

The
FIELD ARTILLERY
Journal



IN THIS ISSUE:

Campaigns

MARCH, 1943



FIELD ARTILLERY GUIDE

- Designed for *field reference*, not for garrison training.
- Compactly combines *essential* matter widely scattered through many texts and manuals.
- Enthusiastically *endorsed* by all — Privates to Generals and back again.
- Actually *in use* both here and abroad.
- *Comprehensive and clear, yet concise* — dead wood is eliminated.
- Stoutly bound, in weather-resistant treated cloth.

\$2.00

PER COPY

Subject to Members' Discount — See Page 232



U. S. FIELD ARTILLERY ASSOCIATION

1218 CONNECTICUT AVENUE

WASHINGTON, D. C.

LT. COL. JOHN E. COLEMAN, *Editor*
 CAPT. BERTRAM H. WHITE, *Assistant*
 LENNA PEDIGO, *Business Manager*

M-7 self-propelled 105-how. (on medium tank chassis) graces this March cover. Scourge of Nazi tanks, it is mobile, fleet, accurate, and powerful.

OVERSEAS members and other readers will receive a special, light-weight edition of the JOURNAL, beginning with this issue. Thinner paper has certain disadvantages, but we hope that reduction of both weight and bulk will minimize delivery delays. At the present time this system is experimental. If successful, it will be made permanent. Meanwhile we will be grateful for the comments of any of you who may feel strongly about the matter, one way or the other.

CALIBRATION, especially of the 105-how., is a thoroughly live question—particularly with units newly formed or with new equipment. There is little if any chance for formal calibration tests, but much could be accomplished by careful tabulation and analysis of the results of service practices. The JOURNAL and its readers will welcome word as to what may have been done along this line.

GROWTH of membership is encouraging. More and more new members ask to be dated back to some issue containing material which appealed particularly. Whenever possible we gladly do this, but bear in mind we can't always outguess the future demand for an issue when determining its press run.

CHANGES OF ADDRESS are an ever-present problem. No, not those you tell us about—all requested changes in rank or address are made promptly. But what about you people who haven't been receiving your copy, you who have therefore been wearing out your friends' JOURNALS? The chances are we have suspended your stencil as a result of the return of an issue marked "Moved — Address Unknown." PLEASE take us into your confidence! Drop us a line and give your new address.

The United States Field Artillery Association

ORGANIZED JUNE 7, 1910

President
 Major General Lewis B. Hershey

Vice-President
 Brigadier General Jesmond D. Balmer

Executive Council
 Major General C. C. Haffner, Jr.
 Major General Lewis B. Hershey
 Brigadier General William H. Sands
 Colonel Ralph C. Bishop
 Colonel Alan L. Campbell
 Colonel Maurice W. Daniel
 Colonel Frank A. Henning
 Colonel Edmund W. Searby
 Major James P. Hart, Jr.

Secretary-Treasurer
 Lieutenant Colonel John E. Coleman

The Field Artillery Journal

"Today's Field Artillery Journal is tomorrow's training regulations."

MARCH, 1943—Vol. 33, No. 3

	PAGE
CRETE CORRESPONDENCE	162
<i>By Lt. J. P. Dill, New Zealand FA</i>	
MOUNTAIN JAEGER IN THE CONQUEST OF CRETE, MAY 1941	164
DUNKIRK IN THE MEDITERRANEAN	170
<i>By Allen A. Michie</i>	
THE BRITISH 6-POUNDER	173
GERMAN ARMORED FORMATIONS IN LIBYA	176
<i>By Col. H. B. Latham</i>	
ARTILLERY IN TANK SUPPORT	179
<i>By "Sarkie"</i>	
THE HONORABLE ARTILLERY COMPANY	181
<i>By Claud Golding</i>	
LIBYAN LETTER	182
SOVIET MOTOR MAINTENANCE ON WINTER MARCHES	183
<i>By T. Varshavski</i>	
ORGANIZATION OF THE GERMAN DEFENSE	183
<i>By Major C. Lopatin</i>	
ARTILLERY OF A GERMAN TANK DIVISION	185
THE AUTUMN, 1942, CAMPAIGN IN RUSSIA	186
<i>By Col. Conrad H. Lanza</i>	
CONTRASTS	195
TANKS AT FORT SILL	196
ANTITANK THOUGHTS	198
<i>By Col. M. J. Colbuck</i>	
TUNISIAN EXPERIMENT	199
<i>By Capt. Norman J. Kinley, FA</i>	
"THE RED GUIDON" (SONG)	200
<i>By Col. Gerald Griffin</i>	
RAPID CAMOUFLAGE	202
<i>By Lt. Daniel H. Sherman, FA</i>	
BACK TOWARD FUNDAMENTALS	204
<i>By Maj. A. R. Herecz, FA</i>	
WEAPONS INSTRUCTION AT THE TANK DESTROYER SCHOOL	206
<i>By Capt. R. S. Van Duzer, FA</i>	
THE EMPLOYMENT OF CORPS ARTILLERY	208
<i>By Col. John J. Burns, FA</i>	
NAVAL GUNFIRE IN SUPPORT OF LANDING OPERATIONS	212
<i>By Lt. Robert H. Bingham, FA, and Ensign Herbert C. Manning, U.S.N.R.</i>	
ABANDON SHIP!	214
<i>By Capt. Edward A. Raymond, FA</i>	
PERIMETERS IN PARAGRAPHS	216
<i>By Col. Conrad H. Lanza</i>	
CHEMICAL-PUFF TERRAIN BOARD—F.A.S. VARIANT	226
FEWER BOTTLENECKS	228
<i>By Capt. Roger Wilco</i>	
TIME BRACKET	229
<i>By Maj. Frank C. Narvell, FA</i>	
"CELESTIAL" COMMENTS	230
<i>By Capt. Joseph M. Battle</i>	
MAJOR AMORY'S REPLY	230
DIARY OF WAR EVENTS	231
BOOK REVIEWS	232

Published monthly by the United States Field Artillery Association. Publication office 3110 Elm Avenue, Baltimore, Md. Business and editorial office. United States Field Artillery Association, 1218 Connecticut Ave., Washington, D. C. Address all communications to the Washington office. Entered as second class matter August 20, 1929, at the post office at Baltimore, Md. Accepted for mailing at the special rate of postage provided in Sec. 1103, Act of October 3, 1917, Copyright, 1943, by The United States Field Artillery Association. Subscription price \$3.00; Canada \$4.00; foreign \$3.50; single recent copies to members, 25 cents; non-members, 35 cents. THE FIELD ARTILLERY JOURNAL does not accept paid advertising. It does pay for original articles accepted, but unsolicited manuscripts must be accompanied by return postage if they are to be returned. *Addresses, and changes of rank, will be changed as frequently as desired, upon notification; not otherwise. Changes should reach the editor three weeks before date of next issue. Immediate notice should be given of any delay in the receipt of the magazine.*

Authors alone are responsible for statements made. No articles are official unless specifically so described.

29th April, 1941

We have been evacuated from Greece and are now in Crete. I am now very tired and have had nothing but my greatcoat to sleep in for nearly a week. If you want a good cure for insomnia keep awake and work hard for 36 hours on end.

* * * * *

4th May, 1941

We are still on the delightful island of Crete doing pretty well nothing. I may say the army doing nothing takes a long time, does it very inefficiently, and gets one very tired. I have washed my complete wardrobe since I've been here. It does not take long—1 shirt, 1 vest, 1 pair underpants, 2 pairs socks and 1 towel. I have also got a pullover which does not need washing and a new cotton shirt. Add to this my battle dress (very dirty), a greatcoat and a blanket, tin hat, respirator and web equipment, less pack and plus revolver and kukri. These are my total belongings in Crete. The rations are pretty short, but this is a land of plenty and we can buy beautiful oranges very cheaply and also very good brown wholemeal bread and honey and a few eggs.

We went into action twice in our Battery and are very pleased with ourselves, as the other Battery only saw one action. The first action was the dinkum oil. It was a grand show and most of us enjoyed our baptism of fire. Don't think I'm getting bloodthirsty and want to live on that sort of thing, but it is nice to know that hell fire and machine-gun fire aren't too bad and that one can still stand up and get on with the job. Actually we had quite a bit of fun withdrawing, as we withdrew after the infantry, with the prospect of shooting up the old German tanks. R—— stopped with one gun and I with the other. The gun R—— was with shot up one tank. Another of my guns shot up one or two tanks in that little withdrawal, but I was not there either, worse luck. Previous to this we had had quite a strenuous time withdrawing. We marched the whole of one night and lay up on an open hillside with our camouflage nets spread over the vehicles and no movement outside. We marched half the next night and turned into a dispersal area round about midnight and slept. We got up the next morning at dawn and reconnoitered a position. The guns

CRETE

CORRESPONDENCE



From the *Journal of the Honourable Artillery Company* — April, 1942



The following descriptions of the British actions in Greece and Crete are extracted from letters written to his mother in England and his fiancée in New Zealand by the late 2nd Lieut. J. P. Dill, New Zealand Field Artillery. He served in Libya as well as in Greece and Crete, and died of wounds in Kalinin Military Hospital, Crete, on June 2nd, 1941, after the evacuation of the island.



to be called foul by me. We got to our dispersal area at dusk after a final bit of travelling over an unformed grass track and through 100 yards of water splash.

The next morning we took up positions and settled in in rainy weather. It was a beautiful bit of country, as the river valley narrowed and turned from dull marshes into bright green cornfields and vineyards too heavily wooded to give a good field of view. The steep hills on either side closed things in and made everything seem rather nice and personal. The hills were steep and bare and stark. The weather cleared during the day and we dried things out and cheered up. That evening it was reported that the old Hun was bringing tanks through a tunnel which was supposed to have been destroyed, so we opened up a desultory harassing fire which went on in bits and pieces until about 2 o'clock the next morning. I then turned in at the command post until 5 a.m. It was not a very restful three hours, as the wireless set started up to check communications every half hour and the telephone to the O.P. was being checked constantly.

We stood to from 5 to 7 a.m. and at 7:30 things were still pretty quiet, so I turned in. After one and a half hours' sleep one of the lads came rushing up in a hell of a state saying there were thousands of German infantry coming round on our left flank. This wasn't any of our business, anyhow, but I got up in a bit of a hurry and stayed firing the guns on and off for the rest of the day. Round about midday or 3 p.m.—I just lost all count of

were brought in and slit trenches dug and the position generally made ready, all in the rain. Here we did quite a lot of liasing with an Aussie Field Ambulance nearby, who had managed to appropriate quite a bit of rum. The N.C.O. in charge of it seemed to think he had more than was safe, so he gave us a case. When we were just beginning to think of shelters for the men we got the order to move—round about 3 or 4 p.m. So we got under way for another front.

We travelled through a large (for Greece), important town, which formed a bottleneck of communications, and then across a swamp over an absolutely foul road; and after 15 months in Egypt and six weeks in Greece roads have to be pretty bad

time—the infantry started coming back through us. However, we kept on firing, with various flaps of "Tank alert" and a wrong order to move. We had moved about 50 yards, but came into action again. We ended up in a grand hooley of shellfire from a small mountain gun. I know it was small, because one of its shells hit the ground 20 yards from me, failed to explode, ricocheted over my head and landed 20 yards behind. This gun was not much use, as shells burst within 10 yards of several of us and did no damage. It damaged the old Hun more than us, as it made one lot of chaps pretty wild by blowing up their bedding, leaving blankets hanging on trees, so the chaps were all the more keen on getting more rounds away. Some time during the afternoon G—— came through my gun position looking a bit sorry for himself, as he had had his gun just about blown up under him and his tractor as well. He had been forward in an antitank role and had done great work, shooting up several tanks before he got out. We took him out in one of our tractors to the tune of mortar and shellfire. Not a blessed thing was hit. Why, I don't know. I suppose the devil takes care of his own. The last range we shot at was about 2,500 yards, I think.

Major S—— was at the O.P. and most of the time we were shelling Hun infantry crossing a river in assault boats to some good effect.

Captain B—— was at the gun position all the latter part of the afternoon and was a great moral support. I am no brave man and by God I was glad to get away from there. It was a bit nerve-wracking. We withdrew from there two guns at a time, following all the best artillery traditions, much to the relief of the infantry. First of all we withdrew through "F" troop and dropped G——, and then they withdrew through us, everybody except me seeming to have a crack at the tanks. From here we formed up and started to "withdraw by prearranged plan." It sounds as if this was another Dunkirk, but it was not, as every time we knocked the old Hun we knocked him so hard that he sat down and licked his wounds and gave us a day to withdraw, a day to recover, a day to reconnoitre a new position, and a day to settle in. This particular withdrawal lasted the whole of that night and the next day until 10 o'clock in the evening. It is wonderful how long one can go without sleep.

I was horribly frightened all the time. All the same I would just like to have another lick at the old Hun on more even terms, say with him only having double the number of troops we had. We would beat him hands down. He does use his head a bit, but not as much as us, and he is incredibly brave, but our equipment and individual training are streets ahead of his.

* * * * *

11th May, 1941

I expect you have been hearing all about the Australian and New Zealand deeds around Mount Olympus and Thermopylae. This time there were as

many of us as there were Aussies, so you should hear something of us. I certainly quite enjoyed it and can look back on it as a rather long and protracted climbing or tramping trip. Not much more exhausting and after all not *very* much more dangerous. Anyhow, I have enough faith to believe that I am coming out alive, so nothing worries me much and when things get a bit hot I remind myself of this.

We got into action twice before we were evacuated and the other battery only once, so we are very pleased at that.

Our baptism of fire was a very nice little affair and taught me a lot. It was a "good old days" show of crude gunnery and almost galloping guns—if you can imagine them galloping behind a tractor. It was pretty solid from a rest point of view, as we spent a day settling in and digging a position, and started firing about 9 o'clock at night, going on intermittently for 24 hours. We then spent the next 24 hours withdrawing to the Thermopylae position. Luckily the old Hun can't fight or march as hard as we can, so we had four days to recover and dig the new positions. I think we really did knock him pretty hard. It is a great pity we were evacuated (I suppose I should say "had to be"), as, given half the troops and the same arms as we had then, and add perhaps a few tanks for attacking purposes, we would knock him balmy. Hun dive bombing and machine gunning is a bit of a nuisance, but can easily be got rid of by night moves; anyhow it is not nearly as effective as artillery fire. A spot of R.A.F. would have helped things considerably—I think I saw one of our fighters streaking for home during the whole campaign. This is not a fair statement of what they really did, but it leaves a very definite impression on my mind.

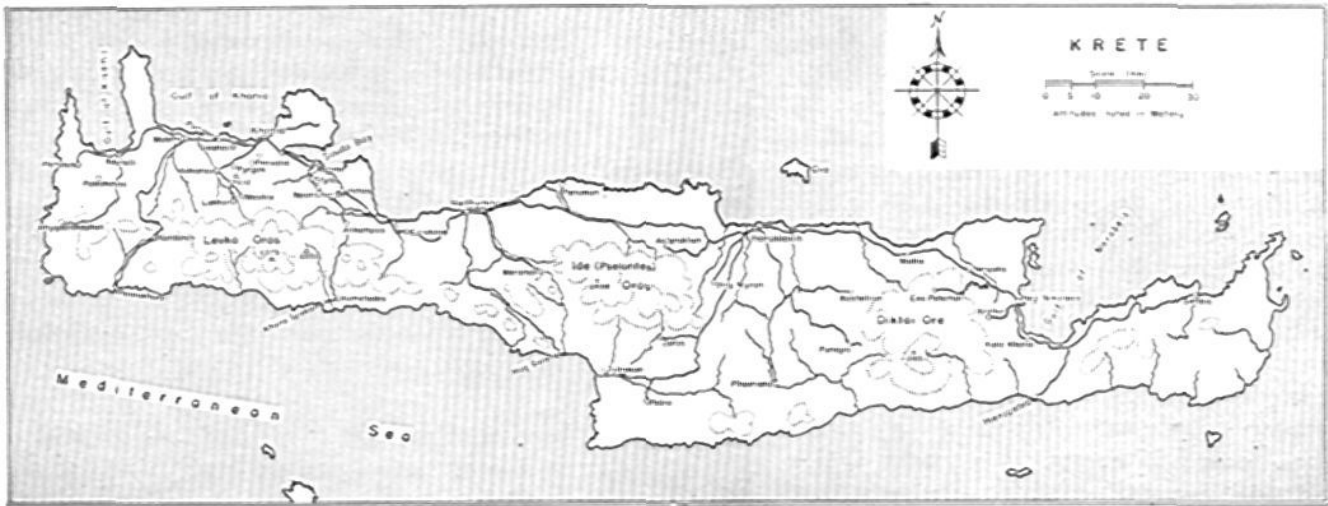
The invincible German tank! Well, report has it that some one saw a 25-pounder shell go right through one. They say we had some crack German divisions against us. If this is so, God help the not-so-crack ones if we meet them. All we are waiting for now is to be re-equipped and to have another crack at them.

* * * * *

Middle of May

We are still on the delightful island of Crete kicking our heels and trying to imagine we are doing something when we are really doing nothing. [This is illuminating. Why no preparation for the defense of the island?—Editor of the *Journal of the Honourable Artillery Company*.]

Our living quarters are in an olive grove. The stream flows north and from us down to the sea; about 600 yards away there are terraced vineyards. Just opposite me on the other side of the stream is a vineyard where the owner says he grows sultanas. It is a beautiful slope, this vineyard, and gets all the morning sun. The sultanas should be grand and very early.



MOUNTAIN JAEGERS

In the Conquest of Crete, May 1941

1. CRETE

Crete has always been very important in the Mediterranean area. For over four centuries the island was under Venetian rule; not until 1912 did it pass from Turkish domination to Greece. It shuts off the Aegean Sea as a railway gate to the south, and whoever possesses it can control this sea and the coast of Asia Minor on the east. West and east Crete forms a link between Malta and Cyprus, and with respect to the south furnishes a good base for sea and air operations against the northern border of Cyrenaica and Egypt with the militarily important Suez Canal.

Crete itself is a wild, bare, hilly country which contains only a few fertile lowlands. In the western part of the island the Levka Oros (White Mountain) rises in a steep slope to a height of 7,690 feet, abrupt and pathless. Bare limestone and in parts almost impenetrable brushwood and shrubbery called *Macchia* give it its character. A road on the west and one on the east traverse it north and south. One of the roads ends abruptly north of Khora Sphakion and changes into a footpath.

In the middle of the island the solid mass of Ide (Pselorites) Oros rises 8,195 feet. Snow covers the summits till far into early summer. Along its western side the road passes from Rhethymno to Hag. (Saint) Galene; along its eastern and southern border the road passes from Herakleion to Tybakion.

In the eastern part of the island are situated the Diktaia Ore with altitudes up to 7,000 feet; northward and eastward from them the road leads from Herakleion over Saint Nikolaos to Hierapetra.

On the treeless and arid mountains, which greatly impede military movements, lives the Cretan shepherd, well-known as a guerrilla, while the mass of the inhabitants (who number altogether 400,000) have congregated along the northern coast on the lowlands covered with olive groves. There along calm bays the chief places of the island are situated. They are connected by the road running west and east, which in places runs close to the sea. Also the principal aerodromes (at Maleme, Khania, Rhethymno, and Herakleion) are located close to the northern coast. This alone possesses natural harbors for larger ships, the most important of which is Kólpos Soúdas (Suda Bay); the southern coast has only slight military importance, since it is difficult of access and has only small fishing harbors.

Anyone who wants to defend the island must, therefore, control the northern coast, as it is the natural approach to the island and the communication line between the west and the east. If this communication is open, movements can be made easily and quickly in either direction. Then also, weak forces keeping close to the coast and aided by the impassability of the terrain have the best chance of defending themselves.

As described in Militär Wissenschaftliche Rundschau

Whoever attacks Crete must begin the attack from the north and strive to occupy the island from west to east or vice versa. The numerous defiles and mountain heights, which again and again give the defender the best defensive positions, make frontal attacks especially difficult and costly. Outflanking movements and detours must therefore be attempted time and again in spite of all difficulties of terrain. But also in the lowland it is difficult for the attacker to fight through the vast olive groves, which make it almost impossible to reconnoiter from the air or on the ground.

Little was known about the strength or the troop dispositions of the English. At the close of 1940 they had occupied the island with about one division and used it as an air and naval base. After the collapse of the Grecian front on the mainland, forces of at most one division from the British expeditionary corps might have been landed in Crete. In addition to these there were about 10,000

Greek troops from Peloponnesus. The collective strength of the enemy might therefore have totaled 40,000 men, some of which were not (with respect to equipment or weapons) fully prepared to be sent into battle. Whether part of these again had gone to Egypt (or conversely, whether reinforcements had come from there) could not be ascertained with certainty.

By the use of parachute troops on May 20 the connection between the west and the east was successfully broken and coordinated communication between the defenders stopped.

On May 21 in the afternoon occurred the landing of the first battalion of mountain jaegers on the Maleme aerodrome, which, to be sure, was still within range of enemy artillery. To eliminate this and make the aerodrome secure was, therefore, the first task. On the morning of the 23rd it was accomplished by outflanking the enemy from the south, and a line approximately 7 kilometers south and east of Maleme was reached.

Platoon by platoon more units of the mountain jaegers now arrived, especially heavy weapons and artillery. The

leader of the mountain jaeger unit, Major-General Ringel, formed several fighting units, one of which mopped up the western part of the island. It joined battle with guerrillas at Kastelli and took the place by storm on May 24 after a preparatory attack of stukas, the guerrillas suffering very heavy losses. The next day some detachments reached the district west of Kastelli, while other detachments attacking above Kandanos also captured Palaiochora after a short battle late in the evening. During the following days the enemy was mopped up in the western part of the island so that that part was soon pacified.

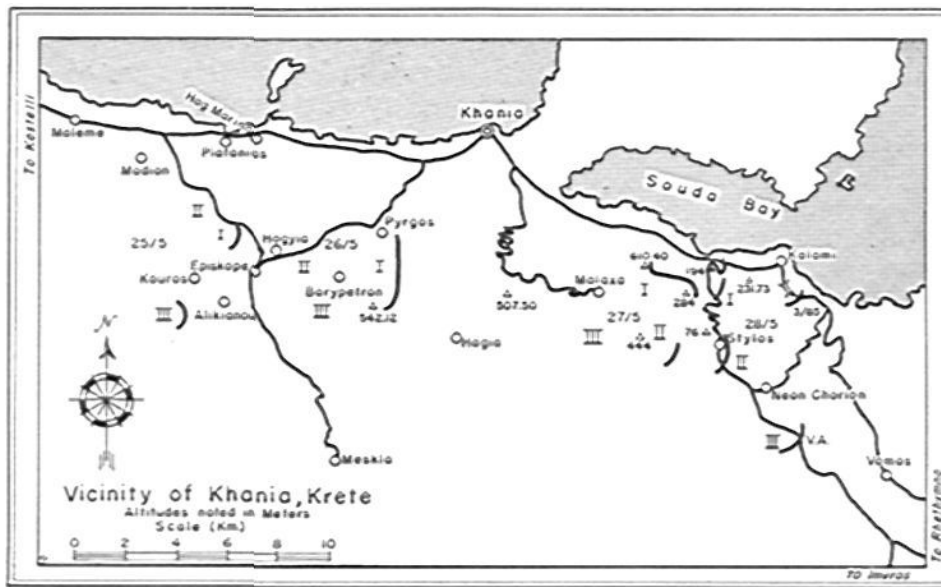
In the meantime the fighting units pressing eastward succeeded by bitter fighting—in which the favorable terrain and the olive groves obstructing the view aided the

foe — in throwing the enemy back to a defensive position which (beginning from the left) lay 5 kilometers to the east of the line Platania-Alikianou. A frontal attack alone could not lead to a decisive victory, so an outflanking group was formed of a

regiment of mountain jaegers which, by taking advantage of the spur of Levka Oros, was to outflank the enemy positions west of Khania, reach the Khania-Rhethymno road in the district southeast of Souda, and thereby cut off the line of retreat for the English.

In the course of the next day—May 25—the enemy positions were wrested from the English meter by meter in the frontal attack. Mountain positions were taken in bitter encounters until finally in the evening a company of mountain jaegers succeeded after a stuka attack in taking by storm the mountain fortress of Galatas and holding it against a night counterattack by the enemy. In the meantime the flanking detachment had pressed forward to the south wing of the foe and gotten ready to attack with its right flank toward Alikianou.

On May 26 the attack was continued according to plan. The outflanking detachment took Alikianou and gained the line 542.12—Pyrgos, advancing through pathless mountains and in burning heat. Further to the north the enemy was thrown back just west of Khania, which was captured by envelopment toward 1400 on the following



day, May 27. Detachments reached the district of Khania—Suda Bay. The outflanking groups, pressing further ahead through steep mountain terrain, were west of Stylos by evening. The resistance of the English ended; beaten, they withdrew to the southeast.

On May 28 a forward detachment was formed. On the 29th it pressed forward to Rhethymno in headlong pursuit after battling enemy rearguards, captured the city, and joined the parachute jaegers fighting there. Once again enemy resistance had to be broken east of Rhethymno, then the way was open so that Hierapetra could be occupied on the evening of the 30th. The enemy detachments retreating toward Khora Sphakion were pursued by a mountain-jaeger regiment, and on June 1 surrendered after a short fight.

The battle of Crete was thereby in the main ended. The mountain jaegers had gone through 12 days of heavy fighting in difficult terrain and burning heat and with little water, against an extremely stubborn enemy. Supported by the Luftwaffe and accompanied by the parachute jaegers to Khania, they carried their entire equipment together with the heavy weapons on their backs over long stretches, and won the victory in this short time.

Besides heavy losses in war materials of all kinds the foe lost: in prisoners, 10,700 British officers and men, 5,000 Greek officers and men; in killed, about 5,000 British and Greek officers and men, not counting those destroyed on the sea.

2. THE OUTFLANKING OF MOUNTAIN-JAEGER REGIMENT 85 SOUTH OF KHANIA AGAINST THE ENGLISH LINE OF RETREAT

The 1st Battalion emplaned from the regiment on May 22 and landed under strong artillery fire from the enemy on the Maleme aerodrome. There it was given the task of silencing the enemy artillery west of Hag. (Saint) Marina and effect a junction with the parachute jaegers west of Khania.

The battalion struck southwest of Hag. Marina at the rear and flank of the enemy. By this bold attack the enemy—which was superior in numbers—suffered considerable losses in a stubbornly contested engagement and was forced to retreat. The task of the battalion was completed; the commanding heights of Hag. Marina, so important for the defensive battle of the enemy west of Khania, were taken; junction with the parachute jaegers was effected.

For the protection of the right flank of a regiment of mountain-jaegers attacking along the coast toward Khania and of the parachute jaegers, the regiment now renewed the attack in a southerly direction against stubborn enemies and snipers. On May 23 in the evening it reached the area north of Alikianou after successful individual encounters with covering parties.

On May 24 the regiment staff and the 3rd Battalion of mountain-jaeger regiment 85 were landed, then they gathered south of Modion and in the region northeast of

Kouvos. At intervals on May 25th the 2nd Battalion and the 16th Company arrived with 6 guns at the Maleme aerodrome. These detachments were concentrated with the regimental staff about 4.5 kilometers south of Platania. In the evening the regiment was ready, after reconnoitering the enemy position at Alikianou, to attack in an easterly direction over the mountain chain south of Khania and press forward to Rhethymno to effect a junction with the parachute jaegers landed there.

For the execution of its task the regiment had 3 mountain-jaeger battalions without baggage and artillery. The 16th Company could be sent along only after the road south of Khania in the direction of Stylos was cleared.

First of all the 3rd Battalion was to gain the highlands east of Alikianou, then the 1st Battalion was to attack. By great physical exertions the 3rd Battalion reached the heights southwest of Barypetron after overcoming slight enemy resistance above Alikianou.

While this enveloping movement was still in progress, it happened that the enemy, which on the afternoon of May 25 had been on the heights southwest of Alikianou and south of Episcopo, slipped away to the southeast during the night 25/26. In order to lose no time and reach as soon as possible the rear of the enemy who was fighting stubbornly at and southwest of Khania, the 1st Battalion was now sent to form the spearhead of the regiment's attack in the direction of Malaxa; the 2nd Battalion, which had gone into the region of Hagia, was sent directly behind.

As early as the evening of the 26th the 1st Battalion broke stubborn enemy resistance and gained the height just southeast of Pyrgos. One company of the battalion captured height 542.12 after a difficult ascent and a hard attack. The 2nd Battalion followed the 1st closely, while the 3rd Battalion was entrusted with the protection of the right flank.

At dawn on May 27 the attack was continued with the object of pressing eastward in the direction of Stylos and there meeting the English who might be retreating from Khania.

In intense heat, over steep, rugged, and pathless mountain terrain the 2nd Battalion (on the right) reached height 507.50 at 1215; the 1st Battalion (on the left) after a battle reached the northern termination of the pass 4 kilometers south of Khania.

By the utmost exertion of every individual man and the complete personnel participation of all commanders and subordinate commanders, the regiment captured by the evening of May 28 the heights 444-284-610.40, which were so important for the continuation of the attack. Enemy resistance was quickly broken wherever it appeared. Three hundred captives, English and Greek, were taken. As a result, the regiment was deep within the flank of the English fighting south of Khania. The outflanking of the enemy was completed.

At dawn on May 28 the attack was continued in an easterly direction. The 3rd Company—the left wing—on

its own initiative broke through over height 231.73 to the bridge 2 kilometers south of Kalami; there they removed the explosive charges and thus possessed intact a bridge which was extremely important for the continued pursuit of the enemy. The bulk of the 1st Battalion reached the road to Stylos east of height 284 and south of point 194.

The 2nd Battalion fighting in the front line on the left flank of the regiment pressed forward in the region west of Stylos and captured height 76 (1 kilometer north of Stylos) by a quick attack and after overcoming stiff opposition. A strong enemy detachment at Stylos itself was surprised by an unexpected push against its line of retreat. Thus there developed an extremely hard fight which led to bloody hand-to-hand fighting. By spirited attacks the 2nd Battalion finally wrested from the English the strategic height immediately west of Stylos, which dominated the line of retreat. Since the regiment did not have any artillery it could not effectively attack the easily observed withdrawals of the enemy toward Neon Chorion. In this battle the battalion destroyed two English medium tanks. Besides, it inflicted considerable losses on the enemy and captured a number of motor vehicles and a large supply of provisions.

The outflanking movement of the regiment in extremely difficult and steep mountain terrain south of Khania, the swift breaking of every opposition, and the attack in the rear and against the English line of retreat caused the strong English Suda Bay position to collapse completely. And after the 3rd Battalion, which advanced south of the 2nd Battalion, had destroyed enemy resistance in the area 3 kilometers southeast of Neon Chorion by a pincer-like attack on both sides of the road, inflicting considerable losses on the enemy—the road was cleared for the advance of the forward detachment formed from the division.

On May 29th the forward detachment was able to take up the pursuit of the enemy in the direction of Rhethymno.

3. THE PURSUIT BY THE FORWARD DETACHMENT FROM MAY 28 TO MAY 30

The battles around Khania ended in a decisive victory in the afternoon of May 27th: the enemy retreated. A forward detachment was immediately formed to pursue the retreating enemy and to reach Rhethymno and Herakleion as quickly as possible in order to relieve the parachute troops there. This detachment was formed from a battalion of motorcyclists, a mountain-reconnaissance detachment, several batteries, two tanks, etc.

The advance was to start on May 28 at 0300 from the region of Platanias. Since, however, a part of the troops had not yet arrived at that time, the advance was started at 0330 with only the reconnaissance detachment, artillery, and pioneer squad. The advance proceeded to Souda with practically no hindrance. On the stretch 3 to 5 kilometers east of Souda the road was twice impeded by explosions. By the exertions of all, including those brought up from

the rear, it was possible to make these places passable by a few minutes after 0900.

While this repair work was going on, the battalion of motorcyclists and one tank platoon arrived. The advance was resumed. The forward detachment met opposition near the fork of the road near Stylos, from enemy troops entrenched on the heights along the line of advance. From there they dominated the fork itself, which was also made impassable by an explosion.

It thus became necessary to capture the pass south of the fork. For this purpose the point company (1 motorcycle squadron) was sent on an outflanking attack to the right, while the heavy squadron of the reconnaissance detachment immediately assumed responsibility for the protective fire on the southern slopes of the line of advance. The artillery also went into position for silencing the enemy. After effective fire by trench mortars, antitank guns, and mountain cannon, it was soon possible to make a detour around the demolished road and take the above-mentioned pass around 1200. The simultaneous march over the mountains south of the road had contributed materially to the quick success of the advance.

For the continuation of the forward march an advanced guard was formed from the company of motorcyclists, the pioneer squad, a detachment of artillery, a detachment of antitank cannon, mountain-tank jaegers, and the heavy squadron of the mountain reconnaissance group. The main body of all the other troops followed, except the motorcycle squadron which—reinforced by an antitank cannon detachment—was to advance along the Kalami-Vamos road toward the crossroad east of Alikampos.

In Stylos a junction was effected with part of the mountain-jaeger regiment going over the mountains in advance. The rapid pursuit continued past Neon Chorion toward the road junction 4 kilometers west of Vamos. One kilometer northwest of this crossroad the forward detachment encountered what was apparently the rear of the enemy retreating southward before the regiment of mountain jaegers. They had taken up positions on a broad front, and dominated the road by an excellent enfilading position and the use of numerous snipers in trees. The road itself was blocked with at least one tank so that at first further progress was halted. An attempt to penetrate the enemy position failed and brought the forward detachment into a critical situation. In the course of the afternoon our main body had to be employed. The enemies' tactics indicated that they were trying by all means to hold at least until evening and then retreat under the protection of the night. They made occasional counter-thrusts so that the fighting frequently took place at very close quarters. Since our own artillery was ineffective because of unfavorable conditions for observation and our tanks had not yet arrived, an attack could not be attempted. It would have cost too much.

At twilight the enveloping movement, begun on both flanks by the right battalion of the mountain-jaeger regiment made its effect felt. The left company of this battalion had lengthened the forward detachment toward the northeast and taken a height which was excellent for enfilading; and at 2200 a company arrived to within one kilometer of the fork in the road. Shortly after midnight it was ascertained that the enemy had retreated; at 0300 the road junction southeast of the battlefield was reported to be clear of enemies.

As soon as it became light on May 29th the advance began in the same formation as on the day before, and on the whole went smoothly to the bridge 2 kilometers west of Episkope (general map). Many obstructions in the road and several mine-blockades had to be removed or by-passed. The bridge at Episkope itself was severely damaged, and not until 1100 could it be sufficiently repaired so that even motorcyclists could be sent through. The advance toward Rhethymno encountered no opposition from the enemy except for a few rifle shots in the inhabited places, so the forward detachment reached the town at 1300. After a brief mopping up of Greek soldiers in the place and silencing the enemy fire on the slopes south of Rhethymno, the forward detachment reached the fork in the road 3 kilometers east of the town and effected a junction with the western Rhethymno group of parachute jaegers. After raking the southern slopes with antitank guns and cannon and dispatching patrols, several hundred Greek troops on the slopes surrendered.

The situation east of Rhethymno indicated that the slopes along the river road were strongly garrisoned by the enemy. Artillery and machine-gun fire had continually been directed against the positions of the parachute jaegers—also occasionally the fire of trench mortars. It was therefore not advisable to advance without the protective fire of heavy weapons and artillery, so the attack against this enemy position was set for the morning of May 30 after the bringing up of 2 tanks and 2 heavy infantry guns. The 29th of May was used also for the mopping up of Rhethymno, the protection of the south flank, and making the necessary reconnaissance and preparations for the attack.

First a strong protective fire was prepared in order to dominate the heights flanking the road, which were occupied by the enemy. Under this protection the tanks were to advance along the road. They were to be accompanied by heavy weapons and a detachment of artillery so that the protective fire could be extended after an advance of 2 or 3 kilometers until the break-through along the road should be accomplished.

At 0500 the advance detachment began the attack. The enemy opened fire with three guns on the cross-road and the outward passage. Our own artillery was soon able to silence 2 enemy guns or force them to change position. It also bombarded the olive-covered slopes along the river so effectively that the forward detachment could, by around

0700, press forward about 4 kilometers. Now the heavy infantry weapons and the cannon that had been placed in front went into action and subjected the slopes along the flank to a heavy fire. The effect of this concentration of fire was decisive. Singly at first, then in ever-increasing numbers, English soldiers were observed with raised hands and white pieces of cloth. Firing ceased; a white flag and a beckoning signified that an approach could be made without danger. After about a quarter of an hour several hundred Australian soldiers, among them a colonel, had come up to the point company. They guaranteed that also those English soldiers that were still in the mountains would cease resisting. According to the statement of the colonel there were about 1,100 Australians and also detachments of Greek troops. Toward 0700 the advance was resumed and about 0830 the forward detachment reached the eastern group of the Rhethymno mountain jaegers. The advance was continued with the greatest possible speed. In three or four inhabited places the forward detachment was fired upon by snipers, who were soon disposed of. Enemy soldiers were now encountered only singly and unarmed. Although numerous stone barricades hindered progress, it was possible around 1145, shortly after crossing the pass 10 kilometers west of Herakleion, to make contact with a patrol sent out by the group of parachute jaegers fighting in that region.

