
Witt, L. A., to London.

### MAJORS

Aurand, P. B., to 514th AAA Bn.  
Bess, G. W., to MAAG Formosa.  
Campbell, T. E., to Ft Bliss.  
Chiodo, S. F., to AAA Command, Colorado.  
Clark, R. W., to 734th AAA Battalion.  
DeBranco, P. F., to USARPAC.  
Downer, W. V., to 516th AAA Msl Bn.  
Ducey, D. L., to 35th AAA Bn.  
Edwards, D. M., to 28th AAA Gp.  
Funks, N. L., to 28th AAA Gp.  
Gainhart, G. H., to 47th Inf Div.  
Gibson, P. L., to TAS, Ft Bliss.  
Godfrey, H. J., to ROTC, Colorado Col.  
Gobeille, G. A., to Stu Asso C, C&GSC.  
Gray, A. P., to 47th Inf Div.  
Hamilton, R. B., to Stu Asso C, C&GSC.  
Hamilton, S. A., Jr., to 47th Inf Div.  
Haughton, R. E., to Hq MDW.  
Henry, George, to 5th AAA Regional Unit.  
Hindman, T. O., to 516th AAA Msl Bn.  
Hutchinson, M. J., to Eastern AAA Comd.  
Isham, O. A., to 504th AAA Bn.  
Kirkwood, W. V., Jr., to 701th AAA Bn.  
Koshaffer, J. T., to G2, Wash., D.C.  
Law, Wm. T., to Stu, TAS, Ft Bliss.  
Marus, George, to USAFFE.  
Masteller, B. G., to 11th Avn Div.  
Matthews, J. H., to 514th AAA Bn.  
McManus, V. J., to 2nd AAA Regional Unit.  
Miller, R. J., to 8th AAA Bn.  
LeMonier, D. J., to USAREUR.  
Murello, C. E., to Stu Asso C, C&GSC.  
Neuver, J. E., to Stu Asso C, C&GSC.  
O'Brien, H. J., to 4th FA Bn.  
Palmer, R. E., to 99th AAA Bn.  
Pechulis, F. V., to USAFFE.  
Richard, Stanley G., to Hq 4th Army.  
Solton, E. A., to USAFFE.  
Sutton, G. M., to 503rd AAA Det.  
Turner, W. D., to 504th AAA Bn.  
Vaughn, F. M., to 44th AAA Bn.  
Verbosh, Michael, to AFF Bd No. 4, Bliss.  
Vitulo, T. L., to 606th AAA Bn.  
Walker, J. R., to 15th AAA Group.  
Ward, J. W., to 99th AAA Bn.  
Waugh, E. S., to ROTC Western Md. Col.  
Yanisch, O. F., to Ft Myer, Va.

## BALLOT

### UNITED STATES ANTI-AIRCRAFT ASSOCIATION

The President and three members of the Executive Council are to be elected on this ballot to replace officers whose terms of office expire December 31, 1954.

Please record your vote by making an "X" in the appropriate square or indicate your choice by writing the name of your candidate.

The Constitution of the Association requires that at least five members of the Council reside in the Washington area, and that at least three of them be on active duty, in order to facilitate the transaction of business.

Ballots close December 31st, 1954.

Use the ballot below or prepare one to indicate clearly your vote. Mail to the ANTI-AIRCRAFT JOURNAL, 631 Pennsylvania Avenue, N.W., Washington 4, D. C.

#### FOR PRESIDENT (1955-1956)

Lieutenant General Lyman L. Lemnitzer, Deputy Chief of Staff for Plans and Research.

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#### FOR MEMBERS OF THE EXECUTIVE COUNCIL:

##### From National Guard (One Member)

Brigadier General John B. Moore, DeING, Commanding 261st AAA Brigade.

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##### From Organized Reserve (One Member)

Colonel John S. Mayer, USAR, Commanding 305th AAA Group, NYC.

\_\_\_\_\_

##### From Regular Army (One Member)

Major General William F. Marquat, Chief of Civil Affairs and Military Government.

\_\_\_\_\_

SIGNATURE \_\_\_\_\_

RANK AND ORGANIZATION \_\_\_\_\_

ADDRESS \_\_\_\_\_

# TERMS OF THE MERGER

MEMORANDUM OF AGREEMENT between THE ASSOCIATION OF THE UNITED STATES ARMY, a corporation not for profit reincorporated and existing under the laws of the DISTRICT OF COLUMBIA, hereinafter called AUSA, and THE UNITED STATES ANTI-AIRCRAFT ASSOCIATION, an unincorporated association, hereinafter called ANTI-AIRCRAFT.

1. AUSA and ANTI-AIRCRAFT agree to merge into a single organization, which shall be known as THE ASSOCIATION OF THE UNITED STATES ARMY.

2. ANTI-AIRCRAFT agrees to transfer all of its assets, real and personal, tangible and intangible, to AUSA, and AUSA agrees to assume all the liabilities of ANTI-AIRCRAFT.

3. a. AUSA will add to its existing 21-member Executive Council the present 9 members of ANTI-AIRCRAFT's Executive Council for a period of one year.

b. In order to fit the 9 new members into the existing panels of AUSA's Executive Council, ANTI-AIRCRAFT will determine which three of its 9 members will serve until June 1957, and which three will serve until June 1956. The remaining three new members will vacate their offices at the June 1955 meeting.

c. The Nominating Committee provided for by Section 1 of Article IV of AUSA's By-Laws shall, if this agreement is ratified by both parties hereto before the conclusion of the stated December meeting of AUSA's Executive Council, be elected by the augmented Executive Council of the merged Association.

d. At the end of one year following the merger, the membership of the Executive Council may be reduced in numbers as the Council may determine, but thereafter the ANTI-AIRCRAFT representation on the Executive Council shall continue on the same equitable basis as changes in the Association may develop.

4. Upon the augmentation of the Executive Council consequent on the merger, the present president of ANTI-AIRCRAFT shall become an additional vice-president of AUSA, pursuant to Section 1, Article III, of AUSA's By-Laws, shall serve as such for one year, and shall, while so serving, be an *ex officio* voting member of the Executive Council.

5. Effective upon the merger, the present members of ANTI-AIRCRAFT shall automatically become Active, Associate or Auxiliary Members of AUSA, as their civilian or military status may determine pursuant to the provisions of Article I of AUSA's By-Laws, and shall remain such for the terms of their existing subscriptions, including life subscriptions, to the ANTI-AIRCRAFT JOURNAL.

