The FIELD ARTILLERY Journal

APRIL, 1944

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

BRITAIN'S 4.5″ GUN has proved to be one of this war's most dependable weapons. It was in its glory in Africa's open country, but even in the mountains of Sicily and Italy it has proved highly useful for accurate shooting at greater ranges than howitzers can fire. It does not, of course, have the range or punch of our 155-mm gun, M-1; on the other hand its lighter weight gives it greater mobility.

The one shown on this month's cover is on the move in Italy. Smoke in the background is from a forest fire started by German mortar shells.

THIS MONTH Col. Lanza's terrain studies swing to the Pacific area, with an analysis of the Andaman and Nicobar Islands. In May he will describe Sumatra in detail, and thereafter will cover the scenes of other major operations that inevitably will take place.

"In the mill" for next month is another of Lt. Col. Jarrett's superb descriptions of enemy weapons. This time he will thoroughly cover the German 15-cm field howitzer. In prospect are articles on other major weapons of our enemies.

THE WIDE USE being made of the contents of your JOURNAL is gratifying to your Association's officers and to the JOURNAL staff. Units incorporate others' developments into their own SOP. The British War Office has reproduced JOURNAL material. Col. Lanza's writings are used as instructional material at the U.S.M.A. A complete list would be endless.

All credit and thanks go to those officers and enlisted men who have given so much of their time to preparing articles for the JOURNAL. They play a large part in the success of those who later enter combat, and thus definitely help shorten the war and so save lives.

The Field Artillery Journal

"Today's Field Artillery Journal is tomorrow's Training Regulations."

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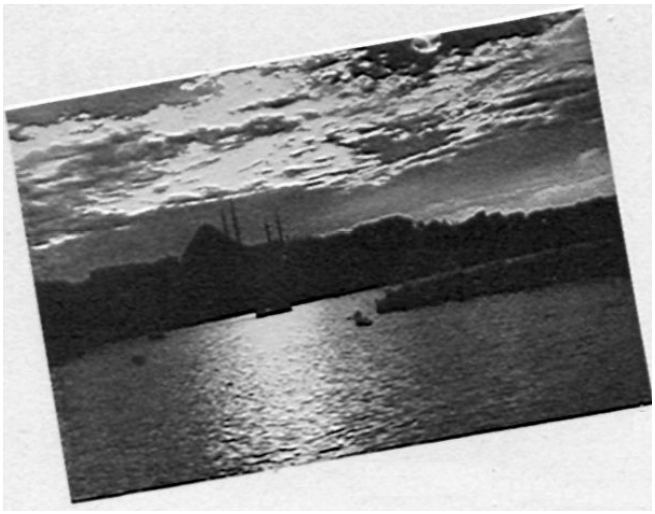


Silhouette of the city

Note Turkish army officer and soldiers

On the Bosphorus; in foreground are Turkish soldier and sailor

The harbor

ISTANBUL

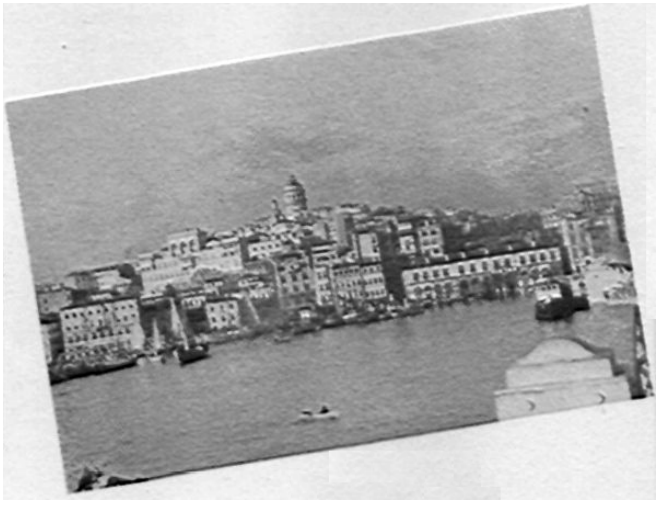
By Col. Lowell M. Riley, FA

With world interest directed increasingly toward Turkey, these photos taken in 1937 are of distinct current interest.