About 1330 the forward detachment at the aerodrome of Herakleion came to a technical rest. The squadrons that had been appointed at Rhethymno to protect the flanks during the morning and later collected the prisoners had not yet arrived.

At 1600 the advance was resumed. The only obstructions were barricades in the road. All opposition, including that of the population, had ceased everywhere. For safety the advance up to the pass west of Neapolis was made in close order, with tanks preceding. From there a reinforced detachment of motorcyclists advanced at an accelerated tempo in order to reach Hierapetra, which was the goal for that day. During the advance a junction was effected west of Kalo Khorio with an Italian motor patrol, which was to cover this position during the night. After exchanging greetings and disclosing each other's objectives the forward detachment continued on its way and reached Hierapetra at 1900. By 2300 the whole detachment of motorcyclists had arrived there with the exception of the 1st Company, which had remained at Kalo Khorio. Enemy troops were no longer to be observed. The village was completely destroyed. The only living beings there were Greek policemen.

On that day the forward detachment together with the main body covered 80 kilometers to the Herakleion aerodrome and from there 110 kilometers to Hierapetra, besides fighting a battle. These battles themselves must be regarded as pursuit combats in which the terrain was especially favorable to the enemy.

4. THE ADVANCE SOUTHWARD TOWARD SPHAKION

The regiment of mountain-jaegers which was to pursue the foe toward Khora Sphakion with the 1st Battalion preceding, encountered enemies on the pass 4 kilometers south of Alikampos in the afternoon of May 29th. Quickly and without loss they were forced to retreat.

On May 30th at 0915, the 1st Battalion again encountered the enemy in the region of Imvros. Resistance was offered at first with tanks; then the enemy retreated to the south in the region of 798 to the end of the road, but continued to resist. To make a frontal attack was not possible. Therefore the outflanking attack begun by the 1st Battalion with the 2nd Company by way of Lakkoi against 798 and with the 1st Company by way of 1180 against 892, could not be executed that day because of the extraordinarily difficult terrain and the differences in elevation. The foe strengthened and extended his flanks on both sides at the end of the road, especially on the west toward height 836, and put up mountain fortifications there.

The enveloping movement of the 1st Battalion was (as a result of this new enemy position) not sufficiently far-reaching and could not, therefore, be effected on May 31st. The attack was halted; the battalion was given the task of holding the enemy on the front, while the 7th and 8th Companies were sent on a far-reaching flanking movement from Askifos on May 31 at 0430. The 7th Company went to the right by way of 1186-1173-979 toward Khora Sphakion; the 8th Company to the left by way of Asphendon toward Antonios.

From the regimental observation post set up with the 1st Company, an excellent view could be had of the whole enemy territory west of the mountain slopes of Khora Sphakion to Wraskos. Strong enemy concentrations were observed in Khora Sphakion and to Kometades. East of Kometades the enemy was working on a mountain position extending eastward with wire obstructions. Because of the strength of the enemy the out-flanking attack originally set for June 1st at 0800 was postponed—it was to be carried out later in the day only after a strong preparatory attack by stukas, and supported by artillery. In order to utilize the dominating height of 892 at the proper time for the attack, a light infantry gun of the 2nd Battalion with 120 rounds of ammunition was brought into position on height 892 under the greatest difficulties, carried part of the way by the men.



On the morning of June 1st an attack was made on Khora Sphakion by 4 stukas and 4 destroyers. The light infantry gun on 892 opened up a well-directed fire at 8 o'clock under excellent visibility. Because of its elevation the fire reached every shelter of the English. The enemy left all their cover because of this fire and aimlessly sought protection in the terrain. In some places white flags were shown. Taking advantage of the fire from the elevated position of the infantry gun, the 7th and 8th companies began the attack against Khora Sphakion and Kometades respectively without waiting for further support from the artillery. The 8th Company reached Kometades at 1000 without a battle; the 7th Company reached Khora Sphakion at 1330 after overcoming a slight enemy resistance.

Now the 1st Battalion also felt its way forward along the road, found the enemy positions that had been strongly defended on the previous day deserted, and reached Kometades. At 2000 Loutrou, west of Khora Sphakion, was also captured.

FROM PAPUA, A PRIVATE WRITES:

"I was greatly pleased by the service you render, and to show my gratitude I am enclosing a money order of two dollars for the promotion of the best interests of THE FIELD ARTILLERY JOURNAL. I have read your book on the *History and Constitution* of the Association, and having been impressed by its history and your very considerate service I ask you to accept my small donation to a good cause."

With the evacuation of Greece, the British High Command was faced with a decision on the defense of Crete. They could give the island to Hitler without firing a shot and save thousands of lives. The British decided to fight, and the Battle of Crete became a vital step in the great delaying action which they have been fighting since Dunkirk. It upset Hitler's scheduled march to India in the summer of 1941, and spoiled the timing of his June attack on Russia.

British resistance in Crete weakened the *Luftwaffe* at a time when British and American airplane production was just pulling even with Germany's. Hitler was forced to unleash every destructive weapon at his command in order to win. And when the fighting ended, Crete looked like a *Luftwaffe* graveyard, with some 200 fighters and bombers shot down, and some 250 troop - carrying transport planes destroyed.

More than 17,000 Nazis had been killed or wounded; at least 25 per cent of the highly trained parachute and air-borne troops were killed. Germany's 1st Parachute Division, at that time the only such Nazi division, was so badly battered that it could take no effective part in the Russian war until September 26, when the 'chutists made an unsuccessful attack in the Crimea.

Yet Crete was the most clear-cut triumph of air power over sea power that World War II had seen up to that time. British and Allied losses were heavy—some 15,000 killed, wounded or left on the island—close to 50 per cent of the total force, whereas in the Dunkirk evacuation it had been 12 per cent, in Greece 25 per cent. The British tonnage lost off Crete was 12 times as high as that lost in the evacuation from Greece; it included four cruisers and six destroyers.

The British had made little preparation for the defense of the island. Only three battalions (about 2,400 men) were maintained there; and since the British couldn't spare enough anti-aircraft guns and planes to fortify the three postage-stamp airdromes already on the island, the construction of more airfields would only facilitate enemy landings.

With the evacuation from Greece, some 32,000 troops were landed in Crete. The defense—doomed from the

start—was given to 52-year-old Major General Bernard Cyril Freyberg, veteran hero of World War I, who at 27 had become the youngest brigadier general in the British army.

Freyberg's troops, like their leader, had guts. They had little else—almost no heavy equipment, just a few light tanks and a handful of captured Italian 75's. Until the last couple of days of the attack 400 men were still without rifles.

At the time of the Battle of Crete, the RAF in the Middle East had barely 50 serviceable fighter planes. On the day of the invasion there was not one British plane

on Crete to meet the Nazis. Without anti-aircraft support they would have been helpless. During the battle, fighter pilots were ordered to fly from Egypt, their nearest base, to protect the evacuation. They arrived with enough gasoline for about 10 minutes of fighting. There was no return trip. Pilots were instructed to fight until their gas ran out and then parachute down and await capture. The more fortunate ones managed to crash-land in the sea next to British naval vessels and were fished out to fight again.

The Nazi invasion began with a dawn blitz on the

morning of May 20. In the early morning an ever-increasing roar filled the air. It was the German air armada and as the specks became larger they filled the sky. Quickly they dropped low, obviously expecting little opposition. First the big bombers, the Dorniers and Heinkels, loosed their bombs from 2,000 feet. On their heels came the Stukas, dive-bombing close to the ground. After them came wave after wave of Messerschmitt fighters; they hedge-hopped over the ground, above the olive trees, firing their cannon and machine guns indiscriminately at everything living.

Wave followed wave: first bombers, then dive bombers, then fighters. The Allied troops, their noses in the trenches, hugged the ground. There was nothing else they could do.

The strafing went on for an hour. Then came a lull. But soon the air was filled with a new sound—the harsher knock of engines of huge transport planes. Junker 52's and Focke-Wulf transport planes droned over at a few hundred feet, opened their doors and dumped their loads. Out of each plane floated as many as 30 parachutists, using the Nazi quick-opening, fast-falling 'chute that

DUNKIRK

in the

MEDITERRANEAN*

By Allan A. Michie

who was in Alexandria during the evacuation from Crete. Later he accompanied the evacuees to their rest camps to get the story of the battle firsthand.

*As condensed from *Retreat to Victory*; republished by permission of Alliance Book Corp. and *Reader's Digest*.

gets men to the ground in about 25 seconds. Behind and above them other 'chutes billowed under the weight of huge canisters which came sailing down like a shower of toy balloons.

Behind the transport machines came great black gliders, towed from the mainland behind the transports and released near the Cretan coast. Some were aqua-gliders, equipped with outboard motors which chugged them ashore. Others were land-skidders which sailed silently into the coastal hills or settled unsteadily on the beaches.

British troops were ready and waiting. Near Canea, the main city on the island, some 3,000 paratroops landed in a few minutes. Almost before their feet hit the red earth of Crete, many were dead. New Zealanders, exuberant as kids with slingshots, slipped from tree to tree firing from the hip. More paratroops were dropped in the afternoon, but at the end of that first day about 80 per cent of the Nazis landed in Crete were killed, wounded, or captured.

Near Malemi airdrome, however, several hundred Germans managed to entrench themselves in a wadi, a dried-up river bed, behind mortars and machine guns dropped from their planes. The British, unable to bring their field guns to bear on them, vainly attempted to drive them out. These paratroops, reinforced by hundreds of others dropped accurately into the wadi, were able to hold the airdrome long enough for troop-carrying planes to land thousands of men.

By noon of that first day the Germans had established their headquarters in the Cretan prison and the tented hospital outside Canea. According to captured German orders, the paratroops were instructed to make the hospital their first objective, and it was marked on their maps as a "British camp." Either the German reconnaissance had failed to reveal the large red crosses on the tents or else the Nazis suspected the British of using hospital tents to hide armed troops.

Early in the attack the British claimed that the Nazis were disguising their 'chutists in British uniforms. The real facts, according to three British soldiers involved, were that the Nazis, afraid that the New Zealanders would return in force to the hospital, herded the wounded British troops in front of them and headed up the road to a village in the hills, where apparently they intended to rendezvous with more paratroops. Using the wounded as protection, they had advanced a few hundred yards through the olive groves when New Zealand infantry patrols began to shadow them. The patients, risking a shot in the back from the jittery Nazis, began a running fire of advice to their own troops: "Look out, chum, Jerry can see you from there," and "Get behind that hump, mate."

The snipers picked off the Jerries one by one until the remainder, badly frightened, took to their heels and raced back to the hospital area.

The Nazi invasion on the second day was on a larger scale, superbly planned to the last detail. Each parachutist

carried everything from hand grenades and submachine guns to special kits, two little tin boxes strapped to his chest, complete with vitamin and energy tablets, writing pads and pencils, chocolate bars, three ounces of toilet paper and three contraceptives. The Nazis apparently came prepared to stay. Captured operational orders even listed instructions for cooperation with local fifth columnists: "Fifth-column men, a proportion of whom are Cretan, will make themselves known to German troops by the password 'Major Brock.'"

The paratroop 'chutes were of different colors: usually the noncom in charge of each party had a brown-and-white checkered 'chute to which the soldiers rallied as soon as they landed. 'Chutes carrying ammunition were red, medical supplies pink, food blue and white, etc. Paratroops needing more supplies spread their colored 'chutes on the ground as a signal and soon down came the stuff from the skies. One New Zealand detachment captured the Nazi code signals, spread out 'chutes, and was duly rewarded with a shower of ammunition, radios, and medical supplies.

Over most of the island, the newly-dropped parachutists were mopped up as quickly as on the first day, but those at Malemi were able to advance to positions all around the airdrome. Then troop carriers started to arrive. Dozens crashed onto the beach, which formed one side of the drome, or smashed on the drome itself, but the Nazis were taking no account of losses of men or material. Plane after plane lumbered down, discharged its load, and took off in a cloud of dust, often with wounded Nazis on board. By nightfall several thousand Germans held a line two to three miles deep across the east end of the drome.

That night, watchers on shore were treated to a grandstand view of the British navy in action. The silver beams of powerful searchlights swung across the water from British warships to disclose dozens of small Greek caiques and coastal steamers—a German invasion fleet of which the British Naval Intelligence had learned. Then big guns flashed and incendiary shells chased one another across the sky like a string of glowing red balls. Again and again the searchlights picked out the German ships and the guns spoke. Finally the light swung across the sea in a full circle: it was empty save for two burning ships, one of which erupted spasmodically in a series of explosions.

The calm sea next morning held no sign of life. I doubt if more than a few score men of the 5,000 reported invaders got out alive.

The British counterattacked at Malemi at dawn on the third day. The Germans had established themselves in houses, and New Zealanders closed in with bayonets, Bren guns and grenades, the aborigines among them shouting bloodcurdling war cries as they charged. Many Nazis threw down their weapons and tried to run away. Some scrambled under beds in the houses and cried for mercy when discovered.

Doggedly, the New Zealanders took house after house until they had the whole village. But it was now broad daylight, and with the light came the German planes. Stukas hammered the defenders with the most intensive aerial pounding yet seen on the island. By afternoon, Nazi troop-carrying planes were landing at Malemi at the rate of one every three minutes. Some 35,000 troops were landed. The Nazis opened up with five- and six-inch mortars, perhaps their most effective weapon. Nazi planes dropped small, wicked fragmentation bombs which spread over a wide area. The defenders took what cover they could find—in the olive groves, beneath the oats, in the shallow ditches along the country roads.

The Germans had planes and time to spare to bomb Cretan civilians. Anything that moved—man, woman, child, goat, sheep — was machine-gunned until it no longer moved. The three main towns of Crete—Canea, Candia and Rethymno—were literally plowed up by bombing, which was carried out with mathematical precision laterally and diagonally so that eventually there was not one stone left standing.

After twelve days of the fiercest hand-to-hand fighting this war had yet seen, the evacuation of Crete began. Aussies, New Zealanders and English troops started up

over the mountains to the south side of the island and the British ships. Day after day they leapfrogged each other, one group turning to fight off the Jerries while the others marched onward. Down one hill and up another, through wild mountain gorges. On the first day, and on the second, there was joking, singing and wise-cracking, but after that there was only the silence of sheer weariness. Toward the end, perhaps because of losses, the German air attack slacked off.

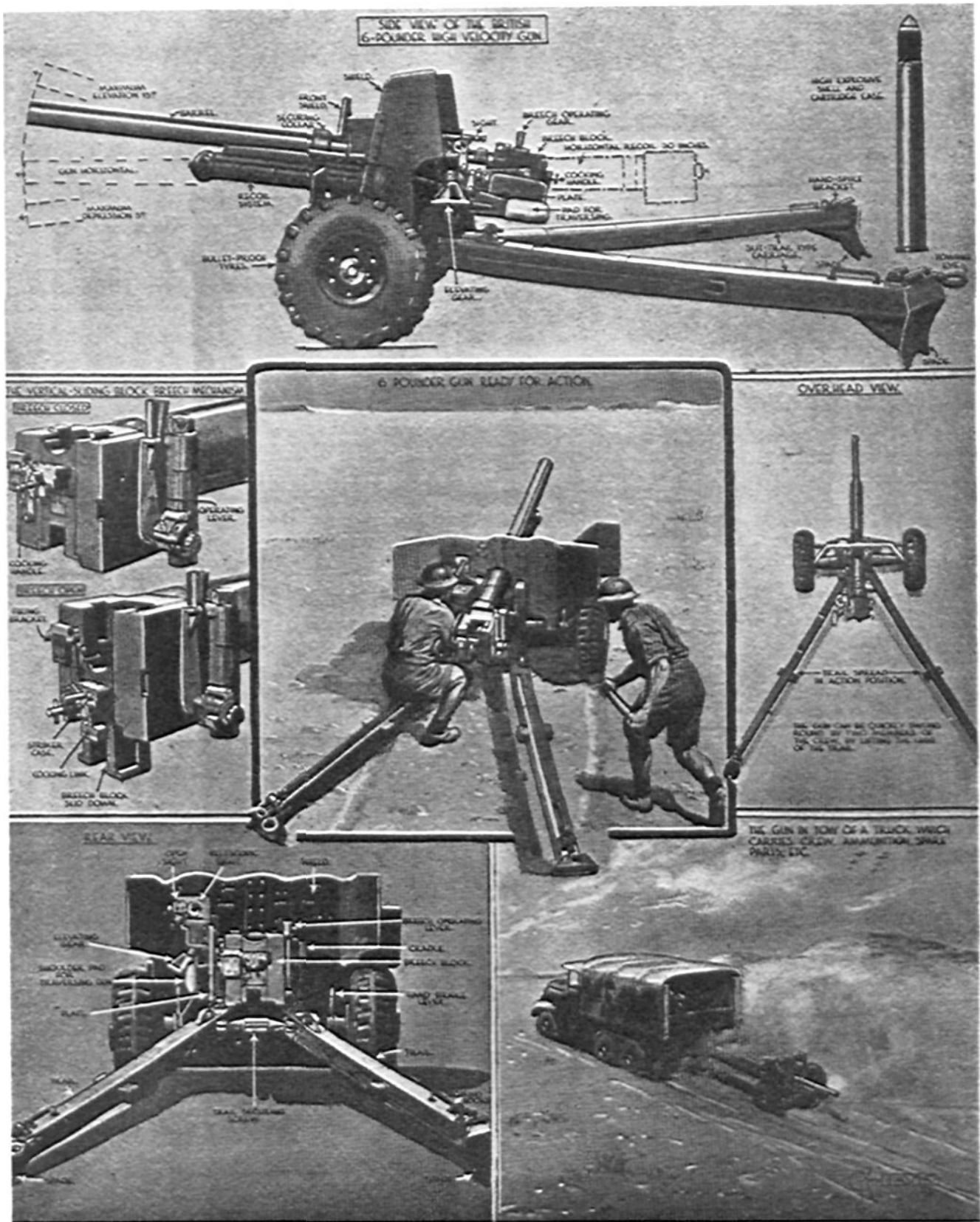
On the night of June 1 the troops were evacuated on British destroyers, anchored just off the little harbor of Sphakia. When the last little boat pulled away from the beach, hundreds, perhaps thousands, of Allied troops were still fighting in the hills, some as a volunteer rear guard, others unaware that a retreat had been ordered.

As I write, these British troops still hide in the hills with friendly peasants during the day, engage in sabotage against the Germans and Italians after dark. The British in the Middle East are not neglecting this pocket of resistance. Night after night British submarines and long-range flying boats make landings along the Cretan coast to evacuate more men, and land supplies and trained saboteurs.

The fight still goes on.



This German 6-barrelled rocket gun was captured at Veliki Luki. Caliber is 15-cm., and it fires a (roughly) 50-lb. projectile about 6,000 yards. Barrels are of course open at both ends, but each has a finger-like projection to hold rockets in place when tubes are elevated. Barrels contain 3 straight guide rails about 1/3" deep. Despite the absence of rifling, projectiles seem to rotate in flight—probably due to the set of their venturis. Firing is electrical, in rotation, at 1-second intervals. The whole assembly is called the Nebelwerfer 41.



THE BRITISH 6-POUNDER



BRITISH 6-POUNDER



Mounted as a field gun or as the principal weapon in the "Churchill" tank, Britain's 6-pounder has proved its antitank value. It is also used portee, at times.

As a field gun its total weight is 2,800 pounds. Trails can be spread to any width, then clamped in position. No. 1 (our "Gunner") sits on the left trail, where he traverses by means of a shoulder pad and handles elevation by means of a handwheel.

The breech block, of vertical sliding block type, is especially interesting. It is held in its open position by extractor levers which, when forced forward when the piece is loaded, release a compressed spring that automatically closes the breech. This system permits firing up to about 2 rounds per minute.

Caliber is 2.24", and both recoil and recuperator systems are hydraulic.

Besides the double front shield shown here, the carriage is also provided with wing shields to protect the crew from side-spray.



GERMAN ARMORED FORMATIONS IN LIBYA

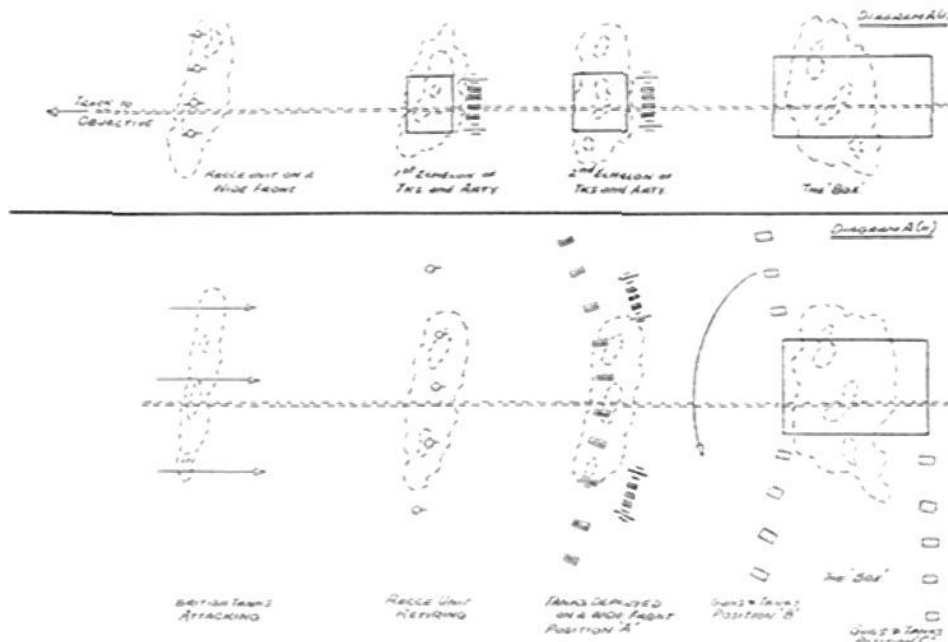
By COL. H. B. LATHAM, in the *Journal of the Royal Artillery*

In connection with the handling of his armored units there are four principles from which the Boche rarely departs:

- (i) The primary role of the tank is to kill infantry.
- (ii) The main weapon of the tank is thus the machine gun.
- (iii) The tank can only be successful if used in conjunction with all arms.

1 Battery Field guns.

On the move or in the attack the artillery with the "Box" is disposed as shown, i.e., the antitank and AA guns guard the flanks and front faces, whilst the infantry guns and field guns are usually only inside the "Box" when it takes up a defensive position. In size it is approximately two miles deep on a frontage of 800 yards. The 88-mm., though it has proved a very effective antitank gun, is primarily included in the "Box" to protect the "soft skinned" vehicles from air attack.



METHOD OF ADVANCE

The method of advance is shown in Diagram A. On dead flat country the distances between the various portions of his column are approximate.

Between the reconnaissance unit and the leading echelon of tanks 5.10 miles
 Between the 1st and 2d Echelons of tanks 1 mile
 Between the 2nd echelon of tanks and the "Box" 2 miles

The whole is directed toward some tactical feature which if seized will force us to fight and so engage on ground of his

(iv) Tanks must be used "en masse."

As a result of these views—

- (a) He will not fight a tank-vs.-tank battle if he can avoid it.
- (b) The order so constantly given to our armored formations "to seek out and destroy the enemy's armor" has led to almost tragic results.
- (c) His tactics are based on his armor always moving with other arms in close support in the form of a "Box" or moving "defended locality."

COMPOSITION OF THE "BOX"

The "Box" is the part of his column which is inside the dotted line in Diagram B. It varies in size, but if a battalion of tanks is moving with it, it might contain the following fighting troops in addition to the tank "ground crews," reserve petrol, etc.:

- 1 Battalion Lorried Infantry, usually carried in semi-tracked, semi-armored vehicles.
- 1 Battery 50-mm. Antitank guns.
- 1 Battery 88-mm. AA guns.
- 1 Troop 150-mm. close support guns, sometimes on S.P. mountings.

choosing.

In normal terrain each portion of his column moves from high ground to high ground and the more rearward echelons of the column step up rather like the old cavalry advanced guard. Each echelon of tanks is supported by field artillery which moves in rear of them.

METHOD OF FIGHTING IF ATTACKED ON THE MOVE

As soon as our tanks are reported to be advancing, the "Box" halts and takes up a position for all 'round defense. This can be done very quickly owing to its formation on the move. As our tanks advance the Boche reconnaissance unit falls back and their two echelons of tanks deploy on a wide front, with the flanks thrown forward, Position A, Diagram A (ii).

If we continue to advance, they continue the retirement to Position B and force us to attempt to break through one flank.

If we imagine that we decide to attack the Boche left flank, this falls back to Position C and our tanks if they pursue are not only engaged frontally by his Mk. IV tanks but are caught in flank by the antitank and A.A. guns of the left face of his "Box." Finally the tanks

of the Boche right flank swing around and engage our attack in rear.

The artillery which moves with the tanks in the advance may either remain supporting them or enter the "Box" to stiffen its antitank layout.

ATTACK LED BY TANKS AGAINST A LOCALITY
(DIAGRAM B)
DIAGRAM B.

In general the Boche accepts our reconnaissance of the ground and aims at taking one of our localities. He realizes that it is usually impossible for an attack in depth to pass between two localities or to cross the front of one locality to attack another. His attack is launched therefore approximately "Head on."

Such an attack might thus be carried out in the following way:

Phase 1. He will reinforce his reconnaissance unit with tanks deployed on a wide front and drive in our covering force until he is approximately 2,500 yards from our "Crust."

Phase 2. A most careful reconnaissance of our localities will then be carried out by a senior commander in a tank to decide which locality to attack. In Libya last winter when our localities were not necessarily sited on high ground a great deal depended on whether the Boche could get a position about 2,000 yards from our front face on which to deploy his covering force. In Diagram "B" it is assumed that he has found this and is going to attack locality "B."

Phase 3. His covering force now deploys as follows:

Mk. IV tanks take up a hull down position on the ridge and with the fire of their machine guns attempt to pin the defense. They may engage visible antitank guns with their 75-mm.

Under cover of their fire 50-mm. antitank guns, heavy machine guns, and close support 150-mm. infantry guns are also deployed in an attempt to knock out the antitank guns of the defense or to kill their detachments.

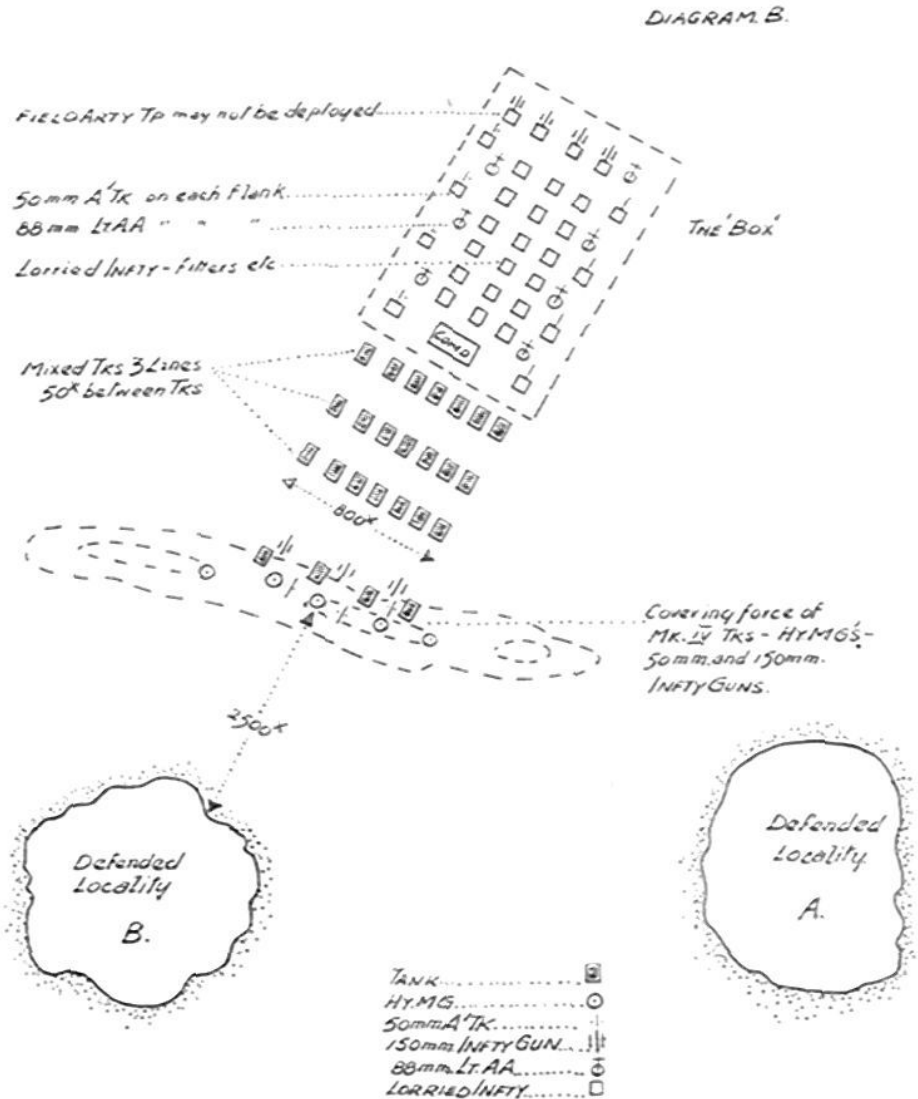
It should be noted that in the British Army since the Vickers machine gun has been withdrawn, there is no means of engaging the heavy machine-guns opposed to us except by the fire of field artillery. The majority of the weapons deployed by the Boche in his covering force are

dependent on open sight laying and so can be blinded by smoke.

Under cover of the fire of his own covering force the attack forms in rear thus:

- (i) Three rows of tanks about 50 yards apart and each row approximately 150 yards in rear of the one in front.
- (ii) When the tanks are in position the "Box" forms up in rear as shown, the infantry all riding in their trucks.

Phase 4. At zero hour the whole moves forward at about



15 m.p.h., depending on the ground. As they pass through their covering force the tanks begin to fire not so much with a view to hitting anything but simply to have a psychological effect.

On arrival at locality "B" some tanks drive straight through to the rear face, others assist their infantry to mop up.

The latter do not usually dismount till they arrive in the locality, when they fan out, using Tommy guns extensively.

Phase 5. When the attack is successful the covering force moves forward into the captured locality to stiffen the defense and the tanks are usually withdrawn and serviced near what has now become the rear face of his locality.

GENERALLY

- (a) It takes 2 or 3 hours to prepare and stage such an attack.
- (b) If successful no minor counterattack is likely to drive him out, for his defense is very rapidly

organized since all the weapons he requires are immediately available.

- (c) As a result of such tactics, our localities have had to be sited on higher ground, to avoid ground from which they can be overlooked.
- (d) Such attacks are now being beaten off and it is apparent that in future they will not succeed without much more artillery support.
- (e) The whole form of the attack has been reduced by the Boche to a "Battle Drill."

ENEMY A-T VARIANT

BY LT. RICHARD B. KLINE, FA

HEADQUARTERS OF THE FRENCH ARMY, OFFICE OF THE CHIEF OF STAFF

Note on Antitank Fire with Unfuzed 75-mm. Shell

The new manual of 75-mm. fire prescribes the use of armor-piercing shells for point blank and antitank fire, or lacking them, of HE with instantaneous or superquick fuze. It has been learned from recent experience that the use of unfuzed HE fired at less than 850 yards will either knock out a tank or at least do it serious damage. Under these circumstances, the gunner firing at point blank range can always obtain a certain number of hits, especially with a gun laid on the exit to a village, a woods, on a road cut, or so as to enfilade a street.

/s/ JUIN

March 25, 1942

The foregoing is the translation of a document captured in recent North African operations. The French appear to have adopted this procedure, however, on the basis of combat experience. Despite some defects, this solution appears to be a sound one under certain circumstances, especially in view of its saving of time when firing at close quarters.

AMERICAN LEGATION

Office of the Military Attache, Pretoria, Transvaal, Union of South Africa
December 8, 1942

The Editor, THE FIELD ARTILLERY JOURNAL
1218 Connecticut Avenue, Washington, D. C., U. S. A.

DEAR SIR:

My October, 1942, issue of the JOURNAL has just reached me, and was read with considerable interest, as there is much in it about the South African troops ("Springboks"). The anonymous author of "Desert Victory" on page 750 is readily identifiable. I have heard him talk on the Abyssinian Campaign, and it is too bad you didn't get from him a narrative of that remarkable piece of work. I think the issue contains one error, however. In the table of contents you call the cover picture "Staff of the 22nd Armored Brigade," which may in part be correct, as I cannot definitely identify more than one individual. The officer in the left foreground is definitely Major General George E. Brink, former Commander of the 1st South African Division, now commanding the Inland Command Area in the Union. The officer facing him, pointing, looks much (though I am not positive) like Brigadier J. B. Kriegler, former commander of the 1st S. A. Brigade, now Commandant of the S. A. Military College. The third officer in the foreground is a South African major, the "orange flash" on the shoulder under the insignia of rank (worn by the Springboks) is clearly seen, as it is on the other two also. The man at the left in the background wears quite unmistakably the 1st S. A. Division shoulder patch. The third from the left is almost certainly Major "Rory" Murray, former commander of the artillery group of the 1st S. A. Brigade, which position he held with outstanding ability throughout the Abyssinian campaign. The moustache and general build are hard to duplicate. He is now on duty in the Union training non-European ("colored" to you) field artillery gunners. This is the best I can do for you in identifications.

The JOURNAL is very well liked here. I turn over my copies to the D.F.A.A. (Director Field Army Artillery, roughly analogous to C.F.A.), whose office enjoys them and then passes them on to the Field Artillery School staff at Potchefstroom, who also enjoy them before destroying them, as required by current instructions. Keep up the good work.

I note with pleasure and interest the present trend of thought, fairly well borne out by recent actions in North Africa and Russia, that the best defense against the tank is properly trained and well-commanded field artillery.

Best wishes for your continued success.

Sincerely yours,

B. A. DAY,
Colonel, G.S.C.,
Military Attache.

P. S. Since writing the above, I have shown the cover to several local authorities, all of whom agree with me on my identifications.



During . . .

ARTILLERY

In Tank Support

By "Sarkie"*

Our knowledge of the problems arising from the artillery support of the infantry tank, particularly in Libya, is now fairly extensive, and being added to daily. Some of that knowledge will be very useful when we fight again on the continent of Europe; some of it will only apply to the desert; later, more data will be gained as the result of new methods or tactics at present unknown—or undisclosed. It might therefore be of interest to go quietly over some aspects of the problem of supporting the heavier type of tank, making the assumptions that:

- (i) Only that phase of the attack is considered wherein the tanks have been successfully launched; and that they are accompanied by infantry who will either occupy, or pass over, the ground taken by the armor.
- (ii) An active determined enemy is being fought, in Europe.
- (iii) Air observation is available as an auxiliary.

The types of resistance generally met by armor are roughly:

*Writing in the *Journal of the Royal Artillery*.

- (a) Antitank guns, in or out of tanks,
- (b) Hedgehogs of mixed arms,
- (c) Field or anti-aircraft guns in their normal role,
- (d) Road blocks,
- (e) Hand destructive methods,
- (f) Mine fields,
- (g) Tank busting planes;

and of these (f) and (g) can be ruled out by the field gunner, as he cannot deal with them adequately if at all. In addition, the infantry who accompany the armor are possibly resisted by a combination of:

- (a) Artillery fire,
- (b) M.G., automatics, and rifles,
- (c) Mortars,
- (d) Counterattack,
- (e) Ground strafing planes,

and against most of these the armored and unarmored troops will expect a large measure of assistance from their supporting artillery. Let us therefore examine the case as it appears at present, and some of the means at our disposal.

OBSERVATION

Is our present system of borrowing a tank for the attack not now out of date? Anyone who has studied this problem practically is probably convinced that no observer can provide first class support if inserted into a tank in place of the loader, knowing that if he is hit, this ends the immediately available artillery support at his disposal. It is therefore considered that field regiments supporting armor should have one tank OP per battery of their own. It should not be an infantry tank, but one of a faster type. The retention of either a 2-pr. or



. . . . and after a tank battle.

6-pr. gun is debatable—this tank is for observation, and to fulfill its role needs speed in getting about the battlefield, no extra temptations to join in the tank-versus-tank battle, and above all an artillery team inside the tank all trained to produce one answer—efficient artillery support. There are snags, as in everything. A new type of vehicle to drive, maintain, and provide spares for amongst others. We swallowed the carrier OP gladly enough—is this really any harder? Given our own tank OP and an improved (artillery) periscope, we would very soon see a great advance in the standard of observation from tanks, if for no other reason than that they are always there to practice with.

LIAISON

Given the issue of an R/T¹ set capable of working on more than one frequency, or a flick² system, there is no difficulty with trained troops in providing liaison with both armored and infantry arms. The effect on our own troops of the fire produced does, however, need consideration; if the gunner is smoking a center of resistance which comes to life just after the armor has passed or skirted it, the silhouette effect upon friendly tanks must not be lost sight of. Again fire can be placed closer to tanks than to infantry, but in doing so the effect of fragmentation on the accompanying infantry must be remembered, if they have closed up at this stage. A higher standard than ever is necessary to support these mixed thrusts in enclosed country; the full development of nice judgment and a first rate gunner's eye for troops attacking will only come as the result of constant study by the observers, acting with troops on the ground; there is a tendency to overlook this obvious fact.