6. Effective upon the merger, ANTI-AIRCRAFT JOURNAL will cease publishing, its last issue being that for November-December 1954; and, beginning with the January 1955 issue of *The Army Combat Forces Journal*, AUSA will provide therein coverage of professional and technical military information on anti-aircraft and guided missiles equal in any one year to the amount of such information published in ANTI-AIRCRAFT JOURNAL during 1954.

7. AUSA will at all times have on its staff a qualified Anti-aircraft Editor who will perform the duties of an associate editor of *The Army Combat Forces Journal*.

8. Effective upon the merger, AUSA agrees to give a one-year contract to Brig. Gen. Charles S. Harris, U.S.A., Retired, to serve as such associate editor.

9. This merger is effected with the firm understanding that all elements will participate equitably in the direction and control of AUSA activities.

10. The merger shall become effective upon the ratification of this agreement by a two-thirds vote of the Executive Councils of both parties hereto; and the parties agree that such ratifications shall be effected in time to carry out the merger schedules elsewhere set out in this agreement.

11. ANTI-AIRCRAFT agrees to dissolve when the merger becomes effective.



# Letters to the Editor

## Civil Defense

I have read with interest the article in the September-October number of the JOURNAL on Civil Defense in St. Louis by General Hardaway. I happen to be the Civil Defense Director of a much smaller city, Manchester, N. H., and have had the same experience, and have arrived at the same conclusions as described so well by General Hardaway.

However in New England, especially in the Boston area where cities are numerous and close together, evacuation of the population is more complicated. We can not move people 25 miles without getting them within the same distance of some other city also proposing to evacuate.

To meet this situation we plan to evacuate before, not after, a Yellow Alert, in other words as soon as war comes with danger of enemy air attacks. Moreover the population will be permanently evacuated, leaving the danger area void of all residents. Such a move may take several days and will include the sick, other disabled persons, etc.

Where will we put them? The population is being divided into three classes:

- those who will have to move;
- those who will not be required to move, but must accept refugees, who will be billeted on them;
- those living in a fringe area, between the above two zones, who may remain at their own risk.

Lists by families, showing number, sex and age of each individual, are being compiled. In another file is a list of homes who have billets which are classified by electronic machines (Remington Rand for us) with some 80 classifications as to number of rooms, and beds (double, single, twin, crib, etc.) in each room. Each family to be moved is classified as to needs in rooms and beds and a relocation can be found almost instantly.

As General Hardaway points out, many people will move out individually without waiting for orders. I find this general throughout the Boston area. We encourage this, subject only to advising us which homes are being abandoned, and where relocated, so that we can keep our lists corrected.

We do not propose to evacuate in advance people working in our industrial areas, or those busy in the business area. In our city these are adjacent. Such people are able to navigate under their own power, and nearly half will have transportation. As General Hardaway suggests these will start evacuating immediately upon the sounding of the Yellow Alert.

All the foregoing are based upon a possible attack with an atom bomb, or shell. We do not have sufficient information regarding the effect of hydrogen bombs to make an intelligent solution of such a problem. So far as known no hydrogen bomb has yet been dropped from the air. From descriptions released as to our H bombs detonated in the Pacific, these appear to have been bombs previously planted. We need to know the probable error of bombs of various weights launched from the air, and a table showing blast pressures per unit space at stated distances from ground zero.

The Federal Constitution forbids the billeting of soldiers. Our legal authorities advise that this prohibition applies only to the individuals mentioned—consequently a fleeing soldier can not be billeted, but anybody else can be. In practice the soldiers, if any, will certainly be taken care of.

With my compliments for the able manner in which the ANTI-AIRCRAFT JOURNAL is being edited.

Very sincerely,

COLONEL CONRAD H. LANZA,  
USA Rtd

Director of Civil Defense,  
Manchester, N. H.

## Reply to Colonel Orman

In any purposeful enterprise it is well to keep clear just what your mission is. I thought of that when I read Lt. Colonel Orman's article "Electronics and Men" in the ANTI-AIRCRAFT JOURNAL for July-August 1954. Maybe he did not forget his own mission, but certainly he forgot the mission of those of us here at The School.

In the Department of Electronics we have the mission to develop fire control and radar specialists of such a level of training that the Artillery will be able to use its electronic equipment in war.

It is a matter of history that the quickest way to get a complicated piece of gear back into commission, and sometimes the only way, is to repair it yourself.

Somewhere in his article Col. Orman mentions the TV repairman, and holds him up as a possible model for the radar repairman. May Mars and all the other Gods of War preserve us from our enemies if we have to depend on such "tube twisters" as are rampant in that industry! Our experience indicates that most repairs will have to be done by the Artillery and its own personnel. We admit that our graduates are not, on graduation, full-fledged radar repairman, any more than Colonel Orman was a full-fledged officer on his graduation from the Military Academy. Some on-the-job training and self dependence is necessary to complete the training of any individual. However, the statement that "the only practical work that they have done is in the laboratory under the eagle eye of an instructor" shows an unfamiliarity with the facts. Any individual who takes the trouble to visit the Department of Electronics Radar Park will see its expanse of equipment and the amount of time our students spend actually troubleshooting on it. Troubleshooting continues to be the main subject taught in the Department of Electronics. However, the basic philosophy of this Department can best be expressed in the words of a Radar Officer of the 8th Army Artillery: "Troubleshooting which is not founded on a sound grasp of theory, plus an intimate knowledge of circuit hook-up, is nothing more than tinkering." I think that Colonel Orman is asking for a race of tinkerers when he uses the example of a TV repairman.

There have been many complaints, Colonel Orman's included, that some of our courses here at The School are too long. Let me quote a Sperry field engineer about the Bliss courses on fire control equipment: "The only way this program will pay off is if there is another war in the very near future." That is the very justification of our existence and our courses. We are not training radar repairmen to sit in a garrison situation at Ducrot Air Force Base, or peacefully to guard the metropolis of New Washimore. We are training these men for war. When that happens, these men will be ours for duration plus six



months, and so it behooves us, since we do not know when trouble will come, always to have the best trained men possible on our radar and fire control equipment.

Colonel Orman refers to the Raytheon Corporation as an example, and cites the relatively low number of personnel in that organization who have degrees in electronics or electrical engineering. Raytheon is dedicated to the proposition of making 6% for the stockholders. We, in the Army, on the other hand, have as our object the defense of this country. Even with this mission we must realize that economy is essential, but we must always remember that our main object is preparation for the most wasteful process known to man: WAR!