Those showing the Turkish officer, soldiers, and sailor are especially so, for though the photographing was incidental, the subjects shown are typical of the Turkish fighting man. He is "of the earth, earthy," as the fighting man should be. He is accustomed to little, for his country is relatively poor. He is tough, as evidenced by his record at Gallipoli—to mention only his best known defensive action in recent times. Physically he is stalwart and strong. His philosophy, like his country, is more eastern than western, and he is inclined to be suspicious of western ways (including the western pastime of photography).

The background of the photographs was not incidental. The camera was directed to record some of the scenic beauty of the old capital of the Ottoman empire. The results give a good idea of the magic skyline formed by mosques and minarets and the palaces which terrace the Bosphorus. They indicate the beauty of the moon's reflection on the Golden Horn, like a Turkish carpet of gold, inviting one to approach and view more closely the glories and mysteries of this ancient city.

A closer scrutiny is far from disappointing. Stately Santa Sophia mosque with its treasures of art, some of which have been uncovered by our own countrymen in recent years, is one of the most worth while. The Palace of the Sultans, the Bazaar with its trinkets and treasures, the Un-Ka-Pan Bridge over the Golden Horn with its never-ending procession of conglomerate humanity—these are but a few of the thousand and one delights of Istanbul.



The Golden Horn

The Andaman and Nicobar Islands

By Col. Conrad H. Lanza

In the Bay of Bengal the Andaman and Nicobar Islands form a chain nearly parallel to the Malay coast, around 300 miles west of it. The north end of North Andaman Island is 190 miles from the delta of the Irrawaddy River, the nearest part of Burma. The south end of Great Nicobar Island is 130 miles from the mainland of Sumatra.

These islands lie on the are of a circle which from Burma to Sumatra measures 810 miles. The chord of this are is nearly a meridian line, 770 miles long. Disregarding a few detached islands, the width of the chain varies between 20 and 40 miles. Except for some coral islands among the Nicobars, the group is hilly and mostly of volcanic origin. Except for the detached Barren Island, volcanic activity has ceased.

The Andamans on the north are separated from the Nicobars on the south by the Ten Degree Passage, 80 miles wide and so named because the parellel of 10° North Latitude is slightly north of the center of the Passage. In normal times this is the main sea route from Ceylon and south India to Singapore and the Far East. Navigation through the islands to the north and south of the Passage is difficult and dangerous. Of the 810 miles along the are from Burma to Sumatra, the islands form a barrier of 370 miles.

These islands form a natural line of defense to an approach by sea from the west toward the Malay coast. They are in a favorable position to aid in the defense of Burma to the north or Sumatra to the south. Thus they are of great value to the Japanese, who have occupied them since the spring of 1942. Allied planes have since flown over the islands at intervals, but very little is known as to what the enemy has done there. He has had nearly two years to consolidate his possession. It must be presumed that he has not been idle during this period, but has employed the time available to him to arrange an appropriate defense system.

THE ANDAMANS

The axis of these islands measured along the are is 225 miles. There are six principal islands, which from north to south are

1. North Andaman (51 miles long), separated by a 2-mile strait from

2, 3, and 4, the three islands of Middle Andaman, South Andaman, and Baratang. Baratang is to the east of and overlaps both Middle Andaman and South Andaman. These islands are separated from each other by narrow, tortuous straits, navigable only for small craft. Together this group of three is collectively known as Great Andaman, and is 95 miles long.

5. Rutland Island (11 miles long) is at the south end of Great Andaman, across a strait about 3 miles wide. Rutland overlaps Great Andaman slightly.

6. Little Andaman (30 miles long) is 36 miles south from Rutland.

Besides the main islands, there are 198 other small islands and islets.

The sea passage around the south end of Great Andaman north of Rutland, and that between Rutland and Little Andaman, are obstructed to the west by shoal water and reefs 18 miles out. These are the Dalrymple and Western Banks at the ends of which are the two small islands of North Sentinel and South Sentinel, 35 miles apart. Together these form a dangerous obstacle to navigation.