ENGAGEMENT

A/T Guns

There is often doubt in the minds of tank and gunner officers as to what can be done by 25-pr. observers against the antitank gun. If it is in a tank, the observer is faced with the choice of smoking it to make the tank lose direction or to blind it until his own tanks have maneuvered to their selected fire position. When this is done the tank-versus-tank battle is on, and there is little that an OP can do by indirect fire other than to screen a flank, possibly put HE down to block an exit, or cause a change of direction. If, on the other hand, the antitank gun is on the ground, it is in all probability escorted by, if not part of, a hedgehog. It is pretty certain to be thoroughly well concealed, as this is almost the first thing the antitank gunner learns. It is probably only spotted in the first place by the tank it fired at and missed or by one not engaged but near, which escaped. The OP will therefore not necessarily have seen it. One solution might well be to have an understanding that the tank reporting this target gives a brief description of the place it is in and fires a round of smoke at it to point out

¹Radio telephone.

²A radio with at least 2 tuned circuits to permit instantaneous switching from one frequency to another.

the center of the area or the gun. Once the OP sees this, its task of bringing down neutralizing fire is comparatively easy. This done, the tanks can go in and kill.

Field or AA Guns

The hunting out and engagement of such guns before being overrun should be the province of the field artillery OP, as it has the requisite knowledge of areas likely to make suitable gun positions. The AA gun is not of course grouped as closely as the 25-pr. in its normal role; but on the other hand is more easily located as a rule and more vulnerable—though there are some sharp lessons to the contrary.

Hedgehogs

It is impossible and in any case undesirable to lay down any hard and fast rule for these tasks. The "hedgehog" may have supporting artillery located back and controlled from the defended area, as well as antitank weapons. It often relies upon woods, broken ground, or naturally difficult country to give the protection required. It may consist of a strong or weak garrison. Only determined attack will show what its value is, and rapid artillery preparation on the most generous suitable scale is essential if the attack is to keep up its momentum. The tanks can then close quickly and overrun the defense or get their supporting infantry in to finish off the job as best suits the case. A mixture of smoke in the HE concentration will often hang in the edges of damp woods and hamper the antitank guns whilst the attack is closing in to short range; close support air bombing in conjunction with the gunner task is generally a most effective combination.

Road Blocks

The block itself is a target for direct fire, either from hull down tanks or, in an emergency, antitank guns brought up specially under their protection. Field artillery is more suitably employed in neutralizing the area around the block by destroying the covering troops and keeping down their antitank gun fire.

Hand Destruction

This is usually only put into operation in the first place against immobilized or broken down tanks. A section, if ranged carefully, will often keep the enemy infantry off and give the crew a chance to effect repairs inside the tank. Smoking a likely area might keep down antitank fire. It is a waste of ammunition if the tank clearly cannot move again after a direct hit, but this is not always obvious unless their R/T set is still working.

Infantry Tasks

These are the everyday tasks facing any OP in an attack, and therefore call for no comment other than that it is desirable that the OPs keep in mind the many useful tasks they can carry out at the flanks of these armored cum infantry thrusts. Counterattacks often come in against the shoulders or flanks, and their prompt engagement by hard hitting artillery goes far to break them up before they can reach our own troops.

THE HONORABLE ARTILLERY COMPANY

By Claud Golding

Contrary to the belief of most people, the matrimonial affairs of Henry VIII did not take up all his time. When he granted a charter to certain London citizens called the Fraternity or Guild of St. George, to encourage the "science of artillery" (which meant bows and crossbows) he started something—nothing less, indeed, than the English regiment known today as the Honorable Artillery Company. That was in 1537, which makes the H.A.C. probably the oldest regiment in the world.

Now, a tradition such as this needs some keeping up. One can imagine the Commanding Officer frequently reminding the men of their regiment's aristocratic birth. Or the Sergeant Major indicating a speck of dust on a man's tunic in drawing room manner.

All this may be so, but the H.A.C. are tough. Take, for instance, that episode in the spring of 1942 when they saved two divisions and their own guns in the Western Desert.

At that time the fighting was extremely bitter, for Rommel was going all-out to push the Eighth Army back on to the Delta. And the job which the H.A.C. were called upon to do—and did—on June 14th, was a hazardous one. As part of an armored brigade the "Company" had to hold the El Tamar ridge and facilitate the withdrawal of the 50th Division and a South African Division.

They rushed their guns to the ridge. On their left was a regiment in a box, on the right South Africans. The enemy attacked in force and the regiment was compelled to fall back, leaving the left of the H.A.C. exposed. Unperturbed, the gunners continued to fire over the ridge.

Then came the Nazi tanks—30 of those formidable ones that made things look bad for the gunners. The "Company" let them have it. Three tanks coughed and wheezed and settled down on the rocky ground, out of action. Other tanks came on. One H.A.C. troop fired until completely wiped out—but not until three more tanks were knocked out.

Evening came. The two divisions were saved, though the H.A.C. had lost a troop of guns, and one gun from another troop, while the survivors were cut off.

The party now left consisted of the survivors of two batteries of the H.A.C., elements of the Queen's Bays, and the Rifle Brigade. At dusk they gathered on the Acroma escarpment, and decided to quit the hot spot. Only by getting their guns down a steep gradient varying from 1 in 2 to 1 in 3 could they be saved.

The H.A.C. moved off in two groups, one battery behind the other. An officer, scouting the path, signalled

it was impossible to negotiate it. Huge boulders blocked the way. A gang of men were sent with picks and shovels. They dragged boulders aside, shovelled out the sand, and made a track for a single file. The guns threaded their way around rocks, dislodging many which rumbled down the hillside with thunderous noise. Eventually they reached the wadi, a narrow road at the bottom.

Even more appalling was the next rise which they had to negotiate—this time upward. Radiators pointed toward the sky, and the vehicles collided with rocks and boulders. At length they reached the top and took stock. Several vehicles were damaged. Daylight came before they were out of rocky ground and heading for the coast road between Tobruk and Derna with the enemy shelling most of the way.

Not one of the ten guns with which they had started from the top of the escarpment was lost on the journey. All this occurred after the H.A.C. had fought continuously for 52 days in the Western Desert. Nor was this the end, for they had to go on fighting at Sollum, Mersa Matruh, and El Alamein.

Reverting to the history of the H.A.C., it is interesting to note that there is an association between the regiment and the United States. In 1638 four members of the "Company" emigrated to Massachusetts and formed there the "Ancient and Honorable Company of Boston," a defense unit similar in character to the H.A.C.

Three years later the "Company" secured a training ground in Bunhill Fields, London—which quarters they still hold. The Prince of Wales (afterwards Charles II) joined up, since which time either the King or the Prince of Wales has generally been what is known as the Captain-General. At present King George holds the position.

Until 1914 the regiment consisted of a battalion of infantry and two batteries of artillery. As a part of the Royal Horse Artillery, the H.A.C. belongs to the Royal Regiment of Artillery. At the same time the "Company" is head of all Territorial regiments, and is brigaded with the Guards.

The Arms of the Honorable Artillery Company are: In the first and fourth corners the Royal Crest, in the second and third corners the Royal Cypher reversed and interlaced, ensigned with the Imperial Crown. The badge is a gun with the initials H.A.C. above, and the motto *Arma Pacis Fulera* (Peace Based on Arms). The associated Dominion Regiment is the Transvaal Horse Artillery of Johannesburg, South Africa.

LIBYAN LETTER

From a letter from an officer of "E" Battery, H.A.C. Regt., R.H.A., to a brother officer at home; the author has since been killed in action. Republished, with permission, from the *Journal of the Honourable Artillery Company*, April, 1942.

M.E.F.

February 20th, 1942.

A letter from a gunner to a gunner on what to do when you are up against it, as I have had one mass of experience.

A battle has taken place and the good old Regiment was in it from the word "go." The news has already given you the outline of what has happened; here are a few personal details.

We were in Mobile Column in sand dunes, which meant we were not mobile. Once you were in, you were in; the most awful going—vehicles digging themselves in all the time, winches going, and the whole party moving at a snail's pace.

Here the Boche caught us. Tanks, dive bombing, low flying attack with M.G.s—everything he had was thrown against the Regiment and the columns. The only orders I ever got were, "Retire seven miles east," as they hit us. Our masses of "soft" vehicles were bogged, blowing up, in flames.

That first day was a nightmare. One moment I was having lunch; the next (about 15 minutes later) I was fighting one gun over open sights against 30 Boche tanks to cover the withdrawal of my other guns (score, two tanks).

"A" Battery in front of us had been practically overrun by 60 tanks, Town fighting his gun to the last. Most awful hell in "A's" position—the tyres were shot off the wheels—Subs. and Section Commanders dying round their guns—blazing tanks in front of them. Bill Leishman actually said the shell that killed his detachment came at him through the telescope. He threw himself flat and was only wounded.

"A" Battery put up a terrific show and came back with many of the chaps we know missing. Peter wounded, Armitage missing, Hart killed. Buchanan was captured, but collared a lorry after three days and sailed away in the best P. C. Wren manner. Mark was missing for three days but turned up quite happily.

John McD. and Geoff. A. were both as cool as cucumbers, John leap-frogging his troop back as if on a drill order, and Geoff. swarming along ticking off the Troop Leaders for bad dressing (shells bursting all round him as he did so).

"B" had a damn good party. They were to a flank and

missed the main battle, but caught 500 Boche M.T. over open sights at 2,000 and had 500 rounds gun fire! Intercepted Boche message that evening read, "Tanks unable to proceed as 'B' Echelon wiped out by gun fire."

"E" (with me in attendance) had an amusing few days behind the Boche. He had done his celebrated pincer movement, and there we were. On the second day we ran out of petrol, so sat down where we were and shelled every Boche we saw to the tune of 100 r.p.g. On the third day I stood frozen into a statue at an O.P. (in my truck on the *forward* slope of a basin, pretending it was a derelict vehicle) whilst a Panzer Brigade went by 500 yards away from me. Gave running commentary to Battery, who had only 30 r.p.g. left and I was not allowed to shoot!

Battery found that Boche would hit them within the half mile, and whole Group (now petrolled up) had to move pretty R.H.A. When I scuttled over the crest four shells followed me. Our Column ran parallel to the enemy about 3,000 yards apart for 40 miles, with my O.P. a moving sandwich in between. Each shelled the other column desultorily all day—they obviously thought we were a strong force—damn lucky—and that and the following night we (and the Hun) knew we were surrounded. Planes looked for us with flares, and we watched enemy Very lights going up in all directions. We did two desperate night marches right through them. Every finger on trigger (I stood with 100 rounds Bren out of the top of G.H. and three bombs in my greatcoat pockets).

As we had been dive-bombed, machine-gunned and shelled all day (and for days past), found the old nerves getting a bit frayed. Effort required to keep one's voice steady and to appear cool when one's Ack. points out "that the shell which had just burst behind one's Command Post completes the verified short bracket" needs experiencing (especially as you know it damn well did!).

We got back; we stabilised; we refitted; we dug in; we had a visit from the C.R.A., the C.O., the Brigadier, the General (only he didn't turn up). We have been issued with brand new guns and have been practising "On and Off" all day in anticipation of the usual brain baffling which must be done now.—Talk of the Devil. Here it is—"Return of all men experienced in concrete."

Regret no time for more,

JOHN

Soviet Motor Maintenance on Winter Marches

By T. VARSHAVSKI, Military Engineer of the Third Rank, in *Automobile*

In order to mass troops for certain large-scale winter operations it has been necessary to transport large troop units (such as a corps or division) by motor for distances of 250 miles or more. Whatever the tactical considerations, maintenance of motor transport must be prepared for in advance and continued until the mission has been accomplished.

All repair and service units must be coordinated under a central head. He has one assistant who is in charge of the collecting point for tow cars, repair trucks, gas trucks, etc. The tow cars are used to pull out vehicles which are stuck—pull them off the road or to a field repair shop. In case a vehicle is beyond repair it is towed to the collecting point and delivered to its unit after completion of the tactical operation. Repair trucks perform minor repairs and distribute spare parts, materials, oils, antifreeze, and batteries along the route. The gas trucks refuel empty vehicles and maintain the temporary filling stations. Tractors are used for towing on forest roads or in drifts, and also for dragging snowplows.

The other assistant supervises the field repair shops, which are portable and are usually placed about twenty miles apart, near villages if practicable. Each is well marked by signs and has enough tools and machinery for minor overhauls. In addition, each field repair shop is equipped with stove and Delco-type electric system; the former permits work 24 hours a day with heat and boiling water for the water trucks, the latter gives electric light and power at all times. Responsibility for servicing and repairs,

for seeing that the road is clear of disabled vehicles, and for taking care of stragglers, rests on the shoulders of the manager of the field repair shop in each district.

In one winter operation on which the route of march covered by the trucks was 315 miles long, service and repairs were rendered to 600 vehicles. One field repair shop alone repaired fifty vehicles. Correct organization of the motor transport system and its maintenance greatly assisted the Red Army in preparation for this attack.

COMMENTS

This article points out some of the difficulties motor transport conditions which have to be overcome under such severe weather conditions as existed on the Soviets' Western Front in the winter of 1941-42.

Roads are generally only one lane wide, with frequent "drive-offs" for passing and repairing trucks. Sometimes the two tracks are covered by boards—a task expensive in lumber, labor, and maintenance.

With temperatures as low as 40 to 50 degrees below zero (Fahrenheit), it is necessary to adopt many measures to prevent freezing. As antifreeze is of relatively small value, engines are kept running as much as possible. When it is necessary to stop for a long period of time the water is drained from the radiator. When the engine is started again it is necessary first to flush the radiator with hot water and then fill it with hot water. Thus much gasoline and hot water must be provided. Thin winter oil is used.

The Soviets are very ingenious at making repairs with the minimum of equipment indoors or out. They are physically able to work for hours in extreme cold.

Organization of the German Defense

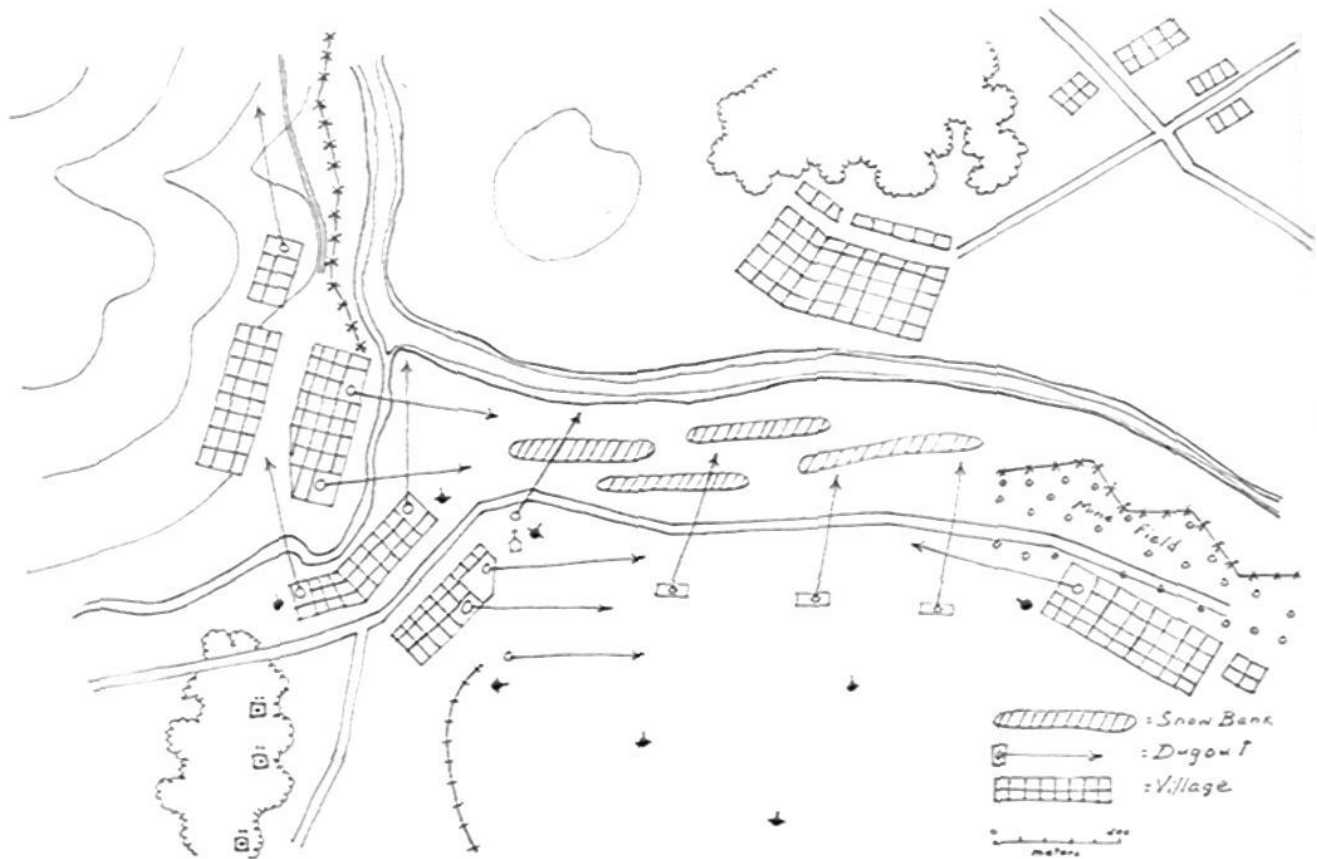
By MAJOR C. LOPATIN in *Krasnaya Zvezda*

The German defense depends upon a system of fire combined with land fortifications and obstacles, using all advantages afforded by the terrain. Their defensive positions usually extend along streams and rivers with steep banks. They also make extensive use of hills and valleys, or ravines.

The Germans' defense plan used on one part of the front is shown on the attached sketch. They used all the advantages presented by the village with the church. From this village, situated on a rather high elevation, the river and its bed were well covered by fire to the north as well as to the east. The church, being in front of all other buildings and of good height, served as an excellent observation post and firing point for machine guns and antitank guns. The

northeastern part of the village contained three or four firing positions (machine guns and mortars) and one or two trenches. The road was completely covered by fire from weapons placed in the stone buildings. The village thus provided a strong resistance, and the Germans, relying on fire power, did not construct obstacles here; all approaches were covered by entrenched machine guns and detachments.

To the northwest this village joined a second village, beyond which was Hill No. 190. From the second village the left bank of the river was covered by flanking fire. The combination of fires from both villages, as well as from buildings on the right, gave excellent cross fires in front of the position. The firing units in position



in the second village and on Hill No. 190 were considerably smaller than those in the village with the church; therefore the approaches to the former were blocked by a double-staked wire fence so that the village and the eastern slopes of Hill No. 190 formed an auxiliary position of the defense.

The buildings on the right flank were located in the open and easily visible from the opposite bank of the river. Here the fire power was very low, but what there was gave flanking fire along the left bank of the river, and cover for the especially strong obstacles in front of the position, on which the defense here was based. The wire obstacles consisted of a 3- to 4-stake fence and a mine field containing high explosives.

In the system of fire it is characteristically the case that blindages (rest dugouts) and dzoti (dugouts or firing points) in forward positions are covered successively by those in the rear. Therefore, in seizing a dzot in the forward positions our troops are immediately subjected to fire from the dzoti located in the rear.

Defensive structures are always carefully camouflaged (being blended with the surroundings) from both aerial and ground observation. Camouflage of real gun positions is aided by the construction of false ones out of snow, from the general vicinity of which the Germans fire periodically. The Germans also use small hillocks as firing positions.

On our sector the Germans have organized this complex system of fire in depth. Especially effective within the

system of fire is the proper use of terrain and small villages. They attach great importance to the use of small villages in their defense. This is quite logical, for in a village are rows of buildings which can be used with considerable effect and with the minimum loss of time and means.

When our troops break through the defensive position, destroy the forward line, and penetrate further, the Germans make new defensive works in a short time—principally of dzoti of light construction. Herein lies the flexibility of the German defense.

Location of trenches and dugouts is determined by the relief of the terrain. Sometimes they are arranged in checkerboard fashion. Between blindages are constructed a large number of dzoti, including false ones. In the dzoti are relays of automatic riflemen and machine gun men, usually 15 to 30 per cent of the detachment; the remainder are in the blinding.

Construction details of the dzoti and blindages were obtained from prisoners captured in this sector of the front at the end of February. Each section has one or two blindages where the men rest and one or two dzoti connected with tunnels or trenches cut into the snow. A blinding is a hole in the ground 2 meters deep and 6×4 meters in cross section, lined with boards; it has a timber roof which is covered by .5 meter of earth soaked with water. A dzot (dugout or firing point) is usually simply

a hole in the ground, 4 × 6 meters by 1.5 or 2 meters deep; it has a cover of two or three layers of beams which are 15 to 20 centimeters in thickness, on top of which is placed a layer of dirt .5 to .7 meter thick over which is poured water. A layer of frozen earth will withstand shells up to 155-mm. Dzoti are usually 50 to 100 meters apart, and in front are barbed wire entanglements and mines.

Sometimes mine fields and high explosive charges are combined with a wire fence. They are of simple construction—to the beams of the dzoti, which are frozen to the ground, is fastened a wire hook or ring to which is attached the barbed wire. The Germans make extensive use of antitank (T-35) and anti-infantry shrapnel mines with instantaneous or delayed action.

Spirals of smooth wire, usually used in combination with mined obstacles, are of little hindrance. Covering the spiral of the mine and entwining in it the wires attached to fuses of the delayed action bomb, the Germans try to hinder as much as possible the task of demining a mine field.

No matter how carefully the German defense has been planned, it is always possible to find a vulnerable spot. In order to find such places, every commander must be able to determine the system of fire used, the character of the defensive works and obstacles of the enemy, and the method of their use during combat. This is attained by careful reconnaissance, attentive study of the terrain, and constant observation of the enemy.

Artillery of a German Tank Division

As Reported in *Red Star*

The organic artillery with a German tank division, as used against the Soviet-German front, normally consists of two 105-mm. battalions and one 150-mm. howitzer battalion, but is usually reinforced by one or two battalions of light.

On the march, the C.O.'s of the artillery regiments, battalions, and batteries, plus a minimum of their respective staffs and control units, march at the head of the column. The artillery reconnaissance party marches with the tank reconnaissance unit. Battery reconnaissance parties consist of two armored cars and two motorcycles. In case one of the cars is destroyed the other can carry on the vital reconnaissance work.

Artillery observers ride in armored cars, type 253 and 254 being the most usual, which are armed with machine guns. In each car there is an observer, the observer's assistant, a radio operator, and a driver. There are two such observation vehicles per battery. The battery commander rides in one and another officer, who fires independent missions, in the other. Battalion has three such observers' cars.

Planes are assigned to work with the artillery of the division and are subject to call by the C.O. of the artillery, who assigns through battalion one plane per battery, depending upon the number of planes available. In the attack, normally one light artillery battalion supports one tank regiment in direct support and the medium battalion is in general support. But in the majority of cases experienced the artillery of the tank divisions has been reinforced so that two light battalions can be assigned to a regiment in the first echelon, which allows one light battalion per tank battalion. One battery of each battalion supports the right element of a tank battalion, another the left element, while the third is echeloned to the rear and is charged with flank and rear security.

Observation posts, command posts, and battery positions are all moved as far forward as possible. Batteries fire from concealed positions, however, as a rule.

Preceding an attack, preparation fire is conducted from fifteen minutes to an hour on enemy artillery and tank assembly areas, and observation points are smoked. Enemy front-line infantry is generally disregarded during the preparation, as their neutralization is left to the tanks. Direct support battalions do not always participate in the preparation fire but are put in march order with full supplies of ammunition ready to jump off with the tanks.

The battalion commanders and battery commanders of direct support units remain at their observation posts in an attack until the lead tank passes their line, at which time they take up their positions in the attack echelons. Battalions not assigned to direct support, however, push their observation ahead with the attacking echelons. The German general support artillery does not change its position in an attack which is designed to go no further than the enemy artillery positions. In an attack which is intended to penetrate beyond enemy artillery positions, though, they do move forward when practicable. If, on the other hand, the German infantry lags and is finally held up, but the tanks break through and continue forward, the general support artillery does not move forward. During the German breakthrough at the end of October, 1941, from the city of Orel in the direction of Mtsensk, German tank units succeeded in breaking through the Soviet infantry lines, but the German infantry supporting the tanks was cut off and forced to dig in. The support artillery could not move forward and as a result the tanks, having no support from their artillery, were compelled, after suffering heavy losses, to return to their original positions.

The Autumn, 1942, Campaign in Russia

Based on best information available at date of writing, this article is subject to later historical correction.

By Col. Conrad H. Lanza



On 30 September, 1942, Hitler in his Stalingrad speech said in part,

"We have prepared a very simple program:

1st—we must under all circumstances hold whatever must be held. That is to say, we must let the others attack as much as they wish, wherever we have no intention to advance. We must hold everything, and wait and see who tires the soonest.

2nd—we must attack under all circumstances where attack is necessary.

"The occupation of Stalingrad . . . will become a gigantic success . . . no human being will push us away from that spot . . .

"We are mainly interested in obtaining this great space [Russia] to render it usable for our war, also for the feeding of our people; together with the securing of raw materials for the maintenance of all Europe."

When this speech was made it was commonly heralded as a sign of German exhaustion or approaching exhaustion. It was believed to be a definite abandonment of the offensive by the Axis, due to sheer inability to continue. Perhaps this was to some extent so, but it is probable that the Sportspalast speech had been carefully prepared in advance and indeed marked a change in the Axis strategical plan, although not exactly along the line which at the time was attributed to it.

About the time of the speech, there was regroupment of Axis forces in Russia. It was similar to what had occurred in December, 1941, when the German offensive of that year was suspended for the coming winter. Experience at that time had indicated that when major changes in battle lines are initiated after winter commences, there are great losses of men, supplies, and materiel. The 1941-1942 season had been unusually severe; the freezing of motor transportation had in turn caused the abandonment of notable quantities of artillery and stores. So this year, the decision was to complete any required changes before winter started.

Two minor exceptions were made: first, a limited offensive on a narrow front was continued against a part of Stalingrad still held by the Russians as a bridgehead on the west side of the Volga River; second, another limited offensive was pushed in Caucasia, in the vicinity of the Terek River, with the mission of gaining the Ordzhonikidze oil region and at the same time closing the north exit of the main pass over the Caucasus mountains leading to Tiflis.

Elsewhere a general defensive, strategical and tactical, was to be maintained, though this did not exclude minor offensive operations to improve the line, to secure identifications, and to harass the enemy. Many divisions were withdrawn from line, which was comparatively lightly held. The front was prepared for defense as well as time and means permitted. Great dependence was placed on the Air Fleets which, held in reserve, were ready to furnish aid on an hour's notice to any sector which needed help.

Hitler (and presumably also the Axis High Command) either wanted the Russians to attack or were indifferent to their doing so. They felt it would be more advantageous to let the Russians come to them than to go chasing after natives who could avoid combat by retiring indefinitely

into their own country. The Sportspalast speech was an invitation to the Russians to come on and attack: the Axis hoped that this might result in the complete annihilation of the Russian armies during the winter of 1942-1943, on ground selected by the Axis. If this plan succeeded it would leave the Axis armies free to meet any Anglo-American invasion that might come, and which it was believed would not occur before the spring of 1943.

THE RUSSIAN PLAN

Russia accepted Hitler's challenge. It was willing and even anxious to assume the offensive, if given the time to prepare. Russia had the mission, ardently desired by all Russian peoples, to expel the invader from their territories at an early a date as practicable. The Russian armies were willing to fight regardless of winter or other conditions. Notwithstanding numerous previous defeats their morale was high. Due to materiel and supplies received from Great Britain and the United States the armies were well equipped. The leadership was entirely Russian. As far as is now known the proposed winter campaigns were planned by Russian staffs, without help from their Allies. It was decided to start major offensives in several sectors, as soon as possible.

On 30 September (when Hitler's new policy was promulgated) the Russians had already in preparation a major offensive in the vicinity of Rzhev. This was to have started early in October, but was greatly delayed for reasons which will be discussed later. It was now decided to prepare offensives as follows:

I. To relieve Moscow:

(a) **The foregoing offensive near Rzhev, extended westward to the vicinity of Velikie Luki, to advance southward to the line Smolensk-Vyazma.**

(b) **A smaller offensive, east of Rzhev to Kalinin, to cover the left of (a) as it advanced and ultimately to establish connection with (c).**

(c) **An offensive starting southwest from Moscow (from the vicinity of Maloyaroslavets) to advance westward toward Smolensk.**

If (a) and (c) succeeded the enemy could be expected to withdraw to the Dneiper River.

II. To relieve Stalingrad, reopen the Volga River route, and free wheat lands much needed for food production in 1943:

(d) **An offensive to cross the Don River in the vicinity of Serafimovich would push south to the Chir River, where it turns eastward, and then follow along the railroad toward Stalingrad.**

(e) **A smaller offensive starting from near Kachalino on the Don River, covering the left of (d).**

(f) **An offensive starting south of the Volga, in the Kalmuck steppe, in the vicinity of Malo Derbety, and moving west through Abganerova. It would then turn north, its left swinging around to join the right of (e) along the Don River. It would join in reducing Stalingrad.**

(g) **An offensive starting on the Don River about opposite Boguchar, and proceeding south down the Kalitva valley. This would protect the right of (d), free valuable farm lands, and (in cooperation with (d), especially if Stalingrad were reduced) might ultimately push the enemy back to the Donets River.**

According to Stalin's speech of 6 November, which presumably represents the Russian opinion at that date, it was believed that the principal Axis strength was on the Don River, between Boguchar and Kachalino. According

to a map which Stalin stated had been found on a German staff officer captured near the front, this large Axis force had intended to advance northeast to Saratov and beyond. It had not done so, and it was assumed that this was because of very high losses in the battles around Stalingrad. Consequently it was no longer in a position to assume the offensive, and neither were lesser forces elsewhere. This opinion was confirmed by Hitler's Sportpalast speech which was construed as indicating Axis weakness.

In view of this situation, the various proposed Russian offensives were launched, each as soon as it was ready. Those that occurred in the autumn will be considered in the



order in which they began.

RUSSIAN OFFENSIVES AROUND STALINGRAD

The first offensive was that provided for in (d) of the general plan. The front of this attack was about 30 kilometers wide extending east from Serafimovich on the Don. Opposite were 3 hostile infantry divisions. The Axis had two to four lines of prepared defenses extending over a depth of about 15 kilometers. The Don River was frozen, enabling infantry and light materiel to cross in nearly all places.

Operation (e) was ready to start at the same time, and initially was to move due south following the Don River from near Kachalino. It had a front of about 10 kilometers.

Early on 19 November, the Russians started a strong artillery preparation. Air photographs had located enemy critical points. Snow interfered at times with observation, but the artillery appears to have delivered a most destructive fire: it was so thorough on front lines that the defenders in many cases were driven out of their trenches, and the Russians were able to cross the Don with only light losses. They established themselves in what had been the Axis forward areas, and later in the day and in the ensuing night transported their artillery and trains across the river.

Next day, the 20th, the attack was renewed, and was accompanied by the launching of the offensive south of

Stalingrad according to item (f) of the plan. Very strong resistance was met by all three Russian offensives. At places the Axis had local successes, and succeeded in destroying a few enemy units which had hazardously advanced too fast. On the whole the Axis was pushed backward materially, particularly due south from Serafimovich. The Russians only claimed "wiping out" 270 Germans and Rumanians on this day.

On the 21st the Russian attacks were pressed. Their communique indicate very hard fighting, for they refer only to repelling counter-attacks and a "wiping out" of but 80 Germans. The German communique checks as to having made counterattacks by which 600 prisoners were taken and 61 Russian tanks destroyed. Still, all Russian attacks made progress, and (d) reached Bolshy. The front was very irregular, there being a battle zone in which Axis and Russian troops alternated over a depth of two to ten miles on a saw-tooth basis. The original three Axis divisions south of Serafimovich were reinforced by a Panzer Division,, and the battle was very confused. Units found the enemy in front, and sometimes in rear

and on one or both flanks, as armored vehicles dashed around with artillery and air support, endeavoring to encircle opposing troops. This day it rained.

On 22 November the Russians had their first principal success. Column (e), which had been fighting its way south along the Don River, reached Kalach, where the railroad crosses the river, and thereby severed the western Axis line of supply to the Stalingrad area. They had been opposed by about one Axis division. Attack (d) made more progress and arrived south of Bolshy. Attack (f), on a front of 20 kilometers, reached the railroad at Abganerova, cutting the line of supply to the Stalingrad area leading from the south. This attack was opposed by about 2 Axis divisions.

The Russians claim that at the end of this day, out of 7 enemy divisions (which is all they state opposed them) the enemy had to date lost

**13,000 prisoners,
14,000 killed,
360 to 400 guns.**

There is no confirmation of this in German communique.

On the 23rd the Russians had an undoubted and admitted success. Attack (d) broke through German and Rumanian troops and by the end of the day had reached the line Chernyshevsk-B. Donschinska (both inclusive). The Germans claim that the Russians lost several hundred tanks in this attack, which may be so; but the

Russians, still fighting the same seven Axis divisions, claim that at the end of this day these had lost

24,000 prisoners,
26,000 killed,
556 guns,
2,826 tanks,

with other booty in proportion, all exclusive of numerous itemized accounts which are assumed to be included in the above figures.

Analysis of the foregoing figures casts some doubt as to what they represent. Even if liberal allowance is made for corps and army tank units which may have intervened in the battle on the Axis side, the number of tanks reported captured or destroyed is several times the number which seven divisions (only one being an armored division) would normally have. The explanation may be that the Russians counted in tanks of the original Axis front, not part of mobile units, which were buried in the ground as nuclei for strongpoints. There was a large number of these disabled and condemned tanks, Russian and German, left from wrecks of the summer's campaign, although there is no available report as to just how many there may have been. There is some evidence to indicate that on portions of the front the Axis troops had as many as 80 dug-in tanks per kilometer in the forward areas. Whether this was general, and whether rear lines of defense were similarly provided with abandoned tanks, is not known. However, if this kind of tank is included it is quite possible that the Russian figures, which cover a 70 kilometer front, may be correct.

The same situation relates to the report of guns captured. In addition to the organic artillery of the Axis troops, worn guns which were too inaccurate for precision fire but were good enough for short ranges and for direct fire against tanks and other moving targets, were in the forward areas, provided with ammunition but no transportation and only minimum gun crews. These guns would of course be lost in a withdrawal. Presumably the Russians counted these in as captured.

In view of the unexpected Russian success near Chernyshevsk the Axis High Command took immediate action. They ordered the abandonment of the Don Loop, to start immediately. Troops were to proceed eastward, crossing the Don River south of Kachalino, and report for duty with the Stalingrad garrison. The movement commenced at dark and was pushed with great speed. During the shift, avoidance of combat with large enemy groups was sought until after junction had been made with the Stalingrad troops.

The Russian force which had taken Abganerova failed to turn north as had been expected; it received reports that hostile elements were coming up east of the railroad, threatening its line of communication. Consequently the day was spent in building up a new line east of the railroad, facing south, extending from Aksai to Tundotovo (both inclusive). These Russians were accompanied by a sizeable

force of horse cavalry, which appears to have been used to cover and protect rear areas, the Kalmuck Steppes—largely barren, flat, and only thinly inhabited.

On 24 November the Russians near Chernyshevsk completed the destruction of three infantry divisions, apparently the three which had been in line when the Russian offensive started. All three Division Headquarters, including commanding generals and staffs, were captured. The Panzer Division, unreported for this day, apparently escaped.

The Germans in the Don Loop had during the night made long marches to their new positions. Their disappearance from the Don River was soon noted, and Russian troops crossed over on the ice from Sirovinskaya to Trekh Ostrovnyanskaya. As they do not seem to have been prepared to undertake an immediate pursuit, the Axis troops made good progress.

The Russian force (f) still held Abganerova. The detachment east of the railroad advanced southward and reached without serious interference the line Nebikov (exc.)—Sadovoe (inc.).

The Russians claim that they took this day

12,000 prisoners,
5,000 horses,
3,940 trucks, and
1,164 guns,

while the enemy lost another 14,000 killed in the main battles west and south of Stalingrad.

Another minor attack was started by the Russians. The Axis troops around Stalingrad seem to have detached troops to move westward toward the Don, in rear of the German barrier line which extended from near Kachalino eastward to the Volga, in order to succor the troops retiring from the Don Loop. Taking advantage of this situation, the Russians in the north section of Stalingrad broke out close to the Volga River and rapidly advanced northward. Another Russian force similarly broke through the barrier line, also close to the Volga, and pushed southward. The two forces effected a junction in the vicinity of Dubovka. This success enabled much-needed materiel and supplies to be sent to the troops in Stalingrad.

The Russian troops of attack (d) did not stop after their capture of the remnants of the three Axis divisions—they started outward in all directions. Some went eastward after the Axis withdrawing from the Loop, others south, while still others went back north and northeast, after isolated Axis troops who had been by-passed in the advance and were still holding out. No serious fighting occurred, but the troops moving south reached the railroad from Lobachev to Surovikino (both inclusive).

By morning of the 25th the Russians seem to have fairly well established the intentions of the enemy, except that it was apparently believed that the Germans and their allies withdrawing from the Loop would go south. Consequently offensive (d) moved eastward along the railroad as far as Maksomov and Richkov,

with a view to intercepting the enemy on this line. At the same time the troops which had gone eastward from the Chernyshevsk area, meeting only minor resistance, secured a line about north and south through Maiovsk. Russians were still at Kalach, and it looked as if the enemy forces in the Loop might be captured.