The term "hog-wash" is used at least twice in this article, and directed at the School's belief in the proposition that a man well versed in basic electronics, and trained thoroughly on one radar set could, in a short time, be familiarized sufficiently with another well enough for him to be able to repair it. I might point out that this philosophy is utilized by the Signal Corps in training the personnel which it uses for maintenance of the AN/-TPS-1D. This is a sound pedagogical principle and is widely used. The fact that this School started on 9 September 1954 Course No. 44-E-35 to train surveillance radar mechanics is not based on any disbelief in the basic idea just expressed. It was, rather, based on the new tactical concept connected with this surveillance set, which would put it in such a position in many cases that it would be beyond the physical reach of a man on a fire control set, or would place it in units which we would not otherwise furnish with integrated fire control specialists.

Since many references were made to commercial practices in the article which I am answering, I might ask the question:

"Would any commercial corporation put a million dollar piece of technical equipment in the hands of a 'chart mechanic'?"

I might also ask—

"Do you take your child, when injured, to a first aid man or do you prefer a doctor?"

Certainly we are developing "troubleshooting" charts. Many are completed

and in the hands of radar mechanics. Others are in the process of being edited and printed. However, these charts must be considered as a means towards an end, as a way of teaching the radar mechanic a logical method of thinking, a real approach to troubleshooting, and not as an end in themselves or the only tool to be used by the mechanic. His experience and his technical knowledge are his most valuable attributes, not his troubleshooting charts. A man trained only on such charts, we think, has about a 70% chance of locating a trouble about 70% of the time—or a 50% probability. We think that a man trained in basic electronics, in circuit analysis, and in logical thinking has a 95% probability of finding and alleviating a trouble. A "chart mechanic" would probably not be able to locate an unfamiliar trouble, or one which was not listed in his book, whereas the trained technician has a pretty fair chance of being able to reason it out.

The things I have mentioned above are not rationalizations, not excuses, and not alibis; they are the basic philosophy behind the training of radar mechanics at this School. I repeat that we are training for war and war only—that if we feel that the probability, or even the possibility, of war does not exist, we can not only shorten our courses, but eliminate them entirely.

COLONEL ARTHUR KRAMER  
Director, Department of Electronics,  
AA & GM Branch, The Artillery School

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## Meteorological Data

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The 35th Brigade and Warrant Officer Griffin are to be congratulated on instituting the meteorological study reported in the last issue of the JOURNAL. With the present emphasis on velocity fire techniques—not that I am in favor of velocity fire to the exclusion of all other methods of preparatory fire—it is mandatory that the highest quality met data be available at all batteries at all times. Otherwise the battery is left high and dry. It may not, by dictum of higher authority, lack of training of its range officer, or for other reasons, be in a position to shoot out its met message. If the met data is poor, the battery cannot compensate by any reasonable setting of a fictitious muzzle velocity.

During WW II, while a member of the Antiaircraft Artillery Board at Camp Davis, I participated in a long term comparison of met data taken by radiosonde at Camp Davis and Fort Bragg. The differences in wind and density were large, and particularly so in the lower zones, which might be expected for an inland location versus a location near the ocean. Unfortunately these data have long since been relegated to some forgotten file and the results lost.

Over a year ago I had the opportunity of analyzing a series of met messages taken over a period of several weeks by a met detachment at Fort Totten. This analysis showed that the met situation, on the average, seriously deteriorated between messages. What it was like at such relatively remote points as Staten Island, near the shore, and in the vicinity of the George Washington Bridge, fairly well inland, Heaven only knows.

Lately I have been advocating some sort of study such as the 35th Brigade has initiated. After all there are many met detachments in operation, taking messages regularly, and it only requires a bit of analysis to compare data from several stations and to determine roughly how close the detachments should be located to batteries and how often messages should be taken in order to give each battery the information it should have.

The data presented in the article tends to indicate that met data is fairly constant for a 20-odd mile separation between stations although not nearly so constant from message to message. However, these stations are all at some distance from an ocean frontier, all are about the same distance from a large body of water, there are no significant terrain features such as hills or mountains in the area, and the tests cover a period at a time of year when the weather can be expected to be relatively stable. It would be nice to find that on a year-around basis for all areas in the United States the same general pattern would hold. I suspect that such is not the case and I only hope that these tests will be expanded to the point where we will find out the real met needs of the AAA and that the allocation of met detachments will be revised upward if that proves necessary. It will be poor economy indeed to allocate upwards of a million dollars worth of fire control



equipment and armament to a gun battery and nullify its effectiveness by stinting on the data it requires to perform effectively!

Sincerely yours,  
A. A. CURRIE  
Lt. Col., Arty., USAR  
Whippany, New Jersey

## Velocity Fire

THE ANTI-AIRCRAFT JOURNAL really circles the entire globe. Of course my personal copy always follows me regardless of my assignment. Many of the Thai Officers here are subscribers and it is not uncommon to see a complete file of AAA JOURNALS in their club reading rooms. Oftentimes I, as AAA Adviser to the Royal Thai Army, am called upon to explain certain portions of the JOURNAL to them. One Thai Colonel from the AAA Brigade translated a complete article for distribution to his junior officers. To say the least, the AAA JOURNAL is being well received here in Thailand.

I have been interested in the articles by Lt. Col. Earle Mountain, especially the one in the July-August issue concerning Trial Fire techniques. . . . Particularly so since I took part in the development of velocity fire while an instructor in the School at Fort Bliss. . . .

. . . The most perturbing item of the entire article was well critiqued by the Editor, i.e. the assumption that muzzle velocity was already known. Indeed the "cart is before the horse." With our modern equipment and proper training valid met data can be made available. And it must be available before the muzzle velocity can be determined, except with a chronograph. . . .

. . . Can anyone guarantee that I'll have sufficient time for Trial Fire? I say not; therefore, I must know my muzzle velocity and be assured of accurate met data prior to engagement. . . . There is only one solution to the problem at present and that is the velocity fire technique as now taught by the School at Fort Bliss. . . .

MAJOR R. V. KISSAM, JR.  
JUSMAG, Thailand

# BOOK REVIEWS

**THE NEMESIS OF POWER, the German Army in Politics 1918-1945.** By J. W. Wheeler-Bennett. McMillan & Co., London-New York. 829 pages. \$12.