Opposite, on the east side of the Andamans but 40 miles out, is the Invisible Bank, part of which is just awash and which forms another dangerous obstacle to an approach from this direction.

Coral reefs are common all along the Andamans.

The width of the main islands does not exceed 25 miles and is generally less. Little Andaman has low hills at the north end but is otherwise flat. The other islands consist of numerous hills separated by deep, narrow valleys. All islands are covered with dense tropical jungle extending to the edge of the sea. The hills are steepest on the east side; the principal ones (in order from north to south) are

North Andaman—Saddle Peak (2,400 feet)
Great Andaman—Mt. Diavolo (1,678 feet); Koiob (1,505 feet); Mt. Harriet, just north of Port Blair (1,296 feet); and Cholunga (1,063 feet)
Rutland—Ford's Peak (1,422 feet)

Land communications are poor or non-existent. The terrain favors the defense, for the jungle affords complete camouflage to military works which can not be discovered until the attacker is almost on them. Steep slopes and jungle interfere with the use of armored vehicles.

The Andamans have numerous excellent harbors, most of which are quite undeveloped. The best are on the east coast. In order from the north

Port Cornwallis, on North Andaman, is very large.

Stewart Sound separates North Andaman from Great Andaman and is also large.

On Great Andaman are Elphinstone Harbor, Colebrooke Passage, Port Meadows, and Port Blair. The latter (located at the southeast corner) is the principal port of the islands, with a large and excellent harbor.

On the west side, all on Great Andaman, are

Interview Passage, at the northwest end.
Port Anson (or Kwantung Harbor), very large.
Port Campbell, large.
Port Mouat, at the southwest end.

There are numerous minor harbors. A large part of the shore around the harbors is bordered by mangrove swamps which are quite unsuitable for invasion landings. They are not impossible, however, for the Japanese made some landings in Malaya in December, 1941, through mangrove swamps which were unguarded because believed to be impracticable obstacles to cross. Good beaches are restricted in number and size, and generally lead right into the jungle.

Extending inland from the harbors are creeks and swamps bordered by steep hills or cliffs of a fjord-like character. Their waters are largely stagnant, breed noxious insects and form very unhealthy sites.

The capital of the island chain is Port Blair. It is located on a magnificent harbor which in times of peace was the occasional rendezvous of the British fleet. There are no towns of importance.

The native population (estimated as from 2,000 to 3,000) are negritos, and the blackest negroes known. Their height is

about 4′10″ for men and 4′6″ for women. They are uneducated and wild, and live in scattered small villages.

For long the Andamans have been a British penal colony. The number of convicts varied between 10,000 and 15,000, mostly natives of India. Convicts for the first part of their terms, which were for life or for very long terms, lived in one of about six penitentiaries and were employed on public works and on their own maintenance. After a number of years, and subject to good behavior, they were permitted to live outside, with the privilege of marrying and living with their families. They were required to work as prescribed by proper authority and had no civil rights, although they did have complete protection of the law.

To guard these convicts the British maintained a garrison of about a battalion (mixed British and Indian) plus a police battalion. The islands had the usual British colonial administrative staff, including a medical service which was free to all.

The Andamans were invaluable as a site of a meteorological station. It is nearly impossible to predict or track storms in the Bay of Gengal without having the data from the Andaman and Nicobar Islands. From this point of view the loss of these islands was serious.

Early in 1942 the British colony, including staff, guards, convicts, weather observers, etc., were nearly all evacuated prior to the arrival of the Japanese. Japan consequently secured the islands without opposition. There is no information as to the size of the present Japanese garrison or of its dispositions. From observations made it is certain that the enemy has established air bases and bases for light naval forces. How much beyond this he has gone is unknown.

THE NICOBARS

These islands, measured around the are on which they lie, extend 185 miles from north to south. They are divided into two groups. The southerly one consists of Great Nicobar and Little Nicobar Islands. Above the 35-mile-wide Sombrero Passage, the north group includes all other islands. The submarine cable from India to Malay is laid through Sombrero Passage.