Before daylight on 26 November Axis troops from the Loop commenced to cross the Don River on a broad front on both sides of Nabatov. There was snow and low clouds, and air activity on this and most other days of this campaign was on a comparatively small scale; consequently the Axis withdrawal from the Loop was not seriously interfered with by bombing. Ice on the Don enabled troops to cross easily, but there seems to have been an abandonment of considerable materiel on the west bank due to inability to move it over the prevailing thickness of ice. Some of the withdrawing troops were Italian and Hungarian divisions. After this date they were not again reported in line until 12 December, by which time their lost equipment had been replaced. They went temporarily to army reserve near Stalingrad.

The Axis forces coming from the south attacked the Russian line between Nebikov and Sadovoe, with the principal effort on the right. Axis reports state that a Russian Cavalry Division covering their east flank was disintegrated, but the main Russian line held. On their part the Russians also made a principal effort on their right, by advancing southwest from Abganerova. This attack made a gain of about 15 kilometers, and at night was on a general line through Gromoslavsk.

A new Russian list of enemy losses for the entire Stalingrad area claims that to date these were

63,000 prisoners,
1,863 guns,
1,320 tanks,
9,000 horses.

The number of tanks reported in this list is less than half what had been previously reported as already taken on 23 November. Perhaps the basis for the count had been changed.

The Axis completed its withdrawal from the Don Loop on the 27th. According to Russian accounts, captured Axis booty amounted to

many prisoners (number not stated),
99 guns, and
164 tanks,

which includes materiel abandoned by the Axis west of the thin ice of the Don River. In the Don Loop there remained only one Axis island—near Masovska, an important road junction.

South of Stalingrad the Russians delivered violent attacks both east and west of the railroad. The attack on the east side was opposite strong Axis forces and was unable to advance beyond the line Nebikov-Sadovoe; however, the Russians appear to have secured Nebikov. On the west side the Russians met weaker forces and advanced about

15 kilometers further, to the line Verkhni-Guilovski to Larya (about 20 miles southwest of Abganerova).

New and strong Russian attacks were also delivered against the Axis barrier line extending from the Don to the Volga, north of Stalingrad. This barrier was built originally around dug-in abandoned and condemned tanks, but had since been strengthened by field fortifications and obstacles. The line held, and the Russians made no appreciable gain.

In view of the current situation the German High Command ordered a new operation:

a. Troops in and about Stalingrad would adopt a hedgehog position, as follows:

Facing north—the existing barrier line from the Don to the Volga, about 40 miles long and also about 40 miles north of the center of Stalingrad.

East—along the Volga, around a pocket held by the Russians in the north part of Stalingrad, to the south edge of the city (in all about 50 miles); thence south to north of Abganerova.

South—from north of Abganerova, northwesterly to east of Richkov, about 40 miles.

West—on the east bank of the Don, around Russian bridge-heads at Richkov and Kalach.

b. Strong forces astride the railroad north of Kotelnikov would prevent any further enemy advance southwest from Abganerova, and would continue the offensive against the Nebikov-Sadovoe line to reopen a route to the hedgehog.

The dimensions of the Stalingrad hedgehog were on the average 80 miles from north to south and 40 miles from east to west. According to Russian G-2 reports, the garrison consisted of 22 divisions with usual corps and army troops, numbering in all anywhere from 300,000 to 400,000 men. They were supposed to be on short rations. A German air transport service operated to and from the hedgehog, carrying in supplies and replacements and taking out the sick and wounded. The Germans reorganized the troops within the hedgehog: a minimum were detailed to hold the lines on a strictly tactical defensive, and a mobile force was organized to be available for offensives. It took some time to arrange this, from which it is presumed that the Axis disposition was forced on them and had not been foreseen.

On the 28th the Russian offensive came practically to a halt, and the lines began to stabilize. Neither side claimed any gains but both report repulsing counterattacks, although not at the same places. The weather was not yet very cold; it generally froze at night, but in the daytime it sometimes rained and sometimes snowed.

On the 29th an Axis motorized and armored force passed around the left of the Russians east of Sadovoe and on to Tundotovo, getting into the Russian rear areas. It caused a considerable disturbance in the Russian supply system. As the Kalmuck Steppes are generally flat, what was really a large raiding party could operate across country and was hard to bring to battle. It did not alter the general situation, but the Russian advance southwest of Abganerova stopped. Instead the west flank was extended northwestward to connect with the Russians near Richkov. This movement completed the isolation of the Stalingrad hedgehog. The Russians near Abganerova were facing both ways: the interior group looked toward Stalingrad, and the outer one fronted strong hostile forces north of Kotelnikov.

The German forces around Kotelnikov were supplied from bases at Rostov and Azov, both on the Sea of Azov, from where water transportation was available to Rumania.

During the next few days there was no important fighting in the Stalingrad area. The Axis raiders in the Kalmuck Steppes continued to capture and destroy supplies and lines of communications, all of which was annoying but did not interfere with the main Russian forces. The Russians closed in on the hedgehog, and commenced to lay the lines for a siege.

A new Axis force had by now been organized. It appeared on the west bank of the Chir river and started operations (but on a limited scale) toward recovery of the Don Loop, by starting an advance eastward over the Chir. During the ensuing week it made a minor advance.

On 12 December the Axis troops within the Stalingrad hedgehog commenced offensive operations. Hungarian and Italian divisions, which had previously been within the Don Loop, made limited attacks starting on the north side. The barrier line, which the Russians had broken through on 24 November near the Volga River, was again definitely closed. Other attacks were obviously intended to improve the alignment of the front. Up to the last week of December the Axis had made some gains in this direction. The Russians were content to maintain their siege, feeling confident that the Stalingrad hedgehog must fall sooner or later.

RUSSIAN OFFENSIVE EAST AND WEST OF RZHEV

This was offensive (a) according to the original plan, and was to have started about the first of October. It wasn't ready at the time, and then autumn rains set in. This made the terrain unfavorable for operations so the offensive was postponed until after the ground froze.

The German line in this sector ran east from Velikie Luki to Toropets (exc.), thence to Rzhev. Both V. Luki and Rzhev were fortified areas, capable of a hedgehog defense should they be isolated. Rzhev is an important city with road and railroad junctions, but it was not valuable to the Germans for its transportation facilities as it lay on the edge of the front line. In fact, the latter went through the city, the Russians holding that part of it which was north of the Volga River. Rzhev would be valuable to the Russians, though, should they be able to clear the railroad from V. Luki to Rzhev and thence eastward. The city was important to the Germans because it deprived the Russians of through routes, and forced long detours through forest and swamp lands.

East of Rzhev the line ran south of the Volga River to Zubtsov (to Russia), thence to southwest of Kalanin, where it turned south. The entire Axis line from V. Luki to the vicinity of Kalanin was held by German troops. The main Russian attack was to be between V. Luki and Rzhev, with a secondary one east of Rzhev. The main attack, with a front of about 125 miles, would have the mission of advancing to the line Smolensk-Vyazma.



The Germans learned about this attack in September; they started a continuous day and night program of bombing Russian railheads, depots and dumps. The country is generally wooded and swampy. Traffic can not easily move off roads, and the latter are easily seen from the air. The bombing thus had considerable effect, and had much to do with causing a postponement of the attack even though it was unable to prevent it entirely.

With the arrival of cold weather toward the end of November, the Russian High Command believed the time had come when the offensive could be profitably launched. It started on the entire front on 25 November. There is no information yet available as to the strength of the Russian armies. The German strength in the intervals between the fortified areas appears to have been reduced to an average of about 1 infantry division to each 15 kilometer of front, with Panzer divisions (in corps and army reserve) ready to move to the assistance of any part of the threatened front. Strong German air forces were available, and had been accustomed to intervene on short notice to support ground troops.

The attack started with a violent artillery preparation. Neither side mentions any special air activity, low clouds and some snow preventing extensive flying. The Russian attacks met strong resistance and at first made only short gains. Details of this fighting have not been given except as a whole for the four days 25 to 28 November. By evening of the 28th Russian attacks against V. Luki and Rzhev had broken down, but in the interval between these two strong areas they had made four penetrations:

- one east of V. Luki, 30 kilometers wide;
- three west of Rzhev, respectively 20, 17, and 10 kilometers wide, centered south of Olenino.

Each of the four Russian advances claimed to have routed 1 German infantry division, plus 1 Panzer division

which had intervened. Only 400 German prisoners were taken. The Russians had very severe tank losses, and the Germans were able to withdraw without excessive losses either of personnel or materiel. They appear to have given up the entire area involved in the three penetrations west of Rzhev, and fell back about 25 kilometers. The Russian attack near V. Luki succeeded in cutting the communications from that area to both the south and the west, but they remained open to the north. From now on the Russians operated in two separate movements. That near V. Luki became involved in heavy fighting between that area and Germans coming from the north in the vicinity of Toropets. Russians west of Rzhev continued on with the original mission of advancing to the Smolensk-Vyazma line. The weather at this time averaged about 15° F., with frequent snow falls. The snow was not very deep, however, and it was practicable for vehicles with caterpillar treads to move across country.

Besides the Germans coming toward Toropets from the north, a strong German counterattack started on 29 November, southeast of Lake Ilmen and headed for the railroad junctions at Valdai and Bologoe. As the latter was a main base for supply of the Russian troops between V. Luki and Rzhev, the German attack could not be overlooked; and it was necessary to detach troops to meet it. The initial German move made considerable gains, however. Near V. Luki bitter and confused fighting occurred. The German air force intervened this day, attacking in strong force at a very low altitude. No important change occurred in this area. West of Rzhev the new Russian line pushed slowly southward from the front Nelidovo-Olenino.

In the meantime the Russian secondary attack east of Rzhev appears to have been limited to an attempt to drive in the salient angle southwest of Kalinin. This had no appreciable success, and the attempt was soon abandoned.

The German counterattack southeast of Lake Ilmen was stopped by the Russians on 2 December, but hard fighting continued in this area for several days thereafter.

Furious fighting continued daily west from Rzhev. The Russians made continual slight advances and, working around the defenses of Rzhev, secured the railroad leading south to Vyazma. They also advanced toward Bely. In the vicinity of V. Luki they succeeded in encircling some of the German advanced posts, but without capturing them. On their part the Germans encircled some Russian forces in the same general vicinity.

For this campaign both sides have published the alleged tank losses of their opponent. The Russians have made no claims to taking so large a number of tanks as in the Stalingrad offensive, which lends credit to the figures they publish. On the other hand the Germans claim large Russian losses in this northern battlefield, while omitting similar claims in the south. The losses are reported to be:

CLAIMED TANK LOSSES IN THE NORTH RUSSIAN CAMPAIGN

Dates	Lost by Russians	Lost by Germans
November 25, 26 and	27	95
	28	57
	29	135
	30	24
December	1	95
	2	106
	3	49
	4	104
	5	51
	6	37
	7	298
Totals	1,051	170

The large tank losses alleged to have been incurred by the Russians on the 7th are explained by a renewal of the German counterattack southeast from Lake Ilmen, together with another made opposite Kalinin. The Ilmen attack succeeded in advancing about 15 kilometers into the Russian lines, and captured dumps and depots. The latter may have had Russian tanks under repair which were lost to the enemy. The totals give for averages

Russian tank losses per day, in a major offensive..... 95
German tank losses per day, in a major defensive..... 15

In this case both sides appear to have been about evenly matched at the start.

After a decrease in the intensity of the fighting the Russians, having reorganized, restarted their offensive west of Rzhev on 11 December with very strong infantry and tank forces. This attack reached the outskirts of Bely, but on the whole made unimportant gains. The Russians claim to have wiped out only two companies of infantry and to have captured 6 guns. The German account claims the Russians lost 170 tanks, as against 21 German ones. Other Russian attacks southeast of Toropets were also repulsed with an additional Russian loss of 36 tanks.

The Russian attack near Bely was continued on the 12th. The Russians claim to have forced a crossing of the Dvina River, killing 800 Germans, but the German account claims that the Russian attacks as a whole collapsed with a loss to them of a further 153 tanks. The Russians did not list any German tanks as lost on this day.

There are no reliable figures as to artillery participation, other than reports that it was artillery which inflicted the major number of casualties. Some losses were due to infantry weapons, and still fewer to air action, insofar as personnel were concerned. At times the destruction by air forces of materiel, supplies, and communications was serious. German reports stress that the air transport service was of exceptional value. It operated day and night, regardless of weather, and had a decisive influence at certain times and places. No Russian air transport system on a large scale has been reported.

On 16 December the Germans completed the capture of the remainder of a Russian force which had been encircled southeast of Toropets about a week earlier. It appears to have been the better part of a division protecting a large park and dump of guns and ammunition. About 4,000 prisoners were taken.

In the following ten days considerable hard fighting continued on this north front, in which both sides undertook local offensives. Changes in the line did not alter the general situation, which at the close of December remained in a fluid condition.

RUSSIAN OFFENSIVE ON THE MIDDLE DON

Due to the late date on which this started, only a brief description can now be given. This offensive was a modification of items (c) and (g) of the original plan. In view of the success of the Stalingrad offensive, it was decided to extend this to the west. Two new offensives were prepared:

1st: Under General Batukhins, on a front of about 60 miles along the Don, from west of V. Mamon to the vicinity of Kazansk. To advance southwest to the railroad north of Millerovo.

2nd: Under General Philip Volkhov, on a front also of about 60 miles, based on the upper Chir valley. These troops were taken from the same forces which had advanced south from Serafimovich in the Stalingrad offensive. They were now to move generally west, with their left directed on Millerovo.

The front to be attacked had been unusually active for several weeks, with constant raids and minor attacks. These had enabled the Russians to obtain considerable information concerning the defenses the enemy had. On the Don, where there had been time to organize in regular positions, Axis troops had four lines of resistance in a depth of 10 miles. This was lightly held, there being about 14 divisions in line in the 120-mile front selected for the attack. In rear, but some distance away, were an undetermined number of Panzer divisions in corps and army reserve. All villages had been prepared for defense. There was much wire. Some sections had mine fields in their foreground. In rear of the Don was a novel obstacle: instead of tank *ditches*, tank *walls* had been erected of snow, ice, and earth which had frozen into a thick, solid mass.

The weather favored the Russian preparations for their offensive. Frequent snow falls and constant lowlying clouds impeded air observation. As far as now known, the Axis were not expecting an attack along the Don. They probably were along the Chir valley.

On 16 December the Russians opened a terrific artillery preparation which overwhelmed the Axis positions along the Don. It was so heavy and accurate that the Russian OPs saw the infantry evacuating their positions to escape the artillery fire. Russian infantry thereupon crossed the Don on the ice, while the artillery shifted its fire to the enemy's next line of resistance. Engineer troops laid light pontoon material on top of the ice, whereby artillery and armored

vehicles were soon able to follow the infantry across the Don.

The enemy's second line also was abandoned under the artillery fire. The Russian infantry were equipped with scaling ladders by which they crossed the ice wall all along its length. Engineers breached it, to allow the batteries and tanks to go through. Tanks now took the lead, and got far ahead of the infantry. The latter bypassed strong points and pushed along after their tanks, but at the end of the day had not caught up with them. The net result was that the Axis line along the Don had been pierced on the whole 60-mile front, less islands of resistance still holding out. Part of the troops holding this sector were Italians.

Along the Chir valley the Russian attack made not quite such great gains, but it got over the river and made a substantial start. The temperature on this day was — 13° F., the sky was clear, yet neither side mentions any special air activity. The low temperature favored an attack by armored troops, as the ground was so solidly frozen that even the heaviest tanks could move across country in all directions.

The German High Command ordered strong air forces to the new theater of operations; they intervened on the 17th. German ground forces were ordered assembled south and southeast of Rossosh, with a view of taking the northern Russian offensive from its rear. Other steps not yet known were undoubtedly taken also.

The details of the next few days' battles can at this time only be outlined. The Russian north attack made the greatest advances: it maintained its front of about 60 miles, and on 19 December was attacking south on an east-west line through Kantemirovka, which had been an Axis depot; this was an advance of 35 to 40 miles. The Chir valley attack had been narrowed to a 12 mile front, and had advanced about 20 miles in a generally westward direction. This advance appears to have been due to a withdrawal of the Axis troops, in view of the situation created by the advance of the Russian north offensive. It also lost heavily, German reports showing that on this day it had lost over 100 tanks while the Russian north offensive only lost 20.

As against their own losses the Russians report that to include the 19th, the two offensives had met (and identified in line) 13½ infantry and 1 Panzer divisions which together had lost

**84 tanks,
1,102 guns, and
2,720 trucks.**

The relatively low Axis loss of tanks indicates that there was not much armor behind the lines in this area.

On 20 December the Russian north offensive made another formal attack, using the artillery which had now come up for a strong preparation. This attack once again broke through the German lines on nearly the whole front. The main Russian force reached Chertkovo, with advanced elements at Degteva. In view of this success the German High Command ordered withdrawal of the 4 divisions facing the Chir valley and of about 10 divisions north of Millerovo.

The Russians took 3,500 prisoners in this battle, and reported that 10,000 others had previously been taken, including those captured in reducing island posts in the Russian rear. 8,000 German killed were stated to have been left on the battlefield. No claims were made of Axis tank losses, but the number of guns and trucks taken is stated to have brought the cumulative totals to

**1,320 guns and
6,320 trucks.**

The increase in the number of guns taken is explainable by



the success of the day.

The Germans reacted strongly after the battle of the 20th. At least two more Panzer divisions entered the line, and a new front was established around Millerovo. Forces were assembled northwest of Millerovo to counterattack in rear of the Russian left. Temporarily the Russian advance was slowed. The new Axis front was about 40 miles in rear of the line previously held, and although Russian tanks were in contact with the enemy in his new positions on the 21st, the Russian infantry was 30 miles in rear. Russian tank losses appear to have been considerable, about 200 having been lost on the 20th and in the exploitation of the next day.

On 23 December the Russian offensive from the Chir valley occupied Bolshinsk, and the Russians closed in around Millerovo. On the other hand a German counterattack reoccupied Kantemirovka in the Russian rear. It was recaptured by the Russians on Christmas Day. As of 26 December the situation in this sector was that the Axis had provisionally established a new line, with Millerovo as a strong point. The Russian offensive from the Chir valley was passing around this to the southwest; the north offensive was going around the other flank. To date the Russians claimed to have taken 56,000 prisoners, including the island centers which had held out and which by now had been reduced.

MINOR OFFENSIVES

At the end of October an Axis offensive with German and Rumanian troops initiated a small offensive in the Caucasus, near the north exit of the main military road over the mountains to Tiflis. This secured Alagir on 1 November. After much fighting without substantial change in the situation, the Russians reentered Alagir on 24 December. They now have access to the mountain pass, which is not, however, very practicable during winter.

Minor fighting has also occurred at various other places on the long Russian front, which have involved much loss of life and of materiel without altering the situation.

COMMENTS

The German idea of adopting the strategical defensive together with a tactical offensive, as out-lined in Hitler's Sporspalast speech of 30 September, seems so far to have turned out to the advantage of the Russians.

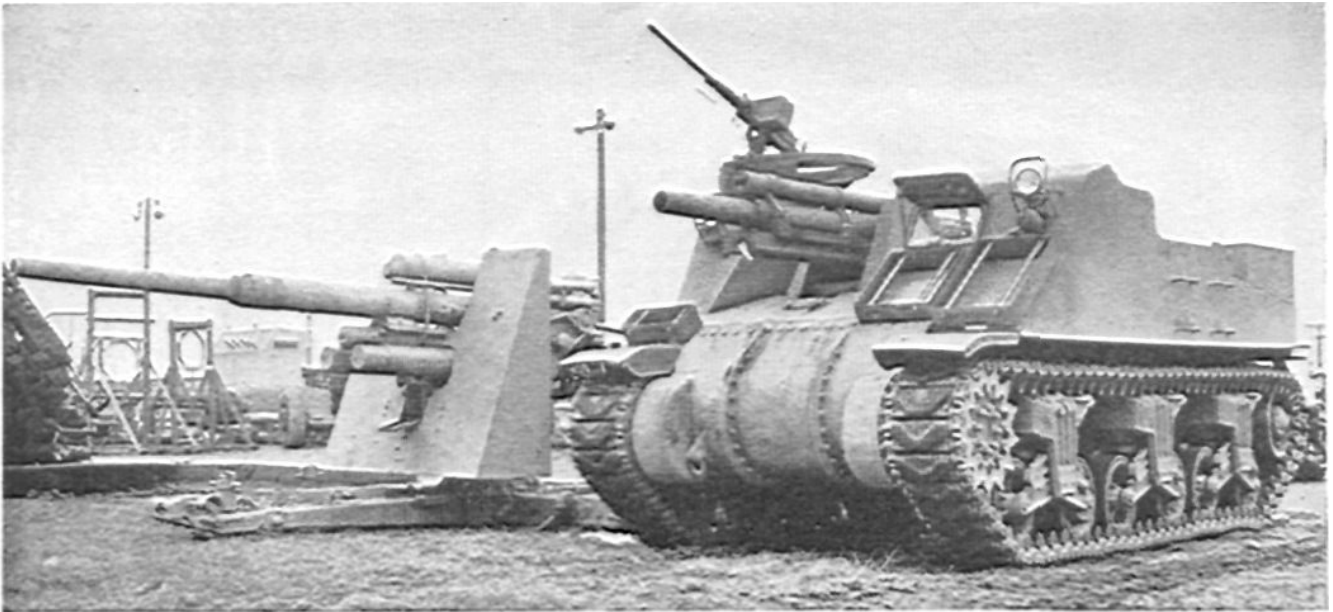
The Russian offensive around Rzhev and V. Luki may have involved losses out of proportion to the minor gains of territory secured. This was because the Germans foresaw this offensive and were prepared for it. The various Russian south offensives around Stalingrad and on the Don appear to have turned out to the considerable advantage of the Russians, the Germans having lost large sections of valuable wheat farm

lands with incidental large losses of personnel and materiel. Also, Stalingrad is isolated. It has a large garrison whose ultimate fate can not be foreseen.

The winter campaign is young. There are months ahead in which the Axis may retrieve their defeats. They will have a hard fight before them. The first third of the winter season illustrates the danger of allowing the enemy to select the areas and dates for initiating campaigns. The Russians were eager to seize this opportunity, and availed themselves of it as soon as the Axis gave them the time to do so. It is now possible that the Axis will abandon the strategical defensive for some aggressive action, not necessarily in the sectors where fighting has been occurring.

Tank and gun losses in Russia have been very large on both sides. Ample replacements are required for modern warfare.

Preliminary reports are that casualties from infantry weapons have been around 10 per cent of the total (which would be about 1 per cent less than in 1918), as an average. Both Russians and the Axis have had to greatly increase their artillery forces, which now furnish the greater part of the fire power and cause the major proportion of the casualties. Reports of guns captured can not be accurately interpreted as the figures given presumably include sector artillery, antitank and anti-aircraft guns, etc. The Russian report for 23 December claims to have captured and destroyed 2,040 guns out of about 15 Axis divisions; this makes 136 guns per division accounted for, and excludes guns still remaining but not captured. Allowing liberally for corps and army artillery, the Axis divisions seem to now have in Russia at least 30 batteries per division, a much higher number than they had at earlier dates in this war. And it was not enough to stop a major attack. The explanation is that the front held by Axis divisions on the Don, which was between 6 and 7 miles per division, was too great. Thirty batteries can not effectively cover a front as wide as this.



German "88" is static, relatively immobile, and poorly protected; our M7 (105-how, on M3 tank chassis) is fleet, armored, hard hitting, and carries its own .50-cal. MG for close defense.

CONTRASTS

Some years ago the German State promoted a plan whereby small wage-earners could buy a light-weight, inexpensive "People's Car" or "Volkswagen." After paying enough weekly or monthly instalments, buyers would receive their vehicles. Large sums were thus collected—but of course the State, a non-producer, decided to keep both the money and the cars. The latter were diverted to the Army but prospective owners were cajoled or threatened into continuing their "contributions." They would have done better to have emulated Italian prisoners in England, who are investing their savings in securities of the British Government. In this country, War Bonds rightly have more appeal than would any fly-by-night schemes for "pay-now-but-get-the-goods-when-you-can!" By contrast to our "Jeep," the "Volkswagen" is flimsily built; has 2- instead of 4-wheel drive; and has a top speed of only 30 MPH as against 50-plus.



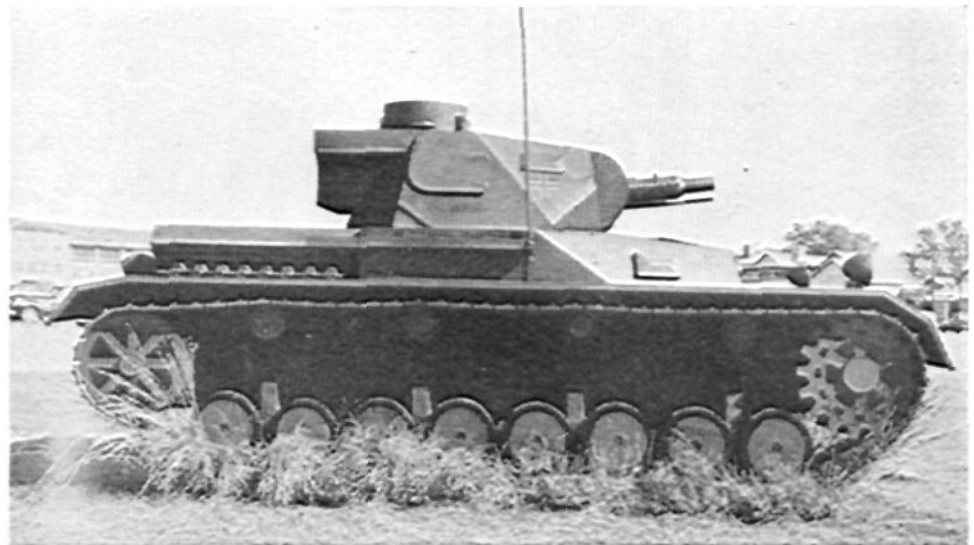


Mk. II

TANKS AT

"To recognize a tank when you see it, you must have gotten acquainted with a full-size model"—so reasoned Lt. Col. J. R. Burrill at the Field Artillery School. As a result of this interest, Col. W. L. Coughlin had his Materiel Department construct these dummies, following exactly the data published by the War Department. In line with Lt. Riggs' Teaching

GERMAN MODELS



Mk. IV



These German dummies are so well made they look like the real thing.

Mk. IV

FORT SILL

Enemy Tank Identifications (p. 667 of the September, 1942, JOURNAL), models of the most common enemy tanks will be spotted about the reservation, with signs bearing pertinent data. Interested units wanting to follow suit but lacking some of the construction facilities of the School, are referred to Lt. Riggs' article for suggestions as to ersatz materials.



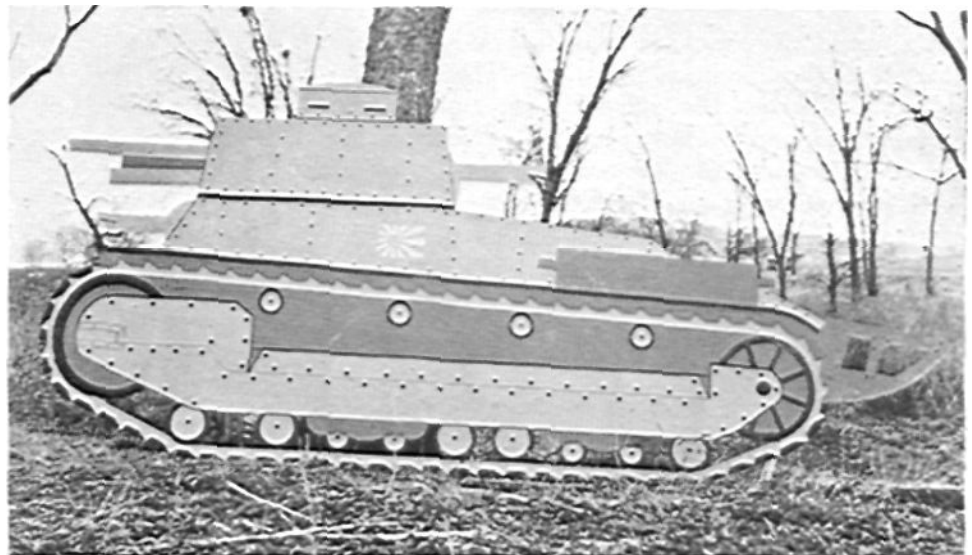
Tankette



Light

JAPANESE SILHOUETTES

When placed under a tree and viewed from a short distance, even a silhouette is surprisingly realistic.



Medium

ANTITANK THOUGHTS

By Col. M. J. Colbuck



ALTHOUGH much antitank doctrine is being put out in pamphlets, memoranda, articles, and news dispatches, some fundamentals have been largely overlooked. It should never be forgotten that the tank and the antitank gun have diametrically opposite characteristics. The tank is protected by its armor; it has mobility and can move from place to place to obtain the best field of fire for its immediate purpose; it is a traveling elevated OP; and, at least among German tanks, one out of every 7 or 8 is outfitted with a 10-power BC 'scope. The antitank gun, on the contrary, is utterly unprotected against shell fire, except for its shield and such natural cover as it might have available; when it has been prepared for action its mobility is practically zero; in the absence of a handy tree or cliff its crew has only a worm's eye view; and the only optical aids at a gun position are the sight itself plus perhaps a pair of field glasses.

These differences mean that as tanks approach a crest they can and do halt to scan the countryside before them with great caution and in great detail. With the 10-power 'scope any suspicious objects within at least 2,000 yards will be given a few rounds of HE in an effort to find out just what they might be. Artillery crews must practically be miracle men if their camouflage still deceives the enemy after such a scrutiny, so that the positions are not the subject of a few "smoking out" rounds. And if by chance a few rounds do fall near a gun's position its crew will have steel nerves indeed if it refrains from trying to return the fire.

The whole point, of course, is that the tank wants its fire returned. It wants any antitank guns within sight to disclose their positions by firing. The tank commander well knows how vulnerable the antitank guns themselves are and that he can stay well beyond the effective antitank range of these weapons and blast them completely out of action. His elephant hide will protect him, so it's heads he wins and tails you lose. There are, therefore, three vital principles in the placing of antitank guns—defilade, depth, and enfilade.

Both concealment and protection are gained if defilade can be had either through use of natural folds or hollows or by digging-in the piece. Utter concealment is perhaps the more important, if these two factors can be weighed. If the tank commander sees neither the gun nor anything that looks like or could even conceivably be a gun position he is not apt to send his random rounds in your direction. After all, his ammunition supply is none too great, so he will think at least once before commanding

"Fire." Camouflage carefully applied is also necessary, of course, for there are no natural positions which are completely concealed. At the same time this defilade affords considerable protection, far beyond that obtainable by such artificial means as sand bags, revetments, and the like.

All possible hostile approaches should be covered by at least two guns. For flexibility, positions ought to permit wide arcs of fire so that primary and secondary (or alternative) missions can be assigned. Mutual support is essential, particularly coordination on the flanks of both small units and larger formations.

It is advisable to avoid positions where the gun crew can see the enemy at any great distance or there will be danger of their opening fire too soon and disclosing themselves, yet without any possibility of penetration. But wherever possible, positions should be so chosen that guns will not have to fire at tanks head on, where the armor is thickest. The most effective shot is one at right angles to the tank's path, so it should always be sought—not only because the round may hit an area where the armor is of minimum thickness but also because the AT position will not be detected so readily by personnel within the tank. *The ideal is one shot, one tank.*

FIRE DISCIPLINE

Perhaps most important of all is discipline in withholding fire until it can be surely effective. This requires intimate knowledge of both the capabilities and limitations of the weapons at hand, and is closely related to the selection of the field of fire.

As intimated above, a position on a reverse slope will generally give the best chance of halting an enemy tank. But positions must be no farther from the crest than the maximum effective range of the antitank gun. Remember, the tank is invulnerable as far as you are concerned if he is very far away, and if you give him a chance to locate or even guess your position through his BC 'scope you haven't much of a chance; and if you let him tempt you to reply to his random decoy shots on your suspected position, the result will be the same.

Thirty-seven-millimeter AT weapons should not have a possible field of fire of more than 500 yards. Antitank guns with characteristics similar to those of the British 6-pounder may be sited to shoot to up around 800 yards. The 105-howitzer is of course primarily a field weapon and must be used to do a field gun's work. It can and does give depth to the antitank defense, but that role is secondary; it is an important one, nevertheless, so positions should not be more than 1,000 yards behind the crest, with the crest itself covered by the lighter antitank weapons.



TUNISIAN EXPERIMENT

By Capt. Norman J. Kinley, FA

During the fighting around Tunis my battery was detached from our battalion for a time, with the mission of defending a compartment, down which ran a road, against a possible enemy armored thrust between two of our brigades with the object of cutting our supply line.

There were no friendly troops in the vicinity except a company of French Senegalese, who placed themselves to our rear; we therefore converted the battery into a tank destroyer outfit.

The valley was about two miles wide, and to start with we sited two guns on each side of it, well off the road, and each with a .50-caliber machine gun in support. We then ran liaison wire forward about two miles, set up one SCR-194 set there, and sent another up the valley in a peep for our warning service. All four guns commanded the road and were in an arc formation converged on a common point at a range of about 1200 yards.

We felt we were set to do business in the daytime, but we were not so sure about night.

As soon as it was dark the two guns nearest the road displaced to points about 100 yards from it on either side, and about 500 yards from the common point. We laid these guns directly, by referring them with a flashlight on the point at which we wanted our fire converged.

Next we dug the "grand daddy" of all slit trenches about 50 yards off the road opposite this point, and strung a trip

wire to it. At the end of the wire we had 40 gallons of gasoline in opened 5-gallon tins, and in the center of the pile was snugly nestled an M-1 hand grenade in a cradle of loose cordite.

Finally, in a line beyond this, perpendicular to the road we dug a series of fox holes about 100 yards apart, each containing a grenadier armed with plenty of antitank power. We were all set.

We visualized our scheme to work out like this. The forward peep, having warned the battery of the approach of the enemy, would fade toward the hills. The radio-wire station two miles forward would try to supplement the warning with a definite identification, as it was fairly close to the roadway. But the key to the plan was the stout hearted man in the slit trench. He was to positively identify the column as enemy and, letting motorcycles and light escort vehicles through for the machine guns to deal with, was to pull the trip wire so that the grenade would detonate as the leading tank arrived at the point. The result would be a column of burning gas about 20 feet high, and sufficient disturbance to make the enemy tank commander halt long enough for the two closer guns to drill into him with armor-piercing shell, while the others blazed away at the rest of column with HE, forcing them to deploy, and giving the grenadiers a chance to go to work.

I regret to say that at this writing the scheme is still theory, but we do know for certain that the burning gasoline part of it is practical and will serve the purpose of providing illumination and a means of concentrating fire. We'll try to let you know how it works as soon as we can.



French officers in North Africa are greatly interested in our 105-how. These photos were made "a Pecole d'artillerie de Btry 'B'." The American officers are Lt. Col. J. T. Dawson and Capt. David Brooks.

THE RED GUIDON

By COL. GERALD GRIFFIN

Animato

1. Come, fill up your tank-ards, I'll give you a toast: We'll
2. We've soldiered to - geth - er, brave hearts ev - er true; We've
3. Come! up with your tank-ards and drink long and deep, Brave

drink to the Ar - til - le - ry, — The first in the bat - tle, the last from its post — Old
marched, we have fought and we've bled — For the dear old flag with its red, white and blue That
hearts ev - er gal - lant and true, — To those who now rest in their long peace - ful sleep, They

com - rades, drink stand - ing with me. — To friends who have passed o'er the
streams in the breeze o - ver head. — We've joked and we've laughed in the
once wore the red and the blue. — Prove true in the fu - ture as

last long di - vide, Their spir - it is still march - ing on, — The spir - it of those who once
camp fire's red glare From Cu - ba to dis - tant Luz - on, — And told the old sto - ries that
they in the past, Old com - rades of gun and cais - son; — Then go to your God like a

THE RED GUIDON

rode side by side With the guns of the Red Guid - on.
drive a - way care Near the tents of the Red Guid - on.
sol - dier at last, If you fall near the Red Guid - on.

This system contains the first line of the song. It features a vocal line with lyrics and a piano accompaniment with treble and bass staves. The key signature has two flats (B-flat and E-flat), and the time signature is 6/8. The lyrics are: "rode side by side With the guns of the Red Guid - on. drive a - way care Near the tents of the Red Guid - on. sol - dier at last, If you fall near the Red Guid - on."

CHORUS

For me the crossed can - non, they nev - er will run; The

This system marks the beginning of the chorus. The key signature remains two flats, and the time signature changes to 6/8. The lyrics are: "For me the crossed can - non, they nev - er will run; The"

lim - ber and roll - ing cais - son, The trace and the col - lar, the

This system continues the chorus. The lyrics are: "lim - ber and roll - ing cais - son, The trace and the col - lar, the"

rum - ble of gun, As we fol - low the Red Guid - on.

This system concludes the chorus. The lyrics are: "rum - ble of gun, As we fol - low the Red Guid - on."