This book is the history of German military leadership and of the German General Staff from the end of the First World War until the end of the Second World War.

Wheeler-Bennett has made the only complete study in this field in existence. The previously most authoritative book was that of Benoist-Mechin (in French), *History of the German Army Since the Armistice* (of 1918), published in 1938.

All the intrigues through which the German Army was rebuilt after the First World War, the Army's support of Hitler in his rise in a mistaken effort to direct politics, Hitler's seizing of control of the Army, and finally the military leadership's long thwarted plans to dispose of Hitler by one means or another are narrated in enthralling detail.

Although all this reads like a thriller, it is fully documented with the scholar's careful attention to detail and accuracy.

During the present period in the United States, in which military advice is so important and military advisers are in the top councils of the nation, Wheeler-Bennett's book has lessons for our own military leaders who may be inclined to step beyond the proper boundaries of military advice and interfere in politics.

During the period after 1918, the German army survived its hitherto most disastrous defeat. It regained its prestige and by staying out of politics exercised an amazing degree of power and influence. When it was mistaken enough to step from its pedestal and play politics it was taken over by Hitler and began a descent that ended in abject defeat.

Any soldier with a long view and a genuine professional interest will want to read the *Nemesis of Power*.

BRIG. GEN. T. R. PHILLIPS, Ret.

**THE NEW WARFARE.** By Brigadier C. N. Barclay. Philosophical Library. 65 pages. \$2.75.

This British author has written a short challenging book that requires

more than a few minutes of your reading time. As the title implies, the author considers our present world as being at war, under new ground rules. Whether you believe in appeasement, a shooting war or something in between, this book gives you basic definitions and a sharp discussion that will stimulate your thinking. For military men it should be a must.

BRIG. GEN. H. F. MEYERS  
Retired

**GENERAL JO SHELBY.** By Daniel O'Flaherty. Chapel Hill: The University of North Carolina Press, 1954. 437 pages. \$6.00

Daniel O'Flaherty has presented a scholarly and carefully documented account of the operations of General Shelby in the Civil War. The campaigns in the West, in Arkansas and Missouri in particular, in which Shelby played so gallant a part, have received less than their proper share of attention. Thus in presenting these operations, Mr. O'Flaherty has performed a service of value equal to his portrayal of one of the most interesting of the military figures of that time.

If Shelby's abilities and achievements were perhaps not so great as the author makes them out, he was nevertheless a remarkable soldier. Without formal military education, he succeeded through his inherent characteristics in building and leading an outstanding force. The most romantic of Shelby's exploits, however, was his march into Mexico after the collapse of the Confederacy. But Mexico offered no haven, and the uneasy association of the ex-Confederates with the forces of Maximilian was only temporary. Shelby and his men drifted back to the United States and became as "reconstructed" as any of their former comrades in arms.

O'Flaherty's style is somewhat ponderous and the book needs some maps of Shelby's operations; however, the author's thorough research and the attention he focuses on an important part of the war make this book very worthwhile.

LT. COL. JOHN B. B. TRUSSELL, JR.



**POWER AND POLICY.** By Thomas K. Finletter. Harcourt, Brace & Company, New York. 402 pages. \$5.00.

*Power and Policy* is a lucid explanation of the foreign and military policy of the United States as it has been in the recent past and as it should be in the future.

The emphasis is placed heavily upon a strong strategic Air Force: "If the United States builds and keeps an Atomic-Air splendidly defended against Russian direct air attack and sabotage, and capable of an overwhelming counter-attack which would destroy the Russian state, we will win this battle and the war in the only way they can be won—by seeing to it that the Russians dare not start the war."

He follows this by a corollary statement: "If we do not have such an overwhelming Strategic Air, it does not make much difference what we do about our other forces." He assumes that the next war *will be* an all-out atomic-hydrogen war, and that this war can be prevented *only* by having an overwhelming strategic Air Force.

Here is an idea which he does not explore. If the United States neglects the other services, then we may be *forced* to use the only strong weapon we have, and thus bring about what we are trying to prevent—all-out atomic-hydrogen warfare.

Here is his rough guide: "If (the dollars appropriated to the Air Force for New Obligational Authority) is below 18 billion dollars in any of the next four or five years, the presumption is almost conclusive that we are still not preparing for the terrible threat before us."

The significance of these figures is that the FY 55 military budget is about 30 billion dollars, and the next budget may be somewhat less. A little arithmetic will show where this leaves the other two services.

MAJOR T. P. FUREY

**THE BATTLE HISTORY OF THE 1st ARMORED DIVISION.** By George F. Howe. Combat Forces Press. 471 page. Illustrated. \$6.50.

This book is a factual history of the 1st Armored Division, described as "Old Ironsides, the first of the mighty Armored Force, the pioneer in the art and science of armor, . . . the first to engage

German troops in World War II, . . . the first into Rome, and the first of the armored divisions in days of actual field service during World War II."

The account begins with the birth of the Armored Force in 1918; traces the development (and lack of development) through the period between wars and tells of the activation of the 1st Armored Division in 1940. Dr. Howe recounts the difficulties and confusion inevitable in the formation of a new arm. From the experiences of the division in the landing at Oran and its subsequent employment in Tunisia, it became apparent that there were many lessons to be learned and mistakes to be corrected. In plain, unvarnished language the author gives a detailed account of each engagement in which the division participated. He tells how the division was "walloped" at Sidi-Bou-Zid, in eastern Tunisia. Most of the division did not participate directly in the battle at Kasserine Pass, but it was "at the bottom of its ladder of achievement" just prior to that battle, when it was forced to make a humiliating withdrawal from the nearby town of Sbeitla. Within a few months, however, the division was able to "get on its feet" and make up for these initial reverses by playing an important part in the sweep through Tunisia, the break out from the Anzio beachhead, the capture of Rome and the crossing of the Po.

The author does not endeavor to cover up or minimize the mistakes, nor does he overemphasize the importance of the division in the big picture. The account ranges from the overall scheme of maneuver at theater and army group level to small unit tactics at company and platoon level. A number of eye-witness accounts lend the book an authentic combat flavor.

CAPTAIN ROBERT H. PIEHL, U.S.M.C.