In the north group, and almost at the geographical center of the Nicobars, is the magnificent Nancowry Harbor, located at 8° North Latitude between Nancowry (or Nankauri) Island and Camorta (or (Kamorta) Island. It is 225 miles south of Port Blair, which was the administrative headquarters for the Nicobars, as well as the Andamans.

The native population (estimated as not exceeding 7,000 in number) are of the Malay race, but of several tribes speaking languages unintelligible to each other. The women are about 5′ in stature, the men around 5′5″. They are a well built race. There are no European settlements on these islands, but there was some trade—mostly in cocoanuts or their products.

Great Nicobar is the largest island, 42 miles long from north to south and 14 miles wide. In general the islands resemble the Andamans, being hilly, covered with jungle, and intersected by narrow and deep ravines. The highest hill is on Great Nicobar, 2,100 feet high. Differing from the Andamans, in addition to extensive coral reefs offshore there are a number of flat coral islands.

DETACHED ISLANDS

Along that part of the are which stretches from Burma to North Andaman are a number of reefs and two small groups of islands — the Preparis and the Cocos. To date there has been no report as to enemy activities on these islands, which are small and unsuitable for bases.

East of the Andamans are Narcondam and Barren Islands. Narcondam Island is an extinct volcano 70 miles northeast from North Andaman Island. It is completely covered with jungle. Barren Island, 70 miles east from Great Andaman, is a barren cinder cone 1,150 feet high; it shows signs of volcanic activity, and was last reported in eruption in 1803; it is 7 miles in circumference.

COMMENTS

The Andamans and Nicobars would be as useful to the Allies to further an invasion of southeast Asia as they are to the enemy to defend these places. They will not be easy to capture.

They are exposed to both monsoons. Rough weather is habitual

through the greater part of the year. Best seasons for invasion landings are from February to April (both inclusive) and in October, during which months good weather can reasonably be expected.

Extensive reefs offshore and the lack of beaches will handicap invasions. It may be necessary to do as the Japanese did in Malaya: land some troops in among the mangrove swamps. Troops so employed require special training, previous instruction as to the objective after landing, and directions for very small groups to proceed independently to some objective in the interior. Each small group must have rations, ammunition, and supplies sufficient to permit jungle operations for at least four or five days.

The entire chain of islands is notoriously unhealthy for white people. Rainfall varies widely even between places only a short distance apart, but on an average is heavy, amounting to 100 to 150 or more inches a year. With the hot climate the result has been a dense jungle and extraordinary quantities of insects which make life difficult for outsiders. Unpleasant exhalations from swamps are common.

For military reasons these unfavorable conditions may have to be accepted. Once taken it would be improbable that the enemy could retake the islands. The garrison could therefore be reduced to a minimum once the campaign was over. It could then be changed, in view of the conditions, at relatively frequent intervals without impairing the usefulness of such air bases and naval bases as might be needed to further operations against the continent.

Reduction of these islands would seem to be a necessary preliminary to operations in south Burma, Malaya, or Sumatra, otherwise the enemy—using the bases on these islands—would be in excellent position to raid Allied shipping. An attack on the islands must precede an invasion of Malaya, but need not necessarily precede operations against south Burma or north Sumatra. For these latter areas the Andamans and Nicobars could be attacked at the same time or slightly later. But not much later without considerable risk.

Wire in Armored Artillery

By CommO

Despite statements that "Armored Artillery never uses wire," "Radio is the primary means of communication in an armored unit," etc., the unit of which I am CommO has used and habitually uses wire to the fullest extent which the meager wire allowance permits. This includes installation of a Bn switchboard (BD-71) in all positions, provided the batteries are not over a mile away. Wire (1) is more reliable than radio, (2) is reasonably secret, (3) saves radios from running continuously, and (4) can be used regardless of an imposed radio silence.