RAPID CAMOUFLAGE

By Lt. Daniel H. Sherman, FA

In modern warfare it is vitally important that the artillery have some means of rapid concealment from enemy observation. With this in mind, experiments were conducted in Battery A, 3d Bn, 1st FA Tng Regt, FARTC, Fort Bragg, to devise means whereby a camouflage net could be put up quickly.

A spider-web made of wire, which (to the best of my knowledge) was first used by Capt. Richard Brown, formerly of Btry B, 149th FA Bn, 31st Div Arty, furnishes the frame on which the regular fish net is supported. This spider-web and net can be erected in a very few minutes and provides the necessary concealment and adequate field of fire for flat trajectory guns, but does not allow for howitzer fire. Slight changes in the construction of the wire spider-web allows an embrasure for this high angle fire.

MATERIALS FOR THE FRAME

The materials used in the net are all standard issue. Ten-gauge wire is used in constructing the collapsible spider-web; lacing and rim wires are 16-gauge material. The

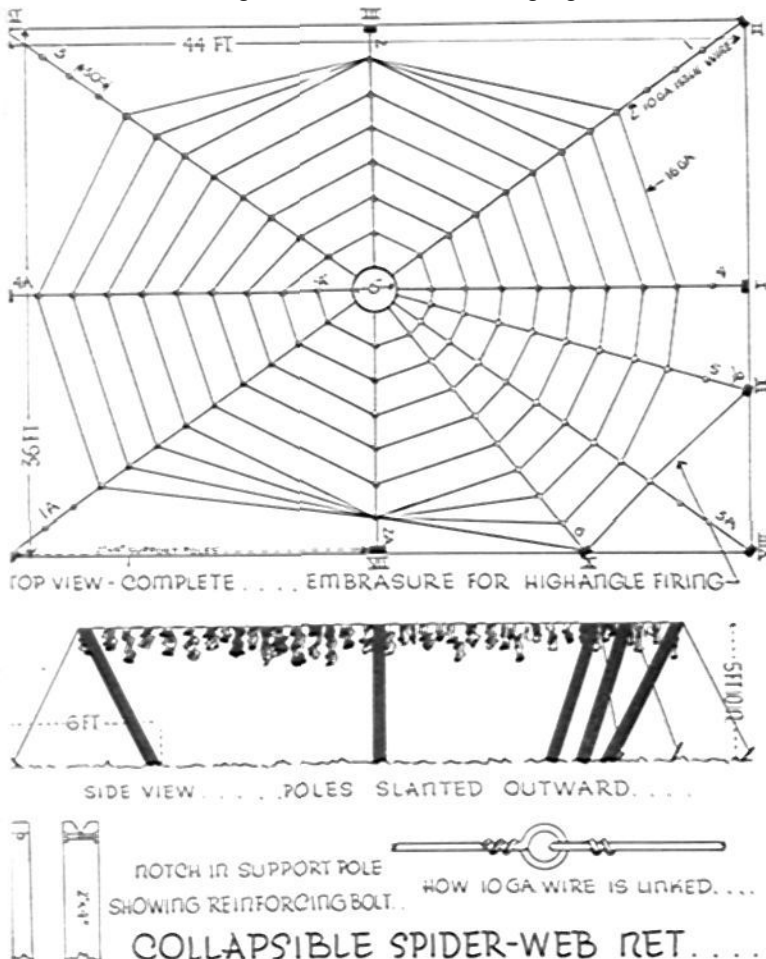
former is 330 feet long, the latter 165 feet in length. Ten guy ropes, equipped with metal or wire slips, are of $\frac{3}{8}$ " hemp rope 10 feet long and are permanently fixed to each radial. The standard 36 x 44 foot fish net equipped with garlands of jute or oznaburg painted the correct color is used to cover the wire spider-web.

To construct the collapsible spider-web, cut the 10-gauge wire into 36" lengths, bend each end of the lengths back three inches, and fold it, providing a half-inch eyelet at each end. A second length of the wire is hooked into this eyelet and twisted, thus forming a loose link. This is repeated until ten chains are made, four of ten, two of seven, three of eight, and one of nine links. The chains are folded link over link into a compact bundle 8" in diameter and 30" in length. A center ring, 6" in diameter, is made by forming a 20" length of $\frac{3}{8}$ " rod into a circle and welding it. To this center ring the chains of 10-gauge wire are fixed permanently, but loosely enough for the links to be moved freely. As noted in the diagram, four of the radials (1, 1A, 3, and 3A) are the diagonal chains to the corner posts (Nos. II, IV, VI, and VIII), and four (2, 2A, 4, and 4A) pass through both the long and short axis to posts numbered I, III, V, and VII. The two remaining radials (5 and 6) run out to posts numbered IX and X.

The support poles are of 2 x 4 inch material, cut into 6' 6" lengths with a 1" notch in the top to provide a slot in which the end link of the radial is placed and affixed to the guy rope.

TO ERECT NET

Trails having been dropped and the direction of fire indicated, the chief of section determines the center of the net. On this spot he places the collapsed spider, ring down. Each member of the squad takes a folded radial and unfolds it outward. Care is taken that radials numbered 3A, 5, and 6 are in the direction of fire. When all chains are unfolded they are pulled taut, thus adjusting the net. It is important that chains 1 and 1A, 2 and 2A, etc., be exactly aligned across the center ring. After the net is oriented each squad member marks a spot two paces from the radial end and firmly emplaces a 2½' stake over which he places a loop formed in the end of his guy rope. When this is done, each squad member places a support pole underneath the radial and guy rope. On command of the chief of section all poles are raised simultaneously. Poles should finally slant outward from the center, common tension being the means of providing stability. The 165-foot length of 16-gauge wire is firmly fixed to pole IX, then carried around the edge of the net frame, being placed *outside* the top of the poles and *above* the guy ropes to post X. It is then



carried diagonally across the corner and threaded through the end of the eighth length of radial 3A. This eyelet is (note diagram) toward the center of the net from the diagonal line from poles IX to X. No excessive strain is placed on this rim wire. The frame is now ready to receive the net which has previously been equipped with garlands. All members of the squad lift the net to the top of the frame and spread it by rolling it down the long axis of the frame. Edges are drawn taut to the rim wire and pinned there with small sticks or twigs. Concealment is now provided. Further improvements such as threading in the lacing wire, digging slit and ammunition trenches, digging in the piece, etc., can be accomplished free from observation.

The piece is placed generally under the corner of the net facing post VIII, wherefore ample space is available to the rear of the trail for slit trenches. The lacing wire, 330 feet in length, which gives additional support for the net between radials, is threaded through the eyelet of a radial at the center (note point A, diagram) and threaded through the eyelets of the links in successive outward circles to point B (diagram). Only mough tension is applied to pull this lacing wire reasonably taut. In case of rain this wire prevents any sagging of the net that would result from the added weight of the moisture-soaked garlands.

TO STRIKE NET

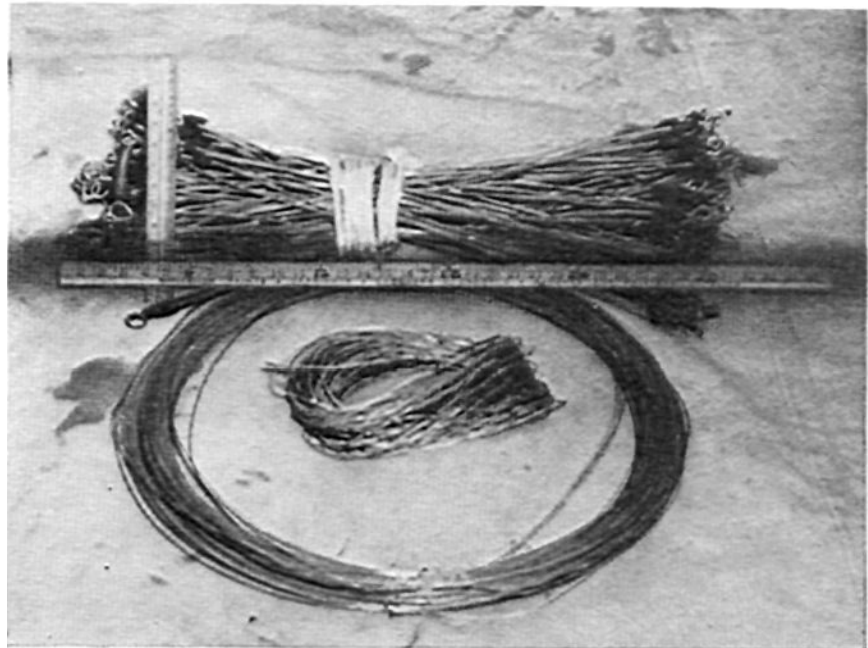
Remove the pins from the edge of the net and roll it from the frame, down the long axis. Release the lacing wire at both ends and remove by the squad members placing themselves advantageously throughout the circles and feeding it to the center. Then remove poles, pull up stakes, fold the radial chains to the center link over link, and tie each chain with its individual guy rope.



Threading the lacing wire. Note the center ring.



A firing embrasure is formed in corner of the net by dropping corner pole (No. VIII) and rolling net back to wire placed diagonally across corner.



Spider is compact when collapsed.

Back Toward Fundamentals

By Maj. A. R. Hercz, FA

With the present trend of artillery survey away from plane tabling and inclining more and more to transit work, it might be appropriate to cast back a glance at "the good old fashioned way" with an eye to salvaging what is worth while. The principle advantages of the all-but-forgotten plane-table are: that no computations are necessary in order to get final results, or else that no notes need be kept for interpretation and replot later; and that a solution to the survey is developed graphically, on the ground, where it may be compared with the terrain at each point of progress. Therefore less training is necessary and fewer mistakes will result than by use of computed survey. Also many problems (such as resections) may be worked out graphically with comparative ease, while the same problems solved analytically using transit data are quite complicated.

While the transit is, of course, more accurate, a plane-



Figure 1

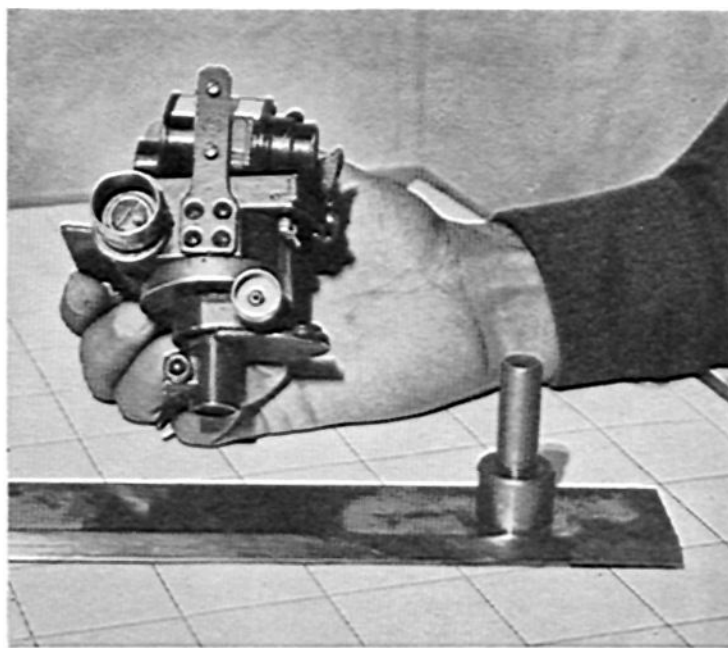


Figure 2

table survey to an appropriate scale has all the accuracy required for artillery purposes (with the sole exception of short-base triangulation).

The chief objections to planetabing are not due so much to the methods as to the poor equipment generally used. Anyone who has stood in the wind on Bald Ridge trying to find the Water Tank in Elgin through his open sight while the wind whipped out a tune on the front sight hair, or who tried to unscramble the magnetic bearing while his needle bounced from one side of the declinator box to the other, knows what is meant.

However, with the device described below it is believed that the plane table will still be found very useful for many artillery surveys, such as the position area survey of a battalion.

The only new item required is shown in Figs. 1 and 2. It simply consists of a brass straight edge near one end of which a post is rigidly mounted, and near the other end of which there is a small knob for a handle. This can be made in any machine shop from the dimensions given in Fig. 3, which also indicates the only critical machining. A scale along the plotting edge is handy but not necessary.

USE

To use this instrument mount an aiming circle on the post in the same way that it fits onto its regular tripod (Fig. 2). In using this alidade the principles are the same as for any other type, except for the added upper and lower motions and compass needle. These allow several short cuts in operation:

A. To set up and orient on a known visible point:

1. Set up plane table in usual manner, using spherical bubble in aiming circle for leveling.

2. Laying the straight edge on the two plotted points, orient *approximately* by rotating the table, then clamp the board.

3. Starting with the line of sight of the aiming circle approximately parallel to the straight edge, use the lower slow motion screw to get exactly on the fore sight (point on the ground).

4. Both board and alidade are now oriented. Upper and lower motions must not be disturbed during any one setup. Use alidade the same as any telescopic alidade. (Line of sighting need not necessarily be parallel to straight edge.)

B. To set up and orient by compass:

1. Set up the plane table as before.

2. Lay the straight edge along any Y-line of the grid and rotate the board until the grid is *approximately* oriented.

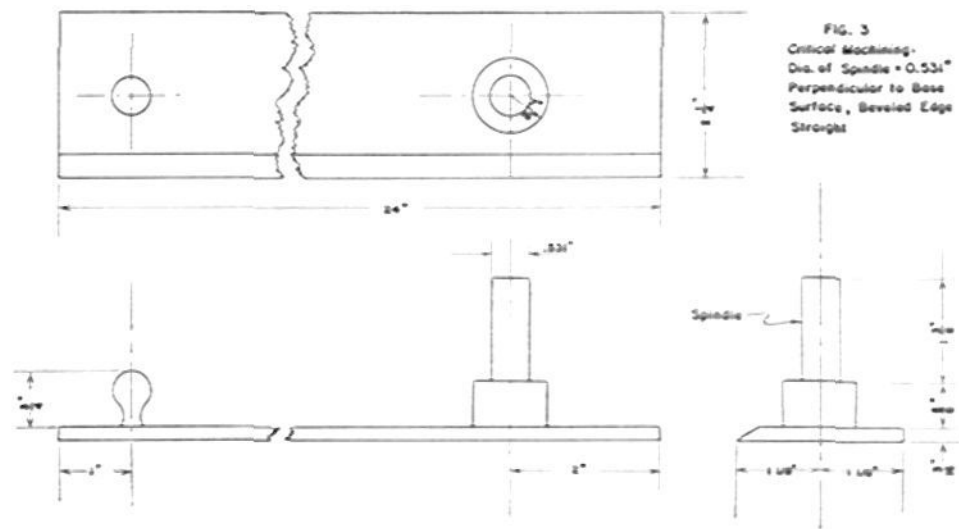
3. Set the declination constant on the upper motion.

4. Using the lower slow motion, center the needle. Then lock the needle.

5. Using the upper slow motion, turn the azimuth scale to zero.

6. The board and alidade are now oriented and are used as before.

C. A somewhat similar method of compass orientation may be used when there are no grid lines but the azimuth between two points on the map or chart is known.



ADVANTAGES

1. The tedious job of tapping the board to get it oriented exactly has been eliminated, therefore this alidade is quicker and easier to orient than the older ones.

2. An extra compass needle need not be declinated for use with the plane table.

3. A prismatic telescope is substituted for the open sight of the old alidade.

4. Angles of site may be read easily.

5. Standard night lighting equipment could be adapted if necessary.

6. This device simply adds greater flexibility and new applications to the familiar aiming circle without adding materially to present equipment. The alidade without the aiming circle may be used in place of the regular (issue) straight edge.

NOTES ON ARTILLERY IN RECENT OPERATIONS

"Survey in this type of warfare is of the *utmost* importance because observation is limited. . . . Most of our officers and instrument personnel are insufficiently instructed in *ACCURATE* survey methods.

"Each battalion should have a transit.

"Batteries should be trained to emplace their guns in a diamond or other polygonal formation, with gun pits constructed to permit firing *all* the way around the horizon—360°. We generally indicate a direction of fire by commanding an azimuth rather than a base deflection shift.

"Batteries should be provided with sufficient head-and-chest telephone sets to permit direct telephonic communication between battery executives and chiefs of gun sections.

"We have found it necessary to improvise a coast-artillery technique for batteries to fire indirect fire at water-borne targets, plotting done by the fire direction center.

"Extensive instructions should be given in the use of air photos in the preparation of artillery firing charts. Maps suitable for fire control are non-existent and must be improvised from air photos. The survey-air photo technique provides the fastest and most accurate method of preparing a firing chart.

". . . artillery has been forced to make extensive use of forward observers."

Weapons Instruction at the Tank Destroyer School

By Capt. R. S. Van Duzer, FA

Since a well-rounded course of instruction is necessary for the training of specialists for duty with Tank Destroyer Battalions, the Tank Destroyer School was organized into five departments: Tactics, Automotive, Communications, Weapons, and Pioneer. The physical disposition of facilities has been planned with an eye toward the integration of class and field work. Instructors found printed literature in their various fields inadequate for the purpose or not available, requiring them to prepare mimeographed pamphlets upon their different subjects.

The Weapons Department is divided into four sections: the small arms section, 37-mm. section, 75-mm. section, and AA section.

SMALL ARMS SECTION

In this section men are taught to handle and fire all the various types of individual weapons with which Tank Destroyer units are equipped: such weapons as the .45-caliber revolver, pistol, Thompson sub-machine gun, and .30-caliber carbine. Preliminary instruction is composed of disassembly, assembly, and functioning.

In addition to the standard firing positions, students are instructed in the art of firing from the combat position. In this type of firing emphasis falls on intuitive sighting with the body toward sounds; the weapon is retained in a fixed relationship to the body—assuming a crouching position with the weapon held level with the waist, the soldier makes no attempt to use the sights on the gun itself. This position is adaptable to any small arm, and is equally effective in day or night. [See page 57 of the January, 1943, FIELD ARTILLERY JOURNAL.—Ed.]

In the instruction of combat firing, men are taught the high combat value of foxholes. Intermittently they fire their carbines at "bobber" targets, or seek the protection of their foxholes while light tanks roar over their heads. Throughout this period gelamite grenades are detonated at distances which barely respect safety and "battle-sound" records blare forth over an amplifying system. To further simulate battle conditions the men run, climb, crawl, and scramble over the "Combat Obstacle Course," to the accompaniment of more grenades. Then, even though fatigued, they approach the latter part of the course, which consists of further firing at concealed "bobber" targets with the "Tommy" gun which they have been carrying throughout the course. This training instills the proper instinctive reaction to the exigencies of battle and develops the correct reflex to any circumstance.

Also during the instruction period each student makes a Molotov Cocktail and a demolition grenade, using only

ingredients which are readily available in the field. He studies the methods of overpowering sentries silently and swiftly. Further, each student goes through the "Tank Hunting" course armed with his home-made grenades and a "Tommy" gun. His work is then culminated with a study of the devastating new antitank grenade.

Instruction is also given in the use and firing of the .30-caliber and .50-caliber machine gun. After instruction in the operation of these weapons, each student fires some 700 rounds of caliber .30 ammunition and 100 rounds of caliber .50 at distant stationary targets, at "bobbers," and at towed targets.

37-MM. SECTION

The instruction in this section gives the student a working knowledge of the technique of tank destroyer fire. Special attention is laid on the use of the angular lead and the acquisition of finesse in tracking. The angular lead is based on an angle of five mils composing one lead. Its character makes it necessary to compute only one element in regard to the target and its movement in order to determine the number of leads required. This element is the speed at which the target is moving. Thus, we can say that if a tank is moving at a speed of ten miles per hour, one lead is required regardless of the size of the tank or how far it may be from the gun. These five-mil angles are established by the design of the reticle of the M-6 sight. Further emphasis is placed on a high degree of coordination among the gun crew in the service of the piece, and on training each member of the crew to be a potential gunner.

Students are trained in estimating ranges and speeds, and after a preliminary tracking practice they are ready to fire. Range practice consists of two days of firing the .22 subcaliber on the 1000-inch range, one day of .30 subcaliber fire at tanks, and one day of service practice with armor-piercing ammunition. In firing the caliber .30 light tanks, the seams and cracks of which have been welded, are used to provide an incomparably realistic target. In this firing battle conditions are further simulated as far as possible by gelamite grenades being thrown along the firing line.

75-MM. SECTION

Here the student is taught the use of the 75-mm. gun and its employment in the destroyer platoon of a Tank Destroyer Company. Students are instructed in the characteristics, functioning, and ammunition of the gun, and are then familiarized with the gridded type of sight

reticle. They have a short review of the technique of tracking previously given them by the 37-mm. Section, which is followed by schooling in the service of the piece with the loader remaining in a crouching position in the "well," beneath the recoil of the piece. After that comes use of the mil scale in the sight reticle and in field glasses for assistance in estimating ranges. They then fire through practically the same course as that of the 37-mm. Section.

When there is need of artillery support for other troops the firepower of the Tank Destroyer Battalion should not lie idle just because there are no enemy tanks in the vicinity, so students learn the fundamental aspects of indirect fire for use in this secondary mission. They are shown the manner of laying the guns by the Lensatic Compass. Some of our destroyers¹ are equipped with panoramic sights, and it is expected that the future destroyer will also have this type of sights; on this assumption, instruction is also given in the methods of reciprocal laying and referring.

For indirect fire only the forward observation method of fire control is taught, as it can be employed regardless of the size of the angle "T." The few hours allotted for instruction, plus the fact that students come from all branches of the service, make the teaching of more refined types of fire control virtually impossible. Instruction in computation of firing data is given only on the basis of laying by compass and by the magnetic azimuth. No consideration is given to the use of a "Y" or grid azimuth, or aiming point for computing data, although basic information is disseminated on the establishment and use of a fire direction center for coordination of the fire from several units.

ANTIAIRCRAFT SECTION

In this section students are taught to recognize the more common types of enemy planes, through maximum use of such training aids as models, pictures, and training films. They learn the characteristics and potentialities of their antiaircraft weapons, and are introduced to the intricacies

¹The term "destroyer" refers to 75-mm. on motor carriage or "half-track."

of the new antiaircraft mount with its power operated turret and dual .50-caliber machine guns.

They learn the fundamental principles governing selection and installation of a peripheral defense of a bivouac area and that the antiaircraft mounts assigned to each Tank Destroyer Battalion make it possible to employ a continuous belt of tangent fire zones in this peripheral defense. They also learn that in a column AA units are staggered through the weapons companies—emphasis is placed again on the distribution of AA mounts to provide the conjunction of the two fire units.

Since defense against aircraft is the primary mission of Tank Destroyer antiaircraft units, they must become acquainted with the delicate technique of adjusting the tracer stream on the target. The method used is to select that part of the stream which is estimated to be at approximately the same range as the plane, and then attempt to place that part of the stream on the target. This of course requires facility at depth perception, and it is suggested that tests for this ability be employed in the selection of AA gunners. Men are taught that it is considerably easier to get an adjustment on the incoming part of the course of the target than on the receding part. In this instruction they fire at gliders shot into the air by catapults, at hydrogen-filled balloons, and soon they will be given an opportunity to fire at radio-controlled model planes which have a top speed of approximately 140 miles per hour. Further, they are taught that they must be selective about the type of plane at which they open fire, and always to respect the principle of not revealing their positions unless absolutely necessary.

SUMMARY

The Weapons Department has made every effort to conduct its program of instruction along vital and interesting lines. The fundamental precept is to learn by doing. Field work and leadership are given equal weight with recitation and examination. Therefore, in training men for combat, the Weapons Department has kept in mind the slogan of the Tank Destroyer Center: "Seek, Strike, and Destroy."

FIELD ARTILLERY GUIDE—*What they say about it:*

"It has taken the "Field Artillery Guide" a long time to catch up with me, but I am delighted to have it available. The Editors and Compilers deserve much commendation and I believe that it will serve a long felt need because it represents the essentials covered in so many separate manuals.

"Just as soon as I can get my entire organization together again I am going to recommend the "Field Artillery Guide" to my officers in a very definite way."—BRIGADIER GENERAL, U.S.A.



THE EMPLOYMENT OF CORPS ARTILLERY

By Col. John J. Burns, FA

THE FIRST OF TWO PARTS

Author's note: The manner of employing corps artillery in various operations, as developed in this article, conforms closely to the doctrines enunciated in FM's 6-20, 100-5, 100-15. Corps artillery will often have an important place in task forces during the development of the strategic war in the far flung places of the world where our forces are being built up. It will have a greater role in the struggle of the giants when they finally grapple for a decision. Aggressive imagination, energy, and mental flexibility are just as essential as a thorough knowledge of principles in exploiting the potentialities of corps artillery.

Napoleon stated that he who can unexpectedly and suddenly place a surprising mass of artillery fire on one of the enemy's points is sure to take it. The present organization of American artillery was developed to permit this principle of surprise mass fires being put into effect. Mass fires require centralized control. Centralized control is dependent on reliable communications.

When communications are unreliable, due to rapidity of movement, distances separating units, or devastating enemy action, a resort to decentralized control becomes necessary: only thus can separated elements act quickly to meet a changing situation and to exploit information. These smaller elements, however, should also apply the principle of surprise mass fires insofar as practicable.

It will be observed that the speed with which an operation progresses largely dictates the degree of centralization that exists. In a static situation centralization becomes complete; as maneuver situations develop, decentralization becomes greater. It will rarely become complete because the commander will always strive to keep a mass of artillery in action at his immediate disposal so that he can decisively influence the battle at critical moments. Then too, in all planning, he will provide for passing in varying degrees from centralized to decentralized control and back. Centralized control means massed artillery fires and victory.

Commanders of corps artillery units, including observation battalions, while enjoying the independence inherent to a great degree of decentralization, must always take every practicable step consistent with their immediate mission to facilitate their reversion to centralized control as part of a large tactical unit.

It is in the corps that control of the artillery reaches its highest degree of centralization. In certain phases of an operation the corps commander, through his artillery commander, will prescribe not only what the corps artillery

will do, but also what the division artillery is to do. For example, for the artillery preparation and counterpreparation and for defensive fires during the lulls between phases of an action, the fires of all the artillery with the corps may properly be closely coordinated.

Yet, in seeking centralized control the first problem in a rapidly moving or developing situation is to get the corps artillery into action quickly in order to have the advantages of its power. Timely used before the enemy can get set or when he is off balance, corps artillery can pave the way to success. To leave it unemployed for two or three days while an action develops violates the principle of economy of force.

Under cover of guns firing with wide traverse and at long range and so hurling large shells over a wide area, light artillery and other troops can be pushed forward to advantageous positions. Enemy tank concentrations can be broken up. Antitank guns and light artillery can be emplaced under cover of these big guns for direct fire against strong points, tanks, etc. Without long range artillery immediately available to oppose similar enemy artillery, our troops will be at a decided disadvantage. Valuable time may be required to get it up.

It is in conformity with these ideas regarding the use of corps artillery in a rapidly moving situation, together with those already accepted for more stabilized situations, that the organization of corps artillery should be established. The organization should be flexible, capable of expanding or contracting in accordance with the requirements of a particular operation.

The basic unit of the corps artillery should be the battalion, the real artillery fire unit. It should be self-contained as regards administrative and tactical functions so that it can be shifted from one command or locality to another. Command or groupment headquarters headed by artillery officers of suitable rank (colonel) should be set up to control two to four, or even five, battalions or fire units.

Fixed units of the corps artillery are the corps artillery commander, his headquarters and headquarters battery, and the observation battalion. In addition to commanding the corps artillery, this artillery commander is adviser to the corps commander.

The principal mission of the corps artillery, as stated in FM 100-5, is the neutralization or destruction of hostile artillery, the destruction of hostile defenses, and long range interdiction fire. The corps artillery is also used to reinforce the fires of division artillery. This mission is general, and is not restricted in its application to any particular type or phase of an operation. It is important that its general application be kept in mind throughout this study.

THE ARTILLERY COMMANDER'S STAFF

Control of the corps artillery is exercised by the corps commander through his corps artillery commander. The latter has a staff of seven officers and eleven soldiers to

assist him. It has command, staff, and operational functions.

In order to carry out these functions, the following organization is suggested:

ARTILLERY COMMANDER (BRIG. GEN.) EXECUTIVE OFFICER (COL.)			
	<i>S-2 Section</i>	<i>S-3 Section</i>	<i>S-1 & S-4 Section</i>
AT CORPS COMMAND POST	Major (S-2) Corporal Clerk Draftsman	Lt. Col. (S-3) Capt. (Ass't S-3) Tech. Sgt. (Opns) Clerk	1st Lt. (S-1 & S-4) Mr. Sgt. Stenographer
AT COUNTER- BATTERY FORWARD REPORT CENTER	Capt. (Ass't S-2) Corporal Clerk	Major (C.B.O.) Clerk Draftsman	

It will be noted that the staff is organized into the usual staff sections, but that it is divided into two elements. The first, known as the corps artillery command post, usually is located with the forward echelon of the corps command post. It consists of the S-1 & S-4 and parts of the S-2 and S-3 sections.

The forward element includes the S-2 advance information center and the counterbattery group of the S-3 section. This can be conveniently designated as the COUNTERBATTERY FORWARD REPORT CENTER (CB-FRC). Its functions are largely operational. It will usually be located in front of the corps command post, convenient (from a wire communications point of view) to the various groupments of the corps artillery. It should be set up with radio communications at the first indication of stabilization.

This CB-FRC collects all information from forward agencies, sending at once positive information directly to the commander who is to act upon it and then to others interested. Unverified or vague information is transmitted to S-2 at the corps artillery command post for study and collation. The counterbattery officer (CBO), with post at the CB-FRC, receives immediate information of batteries reported to the forward report center by artillery and air observers, the flash and sound battalion, and front line troops. He receives data on batteries located by S-2 (at the corps artillery command post) from the study of photographs, reports from the rear, etc. Until the corps assumes control of the corps artillery, the CB-FRC limits itself to being an information service, collecting data and preparing for centralized control.

The counterbattery officer's group functions in a manner quite similar to that of a division artillery fire direction center. Each battalion designated as a counterbattery unit sends a counterbattery party to the CB-FRC. It should include telephone operators with a telephone, to permit direct telephone and radio communication between the CBO and the FDC's of the counterbattery battalions. The setting up of the CB-FRC is the first step toward centralization and mass of fires.

CBO should have authority to order counterbattery fires directly and with priority over other missions. If a hostile battery is observed from a ground or air observation post, the CBO tries to arrange to have the observer who discovered it adjust or report on the fire. Similarly, if the battery was reported by the flash or sound sections, he arranges for the section to adjust or report on the fire. However, the observation of such missions is the primary responsibility of the unit to which they are assigned.

The element of the artillery section at the command post, in general, performs the usual staff functions. S-1 & S-4 section is concerned mainly with ammunition. S-2 section collects information from agencies in the rear, evaluates information from all sources, conducts necessary research, and maintains an up-to-date situation map and enemy battery file; it disseminates information through a periodic S-2 bulletin and (when timeliness is important) by the most direct means to the CBO or interested commander. S-3 section carries out all S-3 duties less immediate action counterbattery. Corps artillery command post is established when the corps commander decides to take control of the corps and sets up his command post.

The CP and CB-FRC, being parts of the same unit, must maintain close touch with each other so that they really operate as a single staff.

A study of Figures I and II will make clear how all the elements fit into the general scheme.

In Figure II is shown the complete telephone net for combat. As a situation stabilizes, or in a defensive situation, this net would be expanded by duplicating some lines and installing lateral lines.

The observation battalion is organically a part of the corps, and functions directly under the corps artillery commander. It will carry survey control from points in the corps zone furnished by the corps engineers to points in the vicinity of artillery areas indicated by the artillery commander. It reports definitely located hostile batteries to the FRC and others to the corps artillery CP. It adjusts fire on discovered enemy batteries upon request of the

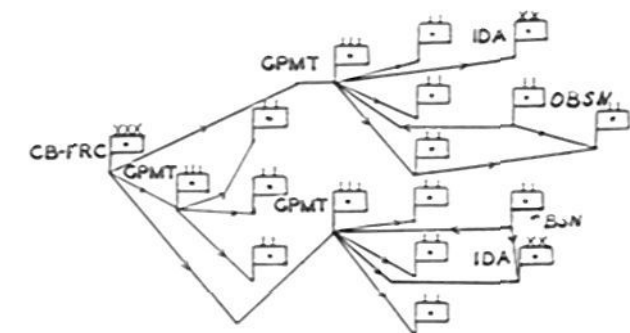


FIG I
INITIAL TRUNK LINE SYSTEM
(ARROWS POINT AWAY FROM RESPONSIBLE UNITS)

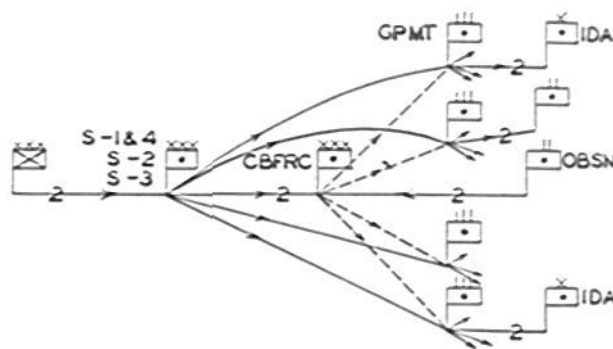


FIG II
COMPLETE TRUNK LINE TELEPHONE SYSTEM
(RADIO COMMUNICATION PARALLELS THE WIRE SYSTEM)

- (a) Normal net within groupments and battalions.
- (b) Dotted lines are counterbattery lines laid by corps artillery units as basic lines. Battalions designated for counterbattery have a special counterbattery line to the next higher unit, plugged through intermediate switchboards direct to the CBO.
- (c) A medium groupment of the corps artillery establishes wire communication for counterbattery use to the CP of IDA on the right (left) if it is on the right (left). The same principle applies to reinforcing groupments.
- (d) CB-FRC is located close to the axis of communication of the division first committed, and centrally located with respect to the contemplated corps artillery dispositions.

interested unit or upon order of the CBO. It works for the corps as a whole.

ORGANIZATION OF COMMAND

Large quantities of artillery will usually be made available to the corps in a tough offensive or stubborn defensive operation. Particularly well adapted types of artillery will be given to the corps to meet special situations. In any event, the necessity for the corps artillery commander to organize the allotted and organic artillery to permit its centralized control is evident.

This action, known as organization of command, should be accomplished in accordance with well established and generally accepted principles. In general, consideration is given primarily to the mission of the corps, to the characteristics of weapons, and to principles of organization and tactics. The following summary of rules may be used as a guide:

—Attach to the divisions in accordance with the importance of their respective missions in the general scheme of maneuver those light weapons of the corps artillery which are suitable for the direct support of the infantry. The 75-mm. gun and howitzer and the 105-mm. howitzer will usually fall in this category.

—During a rapid maneuver situation attach to the divisions long range, wide traverse, mobile artillery which they can use to advantage.

—Form groupments of units having the same or similar missions. This is of primary importance.

—Form groupments of units armed with the same weapon. This simplifies ammunition re-supply and is usually consistent with the mission rule. However, when the terrain is compartmented, or when the front is very wide, or in constituting security detachments, the principle of unity of command may outweigh the desirability of having only one type of weapon in a groupment.

—Use a trained groupment headquarters as the nucleus of a groupment whenever possible. A groupment headquarters can adequately control four, and sometimes five, battalions. If there is a very large amount of artillery to be organized, the groupment just described can be made a subgroupment under a higher headquarters. A battalion headquarters can supervise a maximum of one battalion in addition to its own batteries.

—Respect tactical unity. Although it is of little consequence if a groupment is broken up, breaking up battalions and batteries is very serious and should be rarely done. The reason is obvious when it is considered that the battalion as a fire unit is trained to deliver the massed fires of its three batteries and that the massing of heavier fires by commanders of higher echelons is simply the massing of fires of two or more battalions.

—Constitute groupments with due consideration of the locations of the divisions in line which may have to be reinforced by fires.

—Place battalions which are known to and accustomed to work with one another in the same groupment, as far as practicable. In attaching units to the infantry, the same principle applies.

—Announce the commander of each groupment. Ordinarily, personalities and other factors being considered, the commander of an organic unit should be the groupment commander even though junior to a non-organic commander of the same command echelon. This is so because the non-organic troops may arrive just before or even after an operation has started, and they may be pulled out before the action is completed. Besides, the organic commander will usually be more familiar with the situation and the terrain. Because the commanders of the organic chain know each other through association and work, it appears logical to use that chain rather than to insert strange links into it.

—Form groupments as soon as units arrive so as to settle command responsibility and permit planning.

WEAPONS

As indicated in the discussion above of the organization of command, the type of weapon available has an

important bearing upon the employment of the corps artillery. In addition to the principal mission prescribed by regulations, it is well to keep in mind various other missions that the corps artillery will receive: counterbattery; destruction of materiel, obstacles, positions, and bridges; neutralization and harassment of personnel; interdiction; smoking and gassing of localities; antitank, antiaircraft, and antilanding fires; participation in preparations, counterpreparations, and various kinds of barrages; and reinforcing fires.

Some types of artillery weapons are more suitable for the specific missions just listed than are others. In evaluating the artillery means to be required for a certain operation, the army should provide, or the corps artillery commander should prepare a request for, the quantities and types of artillery needed. A consideration of the types most suited for particular tasks is a study in itself and will not be treated further here. It should be noted, however, that while no artillery weapon is best suited for all the above tasks, all must be ready to participate in any of them when necessity calls: use of the 155-mm. gun as an antitank or antiaircraft weapon may be unusual, but it is possible.