**HUGH ROY CULLEN.** By Ed Kilman & Theon Wright. Prentice-Hall, Inc., N. Y. 369 pages. \$4.00.

Here is an outstanding story of American opportunity, of a fabulous man. Young in life while standing on the bank of the San Antonio River observing a whirlpool; Roy Cullen asked himself, "why need anyone be afraid of a whirlpool?" By allowing himself to be carried into the swirling water and sucked down into the turbulent whirlpool, and

moments later rising to the surface unharmed, he had proved to himself *how* to overcome its danger. He carried this lesson through life and it was by *no* means the last time he took a calculated risk to prove a point to himself.

Through the years of an outstanding fabulous life, first as a cotton buyer, later as a real estate man, and finally as an oil producer, again and again he demonstrated his faith in his own judgment and courage to act on his convictions. Armed with this faculty in an all out effort to bolster the family finances, he set out seeking opportunity in the growing seaport of Houston, which later brought him to drilling for oil where others had failed. He always adhered to two basic principles! "Flank the old Domes—And drill Deeper."

One of Roy Cullen's drillers once said: "when they say the last rites over Mr. Cullen, and get ready to lower him into the ground, I'll bet he'll look over the side of the casket and say, *'better dig a little deeper, boys!'*"

As stirring as the discovery of his fortune is, with his many long years of struggle—the racing to lease possible oil-bearing land, the speculative drilling in "dried up" fields, the terrifying bursting open of gushers—the story of Roy Cullen's use of his fortune is even more amazing and thrilling.

Here is a man that has given away cash and oil properties valued at some \$175,000,000! His most outstanding and magnificent gesture has been the Cullen Foundation with assets of \$160,000,000 which is to be donated to charitable and educational institutions throughout the state of Texas. In Houston alone in one 48 hour period he gave to four hospitals more than a million dollars each.

And this vivid story does justice to the man. A moving and inspiring biography of a man whose generosity to his fellow man has symbolized his faith in himself and his country.

MASTER SERGEANT FRED A. BAKER

**A MILITARY HISTORY OF THE WESTERN WORLD: From the Earliest Times to the Battle of Lepanto.** By Maj. Gen. J. F. C. Fuller. Funk & Wagnalls. 602 pages. \$6.00.

A British tank corps commander in WW-I, Camberlay Staff College instructor, and an aggressive military student, the author retired in 1930 to continue



the stupendous job of mastering the military history of the Western World and reducing it to three volumes within reach of the military student. This first volume, covering some 3500 years up to the Battle of Lepanto, 1571, is a gigantic and valuable work, for the professional military student.

The author tells his story around major decisive battles, with chapters portraying in each case the political, economic, and military background and analyzing and integrating the mutual effects of the campaigns and the times upon each other. His sharp analyses and critiques on the great leaders and the influences of strategy, weapons, and tactics are fascinating and valuable.

It is well worth careful study and repeated reference by any ambitious military officer. However, it is not to be mastered over the week end; rather it is a work to study and refer to over the years. Brilliant student that he is, General Fuller does not write for beginners. And unfortunately he proceeds on the basis that his reader is a past student of history and a master of geography in every age of ancient and medieval history.

Even so, for the student who would learn more of the masters like Alexander, Hannibal, Caesar, Constantine, and William the Conqueror, it will be found exceedingly interesting.

**WILLARD'S OF WASHINGTON.** By Garrett Laidlaw Eskew. Coward-McCann. 240 pages. \$4.00.

After the British burned Washington, John Tayloe of Virginia contributed toward rebuilding the city by building several two story houses on the north side of Pennsylvania Avenue at Fourteenth. Soon they were incorporated under one management as a hotel, and not long after that Henry A. Willard came to organize a real hotel.

And about the Hotel is entwined the story of Washington, the more entertaining parts of which Mr. Eskew relates in fascinating style. Just relax and enjoy it.

**V-2.** By Walter Dornberger. Viking Press. 281 pages. \$5.00.

Dr. Dornberger, the famous German scientist in the field of rockets, was made a general in the German Army to direct the experimental rocket station at Pe-

enemunde. He relates here the inside story of a fantastic enterprise in the development of the V-2, the fight against time, and how nearly it succeeded. The story of the practical difficulties, the petty jealousies and rivalries, as well as the heroic efforts gives an interesting perspective of the development.

Entertaining and instructive.

**THE JACKSONIANS: A Study in Administrative History, 1829-1861.** By Leonard D. White. MacMillan. 593 pages. \$8.00.

This history of our national administration during the period from Jackson to Lincoln is the last of three volumes by Dr. White devoted to the formative period of American Government. The earlier volumes were *The Federalist*, and *The Jeffersonians*. All give scholarly and human stories of the early political fights and developments in our nation as it charted a completely new course in the political world.

They were exciting and spirited times. While President Jackson was seizing much greater powers for the executive branch of our national government he was also introducing the "Spoils" system and crushing the Whig Party, as well as the Bank of the United States.

**SHOW ME A HERO.** By Melvin Voorhees. Simon & Schuster. 311 pages. \$3.50.

This is a very real story about a modern army at work and play. Splendid insights to frontline action and behind the line pleasure. The press conferences read like actual reports and the court-martial report is superb. The story moves smoothly, and in such intriguing form that one cannot lay it down until he has finished the whole book.

It is a splendid tribute to those who actually participated in the Korean "Police Action." It will go a long way toward restoring the author's good reputation with all ranks of the Army and makes us pleased to note that the Army has finally dropped the court-martial about his earlier book.

SFC JAMES E. MOORE, JR.  
ANTIAIRCRAFT JOURNAL

**ELECTRONICS FOR EVERYONE.** By Monroe Upton. Devin-Adair Co. 384 pages. \$6.00.

"Electronics for Everyone" by Monroe

Upton tells the story of TV, color TV, radio, radar, sonar, high fidelity recording and the place of electronics in the home.

This new volume explains in simple language how the great "electricians" of the past made the discoveries and inventions that gave us our condensers, batteries, coils, and tubes; how later geniuses gave us the wonders of radio, radar, loran, phonograph reproduction, ground-controlled approach systems, television in black and white and in color, X-ray, lie detector, electronic cookery, and every other important application of electrical energy.

The book contains the latest electronic developments and is illustrated with many drawings. It leads gradually from the elementary to the more advanced phases of the subject and brings to life the electrical giants of the past and present.

**THE FIRST AND THE LAST.** By Adolf Galland. Henry Holt & Company. 360 pages. \$4.95.

Here is a book about some of the unvarnished accounts of how close the Germans came to winning the War. It reveals Hitler's complete inability to grasp the principles of defensive warfare. The author reveals his running battle with Goering and Hitler: "I was never a yes man to Goering."

At the war's end, the author, then a Lieutenant General, was in command of a jet squadron—the first operational jet squadron in the world. The jet aircraft of this "Squadron of experts" were destroyed on the ground as U. S. tanks rumbled onto its airfield.

Some of the better episodes in the book: the Channel dash of the Scharnhorst and the Gneisenau; the Hamburg raid; the Battle of Britain; and the capture of Douglas Bader.

**WEBSTER'S NEW WORD DICTIONARY of the American Language, College Edition.** The World Publishing Co. 1760 pages. \$5.00 plain; \$6.00 thumb-indexed.

We find our thumb-indexed copy very handy, valuable and attractive. 142,000 definitions that really define from the American viewpoint—and 1200 excellent illustrations.

## BOOKS RECEIVED:

**SUNK: The Story of the Japanese Submarine Fleet, 1941-1945.** By Mochitsura Hashimoto. Henry Holt & Co. 276 pages. \$3.95.

**NO TIME FOR SERGEANTS.** By Mac Hyman. Random House. \$2.95.

**MCCARTHY AND THE COMMUNISTS.** By James Rorty and Moshe Decter. The Beacon Press. 163 pages. \$2.00 (cloth), \$1.00 (paper).

**BACK OF HISTORY.** By William Howells. Doubleday & Co. 384 pages. \$5.00.

**DON'T TREAD ON ME.** By Captain Walter Karig, with Captain Horace V. Bird. Rinehart & Co. 442 pages. \$4.00.

**THE LIMITS OF FOREIGN POLICY.** By Charles Burton Marshall. New York: Henry Holt and Company, 1954. 128 pages. \$3.00.

**THE FIGHTING SUDANESE.** By H. C. Jackson. London: Macmillan & Co., Ltd. 1954. 85 pages. \$2.00.

**THE NEGRO AND THE SCHOOLS.** By Harry S. Ashmore. University of North Carolina Press. 228 pages. Cloth, \$2.75; Paper, \$1.50.

**THE SECRET HISTORY OF STALIN'S CRIMES.** By Alexander Orlov. Random House. 366 pages. \$4.50.

**THE DRAMA OF ALBERT EINSTEIN.** By Antonina Vallentin. Doubleday & Co. 312 pages. \$3.95.

**THE BALLOON.** By H. P. Brown. St. Martins Press. 242 pages. \$3.00.

**SAILING AERODYNAMICS.** By John Morwood. The Philosophical Library, New York. 124 pages. Illustrated. \$7.50.

**THE NIGHT BEFORE CHRISTMAS.** By Clement C. Moore. Illustrated by Roger Duvoisin. Garden City Books. \$1.50.

**THE MICROPHYSICAL WORLD.** By William Wilson. Philosophical Library. 216 pages. \$3.75.

**FOREIGN POLICY ANALYSIS.** By Feliks Gross. Philosophical Library. 179 pages. \$3.75.

**THE NOMOGRAM.** By H. J. Allcock and J. Reginald Jones. Pitman Publishing Corporation. 4th Ed. 238 pages. \$3.75.

**TABLES FOR ROCKET AND COMET ORBITS.** By Samuel Herrick. G.P.O. 100 pp. \$1.75.

**SPACE TRAVEL.** By Kenneth W. Gatland and Anthony M. Kunesch. Philosophical Library. 205 pages. \$4.75.

**FOOD SERVICE FOR THE ARMY AND AIR FORCE.** Compiled by Colonel Arthur Symons, USAR. The Military Service Publishing Co. \$3.50.

## Comments on the Merger

*(Continued from page 21)*

The news of the merger is received with mingled feelings. Personally and emotionally I am regretful—professionally I am elated. After reading the *CAC* for almost thirty-three years, like any old friend, I hate to part company. I'll miss the personal news about individuals, and the reports of unit activities, as well as the many other items of purely branch interest.

But I am all for it, professionally. . . . We all are required to be one integrated team in the Army Combat Forces. There is no place for further branch consciousness. I am certain our merger with the Association of the U. S. Army and the *Combat Forces Journal*, will go a long way toward achieving that integration.

. . . The best of luck to you.

BRIG. GEN. FRANK C. McCONNELL  
34th AAA Brigade

. . . We wish you every success in your participation in the merger and we feel that it is to the ultimate advantage of the services in general. . . .

COLONEL ROBERT T. CONNOR  
PMS&T, University of Minnesota

. . . Many of us here were in strong favor of retaining our *ANTI-AIRCRAFT JOURNAL* as such. But if the decision is to merge, we see the point and you can still count on us.

MAJOR JOSEPH A. TRINGALI  
Comdg. 3rd AAA AW Battalion (SP)  
3rd Infantry Division, Korea

. . . I feel that any step toward an integrated magazine of the Army is a step in the right direction; . . . that the loss . . . will be more than compensated for by bringing to the Antiaircraft officer current doctrine and thinking of the other combat arms.

COLONEL JOHN S. MAYER  
305th AAA Group, USAR

. . . I feel the merger will be of definite value to the Antiaircraft and should serve to acquaint the other arms with the magnitude of the mission and the operations in the AA defense. . . .

COL. E. B. HEMPSTEAD  
Comdg. 4th AAA Group

. . . I am in favor of it. . . . Since the CAC and AAA lost their ivory-towered isolationism when combined with the FA into one Artillery, it does not appear to be logical to maintain a separate publication. . . . However, we need to continue the AA articles. . . . Count on us to support the *Combat Forces Journal*.

COL. DONALD J. BAILEY  
Central Army AA Command

. . . The AA *JOURNAL* will be sorely missed by all AA Artillerymen. . . . Hope *Combat Forces* will be as good.

MAJOR RICHARD F. TAYLOR  
65th AAA Group

. . . I am sorry because I really enjoy the *ANTI-AIRCRAFT JOURNAL*. Maybe *Combat Forces Journal* will be better. Colonel Symons will make an able publisher. Give him my congratulations.

COL. WILLIAM I. BRADY, Rtd.  
5143 Ward Parkway  
Kansas City, Mo.

. . . In its 63 years of activity the *JOURNAL* has fostered an esprit de corps at first among the Coast Artillerymen and now among the AA Artillerymen. The *JOURNAL* has been a very effective means of giving the AAA a sense of unity and a feeling of accomplishment in its work. It has enabled old friends in the AAA to keep track of one another. I am wondering if the same sense of common interests among friends will be possible under the new plan?