In planning for the use of various types of artillery, old or obsolete models should not be neglected. Experience teaches that in a tough, long war no nation has ever been so rich in artillery that it could afford to leave any available artillery unemployed. There are many tasks that these older models can accomplish as well as the newer models, which are then released for more effective use elsewhere. For example, use of the G.P.F. in the holding attack, or of the Schneider howitzer where short ranges are imposed by the crossing zone of an enveloping attack, would release later models of these weapons for employment where their superior characteristics would count heavily.

Provision for the tactical use of captured materiel must also be made. So far as this effects the corps artillery commander, it involves a study of the characteristics of weapons and plans for the integration in the general scheme of employment for the corps artillery.

As regards the quantity of artillery that will be required by the corps for stabilized operations, the best guide is based on the experience gained in the last war. This is summarized for the offensive in FM 6-20. For sustaining a violent defensive battle of long duration, the French have concluded that a battalion of light plus a battalion of medium or heavy artillery are required per 500 yards of front.

OVERSEAS PRAISE

When notifying us of his change of address, a colonel of the Royal Artillery recently wrote, "I have found your JOURNAL very instructive, damned good reading, and well illustrated. Good shooting to you."

"Despite the fact that the JOURNAL arrives late due to my overseas station, it is still one of my most welcome pieces of mail. My sincere thanks for many a good night's reading."

—1ST LIEUT., FA



NAVAL GUNFIRE

In Support of Landing Operations

By Lt. Robert H. Bingham, FA and
Ensign Herbert C. Manning, U.S.N.R.

Landing operations differ considerably from normal land warfare in that at the start of the operation our troops have no prepared positions from which to launch their offensive. They have no artillery emplaced which can support their attack. The infantry can move up to the beach in small boats and be ready to come out of them fighting upon arrival there, but our artillery cannot sit out in the water and support their attack. However, the guns of the Navy can and do sit out in the water and deliver effective fire on shore targets.

In order that shore targets for naval guns be attacked with as much speed and efficiency as possible, a "Naval Shore Fire Control Party" has been developed. This party consists of one Artillery officer, one Naval officer, and a communications detail of army personnel. The artillery officer is the observer or spotter, and the naval officer acts as adviser to the infantry battalion commander. It has been proposed that this naval liaison officer bring a spare radio set ashore so that he can, if the need arises, act as spotter. The functions of these two officers are practically the same as those of the forward observers and liaison officers of the Field Artillery.

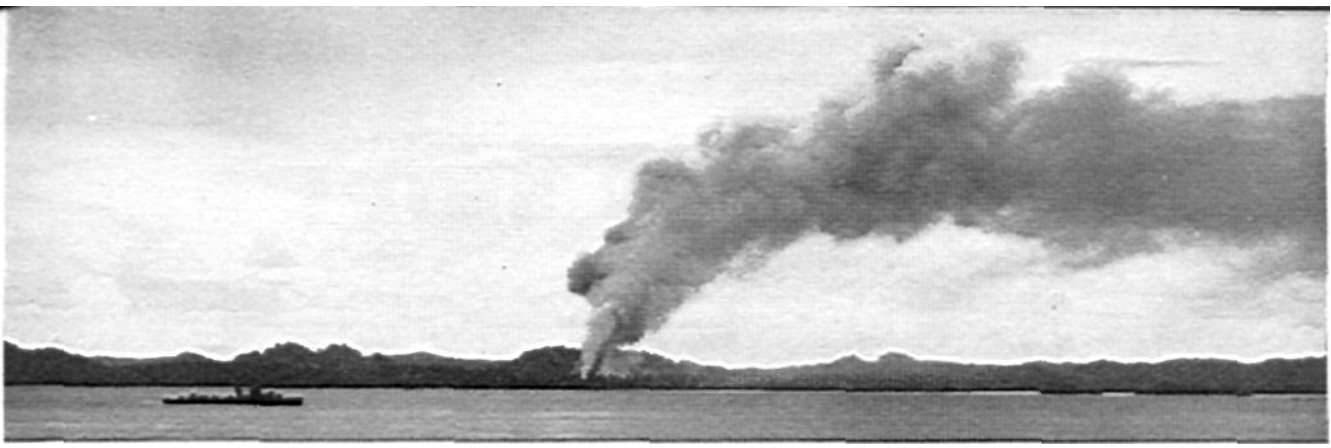
During the early stages of an amphibious operation, as during the early stages of any action, there is great need for fire support. Since field artillery cannot be expected ashore until long after the landing has begun, some other agency must supply the initial support. Aviation could do it, if it could get land bases near enough the beaches to be attacked. If you look back to the Dieppe raid, you will note that planes were sent in great numbers from British airdromes to afford both support and overhead protection. Lacking these bases, carrier based planes might operate, but the number of aircraft carriers available would probably eliminate this as a source of support, mainly because these planes must provide protection against hostile aircraft. This leaves the guns of the Navy to do the job, and as with all other phases of amphibious training the Navy has anticipated this need. They have been training their personnel so that when the time comes the men of the Navy will be fully able to cooperate with the soldiers who must make the actual landing.

The problems of the shore fire by naval guns are readily compared with some of those found in field artillery. First, the relative position of ship and target must be known. This is what the artillery's survey section is concerned with in tying in guns and target areas. Where we often use relative positions of the guns and targets, as on a grid sheet survey, the Navy uses the true positions of both ship and target. The problem of locating the ship is solved on the navigation bridge. Its exact position may be found at any instant by taking bearings on prominent points along the shore line. These points are accurately located on the navigational charts which the ship uses, and by a method similar to the artillery's "back azimuth," the position of the ship can be plotted. Once the ship's position is known the relative position of the ship and the shore is always known. And since the fire control equipment on the ship can constantly correct for the known movement of the ship, as well as for currents, roll and pitch, and wind, we can forget about this constant changing of position.

The normal target fired on by the Shore Fire Control Party cannot be seen from the ship. In this respect, the problem is exactly the same as an artillery forward observation problem. The spotter must designate the target to the ship.

GUNFIRE SPOTTER

Once the spotter is ashore he functions almost as does an artillery forward observer. He looks for an observation post, and as soon as he finds one his communications detail gets radio contact with the supporting ship. Now he is ready to support the action of the advancing infantry. As previously mentioned, he designates his target by means of coordinates. The reason for this is because the ship keeps no firing chart comparable to the one kept by the artillery fire direction center. Once a target is fired, "plot" (as the fire direction center of the ship is called) forgets all about it. For each problem, the ship must recheck its position, consequently data from concentrations fired previously would hardly be of



value. After the initial volley, called a salvo by the Navy, the spotter adjusts the fall of shot to the target. His method of adjustment is very similar to that of the artillery forward observer, the principal difference being that whereas the Artillery Observer adjusts by reporting the error of the last shot, the Naval Spotter gives the correction in yards necessary to put the shot on the target.

As an example of this, let us say that the last shot fell 200 yards to the right of and 100 yards beyond the target. The Artillery Observer reports: "200 right, 100 over." The Naval Spotter sends: "Down 100, left 200"; he is telling the ship what to do, not telling them by how much they missed the target. Note that he sends his range command first, and follows it with the deflection correction. He must always send both elements, and always in the order of range and deflection. If the range is correct, but deflection is in error, his command would be, "No change, right 50"; or if the range needed correction but the deflection was all right, he would send, "Up 100, no change." If both range and deflection are correct, and he wants to fire for effect, he sends: "No change, no change, rapid fire one minute."

Naval guns fire for a certain length of time at a given number of rounds per gun per minute, rather than firing a certain prescribed number of rounds in fire for effect. This is termed "rapid fire," and the spotter can ask for it in minute units up to five minutes. At the end of this rapid fire the spotter may decide that the target has not had enough, and may repeat the rapid fire. But to do this he must repeat the complete spot and command for rapid fire—he cannot merely say "Repeat fire for effect" as the artillery forward observer does.

NAVAL LIAISON OFFICER

So far we have dealt only with the Gunfire Spotter. While he has been busy with his communications and spotting, the naval liaison officer has been a constant companion of the infantry battalion commander, or his representative at the battalion CP. It is his duty to see that the infantry commander learns of the capabilities and limitations of the guns which are supporting the action. If a request for fire comes to the CP, he must relay it to the spotter, giving him the location and type of target he wishes fire brought down on. In order that these requests can be relayed to the spotter, the supported infantry battalion lays wire to some prearranged spot, where the spotter's communication detail hooks onto it. Each Shore Fire Control Party has about a mile and a half of light combat wire which is primarily for use between the spotter

and his radio set. However, it is also used to complete the link between the naval liaison officer and the artillery spotter.

Another function of the naval liaison officer is to keep a running score on the amount of ammunition available for shore bombardment. The ship has a limited capacity for carrying ammunition, and from the time it leaves port until it can return, or until an ammunition supply ship comes up, it will have no chance to replenish its supply. Consequently the ammunition must be used carefully, and an accurate record must be kept of ammunition expended. The ship must also keep a certain percentage of its ammunition for its own protection in the event of a sea battle. Spotters should always pick their targets carefully, being careful to fire on those which cannot be neutralized by infantry weapons.

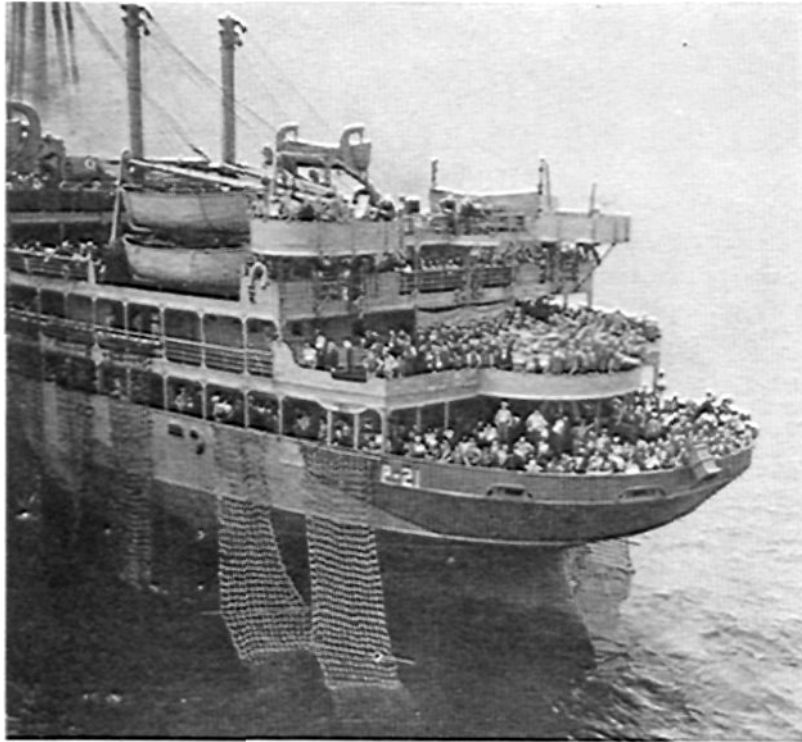
PROS AND CONS

Naval gunfire has some advantages over field artillery. The ships' guns are always in position and ready to fire, because of their fixed installation aboard ship. New developments in fire control equipment have added a great deal of speed to the delivery of fire. This equipment makes these guns almost automatic firing.

Naturally there are some disadvantages too, in the use of naval guns as supporting weapons. Probably the most important is the limited amount of ammunition that is available for shore bombardment. Another is the high muzzle velocity; consequently these guns have a very low ordinate and small angle of fall. This means that targets hidden behind hills can not be attacked with success, and yet by moving around or moving back it may be possible to get fire into many of these places. Thus this fault can be partially overcome by the mobility of the ships.

Up until the present time, there have been several opportunities for artillery officers to observe naval firing. During these shoots the Navy has been as much the pupil as the teacher, but it has demonstrated its ability to put down concentrations fully as effective as those of the artillery. In connection with these gunfire schools, naval officers have been sent to army camps, where they have lived with the artillery. On these visits they have been taught to observe fire, using the Naval Shore Fire Control methods and with 105-mm. batteries simulating the fire of Navy ships. Such cooperation between the two services will win us more than one foothold on enemy held shores, and the longer the association lasts, the deeper will be the respect of each for the other.

ABANDON SHIP!



By Capt. Edward A. Raymond, FA*

To move, to shoot, to communicate; those are our jobs. To get within range of the enemy, we must all move by water. Casualties may start while we are at sea, but they can be held to a minimum by a little forethought and energy. Prepare yourself as you would for battle.

Increasingly, the Field Artillery officer who wants to be in the front rank of his profession needs to study navigation. Simple methods, such as those described by Captain Amory in the November, 1942, FIELD ARTILLERY JOURNAL, can be mastered in a matter of weeks by anyone familiar with survey. A nautical almanac is a good thing to have; a U. S. Hydrographic Office Pilot Chart (the world in six sheets at ten cents apiece) is a perfectly feasible substitute at sea.

If you have a chart, measure distances on the scale of latitude found on the margin. You will be given your approximate position as you go over the side, then modify it by three or four knots per hour (as the average speed of a loaded life boat under full sail in a moderate breeze). Set your watch by Greenwich Mean Time before leaving the ship. Do this whether you expect to navigate or not, as the coxswain may have forgotten or been unable to do so

himself. With no chart, sail due east or due west and if you keep on long enough, you will reach land. Hours spent in learning to navigate may purchase years of life for you and a boatload of men.

Any officer may have life dependant upon his skill in handling wounds, fractures, burns, shock, or suffocation at sea.

Upon going aboard, start preparing yourself and your men for an emergency. The more times a man goes from his bunk to his boat station blindfolded, the better his chances for survival. He should learn and practice all available routes. As the greater proportion of sinkings occur at night, lights may or may not be in service.

Nothing is so fearful as the unknown, and constant abandon-ship drills have been proved by experience to cut down panic, which itself takes a heavy toll of lives. Panic stampedes narrow hatches and companionways. Panic swamps boats. Panic throws men into burning fuel oil around a ship which is still afloat and burning a week later. To decrease panic enforce silence on all but the ship's crew after the order to abandon ship has been given.

Be ready. Probably your life, and certainly your comfort will depend on what you take overboard with you. *More die of exposure at sea than drown.* Never sleep undressed. Wear woolen underwear, even in the tropics.

*With acknowledgments to the N.Y.P.E. and to Richards and Banigan, co-authors of *How to Abandon Ship* (Cornell Maritime Press; \$1.00).

In temperate and cold waters, have extra underwear and a combat suit (with combat helmet and goggles) right at hand.

Above all, have your field bag ready to go overboard with you, and *keep it strapped to your lifebelt*. In it have flashlight and whistle to call aid; knife, useful for fish spear; mirror for attracting fish and rescuers; hooks and line; emergency rations; lemons or limes in a Mason jar (their juice cooks fish); vaseline, to protect face from wind, chap, and sunburn; toilet paper; compass; charts, or nautical tables; toothbrush, to make you feel better and reduce sensation of thirst; raincoat; cards and cigarettes, which will keep you sane. *No liquor*. It lets you down and makes you thirsty.

Know how to get off the ship, and be sure your men know, also. Do not jump unless you are positive there is no alternative. Breaking your neck is the first danger. If you jump with a life belt on, even if it is a kapok jacket and not made of dangerous cork blocks, the suit will stop when it hits the water and your own tendency to keep on going down is sharp enough to break you in pieces. Men have been held upside down in the water by lifebelts and drowned, unable to right themselves—so be sure your men know how to wear their belts *properly*.

Drowning by suction from the sinking ship is another danger. The suction area of a revolving screw is thirty feet or more, depending on the size and speed of the ship. Suction from a sinking hull is felt for a quarter-mile radius. Play with a nail brush in the wash basin if you doubt this.

If you really must jump, throw your life belt over and jump after it. Nearly every time, however, you can climb down to the water by rope, jacob's ladder, or landing net.

Non-coms do not leave a ship until they are sure their men have left; officers are the last to go.

Should torpedoes, shells, or bombs destroy your boat or raft, do not rush someone else's—rely on your life belt.

If the fuel tanks are hit and the ship is surrounded by an oil slick, do not attempt to swim in the oil. It is too heavy

and tacky. You will exhaust yourself to no purpose unless you tow your life belt behind you by a string and swim under water, coming up occasionally for air. This is the technique which must be used if the oil is burning, but with face and hands wrapped in clothing.

Once away from a ship in a lifeboat you are comparatively safe. Cases of the enemy machine-gunning boats are extremely rare. In at least one case such a story started when a U-boat crew tested guns or practiced marksmanship on floating wreckage.

Rations and water should be pooled. Assume that you will not be picked up at sea and use only enough to keep alive. Move only enough to keep the kinks out of the limbs. With the minimum water ration of a six-ounce cup three times a day, very little food is needed. The more food taken, the more water is required. Avoid sugar and salt. Fats and such vegetables as turnips and squash (which are 90% and 95% water by weight, respectively) are the best foods.

Remember in collecting rainwater that it is best to use clothing as a sponge; it takes a lot of water to get the salt out of a boat sail, and the boat cover may have been treated with poisonous canvas-preserve. If raincoats or oilcloth are available to catch water, so much the better. Water can be stored in one of the after air compartments. Temporary relief from the effects of thirst comes from keeping some object like a button in the mouth, and from chewing gum or lemon rind. Keep covered in sunshine to reduce perspiration.

In storm, rig a sea-anchor with canvas or a life jacket, with two ropes to keep the boat's head into the seas.

If worst comes to worst, here is the burial service at sea:

Unto Almighty God we commend the soul of our brother departed, and we commit his body to the deep; in sure and certain hope of the Resurrection unto eternal life, through our Lord Jesus Christ, at whose coming in glorious majesty to judge the world the sea shall give up her dead, and the corruptible bodies of those who sleep in her shall be changed and made like His glorious body, according to the mighty working whereby He is able to subdue all things unto Himself.

VISUAL AIDS

of interest to the Artillery have been released, as noted:

Training Films

- 5-961—Camouflage of All Arms
- 5-962—Anti-Vehicle Obstacles, Elementary
- 6-978—Field Artillery Against Tanks
- 9-971—Care and Maintenance of Pneumatic Tires, Preventive Maintenance

Film Bulletins

- No. 42—Convoy Snapshots and Training Under Fire
- No. 43—With the Australians in New Guinea
- No. 44—Close Combat Firing
- No. 45—In the Aleutians



PERIMETERS in PARAGRAPHS



(Based upon latest information available at date of writing, and subject to correction as more complete reports are received.)

By Col. Conrad H. Lanza

The General Situation and Psychological War

On December 27, 1942, General Hideki Tojo (Premier of Japan) addressed his parliament, reviewing the general situation after one year of war. He discussed Manchukuo, stating that in view of the constantly changing conditions in the world, Japan had strongly reinforced her army facing Siberia and was prepared to meet any hostile move which might appear in this direction. He was aware that the Allies had accumulated a large army in India, estimated by him as around 1,000,000 men with 600 planes. Obviously this was a threat against the Japanese in Burma, and appropriate measures had been taken to take care of this. He did not, however, believe that all these enemy troops in India could be made available against the Japanese, intimating that some of them were anti-British.

The United States and China were jointly engaged in an air campaign in south China. He estimated this force as some 300 planes, which in six months had made 30 aid raids, or about one a week. He considered that the Chinese army amounted to 3,600,000 men. With a fraction of this force the Japanese could contain this enemy.

He paid an indirect compliment to the efficiency of American operations in the southwest Pacific by acknowledging that it was exceedingly difficult for Japan to supply her troops in the Solomon Islands area. As for Kiska, the continuous attacks on that island by American planes based on Dutch Harbor had led to almost unbelievable privations to the garrison. As to the economic state of Japan, he was glad to report that 1,800,000 tons of raw materials had been brought into Japan from conquered areas. From this point of view Japan was now assured of all raw material she needed, and could continue the war (so far as supplies were concerned) indefinitely.

Tojo was aware of plans of the democracies to attack Japan. He knew about the American desire to bomb Japanese cities and was taking measures to meet this eventuality. He was also prepared to act against attacks by ground or sea forces, wherever they might occur. On the whole he considered that the war had but just started, and was making his plans accordingly.

Four days after Tojo's speech, Hitler made a New Year's broadcast to the German people. He acknowledged that this winter might be hard. It could not, however, be worse than the preceding one. The German army had recovered from that, during the ensuing summer had made great gains, and its hour would arrive again after the current winter had passed and gone. He was aware of the American production campaign—but he had one of his own. He did not explain what it was, but claimed that in due time its achievements would be known to all. He expressed his determination to fight on to the end.

Reviewing the statements made by the leaders of our enemies in Japan and in Europe, both are aware of the American program of production, to be followed by campaigns to crush Germany and Japan in turn. Both Hitler and Tojo realize the danger that confronts them, and both are taking measures to do what they can to prepare for our attack when it comes.

Japan is preparing against attacks from Siberia, in China, against Burma, from the Solomon Islands, and from the Aleutian Islands. She does not know from which direction the attack will come. She has therefore had to strengthen her forces in widely separated places, on the circumference of an enormous circle, with the probability that she may find herself finally strong where there is no attack and weak where there is. This is the disadvantage of adopting a strategic defensive plan.

Hitler is up against the same situation in Europe. He is aware that large forces are being accumulated in the British Isles. It is plain that these might be used against any part of west Europe, with its 1,800 miles of coast from the North Cape to the Pyrenees. He has had to detail troops to watch this coast for a long time, but it is now necessary to strengthen them. The arrival of Anglo-American forces in north Africa forces the Axis to detail more troops to cover the very extensive coasts of south Europe, another 1,200 miles exclusive of islands which will probably be defended and are in fact occupied. Without having opened any Second Front in Europe, the threat to do so has forced the detail of so many troops to watch such extensive conquests that the

Axis forces in Russia have been too weak to hold the attacking Russians. The psychological effect of growing American production and of the accumulation of troops near Europe, has helped Russia probably more than an actual invasion of Europe would have. This has been accentuated by continuous and well directed propaganda properly distributed or broadcast throughout Europe, to the effect that the troops of the United Nations are on the way in overwhelming strength. Constant information as to our intentions to reconstruct the freed countries (and Axis countries as well), as soon as our victory is complete, has led to the belief that it is but a question of time until the Allied troops will police the entire world.

This psychological campaign, consisting of production advertised to the whole world, accumulation of troops at places where they are a positive threat to our enemies, and of adroitly disseminated propaganda, has resulted in the Axis being now on the strategic defensive everywhere, with all the disadvantages such a policy engenders. So far as the United States is concerned this situation has been brought about with extremely small loss of life. Our policy has encouraged the peoples of occupied countries to maintain a spirit of opposition to their temporary conquerors. The rapidity with which large French forces in north Africa joined the Allies once they had arrived, is an indication of what can be expected when landings are made on continental Europe. It is a warning to the Axis.

Toward the end of January the general situation is for the Allies, probably the best it has been at any time. It would seem that the Russian successes have caused enormous losses to the German armies, so large that some believe the Germans will never be able to rally again. This is possible, but not proved. In 1941 the Russians sustained even larger losses, and they have been able to stage a decided come-back; it would be rash to assume that the Germans could not do the same. The truth is that there is no precise information as to Russian losses, and rather incomplete information as to German losses in the Russian war. Russian losses will determine the length of time their offensive can be continued before it becomes

exhausted, and the same may be said as to the Axis defense. Without knowing what the strengths of the opposing armies are, and what losses and replacements they are receiving, it is only possible to watch while avoiding prophecies.

Information (not yet confirmed) is that the Germans, and presumably including their vassal states, are raising 2,000,000 new troops. It seems quite certain that the Axis is raising some new troops, and it is not impossible that the quoted figure may be correct. There is no reliable report as to when these new troops will be ready. From Hitler's broadcast it would seem that they are for use next summer, and that prior to this time Hitler will accept losses of terrain in Russia as he did a year earlier.

From the economic standpoint the Axis army in south Russia appears to have been largely rationed off the country, which did not this year contribute any substantial amount of food or industrial products to Germany. The German plan does, however, provide for large receipts of both food and industrial products from the Ukraine during 1943. This is of course contingent upon the ability of the Axis to hold the Ukraine against the Russian advance. Germany appears to have been moving industrial plants from west Germany, where they are subject to being bombed, to eastern territories. German workmen who a year ago objected to following the machinery eastward, are reported now to be more than willing to move out of the Rhine lands. How much progress has been made by Germany in transferring its industries to locations not likely to be bombed is not known; it is probably substantial.

The Axis submarine campaign is continuing, and is taking a large toll of Allied ships. Exact figures can not be published, but the enemy submarine still remains a serious pest of the seas. Besides the loss of ships, there is the loss of cargoes and some loss of trained seamen, who are becoming difficult to replace. The anti-submarine campaign is being pushed and submarines are being exterminated. Unfortunately, Axis replacements appear to be increasing, and the number of enemy submarines raiding in the shipping lanes of the Atlantic Ocean is reported to be larger than ever.

SOUTHEAST ASIA

British troops have closed in on the Japanese forces along the coast of the Bay of Bengal. The present line is the Mayu River, which enters the sea just northwest of Akyab. This front is now fairly active, though without any major offensive being in progress. Main forces are at Rathedaung and south thereof. Minor raids and extensive patrol actions by both sides are frequent.

British and American air forces are raiding Burma daily. Special attention is being given to attacking transportation. This includes not only bridges, an old target, but also

locomotives, barges, sampans, small river craft, and in fact anything that can carry a cargo. This type of attack, which started in Europe, with similar forays in north France and the Low Countries, is becoming general as a major air activity.

Japanese air attacks in India are increasing in number. Several raids have been made on Calcutta and others on Chittagong, a base for the troops now along the Mayu River. Although these attacks have caused casualties and some damage, they have not influenced the general situation.

THE SOUTHWEST PACIFIC

THE SOLOMON ISLANDS

Since the end of December no material change has occurred in this area, although American air and naval forces have paid great attention to the newest Japanese air base at Munda on New Georgia Island, which is less than 150 miles away from American bases. Our planes have been attacking this enemy base almost daily, and sometimes twice or thrice a day. It has also been shelled by surface naval forces.

On January 10th United States troops opened an offensive on Guadalcanal. The initial attack was covered by artillery barrage and by air cover. Against this preparation enemy reaction was weak, and the offensive got a good start. To succor their troops, Japanese planes (on January 14th and succeeding days) raided American

positions on Guadalcanal, causing some casualties but little damage. They have not stopped the American advance on the ground, which is slowly but certainly eliminating Jap troops from Guadalcanal.

On January 15th a force of about 9 Japanese destroyers, discovered north of Guadalcanal, was attacked by our air forces. The enemy had air cover, and none of his ships is reported as having been sunk, but two were damaged and a number of enemy planes were shot down. It is possible that these Japanese destroyers succeeded in landing some replacements on Guadalcanal, as considerable numbers of Japanese were found in line immediately afterward.

Up to January 22nd our troops have cleared much of the west part of Guadalcanal. They report that the Japs lost 1,050 killed since the beginning of the offensive. Our own losses have not been reported, but appear to have been light.

General MacArthur's command in Australia has aided the fight in the Solomon Islands by frequent air raids, some by day and some by night, at what appears to be the enemy's chief base in this area — Rabaul, on New Britain Island. It reports sinking and damaging a number of ships. The activity of the enemy at this port has been such as to lead many in Australia to believe that a Japanese major offensive is in preparation.

NEW GUINEA

The small Japanese force holding in the vicinity of Buna on the north coast of Papua, has been under nearly continuous attack from both air and ground for over a month. Since January 1st the Japanese have held only Sananda Point close to Buna, which they lost at the end of December. The resistance of these Japanese seems to be hopeless, but they are continuing to fight on with their usual desperation, in a constantly decreasing space. Their end seems to be near.

A new American base, or joint Australian and American base, has been established at Merauke. This is



on the south coast of Dutch New Guinea, just over the boundary from Papua. The enemy knows all about this, for he has been frequently bombing the work under progress at this new outpost of the United Nations.

New Japanese bases are reported as established, or being established, on the north shore of New Guinea. These include Wewak, Madang, and Finschhafen, and

supplement older bases at Salamaua and Lae. The country between the north and south shores is exceedingly mountainous and will be difficult to campaign over. The Owen Stanley range was a serious obstacle to the Allied advance northward from Port Moresby, but the mountains west thereof are wider in depth and higher, with altitudes up to 16,000 feet.

NORTH AFRICA

TUNISIA

At the beginning of January, 1943, the line was approximately

starting at the Mediterranean, southward on a line passing about 15 miles west of Mateur; thence across a plateau to Medjez-el-Bab (to Allies); southeast to Pont du Fahs (to Axis); south across high ground to Pichon (to Allies); south to vicinity of Mahnassy (to Axis).

The British First Army, with some American units attached, held the sector from Medjez-el-Bab northward. French troops, equivalent to about 3 divisions, held the south sector. The north sector was firmly held by both sides, with more or less continuous lines; the south one, to which supply for the Allied side was difficult, consisted mostly of detached mountain strong-points. Consequently in south Tunisia it was possible for motorized patrols to pass through the intervals between the regular posts, and they regularly raided into each other's rear areas for distances up to 30 miles. This required that all CPs, camps, depots, etc., in rear areas, be at all times prepared for an all-around defense.

There have been no major operations in Tunisia since the combats of December. What appears to have been an inspired estimate of the situation was issued from Allied GHQ's CP on January 5th; this stated that

a. The winter season, which in North Africa is very rainy, makes movements off roads impossible for armored troops. It also makes it difficult to maintain air fields which do not have hard-surface runways. Streams, which in summer are nearly dry, are difficult obstacles in winter. This condition will not change until about the end of February.

b. The Axis, due to air cover based on Sardinia and Sicily, is in a favorable position to stop an Allied attack, notwithstanding the fact that apparently the German Air Force is now but a shadow of what it used to be in 1940 and 1941.

c. For the foregoing reasons, an Allied offensive is not probable at this time. Neither is an Axis offensive probable, as the Axis is believed to have too few troops to undertake any large operation.

d. Intelligence reports indicate that the Axis is making great preparations for defending Bizerte and Tunis.

On January 6th British troops made a limited attack against Djebel Azzag, a hill on the road toward Mateur. This was captured. Thereupon the Axis artillery shelled the British troops continuously, and when an Axis attack occurred next morning the summit of Djebel Azzag was lost. As this gave the Axis artillery good OP's, increasing the accuracy of their fire against troops holding further down the slope, it was considered that the hill was not worth the casualties that would be incurred to hold it or to recapture

the summit, and the troops were withdrawn to their original positions.

Active patrolling has led to numerous minor encounters. Both sides use patrols mounted in motor vehicles, and the Axis also uses patrols dropped in gliders in rear of

our lines. Some of these, as might be expected, have been captured, but there is reason to believe that others were not detected.

Intensive air activity was common. Allied planes concentrated in bombing the harbors of Bizerte, Tunis, Sousse, and Sfax by day and by night. From air photographs taken of Bizerte during a bombing, none of six ships noted at quays was hit and no wrecks appeared in the vicinity. There was damage to objects on shore, but the nature of this could not be determined. This air bombing was supplemented by a British campaign by submarines and light naval forces against ships plying between Italian ports and Axis ports in North Africa. Quite a number of ships have been sunk, but others still are operating. In general, the experience of this war has been that harbors can be damaged, but can not be completely closed, by air bombing.

Axis air activity has been largely directed to bombing Allied ports. Particular and frequent attention has been given to Bone, Philippeville, Bougie, and Algiers, but the port of Casablanca, nearly 1,000 miles from an Axis air base, was bombed once. The mission of the bombings has been to sink transports. According to Axis reports, they have had some success.

After the middle of January it became clear that the Axis forces in Tripolitania would not defend that territory, but were obviously en route to Tunisia and would, if not prevented, join by the end of the month the Axis forces already in the vicinity of Gabès. The withdrawing Axis troops protected their rear by suitable rear guards, usual demolitions, and planting of mines. They were pursued by the British Eighth Army. After the experience of chasing after the Axis all the way from the Nile, it was judged impossible to overtake them and



force them to battle. This withdrawing force (supposed to be still under command of Marshal Rommel) will, if it reaches Gabès, have an excellent line of defense facing toward the south, in a line of swamps, depressions, and marshes extending some 300 miles westwardly from the sea. There are only a few points of passage across this extended obstacle. It affords an opportunity for Marshal Rommel to leave a detaining force to hold this line, while his main body (which includes three armored and two motorized divisions) joins the Axis forces in Tunisia. This might give the Axis sufficient strength to initiate a major offensive.

In view of this situation, another inspired estimate of the situation was issued at Allied GHQ's CP on January 20th:

a. The Allies are in a position to launch only limited attacks to prevent Rommel's army joining the Axis forces already in Tunisia.

b. The British Eighth Army will follow Rommel, but it is improbable that it would be able to assault the enemy's covering position, presumably west from Gabes, before reorganization of its own forces and assembly of necessary materiel.

c. An Axis offensive is now to be expected on the front Mateur—Medjez-el-Bah.

d. A major Allied offensive might reach the sea in south Tunisia and thus separate Rommel's army from Axis forces in north Tunisia. This would be untimely as the Axis might attack in the north, directly into the Allies' supply lines.

Apparently in preparation for the arrival of Rommel's army, an Axis offensive was launched west and southwest of Pont du Fahs on January 19th. Considerable tank and artillery forces supported infantry assaults, all supplemented by an intensive air attack. The Axis succeeded in driving the French back about 7 miles and (according to their accounts) capturing over 1,000 prisoners. The attack was continued on the 20th. At date of writing the result of this offensive has not been determined.

TRIPOLITANIA

On January 1st Marshal Rommel's Axis army (estimated as having 3 armored, 2 motorized, and several infantry

divisions) was holding a defensive position near Buerat el Hsun and the Wadi Zemzem. It was confronted by the British Eighth Army. The latter prepared to attack the Axis position by turning it from the south. These British intentions were noted by the enemy. In fact, London newspapers published in advance statements that their Eighth Army was going to attack.

The attack was delivered on January 15th. The turning movement met a considerable enemy armored force, and a sharp fight occurred without any decisive result. During the ensuing night the Axis withdrew from the entire position.

Up to January 23d the Axis forces had made no stand, but continued on uninterruptedly toward Tunisia. On that day they had cleared the city of Tripoli, which was entered by British troops.

A supplementary movement to the British advance was made by French forces, which had started from Lake Tchad (south of the Sahara) and advanced across the desert. At the beginning of January it was in contact with Italian posts in the territory of Fezzan. Fighting occurred, but as the Axis had already determined to concentrate its forces in Tunisia the Italians fought only test guard actions. This French force has arrived south of Tripoli, on the left of the British Eighth Army.

The withdrawal of Marshal Rommel's army from near the banks of the Nile started in the first week of November. Together with the pursuit it forms a remarkable annal in military history. It covered over 1,000 miles in 2½ months, or 400 miles a month on the average. During this entire period Rommel has succeeded in avoiding any decisive engagements. Just before his retreat began he had been badly defeated at El Alamein, and had lost perhaps 2/3 of his armor and probably 50,000 men (in captured and casualties). How much of this loss in men and materiel he has been able to make good during his retreat is unknown. Upon the answer depends his future activity in Tunisia, where it is now conceded he will arrive.

THE CAMPAIGNS IN RUSSIA

THE RUSSIAN OFFENSIVES AROUND STALINGRAD

Mid-December, 1942, saw the German Sixth Army (Colonel-General Herman Hoth) holding Stalingrad, less a wedge in north part of the city which had never been reduced, plus an area around Stalingrad extending about 40 miles east and west (from the Volga to the Don) and about 80 miles from north to south. The troops available to defend Stalingrad against the Russian Twenty-first Army (under Major-General I. N. Christiannikov) which had surrounded the Stalingrad area, were approximately

German Panzer Divisions	3	14th, 16th, 24th.
German Motorized Divisions	3	3rd, 29th, 60th.
German and Rumanian Infantry Divisions	11	71st, 75th, 76th, 94th, 10th, 113th, 297th, 295th, 305th, 371st, 389th.
Rumanian Cavalry Divisions	1	1st.

Army Troops:

German Infantry Divisions	2	Parts of 44th, 378th, 384th.
Artillery		Regiments: 44th, 46th, 51st, 53rd (trench mortars), 37th (AA), 104th (AA).
Engineers		Battalions: 50th, 162nd, 294th, 336th.
Total divisions	20	

All organizations were below strength, divisions having about 7,500 men for duty. The total force was around 200,000.

The area being defended was nearly as large as the state of Connecticut. As the east boundary was the Volga River, which needed only to be observed, there was an active front of about 160 miles—too long for the size of the garrison. The west front was in places along the Don River, but the Russians had several bridgeheads across the river and the Don front was very active. In

view of this situation General Hoth decided to reduce the perimeter to be defended. He accomplished this by withdrawing his north and south boundaries until they were only about 20 miles apart, thus making the active front only 100 miles.

The Germans in Stalingrad had communication by air with their main armies. They received some supplies, and were able to evacuate part of the sick and wounded. They could not, however, receive all they needed. Winter clothing had not yet been issued when Stalingrad was cut off, and this was the cause of considerable suffering. The depots near Stalingrad, while large, had not been stocked for a siege, which appears to have been an unforeseen situation. From the beginning it was necessary to fly in food and ammunition.