. . . I wish you luck in your efforts to make the AAA problem a matter of Army wide concern.

COL. W. F. SPURGIN  
97th AAA Group

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# HONOR ROLL

## Original Honor Roll

88th AAA Abn Bn  
Lt. Col. N. M. G. Locksley  
228th AAA Group S. C.  
Col. T. H. Pope  
107th AAA AW Bn S. C.  
Lt. Col. E. R. McIver  
305th AAA Group N. Y.  
Col. J. S. Mayer

## Separate Commands

Hq AAA Command  
Lt. Gen. S. R. Mickelsen  
Eastern AAA Command  
Brig. Gen. A. G. Franklin  
Western AAA Command  
Maj. Gen. H. Hewett

## Central AAA Command

Col. D. J. Bailey  
AAA Repl Training Center  
Col. E. R. C. Ward  
Hq Far East AAA Spec. Sch.  
Col. F. E. Day  
Northern (Prov) Group  
Col. W. E. Johnson

## Brigades

31st AAA Brigade  
Col. Arthur Roth  
32nd AAA Brigade  
Col. C. H. Blumenfeld  
34th AAA Brigade  
Brig. Gen. F. C. McConnell  
35th AAA Brigade  
Brig. Gen. T. V. Stayton

## 40th AAA Brigade

Brig. Gen. E. F. Cardwell  
45th AAA Brigade  
Brig. Gen. T. W. Parker  
47th AAA Brigade  
Maj. Gen. F. M. Day  
52nd AAA Brigade  
Brig. Gen. W. H. Hennig  
53rd AAA Brigade  
Brig. Gen. L. T. Heath  
56th AAA Brigade  
Maj. Gen. N. A. Burnell, II  
104th AAA Brigade Mass.  
Brig. Gen. V. D. Coyne  
105th AAA Brigade N. Y.  
Brig. Gen. A. H. Doud  
107th AAA Brigade Va.  
Brig. Gen. J. W. Squire

## 108th AAA Brigade Ga.

Brig. Gen. G. J. Hearn  
112th AAA Brigade Calif.  
Brig. Gen. J. W. Cook  
261st AAA Brigade Dela.  
Brig. Gen. J. B. Moore

## Groups

1st Training Group  
Col. C. E. Roden  
3rd AAA Group  
Col. M. G. Weber  
4th AAA Group  
Col. E. B. Hempstead  
5th AAA Group  
Col. W. H. Vail  
6th AAA Group  
Col. H. B. Cooper



7th AAA Group  
Lt. Col. R. C. Bali

8th AAA Group  
Col. L. J. Hillberg

9th AAA Group  
Lt. Col. J. H. Brubaker

13th AAA Group  
Col. J. F. Eason

15th AAA Group  
Col. P. B. Stiness

18th AAA Group  
Col. S. M. Mellnik

19th AAA Group  
Col. H. A. Gerhardt

26th AAA Group  
Col. N. A. Skinroad

28th AAA Group  
Col. W. C. Conway

30th AAA Group  
Col. P. H. Wollasto-

65th AAA Group  
Col. H. S. Tubbs

68th AAA Group  
Col. G. F. Pierce

80th AAA Group  
Col. D. B. Murray

97th AAA Group  
Col. W. F. Spurgin

138th AAA Group  
Col. M. B. Tauer

142nd AAA Group Ala.  
Col. R. M. Hardy

205th AAA Group Wash.  
Lt. Col. H. S. McGee

211th AAA Group Mass.  
Col. Douglas MacDuff

213th AAA Group Penn.  
Lt. Col. H. A. Cressman

214th AAA Group Ga.  
Col. J. G. Johnson

218th AAA Group Penn.  
Lt. Col. J. L. Butler

220th AAA Group Mass.  
Col. R. H. Hopkins

224th AAA Group Va.  
Col. E. W. Thompson

226th AAA Group Ala.  
Col. N. J. Walton

233rd AAA Group Calif.  
Col. W. T. Stone

242nd AAA Group Conn.  
Col. Robert Perez

244th AAA Group N.Y.  
Col. L. S. Allen

250th AAA Group Calif.  
Col. R. B. Williams

260th AAA Group D. C.  
Col. G. V. Selwyn

302nd AAA Group  
Col. J. M. Welch

313th AAA Group  
Col. A. F. Hoehle

326th AAA Group  
Col. M. D. Meyers

369th AAA Group N. Y.  
Col. C. L. Baskerville

374th AAA Group Illinois  
Col. T. F. Mullaney

### Battalions

1st AAA Tng Bn  
Maj. J. E. Nuwer

2nd AAA AW Bn SP  
Lt. Col. R. O. Van Hout

3rd AAA AW Bn SP  
Maj. J. A. Tringali

4th AAA AW Bn  
Lt. Col. E. O'Connor, Jr.

5th AAA AW Bn  
Lt. Col. N. E. Fisher

5th AAA Tng Bn  
Lt. Col. C. E. Hogan

7th AAA AW Bn  
Lt. Col. M. J. McGuire

9th AAA Missile Bn  
Lt. Col. G. N. Wilcox

10th AAA AW Bn  
Lt. Col. S. D. Bruns

11th AAA AW Bn SP  
Lt. Col. D. A. Gile

12th AAA Gn Bn  
Lt. Col. J. R. Oatman

15th AAA AW Bn  
Lt. Col. J. E. Hart

16th AAA Gun Bn  
Lt. Col. G. R. Evans

18th AAA Gun Bn  
Lt. Col. E. M. Hudak

20th AAA Gun Bn  
Lt. Col. R. E. Butts

22nd AAA AW Bn  
Lt. Col. W. H. Bornscheuer

24th AAA Gn Bn  
Lt. Col. H. E. Bock, Jr.

28th AAA Missile Bn  
Lt. Col. J. A. Ward, Jr.

32nd AAA AW Bn  
Lt. Col. H. G. Cummings

34th AAA Gn Bn  
Lt. Col. G. E. Sylvester

35th AAA Gun Bn  
Lt. Col. L. H. Kirk, Jr.

36th AAA Missile Bn  
Lt. Col. E. R. Gooding

37th AAA Gn Bn  
Lt. Col. R. R. Corey

38th AAA Gun Bn  
Lt. Col. J. M. McAllister

39th AAA AW Bn  
Lt. Col. F. D. Pryor

40th AAA Gun Bn  
Lt. Col. W. H. Hubbard

41st AAA Gun Bn  
Lt. Col. W. T. Lind

42nd AAA AW Bn  
Lt. Col. J. E. Arthur, Jr.

46th AAA AW Bn SP  
Lt. Col. R. M. Walker

49th AAA Gun Bn  
Lt. Col. C. C. Hines

52nd AAA Gun Bn  
Lt. Col. J. A. Rogers

53rd AAA Gn Bn  
Lt. Col. J. H. Brubaker

56th AAA Gn  
Lt. Col. W. Y. McCachern

60th AAA AW Bn  
Lt. Col. J. L. Davis, Jr.

62nd AAA AW Bn SP  
Lt. Col. H. A. Fulk

63rd AAA Gn Bn  
Lt. Col. E. G. Schwartz

66th AAA Missile Bn  
Lt. Col. J. C. Wilkerson

69th AAA Gun Bn  
Maj. L. E. Ziegler

70th AAA Gun Bn  
Lt. Col. W. E. Barkman

71st AAA Missile Bn  
Lt. Col. L. R. Drake

74th AAA Gn Bn  
Lt. Col. R. A. Janowski

76th AAA AW Bn SP  
Lt. Col. N. E. Ackner

77th AAA Gun Bn  
Lt. Col. W. L. Wyatt

82nd Abn AAA Bn  
Lt. Col. J. T. Evans

83rd AAA Missile Bn  
Lt. Col. C. F. Coffey

89th AAA Gn Bn  
Lt. Col. J. D. Underwood

92nd AAA AW Bn  
Lt. Col. S. C. Farris

93rd AAA Gun Bn  
Lt. Col. B. B. A. Hoemel

94th AAA AW Bn SP  
Lt. Col. A. K. King

95th AAA Gun Bn  
Lt. Col. J. T. Materi

96th AAA Gun Bn  
Lt. Col. C. M. Pentecost

99th AAA Gn Bn  
Lt. Col. F. J. O'Connell

102nd AAA Gun Bn N. Y.  
Lt. Col. E. R. Welte

106th AAA Gun Bn N. Y.  
Maj. J. B. McManus

125th AAA Gun Bn Va.  
Lt. Col. T. J. Buntin

129th AAA AW Bn Va.  
Lt. Col. G. D. Eastes

130th AAA AW Bn SP N. C.  
Lt. Col. W. Lamont, Jr.

180th AAA Gn Bn Ohio  
Maj. F. L. Matson

245th AAA Gun Bn N. Y.  
Lt. Col. C. Davidson

248th AAA Gun Bn Illinois  
Lt. Col. A. C. Andrae

259th AAA Gn Bn N. Y.  
Lt. Col. K. C. Steeneck

271st AAA Gun Bn Calif.  
Lt. Col. V. S. Matthews

340th AAA Gun Bn D. C.  
Lt. Col. R. T. Bard

369th AAA Gn Bn N.Y.  
Lt. Col. J. S. Brown

418th AAA Gun Bn Va.  
Lt. Col. W. K. Adams

443rd AAA AW Bn SP  
Lt. Col. R. J. Raffaoli

450th AAA AW Bn  
Lt. Col. G. W. Shivers, Jr.

457th AAA AW Bn  
Lt. Col. J. Horst, Jr.

459th AAA Gun Bn  
Lt. Col. C. D. Sauvinet

466th AAA AW Bn  
Lt. Col. S. M. Arnold

486th AAA Bn  
Lt. Col. C. C. Edwards

495th AAA Missile Bn  
Lt. Col. B. H. Backstrom

496th AAA Gun Bn  
Lt. Col. H. L. Dickey

501st AAA Gn Bn  
Lt. Col. P. B. Wolff

504th AAA Gn Bn  
Lt. Col. J. C. Baer

505th AAA Gn Bn  
Lt. Col. M. E. Chotas

506th AAA Gun Bn  
Lt. Col. J. H. Valliere

507th AAA AW Bn (75mm)  
Lt. Col. J. A. Laing

513th AAA Gun Bn  
Lt. Col. G. B. Vroom

516th AAA Missile Bn  
Lt. Col. A. H. Manguso

518th AAA Gun Bn  
Lt. Col. D. C. Sherrets

519th AAA Gun Bn  
Lt. Col. A. E. Holt

526th AAA Missile Bn  
Lt. Col. W. J. Wellman

546th AAA Gn Bn  
Lt. Col. W. A. Brinkerhoff

549th AAA Gun Bn  
Lt. Col. E. Mountain

550th AAA Gun Bn  
Lt. Col. F. E. Terry

551st AAA Missile Bn  
Lt. Col. C. M. Allen

554th AAA Gun Bn  
Lt. Col. J. R. Schrader

601st AAA Gun Bn  
Lt. Col. E. E. Bellonby

605th AAA Gun Bn  
Lt. Col. F. J. Raddy

606th AAA Gn Bn  
Lt. Col. J. F. Butler

633rd AAA Gn Bn NY  
Lt. Col. W. A. Baker

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Maj. H. L. Hall

705th AAA Gn Bn R. I.  
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Lt. Col. Wellington Yaple

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Lt. Col. W. W. Morse

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Lt. Col. G. A. Duke

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Maj. J. L. Knatts

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Maj. J. E. Huntsman

737th AAA Gun Bn  
Lt. Col. B. W. Perry

738th AAA Missile Bn  
Lt. Col. M. C. Johnson

739th AAA Gun Bn  
Lt. Col. C. W. Reeve

740th AAA Missile Bn  
Lt. Col. L. D. Burkett

745th AAA Gn Bn Conn.  
Lt. Col. R. M. Story

746th AAA Gun Bn Calif.  
Lt. Col. K. S. Gray

747th AAA Gun Bn Mass.  
Lt. Col. J. F. Kane

749th AAA Gn Bn  
Lt. Col. G. W. Kenna

752nd AAA Gun Bn  
Lt. Col. D. T. Chapman

753rd AAA Gun Bn  
Lt. Col. J. T. Browne

764th AAA Gun Bn  
Lt. Col. R. L. Speltz

770th AAA Gn Bn Wash.  
Lt. Col. W. D. Bair

867th AAA Gn Bn  
Lt. Col. R. D. Harlan

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Maj. W. C. Fore

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184th AAA Det Opns Calif.  
Capt. M. C. Teschendorf

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