Commencing December 12th, by which time General Hoth had reorganized his lines and re-equipped troops who had joined from across the Don, strong sorties were made by the garrison. The mission was to aid German armies attempting to come to the relief of Stalingrad, by keeping as many Russian troops as possible engaged around the city. Most of these attacks were on the north side, which was that furthest away from the expected direction of the relief forces. These attacks, maintained all during the latter part of December, occasionally made minor gains.

General Christiannikov, commanding the Russians besieging Stalingrad, was content to maintain in general the tactical defensive. He was convinced that the German relief expeditions would not get through, and that eventually the German Sixth Army would either capitulate or be exterminated. The more they attacked, the weaker their forces would become and the less ammunition would remain. It was more profitable to allow the Germans to attack and be repulsed than it would be to attack himself. He did, however, counterattack regularly following each German offensive.

The nearest German relief expedition was 200 miles to the south at the middle of December. It was astride the railroad, just north of Kotelnikovski. Under command of General Field Marshal Fritz Erich von Mannstein, the conqueror of Sevastopol, were

German Panzer Divisions	3	6th, 17th, 23rd.
German Motorized Divisions	1	16th
German Infantry Divisions	2	4th, 18th.
Rumanian Cavalry Divisions	2	5th, 8th.
Total Divisions	8	

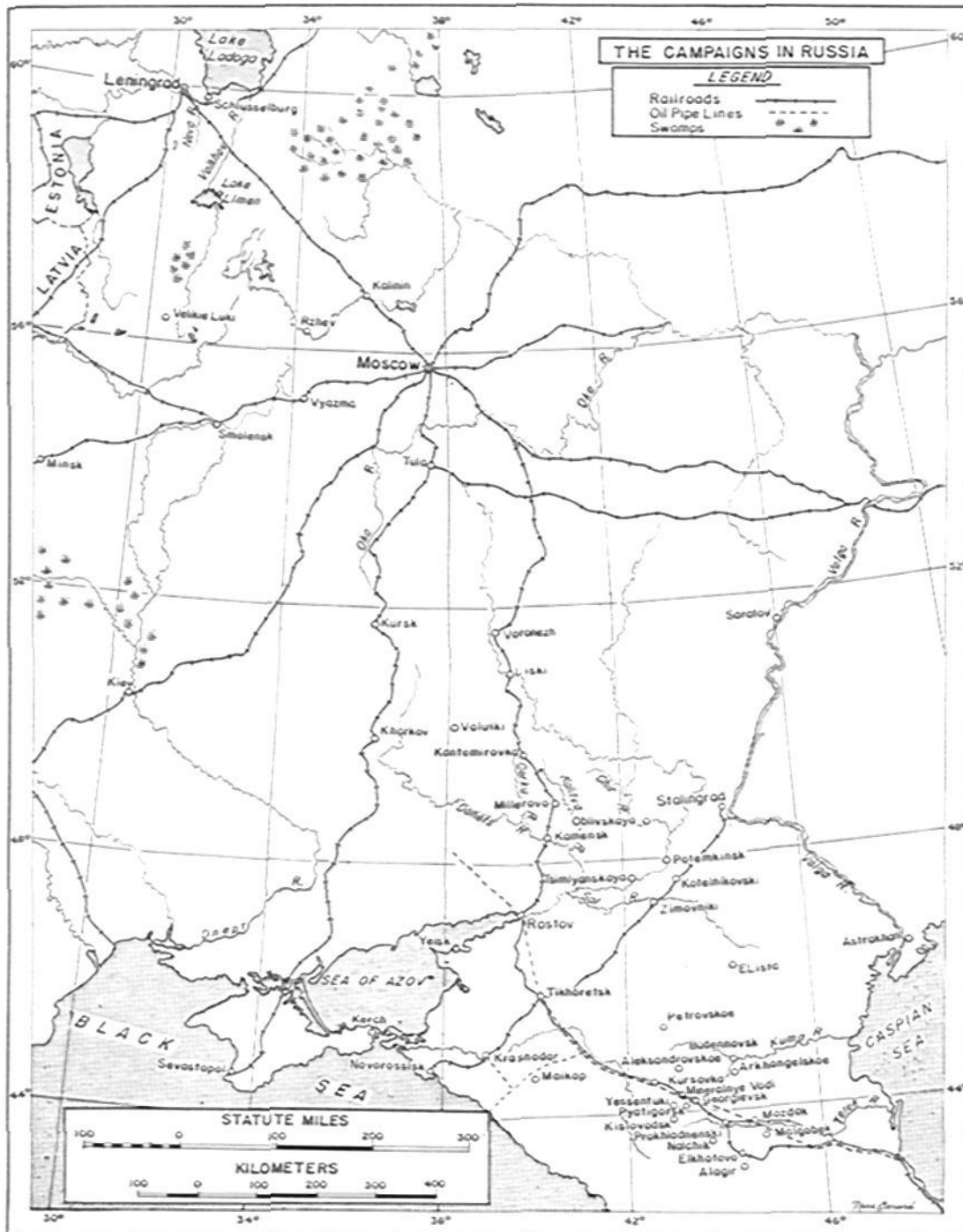
Including corps and army troops, this force is estimated as having about 120,000 men. von Mannstein's mission was to relieve Stalingrad as soon as possible. This required him to take the offensive and overcome a Russian force which at this time had around 100,000 men. The terrain in this area is a steppe country, nearly flat, with few trees. There were few obstacles to maneuver or to movements of armored troops, but there was little concealment possible from air observation so that daylight movements were sure to be discovered by the enemy.

West from Stalingrad, the Russian offensives had pushed the Axis front line back to the Kalitva River. North of Millerovo (which was held by the Germans) the Russian army of General Batukhin had reached the railroad from Kantemirovka to north of Millerovo. On the left of this army was the Russian army of General Philip Volkhov, holding the front from opposite Millerovo southeastwardly to the Don River near Potemkinsk. Both of these two Russian armies were charged with pushing the Germans further to the west. This line at Millerovo was already over 400 miles from Stalingrad, making it improbable that a relief movement from this direction could succeed.

On the Millerovo front the Axis (on a line of about 500 miles) had brought considerable reinforcements into line and were attacking vigorously. They made few gains, but the Russian advance north of Millerovo was practically stopped and that to the southwest slowed down.

On December 12th von Mannstein's army attacked north from Kotelnikovski. He had an initial success, and continued on during the next two days. On the 15th the German attack was again renewed, but this day was stopped. According to Russian accounts it was unable to get by their artillery barrage. Visibility being excellent in the flat open country, the artillery had a field day and inflicted severe losses on the Germans. On the 16th von Mannstein discontinued his frontal attack; for it he substituted an attempt to turn the enemy's left. The Russians had exactly the same idea, so both sides succeeded in advancing their respective right flanks. The Russian right was moving down the left side of the Don River, accompanied in the advance by a corresponding movement on the right bank which, utilizing armored troops, broke around defending Axis forces and captured a large railhead west from Surovikinskaya. This seems to have been an artillery depot, for the Russians reported finding there 580 guns of various calibers. Tank losses on this day (around Surovikinskaya only) were 50 for the Russians, who were on the offensive, and about half this number for the defending Axis.

These two Russian movements on the banks of the Don were timed by Russian GHQ, who on the same day opened another offensive north of their troops at Kantemirovka, now nearly stalled. The new attack, which was placed under the orders of Colonel General Batukhin (commanding north of Millerovo) was on a 60-mile front along the Don from Novaya Kalitva to Monastrischina. This front, held by some 12 Axis divisions, had been prepared for defense by erection of wire, planting of mines, and construction of other obstacles. As usual with the Russian attacks it started with a tremendous artillery preparation which was so severe that the infantry could move forward and occupy the enemy front line with little loss. The infantry then allowed the Russian armored troops to pass through and continue on into the Axis rear areas. The Axis occupation of this position



included about 2,000 men per mile of front. It went down within a few hours, notwithstanding all the labor and materiel which had been expended expressly to avoid such a possibility.

The Axis does not appear to have had any considerable number of reserves immediately available to meet the new attack. The Russians pushed on, using armored troops well ahead to open passages and break enemy systems of supply and communication. Following came the infantry, charged with mopping territory by-passed by the armored troops and with reducing centers of resistance. By December 19th

strong resistance before doing so.

By the 22nd, the Russian attack north of Kantemirovka was beginning to bear fruit. The Axis troops were fighting hard, and made frequent counterattacks—but they were unable to stop the Russians. All villages had been prepared for defense, and as the Axis withdrew it left garrisons in the villages to block roads. The Russian follow-up infantry reduced these villages gradually, in such order as to most quickly open routes of communication to their armored troops forward. One after the other the garrisons were compelled to surrender. Some

the new Russian offensive had reached the railroad north of Kantemirovka, having made an average advance of about 35 miles in 4 days.

Kantemirovka, which had been recaptured by an Axis counterattack, once more passed to Russian hands. The German High Command decided to withdraw the line along the lower Chir to in rear of the Kalitva.

Heavy fighting once again started near Kotelnikovski on the Kalmuck steppes.

Von Mannstein attacked on the 20th, and as before made some gain to the front, although the Russians offered a stiff resistance. Their plan was to pass to the offensive later, after von Mannstein had expended his power in

continuous offensives. They fell back slightly day by day, but making very

20,000 men were captured this way.

On December 23d von Mannstein renewed his previous effort to turn the Russian left. He met Russian cavalry, and without much trouble repulsed and dispersed it. The Germans did not, however, make any advance against the main Russian force, which still blocked all the roads to Stalingrad. In this beleaguered city General Hoth was continuing his attacks to divert Russian troops from opposing von Mannstein. He had no success. The Russians had sufficient forces to enable them to meet both series of attacks at the same time. von Mannstein's effort to relieve Stalingrad came to an end on this day. In twelve days, on eight of which he had attacked, he had advanced about 10 miles out of 100 necessary to go.

On the 24th the Russian army opposite Kotelnikovski passed to the offensive and delivered a strong assault against von Mannstein's army. It made only slight gains, but it definitely stopped this attempt to relieve Stalingrad. Having attracted German attention to their front, next day Russian troops advanced around both flanks of von Mannstein's army. The main effort was on the west flank, to separate the Germans east and west of the Don from each other. Full use was made of armored and motorized troops. The fighting centered about the Kalmuck villages, which as usual were prepared for defense. This Russian army did not have sufficient armored troops to undertake a break-through. It therefore advanced as rapidly as practicable around both German flanks simultaneously, by direct assault on villages and positions as it came to them. The artillery was largely depended upon for rapid capture of strong points.

The three German Panzer divisions made furious attacks on December 26th and 27th. They were unable to stop the Russians, and one of the Panzer divisions was so severely handled by Russian artillery fire as to have lost, according to Russian reports, most of its armor. By the 28th the Russian advance was well past Kotelnikovski. The Germans now decided to abandon that town and all efforts to relieve Stalingrad. A new mission, purely defensive, was assigned to von Mannstein. In view of this change, von Mannstein was ordered to return his best Panzer division to the control of GHQ. It was withdrawn from line and sent west across the Don to join the German forces south of Millerovo. von Mannstein detailed two regiments of infantry, less transportation, to hold Kotelnikovski as long as possible, and ordered his remaining troops to withdraw to south of the Sal River.

On December 29th the Russians attacked Kotelnikovski from three sides and late in the day captured it; 1,970 prisoners were reported as captured. How many (if any) of the two regiments in the town escaped is unknown.

While this fighting was proceeding in the Kalmuck area, north of Millerovo the Axis had about brought the Russian offensives to a halt on a line generally just west of the railroad extending south from Kantemirovka. South of

Millerovo (held by the Axis) the line extended generally southwest to the vicinity of Tsimlyanskaya, where liaison was had with von Mannstein's army. This was the situation as the year 1942 came to a close. According to Russian accounts their booty for the December campaign described above, to include 31 December, was

<i>West of the Don from 16 December</i>				
Men	59,000	killed	60,050	prisoners
Planes	117	destroyed	368	captured
Tanks	172	"	168	"
Guns	268	"	1,929	"
Trucks	over 1,000	"	7,414	"

<i>Vicinity of Kotelnikovski from 12 December</i>				
Men	21,000	killed	5,200	prisoners
Planes	306	destroyed	40	captured
Tanks	467	"	94	"
Guns	257	"	292	"
Trucks	945	"	329	"

Even allowing for possible errors, the foregoing figures give some idea of the wastage of modern battles.

The new year opened with a continuation of the Russian offensives. They continued on in the Kalmuck country, with their extreme left reaching Elista. On the other side of the Don the Russians were at Oblivskaya. von Mannstein and the Axis forces southwest of Millerovo were retiring without other than rear-guard actions and delaying measures. North of Millerovo the Axis line held under continuous fighting.

By January 10th von Mannstein withdrew to a line through Zimovniki. This line was attacked by the Russians on the 15th. The first attacks failed with considerable loss to the Russians, but new attacks toward evening went through and Zimovniki was captured. von Mannstein now commenced to withdraw to the Manych River, which is an improved irrigation project with numerous dams holding back lakes. When not frozen over this line is as good as any in this area. As this article goes to press it is yet unknown whether or not the Germans will withdraw further.

Southwest of Millerovo, the Russian army of General Volkhov advanced during January without meeting opposition other than delaying actions. By the 20th it had passed Millerovo (which was taken on the 17th) and reached the Donets River at Kamensk. It immediately started across that river.

A new Russian offensive began on January 12th to the north of that last made and in continuation of it. This was launched from the vicinity of Liski, and few details are yet available. This sector was defended by Hungarian troops. Their front was overwhelmed by the Russian artillery preparation in spite of defenses, and the Russians pushed westwardly. By January 20th this advance had arrived at Valuiki.

During the December and January battles, the position of the German Sixth Army in Stalingrad steadily deteriorated. After von Mannstein's relief expedition

had been abandoned there was no longer any need for the Stalingrad garrison to maintain an offensive. The Russian Twenty-first Army, judging that the change indicated approaching exhaustion, demanded surrender of the city on January 8th. This being refused, the Russians promptly commenced a series of attacks to capture the city as quickly as possible. Stalingrad is an important railroad center and, except in winter, a depot for supplies arriving by water. Its retention in Axis hands, in addition to requiring troops for a siege, so complicates supply matters that early reduction of this place is desirable. Latest news is that the German lines have been reduced by advances mainly eastwardly from the Don River, and by a widening of the wedge within Stalingrad. Present Axis lines are about 20 miles to a side.

Net results of the series of Russian offensives around Stalingrad are that

- a. Large progress has been made in reducing Stalingrad.*
- b. von Mannstein's relief army has been driven back about 100 miles to the Manych River, and is now 200 miles away from Stalingrad.*
- c. The Axis armies west of Stalingrad have been pushed back to the vicinity of the Derku River, and are also now some 200 miles from Stalingrad.*

These results are the result of a series of coordinated campaigns which started in mid-November. Taking an average, the Russian advance has been just about 100 miles a month.

THE RUSSIAN OFFENSIVE IN NORTH CAUCASIA

At mid-December, 1942, the Germans in north Caucasia held a line Mozdok — Malgobek — Elkhotovo — Alagir, all inclusive. This sector had been active, but not unduly so. The Russians assembled an army under Lieut. Gen. Maslenikov, with instructions to drive the enemy out of Caucasia. If this could be done soon enough, and succeed in passing beyond Tikhoretsk, it would cut the line of supplies by rail to von Mannstein's army south of Stalingrad. These supplies arrived by water at Novorossisk, Yeisk, and Rostov. There was a rail cut-off north of Tikhoretsk, but this place if captured would provide a base for interrupting this line.

Maslenikov started with a series of attacks commencing December 13th. The first heavy attack was delivered on the 16th. It was in two parts—on the north, up the Terek valley; and in the south (separated from the north attack by a range of hills), against the front Ardon-Alagir. The north attack made some progress but the south one failed. Both attacks were renewed on the 18th and 19th, and neither succeeded. On the 22nd the Germans launched an attack in the north sector: after an artillery preparation, armored troops broke through the Russian lines and captured about 400 prisoners. The Germans made no effort to continue on, their object having been to break up enemy offensive intentions.

On December 24th the Russian south attack was renewed. It captured the line Ardon-Alagir, and pushed

ahead. A Russian north attack failed again, the assaulting troops being stopped by German artillery. In the south sector the Russians moved on, and on the 28th captured Elkhotovo in a hard battle. Once more in the north sector a Russian attack broke down in front of the Mozdok-Malgobek line.

About this date the situation of von Mannstein's army was such that German GHQ foresaw its eventual withdrawal to the south. Should this happen, it would be impracticable to maintain the large area now held in Caucasia, so orders were issued to withdraw from the Mozdok-Malgobek front and south thereof; the Axis troops commenced to withdraw westward at once. In the south sector the Russians followed closely, and there was daily fighting between Axis rear guards and the pursuing Russians. In the north sector the Russians failed to note the withdrawal, and after the battle of the 28th spent several days reorganizing and preparing for a new offensive.

It was not until January 3d, 1943, that the Russians discovered that the enemy in the north sector was weak—only a covering force. Russians thereupon occupied the entire Mozdok-Malgobek line. As it was now apparent that the enemy's retreat was general, orders were given to the troops in the south sector to intensify the pursuit. This resulted in taking Nalchik, after a hard fight, by a night attack on 4/5 January. This town was about 45 miles west from the Ardon-Alagir line, giving about a 4-mile average daily rate of advance for the 11 days. This part of the country is much cut up with numerous stream lines (which were not frozen over), swamps, and hills, and afforded numerous excellent positions for rear-guard actions. On January 5th the north and south offensives joined into a single front by the occupation of Prokhladnaya, 30 miles from Mozdok.

The Germans were now aware that the Russians knew they were withdrawing. They commenced to burn all towns and villages as they fell back, to demolish bridges, obstruct roads, and plant thousands of land mines to prevent close pursuit by armored troops. There was a series of continuing rear-guard actions, during which the Russians claim they killed thousands of Axis troops. By the 11th the Russians had reached the Kuma River along the line Budenovsk—Arkhangelskoe—Aleksandrisk—Georgievsk — Mineralyne Vodi — Pyatigorsk — Kislovodsk. This was a 50-mile advance in 7 days. Both sides were extending their north flanks—the Russians to turn the enemy's left and the Germans to prevent this. The south flanks rested on the Caucasus Mountains, where turning movements were impracticable.

The Russians very promptly secured a bridgehead over the Kuma on the 12th, near Yessentuki in the south sector, and crossed at several places in the north sector. Resistance was less in the north, and by the 14th this wing of the Russians was on the line Novo Selitskoe—Sablinskoe—Kumagorsky. This was a maximum advance of 30 miles from the Kuma.

On January 17th the Russian main body was at Kursavka,

having made 40 miles in 7 days. The right wing, continuously extending itself to the north, reached Petrovskoe on the 19th. The Russians claim that in this campaign they captured much booty, but there were no large captures of prisoners. The Germans claim to have shot down a considerable number of Russian armored vehicles. At this date there is no confirmation of the claims of either side.

VELIKIE LUKI

This German strong point has been under attack by the Russians since November 25, 1942. It was part of a general offensive which at the start covered the line from Velikie Luki to as far east as Rzhev and Kalinin. With the exception of the V. Luki sector, this offensive has been stalled. V. Luki is a railroad town, surrounded by a ring of fortifications. According to the Russian account, after numerous attempts over a considerable period of time they broke through the ring and entered the town on January 1st. They offered terms of surrender to the garrison, were refused, and thereupon exterminated the garrison. The Germans at the time denied that V. Luki had fallen, whereupon the Russians announced that all Germans were liars and nothing they said should ever be believed. The truth appears to be that the Russians did capture the town, but did not at that time capture the central work (which was near the town) and had not taken all of the ring.

The Germans sent a relief expedition toward V. Luki to recapture it. The initial approach was from the southwest, and it made some progress before it was stopped. A second approach was then made from the northwest, with about the same results. The Germans then gave up the attempt. Instead, on the night 15/16 January the garrison of V. Luki evacuated their lines and broke out to the west, regaining their main army. Russian armored troops intervened to stop the escaping Germans. According to the German reports the Russians were repulsed after losing 47 tanks. However, the Russians secured V. Luki, which will make an important strong point for them in this sector.

LENINGRAD

Leningrad has been under attack since the autumn of 1941. It has at no time been entirely encircled. Across Lake Ladoga water transportation in summer, and over-the-ice transportation in winter, have been maintained. This was not a satisfactory method, and the city suffered greatly from lack of food, fuel, etc. It seems to have always had ample ammunition (some of which was manufactured locally) and to have received replacements from time to time.

Several times the Russians have attempted to relieve the situation by opening a land route into Leningrad. The

regular method was to attack south of Lake Ladoga, close to the shore line. Facing Leningrad, the German line started at Schluesselburg near Lake Ladoga on the east bank of the Neva River, thence generally southward. Facing in the opposite direction, that is toward the east, was another German line along the west bank of the Volkhov River, whose mission was to keep the Russians on the outside from breaking into Leningrad. The two German lines were back to back and roughly about 50 miles apart. The banks of the two rivers are rather high and steep, and had been prepared for defense by construction of usual trench and wire systems.

The Russians followed the same plan as on previous occasions. The Russians on the outside would attack across the Volkhov westwardly, while the Russians inside Leningrad would attack eastwardly. The fronts of the two attacks (which were to be delivered simultaneously) were about 10 miles each. Although the general Russian plan was the same as before, tactical details were materially changed in view of the experience gained from previous failures.

The Russians enormously increased the amount of artillery. There appear to have been at least 200 guns to the mile of front. The artillery preparation started at daylight on January 12th. At the latitude of Leningrad, this was after 0900. It is described as a tremendous fire, which completely overcame and demoralized the German defenders. The 10-mile fronts were each held by about 2 German divisions, had not over 2,000 men per mile of front, and were comparatively weak in artillery, having only about 45 guns per mile of front. The artillery preparation ended at 1130. Initial assault troops were engineers who crossed the river on the ice and established bridgeheads within 10 minutes. Due to the steep heights the engineers were defiled from enemy fire, and under cover of the artillery established paths up the banks over which light artillery could be hauled by using ropes.

When everything was ready, light artillery crossed the rivers on the ice ahead of the infantry, and with the help of the engineers was hauled up into position on the far banks while the main force of artillery maintained protective barrages. When the light artillery was prepared to give direct support to the infantry, the latter crossed the rivers and the attack proceeded in the regular manner. Neither side seems to have used armored troops in this battle.

Details of the ensuing fighting are not yet at hand. The two Russian attacks were coordinated by an advance section of Russian GHQ, at which the two Russian Marshals Zhukov and Voroshilov issued daily directives to their two armies. The result was the accomplishment of the mission on January 18th, when the two Russian attacks met and thereby opened the road into Leningrad. It was a great success, and well handled.



The class is seated in bleachers 60 feet from the board, scaled to simulate a range of about 9,000 yards.

CHEMICAL-PUFF TERRAIN BOARD-



Viewed through glasses, the sawdust range is highly realistic. Tanks, water mains, oil tanks, dwellings, churches, schoolhouses, and the usual run of story-book targets are all included; the sawdust has been dyed to give the terrain natural color.



A burst of smoke comes up through the range as students sense the shot. An officer has just identified the target for the O.C.S. prospects.



F.A.S. VARIANT



The scale is mounted on wheels (larger ones in rear, smaller in front, so it moves in a fan-shaped pattern) and moves from side to side according to the deflection shift commanded. It is shifted by the endless belt of heavy cloth ribbon, calibrated in mils in accordance with the presumed "range" of the target area, size of pulleys, diameters of the wheels, etc. Elevation is taken care of by a sliding scale. Smoke is generated by ammonia fumes passing through hydrochloric acid; by pressing the atomizer bulb, from one to four bursts may be sent through the screen-top terrain board, depending on the type of problem. The number of bursts is controlled by the positions of the four knobs or stoppers seen just left of the operator's hand—for precision fire, only one stopper would be in the "up" position.

Dispersion is effected by the four rods in upper left; smoke-carrying tubes are on their opposite end. Diagonal rod in the operator's left hand elevates carriage when ready to fire—this permits a compact burst which can be sensed, in contrast to the large blob which would finally trickle through if the hose were considerably below the screen. Screen-door spring serves a double purpose. It keeps upper pulley taut, so that the machine can be moved a pre-determined amount by moving cloth belt. By unhooking it, slack is instantly available so that all settings can revert to zero beneath a new target when one is assigned. Interested readers can obtain any desired details concerning construction or operation from Major Robert S. Reaves, F.A.R.T.C., Fort Sill. He devised this useful rig, and is the operator in these photos.

Fewer Bottlenecks

By Capt. Roger Wilco

Some of the ideas in *Bottlenecks** I believe are conducive to an increase rather than a reduction in bottlenecks. By the time all the confused Private Plinks start answering three or four party lines and clipping one phone onto another—not to mention remembering *not* to plug into a battery line when its switchboard drop falls—the confused Private Plinks will be raving maniacs. No one will answer anything.

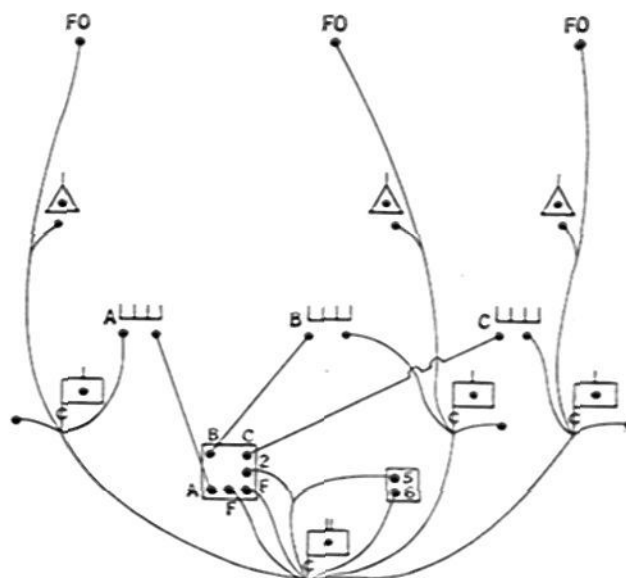
Communications have not been simplified nor fire direction speeded, by taking out battery switchboards alone. There still remains only one line from guns to FDC. For true simplicity of fire direction and certainty of communication, the system sketched here should prove far more satisfactory.

When the battalion first occupies position, radio (if not silenced) can be used. The first wire laid should run from gun positions to FDC: laid, tested, and tagged by the battalion wire section; this gives direct and speedy communication where most needed, before anything else happens. A circuit to the supported unit goes in next, as a direct line unless the switchboard is already set up so it can be quickly cut in to this important line. Next, a normal system using battery and battalion switchboards is installed, with batteries laying to the battalion switchboards.

Three locals (including Commo's party line*) are run to FDC. Liaison lines are started to the infantry battalion switchboards: liaison sections lay to these switchboards from their positions as soon as possible, but radio is still available for direct and immediate contact between LnO's and the FDC.

Batteries lay to their Op's, and then continue these lines on to their FO's. I agree with Commo that FO's are primarily battery observers which are used by battalion, but the batteries must arrange for these men to have the *best* communication available. Each battery's OP line becomes a party line, in that it runs to both OP and the forward OP.

*Page 884. November, 1942, JOURNAL.



BN WIRE NET
(only infra bn lines shown)

With the above system, the objections to ground-return telephony are avoided. Truly alternate wire routes to the guns are available, as it is easier to compel different routes with the lines FDC-guns and battery-battalion switchboards laid by different agencies (battalion and battery, respectively). If a direct FDC-guns line goes out, the computer has only to use one of the two "fire" locals which have been run to the FDC.

Instructions, corrections, information, or targets can be phoned to battery CP's by the S-3 or Opn Sgt, even while a battery is being fired; this is *not* an unusual situation, and should not be thought of as such.

On displacing, a battery picks up its line to the battalion switchboard (which it has previously laid), yet until the guns actually move out there is still direct contact with the FDC. Indeed, in rapidly moving situations only this direct FDC-guns line need be laid.

In short, this system (which has worked well for us) uses battery switchboards mainly to provide administrative simplicity, while an additional circuit direct from FDC to guns gives firing efficiency.

76TH FIELD ARTILLERY

The 76th Field Artillery now belongs to the 7th Division.

The regiment was originally organized at Fort Ethan Allen, Vermont, from the 2nd Cavalry and was, for a very short time, the 18th Cavalry. It served very gallantly in the 3rd Division overseas and was cited for its service at the Marne. It was in the 3rd Division from shortly after its organization in 1917 until 1940.

The shield and the motto together form the regimental insignia. The 3rd Division colors, blue and white, form the basis of the shield. The canton (upper left part) is orange, the color of the 2nd Cavalry shield, its parent organization. In the center of the canton is the dragoon hat worn by the 2nd Cavalry when they were known as dragoons. The round symbolizes the motto, which is "Duty the Spirit of '76."

COL. ALBERT S. FUGER, U.S.A.-Ret.



TIME BRACKET

By Maj. Frank C. Narvell, FA

A lot of us are losing sight of the fact that when shooting time fire, the same old principles of gunnery apply. You still act on what you see and rules are made to be used *when there is no better information*.

To make things easy when we don't know the corrector of the day, let us fire a round in the air and have the executive measure the site to it. This round should be as low as possible and still be visible from the guns. The reason for this is that we don't want to fool with the complementary angle of site. By comparing the commanded site with that reported by the executive, we get an approximate corrector of the day, or a time correction when there is no fuze setter available.

To illustrate, let us assume a set of initial commands as follows: No. 1 Adj, Sh He, Ch III, Time 12.5, Site 320, No. 1, 1 Rd, Elev 276, MEASURE THE SITE. Now with all conditions standard, we would expect the executive to measure a site of 320. If he sees the burst at a greater site, the projectile is bursting too soon and the time must be increased or the corrector must be brought down so that the burst will be 320. Conversely, if the site is less than 320 the powder is taking too long to turn and the time must be decreased or the corrector must be brought up.

If the executive reports *Site 330*, the burst must be brought down 10 mils. Looking in column 22 of the range table, we see that if we change the corrector 5 points (or time .5 seconds) we will displace the burst 12.3 mils, so, in order to displace the burst 10 mils, we must change the corrector $5 \times 10/12$ or 4 points (.4 seconds in time). Our corrector for the day now is 26, or our time correction is +.4 seconds.

Suppose this round was on one end of the dispersion scale. This correction would not be correct and would be apparent as soon as the first problem is fired. Nothing has been lost, and the process can be repeated before the next problem is begun. Of course, this round will be fired near the target so the observer can get some information from it.

To fire the problem, conduct your adjustment with one or more guns (depending on the availability of ammunition), using exactly the same methods you would use for percussion fire except that in the last round of adjustment you bring in your time. This will give you information as to height of burst, if it is an air, and (by not changing the site) your bracket for fire for effect will be established. Now, for reasons to be explained in a moment, start your fire for effect at the lower limit of the bracket using the time corresponding to the elevation and raising the site by the amount necessary to give a 30-yard height of

burst; fire the necessary rounds to accomplish your mission.

Example (Axial Time Bracket)— $c = 11$, $r/R = 1$, Kr for the day 26 (time correction +.4), BAdj, Sh HE, Ch 3, FQ, BDR 250, On No. 1 O 3, Site 305, No. 2 1 Rd.

Commands	Sensings Rn	Remarks
287	+	4-c change is indicated
243	—	Next round will be last in fire for adjustment.
Kr 26, T 12.1, 265		Bring in time. Use T 12.5 when fuze setter is not available.

It must be borne in mind that our lower limit will be either El 265 or 243. Now suppose this round (at 265) is a graze short of the target. We do not know at what point along the trajectory the projectile will burst, but we do know the limits of our bracket on impact. If we were to raise the site for a 30-yard height of burst and move to the center of the bracket, our round might well be over. If, however, we start our fire for effect at the lower limit, the change in site to give the proper height of burst would be 10 mils. The total change in quadrant elevation would be roughly one c , and if we had another impact burst we would not be far from the center of our target area.

If the round at 265 is a graze over the target, we would start our fire for effect at 243 (the lower limit) for the same reason. If it is an air burst, either over or short, the actual number of mils change to give a 30-yard height of burst would be commanded. In this case it would make no difference where we started our fire for effect, but, to do it the same way for all cases, it should be started at the lower limit. Do not forget that a new time must be commanded for each new elevation or range change.

In large- or small-T firing, when you go into fire for effect a shift is made to put the line of fire on the gun-target line. This is the same shift that would be made if fire for effect were to be started at the center of the bracket.

Time is commanded in large-T when a shift is made approximately equal to the width of an open sheaf, as this would be the last round in adjustment for this type of fire. It will also be necessary to use an r/R to determine the proper height of burst.

ERRATUM NOTE

On page 133, February, 1943, JOURNAL, "Top" should read "Bottom."

"CELESTIAL" COMMENTS

By Capt. Joseph M. Battle

Having read with interest Capt. Amory's article in the November JOURNAL, I wish to bring up several matters with regard to celestial navigation using the transit—

(1) Based on the use of transits issued to the FA (105-how.) Regt and the Combat Engr Bn, I do not believe that it is possible to approach the accuracy he states may be gained. I have attempted it on several occasions, and even with a graduate Civil Engineer operating the transit, accuracy of 5 miles with a line of position was exceptional—even when using NAA time and Ageton's tables. With the best new transit we had 4,000 yards was the closest LP ever attained from star sights, in the 115th FA.

*Formerly of the 115th FA and 105th Engr. Bn.; now with the 117th Inf.

(2) All transits used were graduated only to *minutes* of altitude. Under such circumstances it is not improbable, but impossible, to gain 400-yard accuracy.

(3) Lecky, in *Wrinkles*, states that working with seconds of altitude is foolish since atmospheric disturbances will throw one off more than 400 yards.

All this is merely argument against the accuracy of expectable results, and is not to be construed as condemning the purpose of the article. I personally agree that the subject should be conquered by more officers of the Field Artillery than I have found to be the case. And in any operations where celestial navigation is necessary, 3 to 10 miles should be amply accurate, it seems to me. At any rate, the average artilleryman using the average transit may consider himself skilled if he locates himself within three miles.

....AND MAJ. AMORY'S REPLY

I feel that Captain Battle's notes are entirely justified insofar as they relate to the *likelihood* of inaccuracy greater than 400 yards. I merely said it was possible to obtain such accuracy, and I know it is from experience.

The Gurley 20" transit with which the FA is supplied has a one-minute vernier on the vertical scale. This can be read with a magnifying glass to ½ minute. If you have read the nearest half-minute, the largest error inherent in the instrument is ¼ minute or about 400 yards. Therefore I emphatically reject his point (2).

As to point (3), I agree that seconds are silly, and in most of my article I used examples employing minutes and tenths.

With ordinary, decently clear weather I should say that carefully worked sights would give accuracy of one mile. Luck, or many sights averaged, should reduce this to ½ mile or less. Use of a sextant with a bubble, or a sextant of the mariner's type with a glycerine reflecting dish, will give better results than the transit—but prospects of the artillery's receiving such equipment are quite remote.

ADDRESSES MISSING

Mail or magazines sent to the last-known addresses of the following have been returned by the Post Office Department. If you know where any of them can be reached both they and we will be thankful for your passing new addresses along to us.

Lt. Thomas B. Carson
Capt. Fred A. Chapman
Capt. Stoddard B. E. Chase
Lt. Joseph R. Chenette
Lt. John W. Childress
Lt. Robert W. Childress
Lt. Clarence W. Clapsaddle, Jr.
Lt. H. L. G. Clement
Maj. George M. Cole
Lt. James A. Cole, Jr.
Lt. Col. John M. Cone
Lt. Jonas D. Conderman
Capt. Robert S. Conly
Lt. Edward A. Costomiris
Lt. Ralph L. Cowen
Lt. N. F. Cox
Lt. John B. Crandell
Lt. James Crudgington
Lt. Opie C. Cullins
Lt. Col. William H. Cureton
Sgt. Phillip Daherty

Lt. Howard M. Dailey
Lt. David W. Davies
Lt. John V. Davison
Capt. Mario de Maio
Mr. Wilmer B. Dockstadter
Capt. Frank Dorn
Lt. Derald R. Doxsie
Lt. Nelson L. Drummond, Jr.
Lt. Edmond G. Ducommun
Capt. David W. Eddy
Maj. E. M. Edmonson
Sgt. Jack Ellison
Capt. Elwood J. Euart
Mr. Dale Everly
Maj. C. Exum
Lt. Clarence G. Fairchild
Sgt. Edward Ferrell
Maj. P. L. Fisher
Lt. Baron B. Floyd
Lt. Lawrence C. Ford
Lt. Wm. R. Foster

Mr. Orin H. Foutz
Lt. Gustav H. Franke, Jr.
Lt. Keith A. French
Col. Theodore L. Futch
Kenneth E. Garabrant
Capt. Halsey E. Garrison
Maj. Paul A. Gavan
Lt. Roy B. Gee
Lt. Alfred M. Gerelli
Lt. Leonard B. Gerson
Lt. Constantine Gertmenian
Lt. John B. Gillespie, III
Sgt. Clifford J. Goebel
Lt. Edward E. Graham
Capt. R. P. Grant
Maj. J. M. Gregory
Brig. Gen. William R. Gruber
Lt. J. W. Gullatte
Sgt. Patrick J. Hanlon
Sgt. Paul Hartman, Jr.
Lt. G. A. Hardwick

Lt. Ben H. Harmon
Col. John E. Hatch
Lt. O. J. Henderson
Lt. Jerome Hirshowitz
Lt. Charles N. Hodler
Lt. Guy E. Hoole
Capt. John T. Hoyne
Lt. Henry C. Hudgins
Lt. Col. Roy P. Huff
Lt. John Huffaker
Lt. Donald E. Hughes
Lt. Jean A. Jack
Maj. John W. Jefferies
Lt. Frank H. Johnston, Jr.
Lt. John D. Jones, USMC
Lt. Andrew R. Johnson
Capt. Clyde L. Jones
Maj. Edward G. Joseph
Lt. Albert C. Kalweit
Mr. E. Key, III
Lt. Walter Kilimnick

Diary of War Events

(As Reported in the American Press)

JANUARY, 1943

- 1st Russia captures Veliki Luki (central front) and Elista (south of Stalingrad).
U. S. Army planes reported to have bombed Wake Island night of Dec. 23-24.
- 2nd Russian gains continue around Stalingrad and in Caucasus. Axis and Allied bombers active in Tunisia.
Allied troops break Jap resistance on right of Buna position.
- 3rd Heavy U. S. bombers attack the German sub base at St. Nazaire; 7 bombers lost.
Our Navy reports that in the Pacific in October, a U. S. battleship destroyed 20 Jap dive bombers and wrecked 32 other planes, surviving their attack.
- 4th French Tunisian forces, supported by U. S. AT and aerial units, beat off Axis assault near Kairouan.
R.A.F. bombs Jap-occupied villages near Akyab, and railroad centers of Monywa and Meiktila in Central Burma.
- 5th French, using U. S. AT guns, wreck over a dozen German tanks in Kairouan area.
U. S. planes sink 9 Jap cargo ships at Rabaul.
- 6th U. S. and British planes in India make 3 raids on Mandalay.
- 7th Two large Jap transports sunk and 18 planes destroyed during continuing attack on convoy off Lae, New Guinea.
- 8th Zimovivki, railway town 50 miles below Kotelnikov, falls to Russians.
British planes raid Tunis, Gabés, and Sfax; U. S. bombers attack Palermo, Sicily.
- 9th Our bombers raid Bizerte-Ferryville, shoot down 4 enemy aircraft.
China-based U. S. planes bomb Jap-occupied Burma.
- 11th U. S. to invest \$109,000,000,000 in war against Axis during coming fiscal year.
Our bombers continue mass attacks on German communications and supplies in Tunisia.
- 12th In Tunisia, General Giraud's forces drive Germans from mountain pass 23 miles south of Pont du Fahs.
- 13th Flying Fortresses destroy 34 planes during a raid on airfield 10 miles south of Tripoli.
Chungking troops recapture Sinyang (on Peiping-Hankow railway) and Hangchwan (farther east).
- 14th Torpedo boats turn back flotilla of Jap destroyers trying to approach Guadalcanal, hitting at least 2.
- 15th R.A.F. bombs sub base at Lorient in France and the docks at Cherbourg.
- 16th Iraq declares war on Axis.
Our planes in Tunisian area shoot down 7 Junkers transports and fire a large schooner; 17 enemy planes shot down and 14 damaged in air combats.
- U. S. planes from Guadalcanal shoot down 30 Jap planes, lose only 7.
- 17th Berlin heavily bombed by British
- 18th Seventeen-month siege of Leningrad is broken.
Britain's Eighth Army advances to within 100 miles of Tripoli.
- 19th Red Army within 79 miles of Kharkov.
After the capture of Sanananda Point and Sanananda Village in New Guinea, Allied forces mop up the area.
- 20th German fighters and bombers raid London, bomb school and kill about 75 children; 16 raiders shot down.
Chile breaks relations with Axis.
- 21st Axis registers further gains against French, southwest of Pont du Fahs.
- 22nd All Jap resistance ends in Sanananda area of New Guinea.
- 23rd Tripoli falls to Eighth Army; British continue Rommel pursuit.
- 24th Russia continues Caucasus advance.
In Tunisia our troops drive back German force moving south in central area; our planes shoot down 19 planes and damage 16 more.
- 25th U. S. troops raid Maknassy, 33 miles from Gulf of Gabes.
Russians continue to advance on Rostov.
- 26th President Roosevelt and Prime Minister Churchill, with their chiefs of staff and other military and civil officials, announced as having concluded a 10-day conference at Casablanca.
Eighth Army captures Ez Zauia, 30 miles west of Tripoli.
- 27th U. S. bombers make first all-American assault on Germany, with a heavy daylight raid on Wilhelmshaven (naval base) and Emden (port); lose only 3 planes.
U. S. planes shoot down 2 Jap aircraft near enemy-occupied Wake Island.
- 28th Russian forces in the Caucasus continue to advance.
Secretary Stimson announces that our casualties (dead, wounded, missing) in Tunisia totaled 1,258.
War Department states we lost 309 war planes during 1942 against 987 enemy aircraft destroyed and 362 damaged.
- 30th Mosquito bombers hit Berlin in broad daylight just as Reich Marshal Goering was about to begin his "10th Nazi Anniversary" speech, force postponement for an hour. No planes lost.
Navy announces sub-sinking in Pacific of 6 more enemy ships, including a destroyer; 7th ship was damaged.
- 31st Russians wipe out German pocket just west of Stalingrad, capture the commander of the German Army (General Field Marshal von Paulus).
Heavy British bombers drop 2- and 4-ton bombs and thousands of incendiaries on Hamburg; 5 bombers lost.

BOOK REVIEWS

REPORT FROM TOKYO. By Joseph C. Grew. 88 pages. Simon and Schuster. \$1.00.

Mr. Grew (U. S. Ambassador of Japan, 1932-41) tells, in this paper-bound, awkward-sized book, the story of his years in Japan, how he made friends among the Japanese, how war came to the people of that island, why they fight, and how they hope to win. Mr. Grew makes no pretensions of telling a complete story, but he does shed sufficient light on our dealings with Japan to show that the Japs sought war, or at least that they did not seek to avoid it.

Obviously, the writer understands the Japanese mind and he writes clearly about Nipponese tenacity and willingness to sacrifice for the Emperor, their training as

soldiers, sailors, and citizens, and how we must decisively defeat them before we can win.

Although not a complete story, *Report from Tokyo* has enough meat in it to make it a valuable addition to the collection of any who is interested in our Pacific and world relations.

A. V. R.

TORPEDO JUNCTION. By Robert J. Casey. 419 pp.; appendix. The Bobbs-Merrill Co. \$3.50.

Torpedo Junction, bearing the sub-title "With the Pacific Fleet from Pearl Harbor to Midway," is all the name implies. Mr. Casey, a war correspondent, goes to great length to give an exacting story of the Pacific war

NEW RESTRICTIONS

Under Post Office Department Order No. 19687 (Jan. 7, 1943) and War Department Circular No. 19 (Jan. 12, 1943):

a. "No parcel exceeding 5 pounds in weight, or 15 inches in length, or 36 inches in length and girth combined," may be mailed "to APO's overseas for individuals." (Note: This prevents our sending standard Graphical Firing Tables to such addresses.)

b. No parcels may be mailed "to APO's outside the continental United States unless they contain such articles only as are being sent at the specific written request of the addressee, approved by the battalion or similar unit commander of the addressee."

c. This request "will be in the form of a separate communication and will not be included in a letter containing extraneous matter." It must include "(1) a general description of name of the article requested and (2) the grade or rating, complete address, and signature of the individual (addressee) making request."

d. "The request will be presented to the battalion or similar unit commander who will approve it when the circumstances justify. Requests of officers and personnel not assigned to organizations or assigned to separate companies and detachments will be approved by the next higher headquarters or by the theater headquarters."

e. "The required certification of an officer will be indorsed on the request through use of the word 'Approved,' followed by the signature and grade of the certifying officer, together with indication that he is commanding a battalion or higher organization. In no circumstances will requests be approved by other than battalion or regimental commanders or other officers of field grade having supervisory authority over the individual making the request."

f. These restrictions do NOT apply to shipments to military agencies (including, of course, units).

DISCOUNT OFFER

For cash with order, the U. S. Field Artillery Association can obtain for its members 'most any books (texts, biographies, histories, fiction) at the following discounts:

On orders amounting to at least \$2.50 10%

On orders amounting to \$10.00 or more 15%

No discount possible on Government publications, however, nor on *Journal* subscriptions or Association memberships.

We pay postage.

and the foundations laid for the eventual battle of the Solomons.

Vivid descriptions are perhaps the most outstanding features of the book, particularly those of the conditions which Mr. Casey found at Pearl Harbor upon his arrival. A great deal of pride remains with you after learning about the splendid way our Navy availed itself of the equipment left at their disposal following the original Japanese attack.

It is well the book was not released at an earlier date due to the fact that now we feel the tide of battle is in our favor. Had one read it a few months earlier, there might have been cause to wonder just how we did stand in naval strength.

In my opinion, a superb story could have been written in half the space consumed by the author. One is carried to great heights in spots, as Mr. Casey certainly has the knack of making you feel as if you had been on the scene, but at other times one doesn't know whether to put the book down until later or worry through until something else happens. But in spite of its seeming length, this volume bears recommendation.

M. K.

BASIS FOR PEACE IN THE FAR EAST. By Nathaniel Peffer. Harper & Bros., 1942. 263 pp. \$2.50.

This is one of the best of a number of books that have appeared recently on the subject of what must be done after the war is won to prevent a recurrence of bloodletting. Mr. Peffer writes of the Far East, and he believes that there is particular reason to be optimistic about the chances of immunizing that region because it still lacks the age-old, cancerous animosities of Europe's more fully developed civilization.

Four things must be done, in Mr. Peffer's opinion, if the basis for peace in the Far East is to be established. 1) Japan must be crushed and completely driven from the continent of Asia and its people made fully to feel the horrors of war, but the peace must be just and give them the chance to live and prosper. 2) China must be liberated in law and in fact and helped to develop into the peaceful bulwark of Asia and the great industrial nation it potentially is. 3) The process of introducing self-government into the colonies of southeastern Asia must be started immediately. 4) The western world must forever renounce its political and economic imperialism in the Far East.

The alternatives to this program are grim, and one of the grimmest is that school of thought which advocates our blithe assumption of the white man's burden from the shoulders of the British. Mr. Peffer is a thorough scholar and his picture of past relations between Orient and Occident and between the nations of the Orient forms a convincing background for his theme.

L. B. C.



"A book which will be of great assistance to military reconnaissance officers."—WALDEMAR KAEMPFERT, *New York Times*.

**AERIAL
PHOTOGRAPHS
THEIR USE AND
INTERPRETATION
A. J. EARDLEY**

An authoritative presentation of the technique necessary in the use and interpretation of aerial photographs. "Lucidly written, and illustrated with magnificent reproductions of aerial photos. . . . The first half will be of great value to artillerymen, as it is devoted to the use and reading of aerial photographs—including the methods of combining them into mosaics. . . . The second portion is primarily geologic, with definite although secondary application to our operations." (*Field Artillery Journal*, Jan. 1943.)

Price \$2.75

(See Discount Offer on Page 232)



Order Your Copy Direct From

**THE FIELD ARTILLERY JOURNAL
1218 CONNECTICUT AVE. WASHINGTON, D. C.**

*The saga of Manila, Bataan, and
Corregidor has nowhere been
better told than in*

**I SAW THE FALL OF THE
PHILIPPINES**

By

COL. CARLOS P. ROMULO,
*Filipino editor, winner of the
Pulitzer Prize, and personal
aide to General MacArthur*

\$3.00

(see discount offer on page 232)

Order through

**The
U. S. FIELD ARTILLERY ASSOCIATION
1218 CONN. AVE., WASHINGTON, D. C.**

Current PUBLICATIONS of the Adjutant General's School

THE ARMY CLERK (Nov. 1942) 75c

A simple, thorough, comprehensive manual. Large appendix of model forms, with detailed annotations. 286 pp.

INSTRUCTOR'S GUIDE. Supplement to THE ARMY CLERK (Jan. 1943) \$1.00

Useful for the instructor in a service or unit school, also to the individual who desires to train himself in clerical procedures. Contains 400 pertinent questions and answers.

TRAVEL (Complete through Aug. 1, 1942) 60c

Convenient loose-leaf reference pamphlet containing restatement of AR's, WD circulars, etc., pertaining to Travel and Transportation, in clear, concise language. Subjects arranged by functions in logical sequence. Indexed by topics; cross-indexed to official regulations, circulars, etc.

ORDERS (Revised to Nov. 19, 1942—4th Ed.) 50c

How to write General and Special Orders. Bulletins and Circulars.

QUARTERLY DIGEST OF WAR DEPARTMENT DIRECTIVES:

Vol. I, No. 1, covers Dec. 1, 1941 through
March 31, 1942 50c

Vol. I, No. 2, covers April 1, 1942
through June 30, 1942 50c

Vol. I, No. 3, covers July 1, 1942 through
Sept. 30, 1942 50c

A complete record of all WD letter directives, Bulletins, Circulars, new and changed AR's.

BOARDS OF OFFICERS (Dec. 1942) 20c

ARMY PERSONNEL SYSTEM (Dec. 1942) 10c

GENERAL AND SPECIAL STAFFS (Dec. 1942) 10c

LEADERSHIP (Dec. 1942) 10c

ADMINISTRATION OF THE ARMY (Dec. 1942) 10c

SOP FOR A REGIMENTAL ADJUTANT'S OFFICE (Dec. 1942) 10c

MILITARY CORRESPONDENCE, A Check List (Dec. 1942) 10c

(See discount offer on page 232)

The

U. S. FIELD ARTILLERY ASSOCIATION

1218 CONNECTICUT AVE., WASHINGTON, D. C.

STRATEGIC MATERIALS IN HEMISPHERE DEFENSE. By M. S. Hessel, Walter Murphy, and F. A. Hessel, with a section on petroleum by Harold J. Wasson. 235 pages; bibliography. Hastings House, 1942. \$2.50.

Hastings House did a real service to the layman when it brought the authors of this book together, for 'mid all the clamor for strategic materials to date there has been too great confusion for the non-technical mind to ferret out the essential and basic truths concerning our raw materials situation.

The writers have compiled an important listing of hard facts and scientific truths in some 200 pages, almost every one of which contains something that has previously escaped your attention.

This book covers the situation regarding rubber and tin, steel, tungsten, aluminum, mercury, quinine, opium, petroleum, chemicals, fats and oils and gums, and other items of importance toward winning the war.

Throughout, where there is mention of an ore or a metal, figures are given showing our past sources of supply and what we are doing when that source becomes inadequate, exhausted, or falls into enemy hands.

Strategic Materials is excellent for informational reading and reference. All libraries will find it extremely useful and helpful.

A. V. R.

DUEL FOR EUROPE. By John Scott. 298 pages; appendix; maps. Houghton Mifflin Company, 1942. \$3.50.

Duel for Europe is another book on the main subject of the time, World War II.

Despite the fact that the subject has been worked from a great many angles, the author achieves an authentic element of novelty in his approach. Through the title of the book he suggests the proposition that the war in Europe is essentially a duel. The somewhat personal aspect of this proposition carries over into the text, which serves as an arena for the preliminaries of a desperate conflict between Hitler and Stalin. These powerful opposing figures, each backed by immense national resources, dominate the European scene, heads of other nations serving only to augment their dominance, while the startling implications of the struggle are neatly summarized by the author.

Hitler's characteristic boldness, Stalin's stealthy maneuvers for time, and countless subtleties of the conflict presented analytically by an author who is a seasoned correspondent serve to personalize the struggle and sharpen its outlines of stark reality.

The author proceeds from his main text to various speculations as to the outcome of the duel. Despite their variation they lead to one conclusion (that America may have a postwar opportunity to organize a European

confederation) and the solemn warning that "If we fumble this opportunity, we may never have another."

F. E. J.

COMING BATTLE OF GERMANY. By William B. Ziff. 274 pages, bibliography. *Duel, Sloan & Pearce, 1942.* \$2.50.

This book, now among the "best seller" group, can be disposed of quickly. Roughly it is divided into two parts: the picture of the carnage that would result from operations over land and the picture of the comparative ease and uncarnage of operations through the air against Germany.

The blackness of the picture is complete until the author gets to his message and then the hue is rosy.

It boils down once again to land versus air power. Obviously Mr. Ziff belongs to the de Seversky school of thought in this controversy. He would sacrifice routine army and navy ordnance to get more planes; in fact, he would like to see nothing but planes and plane equipment coming off the lines. He advocates the use of planes for freight and shows how such would save gas, rubber, and manpower. There is some merit there and undoubtedly there is merit in many of his suggestions, but they need much tempering that the author has not given them. The adage about all eggs in one basket still is worth remembering.

The author, however, knows how to present his subject in a very interesting manner and will hold the reader's attention whether he agrees or disagrees heartily. A book like this has some value especially to those who disagree in that it will point up and crystalize ideas which the reader may have concerning the use of the various branches of the armed services.

The fact that he disagrees will make him stop to think *why* he disagrees, and how he would take care of the situation if he were doing it.

J. M. C.

THE SELF-BETRAYED. By Curt Riess. 386 pp.; chronology; bibliography; index. G. P. Putnam's Sons. \$3.00

One sometimes wonders if Hitler didn't take power by public acclaim, so many people seem to have been responsible for his rise. The industrialists are not mentioned in Riess's book, but men of the German General Staff take dubious credit. The only factor that seems to remain constant is that regardless of who put Hitler in, Hitler did him dirt within a short time.

The Self-Betrayed reads like a novel—the author frequently uses the style of his mystery stories to good advantage. It flows so rapidly that only after one has shut the book does he wonder how much salt should be added to get the true picture. Then the salt is forgotten, because the book tells what one would like to believe.

The German generals, until Hitler was firmly in power, were men from the Ostelbien, the provinces east



A MATCHING PAIR

FOR A ROUNDED PICTURE OF
GERMAN PERSONALITIES:



THE SELF-BETRAYED

By CURT RIESS

(\$3.00)

tells the tale of the German officer caste, what it was, why it was, what made it tick, and how it is running down.



BLOOD and BANQUETS

By BELLA FROMM

(\$3.50)

gives the picture from the inside, as seen by a brilliant woman, friend of diplomats from all nations, writer for the once-powerful Ullstein chain of papers.

BY READING BOTH

of these complementary books you will learn how insidious forces gain their strength, as well as broaden your understanding of Germany's dominant figures.

*See discount offer on page 232
and order through*

The
U. S. FIELD ARTILLERY ASSOCIATION
1218 CONNECTICUT AVE., WASHINGTON, D. C.



NATION-WIDE BEST SELLERS

among non-fiction as reported by the
New York Times as we go to press:

SEE HERE, PRIVATE HARGROVE By MARION HARGROVE	\$2.00
SUEZ TO SINGAPORE By CECIL BROWN	\$3.00
QUEEN OF THE FLAT-TOPS By STANLEY JOHNSTON	\$3.00
THEY WERE EXPENDABLE By W. L. WHITE	\$2.00
VAN LOON'S LIVES By HENDRIK WILHELM VAN LOON	\$3.95
LEE'S LIEUTENANTS By DOUGLAS SOUTHALL FREEMAN	\$5.00
REPORT FROM TOKYO By JOSEPH C. GREW	\$1.00
TORPEDO JUNCTION By ROBERT J. CASEY	\$3.50
GUADALCANAL DIARY By RICHARD TREGASKIS	\$2.50
EXCHANGE SHIP By MAX HILL	\$2.50



See discount offer on page 232
and order through

The
U. S. FIELD ARTILLERY ASSOCIATION
1218 CONNECTICUT AVE., WASHINGTON, D. C.

of the Elbe: Mecklenburg, Silesia, Pomerania, and East Prussia. They were part of a dynasty whose training began at the age of seven. From then on their lives were governed by a pattern that had no elasticity; they usually looked alike, thought alike, conducted themselves alike. They were not well read outside their profession. Such kindred arts of war as economics and rehabilitation held no interest for them. Their entire existence was absorbed by maps, strategy, and maneuver. The German generals wanted to be important, but they did not want to be known: theirs was a behind-the-scenes role, by a cardinal rule of the caste.

In time the generals decided Hitler was their man and helped maneuver him into power. Then their troubles began, as Hitler had his own ideas and wasn't easily controlled. He was their antithesis so they despised him, but with strikingly few exceptions he bested them at every turn. The "how" is Riess's theme.

The day of the generals is over no matter which side wins ultimately. The generals know it but can do nothing about it: Hitler is too far on top and too all-cognizant of things going on about him.

The Self-Betrayed reads quickly and is important background for all the recent German campaigns. The portraits of the individuals referred to are beautifully clear, adding up to a picture that gives one a mural, as it were, to which to add as the German army moves across the scene.

J. M. C.

NAZIS IN THE WOODPILE. By Egon Glesinger. 244 pages; appendix; endpaper map. The Bobbs-Merrill Company, 1942. \$2.00.

The Nazis have taken to the woods, literally, in their prosecution of the war.

In *Nazis in the Woodpile* Dr. Glesinger gives an astonishing account of Hitler's furtive pre-war plans to enlist the European forests on the side of the Reich. He traces the development in sharp clear outlines through its international complexities to its large scale wartime operation, and thereby sheds light on the mystery of apparently inexhaustible German resources.

Through research extending back over pre-war years the Nazis have discovered in wood a magic raw material source of sugar, motor fuel and lubricants, cattle fodder, textiles, structural materials, and chemical by-products. Wood is an essential factor of the "Ersatz Industries," and as the author says, "its manifold uses tend to prove the Nazi belief that one can make almost everything from anything."

The schemes of the Nazi leaders to acquire a controlling grip on the world's wood and to turn it to account in the larger schemes to subject the world stand out with cold convincing reality on the pages of this authoritative book. In the prefatory words of Douglas Miller, the story of *Nazis in the Woodpile* "is as full of thrills and intrigue as an old-time international spy tale."

F. E. J.

FOR PERMANENT VICTORY. By Melvin M. Johnson, Jr., and Charles T. Haven. 246 pages. Wm. Morrow & Co., Inc. \$2.50.

We shall win this war, but will we win the peace that follows? That is the question that is in the minds of all thinking Americans. Will we, as a nation, commit again the awful blunders that followed the Treaty of Versailles in November, 1918? Will we slip quietly back to our mere money-making, our apathy, our indifference to world affairs, our complacency, lulled to sleep by pacifists and isolationists, or will we stay wide awake and for once put into practice the very old and very wise advice: "In time of peace, prepare for war"?

The authors of *For Permanent Victory* carry you along the road of armament development from the old flint lock rifle to the modern machine gun and tank; they carry you through the wars we have fought and point out how in every era of peace we have permitted our army and navy to be neglected, in fact, often treated with hostility and contempt. Apparently neither Congress nor the people have considered it necessary to keep abreast of the development in arms and munitions made by the other nations: our weapons were allowed to rust, our army and navy reduced to a ridiculous size. Our ships and our forts were barely kept in serviceable condition,

and even when the distant thunder of war was heard we turned a deaf ear and waited until the storm broke around us in all its fury.

America is the birthplace of the airplane and the submarine, as well as of the machine gun, and yet we have permitted these things—the weapons of protection—to be developed by and for the use of the battlefields of other nations. We have turned our backs on the greatest guarantee of peace in the world—Preparedness. We have failed to look ahead and today we are paying the price of our lack of vigilance. No longer can we say with conviction—"It can't happen here."

Then these two thoughtful authors point out the road running into the future that we, as a nation, should follow in maintaining peace, and each milestone on the road is marked "PREPARE."

C. T. W.

POSTMORTEM ON MALAYA. By Virginia Thompson. 323 pages; bibliography; index. The Macmillan Company, 1943. \$3.00.

This book is not a "quickie" which has been rushed out since the fall of Singapore to take advantage of the current interest in the southwest Pacific. It does analyze critically the why and wherefore of the British failure

PRIZE PAIR FOR PERSONAL PROTECTION

By the experienced
MAJOR W. E. FAIRBAIRN

For Yourself:

Get Tough!
The top-notch book that raises "dirty" fighting to a science.
\$1



For Your Family at Home:

Hands Off!
The manual of defense measures designed for a woman's strength and stature.
75c

See discount offer on page 232 and order through

UNITED STATES FIELD ARTILLERY ASSOCIATION
1218 CONNECTICUT AVENUE WASHINGTON, D. C.

Recommended Reading

for Prospective Officer Candidates



So You're Going to O.C.S.	\$1.00
* FAB 20: Military Fundamentals	75c
* FAB 30: Field Artillery Fundamentals	50c
* FAB 160: Elementary Gunnery	30c
* FAB 200: The Battery Detail	60c
FM 6-40: Firing	35c
Field Artillery Guide	\$2.00
The Officers' Guide	\$2.50
Battery Duties: A Practical List	25c
How to Produce an Efficient Firing Battery	20c
Company Administration and Personnel Records	In Cloth \$2.00
	In Paper \$1.50
Soldiers' Handbook for Field Artillery	50c
Drill and Ceremonies for Field Artillery	\$1.00
The Field Artillery Journal (including membership in the Association)	Per year \$3.00

*For sale only to persons coming within the meaning of the classification "Restricted."

*See discount offer on page 232 and
order through*

**The
U. S. FIELD ARTILLERY ASSOCIATION
1218 Connecticut Ave., Washington, D. C.**

in Malaya, but most of the material is too sound to have been written hurriedly. It has obviously been gathered and sifted over the years Miss Thompson was getting facts for her other books on southeastern Asia.

The peoples, the politics, the economics, the military history, and British colonial policies in Malaya have been carefully examined and very fairly analyzed. The overall picture of the pre-invasion Malaya that one gathers from the book is this: Countries with colonial empires can no longer isolate their colonies and keep them apart from the general national and international policies of the mother country. They cannot apply local remedies to local ills and ignore the basic mistakes in policy that gave rise to the ills. Nowhere was the interdependence of colonial and national policy less understood than in the Far East, and this misunderstanding led to the fall of Bataan, Corregidor, Singapore, Java, Borneo, and other southwestern Pacific possessions.

The collapse of Malaya is an excellent example of imperial failure. It draws a moral that Great Britain and America can little afford to neglect when they come to consider the peace.

R. G. M.

HANDBOOK OF SPOKEN EGYPTIAN ARABIC (Fourth Edition). By J. S. Willmore. 113 pages. Oxford University Press, 1943. \$1.25.

A short grammar combined with an English-Arabic vocabulary of current words and phrases, printed in shirt-pocket size—in short, a mighty handy little book for anyone going to, through, or via Cairo. It should be accurate and authentic, too, since it was prepared by a one-time judge of the native court of appeals in that city.

PEACE AND WAR: United States Foreign Policy, 1931-1941. Department of State, Publication 1853. 144 pages. Government Printing Office, 1943. 25c.

Throughout this "White Paper" run two consistent but opposing themes, like the concurrent but contrary flow of an upstream eddy in a river. One is our Government's consistent policy in seeking world-wide establishment of principles of international conduct on the basis of which all nations could attain security, confidence, and progress. The other is other governments' lip-service to generalities, with consistent weaseling when definite proposals were discussed.

The book itself is an introduction to a collection of documents (now being prepared for publication) concerning our foreign relations during the decade mentioned. It summarizes the more important conversations, discussions, proposals, counter-proposals, addresses, and events, to present a damning picture of Axis actions. Although it was viciously attacked by the Axis nations, it has not received at home the attention it deserves. More of us should know its details.

BLOOD AND BANQUETS. By Bella Fromm. 298 pages; index. Harper & Bros. \$3.50.

With an introduction by Frederick T. Birchall, chief European correspondent of *The New York Times* from 1932 to 1939, and dust-jacket comments by George S. Messersmith and Mrs. Martha Dodd, *Blood and Banquets* and its author have an unimpeachable and impeccable background. Just as well, for this intimate picture of the growth of Nazi tyranny and Germany's strangulation might otherwise be somewhat suspect.

You see, it is the diary of a brilliant woman, close friend of the foreign diplomats in Berlin, columnist (from force of circumstances) for the powerful publishing firm of Ullstein, and finally wine merchant to them when Jewish restrictions forced her from the newspaper field. All doors were open to her—first because of her family connections, later because of her own personality and abilities. She knew everybody who was "anybody" in the aristocracy and in circles of government, diplomacy, banking, and business. And at their homes and elsewhere she of course kept in close touch with events of the day. These she jotted into a loose-leaf diary which was exported piecemeal by devious routes, and which forms the backbone of this excellent book which magnificently rounds out the internal picture of Germany. The result is so impelling that the reader welcomes the evidence that the book is authentic, that its author is to be relied upon.

Unfortunately, numerous typographical errors mar the book—possibly the publisher thought they would be overlooked in view of the recital itself. I will admit this shortcoming is more than balanced by the thoughtful device of including thumbnail sketches in the index, making it really a form of *dramatis personae*.

KNOW YOUR NAVY, NOW! By Lt. Francis A. Ford, USN (Ret.). 84 pages. Cornell Maritime Press, 1943. \$1.00.

This little paper-bound booklet gives the reader a vast store of naval information by the question-and-answer method. It covers the navy in general, officers and enlisted men, the Naval Academy, Marine Corps, ships, and navy expressions. Cover charts of shoulder and sleeve insignia, although incomplete, help the tyro get a basic understanding.

HOW TO ABANDON SHIP. By Richards and Danigan. Cornell Maritime Press. \$1.00.

This compact little book details the necessity for extensive preparation of our seamen in the practice of abandoning ship. The authors drive home some good points by giving the differences in casualty rates in an untrained and a trained crew.

Although not an extensive study, it is sufficiently elaborate to give many sound pointers for the training of all our men who may work or fight on ship.

A. V. R.

REPRINTS OF —ILLUSTRATIONS—

from the JOURNAL can be furnished for the indicated prices, subject to the following:

Cuts not used within 12 months are not available, destroyed under WPB rulings.

A few illustrations are subject to copyright restrictions which prevent any sale of reprints.

The same prices apply to half-tones as to line cuts.

For larger quantities, write for quotations.

Size of cut	Number of copies (of a single cut)				
	20	50	100	200	500
Cover cuts	\$2.50	\$3.00	\$4.00	\$5.50	\$ 9.00
Page-size	3.00	3.50	5.00	7.50	11.50
½-page to page	2.50	3.00	4.00	5.50	9.00
Less than ½-page	2.00	2.50	3.50	5.00	8.50

See discount offer on page 232

The
U. S. FIELD ARTILLERY ASSOCIATION
1218 Connecticut Ave. Washington, D. C.

THE BATTERY COMMANDER

was originally written in Germany for company commanders of the new army. One of the finest pieces of "grass roots" military philosophy, it was widely acclaimed when published in the JOURNAL. Due to demand, it is now available in

REPRINTS — 25c

(See discount offer on page 232)

The
U. S. FIELD ARTILLERY ASSOCIATION
1218 Connecticut Ave. Washington, D. C.

PUBLICATIONS of the FIELD ARTILLERY SCHOOL

★

FAB 20, Military Fundamentals, 1942 ed. A basic manual of about 485 pp. and 120 illustrations 75c

FAB 30, Field Artillery Fundamentals, 1942 ed. Among other things it covers materiel and ammunition in considerable detail; about 350 pp. and 163 illustrations 50c

FAB 120, Automotive Instruction, 1941 ed. Complete course in motor transportation, for field artillery purposes; about 500 pp. and 220 illustrations 75c

FAB 140, Mounted Instruction, 1942 ed. Complete manual for horse-drawn units, about 375 pp. and 110 illustrations 55c

FAB 160, Elementary Gunnery, 1941 ed. Slightly more elementary treatment than in FAB 161; about 80 pp. and 38 illustrations 30c

NOTE: FAB161 is exhausted, will not be reprinted. It is replaced by *FM6-40, Firing* (35c, NOT subject to discount).

FAB 200, The Battery Detail, 1942 ed. Up-to-date dope for the battery detail; about 366 pp. and 185 illustrations 60c

FAB 223. Elementary Tactics, 1942 ed. 7 Excellent parts covering organization; combat orders; associated arms FA tactics; signal communication, observation, positions; logistics; and applicatory tactical exercises; about 360 pp. and 45 illustrations 55c

★ Sale of the above books is limited to military personnel, and to other persons coming within the meaning of the classification "Restricted."

(See discount offer on page 232)

★

ORDER THROUGH

**THE
U. S. FIELD ARTILLERY ASSOCIATION
1218 Connecticut Ave., Washington, D. C.**

I SAW THE FALL OF THE PHILIPPINES. By Col. Carlos P. Romulo. 323 pp.; photographs. Doubleday, Doran & Co., Inc. \$3.00.

Two months before Pearl Harbor, the editor and publisher of the DMHM chain of Philippine newspapers made a personal survey (at the request of his personal friend, Gen. MacArthur) of conditions in Hong Kong, Chungking, Burma, Thailand, French Indo-China, British Malaya, and Java. His mission was to learn the attitude of the subject peoples to the sovereign ABCD powers. A brief account of his findings aptly introduces this book; his full dispatches on the Far Eastern situation won him the Pulitzer Prize.

Just after war came to Manila he was appointed a major in the Philippine Army Reserve, inducted into our service, and put at the immediate side of his close friend the USAFFE commander, in charge of press and radio. Until Quezon and MacArthur were removed from Corregidor he was always near these old friends, completely in their confidence. He made frequent visits into the front lines of Bataan; was present when Base Hospital No.1 was deliberately bombed by the Japs; and was flown off Bataan in the crippled "Old Duck" in the early hours of April 9th—day of the surrender of the peninsula.

Col. Romulo's stark tale is gripping. There have been magnificent dispatches and other accounts of some of the events he relates, but none surpass *I Saw the Fall of the Philippines*—which fairly makes you see the scenes and smell the stench. You should read it, by all means.

MODERN JUDO. By Charles Yerkow. 295 pp.; illustrated. The Military Service Publishing Co. \$2.00.

Not tricks, but the *fundamentals* of close combat are the theme of this book. These basic principles are developed in logical sequence, so that by carefully working through the book with an equally enthusiastic partner, you learn them even without the personal help of a skilled instructor. 391 photos clarify the textual matter, so that a rounded explanation is given of every detail. It's a swell book, and deserves a lot of attention and use.

ILLUSTRATION CREDITS

(If not listed, unsigned illustrations are from authors, by the *Journal* staff, or from special sources. References are to pages.)

U. S. Army Signal Corps: Cover, 208.

Sovfoto: 172, 188, 194.

Illustrated London News: 173.

British Information Services: 174, 175.

Lt. Col. F. B. Porter: 179.

U. S. Army: 195.

British Press Service: 199 (top).

Capt. David Brooks: 199 (bottom).

U. S. Navy: 212, 213, 214.

New York Times: 218, 219.

MAPS

speed an understanding of what's happening. Rand McNally's "pocket maps" fold into covers $4\frac{1}{4} \times 9\frac{1}{4}$ inches. Except for Australia and Europe, those listed are $21" \times 28"$ and cost 50c each; Australia is $42" \times 28"$, and sells for 75c; Europe is without covers, and is 10c.

	Scale, Miles per Inch
Africa	260
Asia	340
Australia	85
Europe (without covers)	140
North America	230
South America	195
Alaska	64
Canada	132
France	33
Mediterranean Lands	124
New Zealand and Fiji Islands	55
Oceania, Australia, and New Zealand	463*
Southern Asia and the Near East	218
War Map of the Pacific.....	Mercator Projection
Western Pacific.....	280

*Oceania, 463; Australia, 240; New Zealand, 77.



GOODE'S SCHOOL ATLAS

is being widely used in dayrooms and by officers. At

\$5.50

it is just about the best you can get; all main maps combine physical with political data; scores of smaller maps give rainfall, economic resources, and quantities of other invaluable data.

*For all the above, see discount offer
on page 232. Order through*

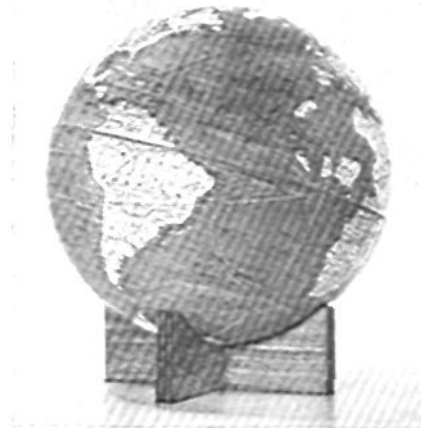
**THE
U. S. FIELD ARTILLERY ASSOCIATION
1218 Connecticut Ave., Washington, D. C.**

New POLAR VIEW GLOBES!



The AIR CHIEF, No. 1225

A full-colored 12" globe ball rests in a handsome, solid American walnut base. The ball may be turned in any direction, or removed from the base for closer examination. A printed dial, mounted on the top of the base, makes it easy to trace and measure the great circle distance between any two points on the earth's surface and also to read differences in time. Price each: \$10.00.



The CLIPPER, No. 1224

Beautifully colored 12" ball rests in a simple American walnut base. The ball may be turned in any direction and is completely visible, or may be held in the hands for close examination. Price each: \$6.00.

See discount offer on page 232 and order through

**THE
U. S. FIELD ARTILLERY ASSOCIATION
1218 Connecticut Avenue Washington, D. C.**