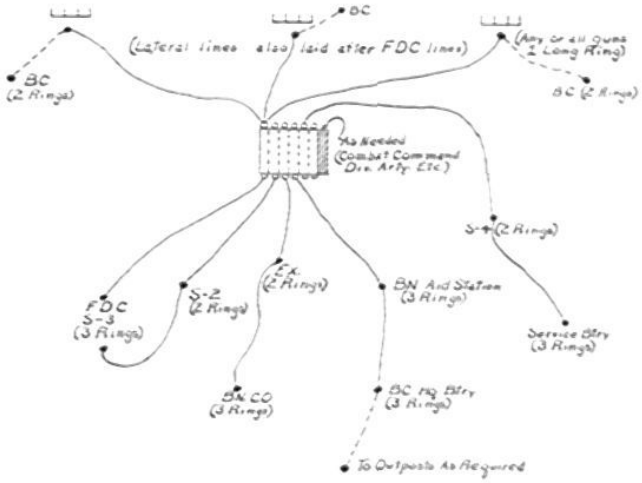
Each howitzer carries 100 to 150 yards of W-110 on a home-made reel mounted on the piece. This line is run to the Battery Exec's track and is plugged into an ordinary multiple house lighting wall plug. Head-and-chest sets are used by the Exec and Chiefs of Section.

Each battery lays wire to a terminal strip at the CP, immediately and habitually upon occupying position (DR-5s on jeeps are used). The strip is wired to a connector for a 5-wire cable assembly which is immediately connected to the FDC. Three double conductors are connected together, thus partying the gun lines, and then connected to one phone at the FDC. A single wire line rather than the 5-pair conductor can be used as well. This completes the battery wire.

BC half-tracks are equipped with ¼-mile of wire. This is often used to establish lateral communication between two OPs (surveyed when possible, for use as a short-base flash ranging system).

Locals from the switchboard are as shown in the accompanying sketch. One drop is connected to the gun party line, thus putting all howitzer batteries on the board. One local goes as a party line to S-2 and S-3; exchange of information is greatly facilitated. Another local runs to Exec (CP) and Bn CO. A third goes to Bn aid station and BC Hq Btry. A drop is available for use by Division Artillery or Combat Command. This latter line is usually run to the LnO at the CP of higher unit. A drop is available for Serv Btry (or ammunition train)

ARM'D FA BN WIRE NET



and S-4. S-4 normally stays near the CP except when on business, which is generally most of the time.

BCs may tie or clip on to the gun line and be contacted by a simple system of rings. As the BC carries a phone with him, he merely snaps on to the gun line when he arrives at his gun position. At night it is particularly advantageous to have sentinels near the CP connected to an extension of the line to BC Hq Btry.

This system has functioned very well on tests. It is normally installed in less time than it took to write these notes. It seems to offer possibilities to any artillery battalion for early stages of an engagement or a rapid moving action.

THEY HAVE THEM, TOO!

From a German training document: "The soldier's optimism must be refreshed time and again. Occasionally the leader might even start a good latrine rumor."—*Air Force*

AMONG THOSE BAPTIZED

By Capt. Howard A. Smith, Jr., FA

Editor's note: Upon reading Maj. E. A. Raymond's *Some Battle Lessons* in the February JOURNAL, Mr. Howard A. Smith sent us this report by one who was among our first troops to be baptized with fire. At that time his son, then a first lieutenant, was Executive Officer of Battery B, KGOth FA. Halfway through the Tunisian campaign he organized and commanded the Cannon Company of the KFRth Inf. He was killed in action in Italy on 1 Nov 43. This account gives some sidelights on how some units roamed up and down the Tunisian front and oddly enough ended the campaign pretty close to where they spent those first hard winter months.

November 8th I landed at Algiers, which seemed like a very heavy deal at the time but in the light of later developments it was just a warm-up. I was supposed to command the city with my guns. I guess I did but to tell you the truth I never fired.

A week later I left for Tunisia. The convoy was wicked; we crossed and recrossed the coastal ranges over wretched roads in a chilling, really numbing rain. We drove day and night, stopping 3 hours of 24 and making the trip in 2 days and 3 nights. Later a week was considered sensational.

We arrived at Medjez-el-Bab the morning of the 18th, around 3:30. No one was there to meet me. Kinley had left early in the day. Lund had been pulled out, so I was in command with Spencer second. I'd been told that the French held the town. In pitch dark I picked a position and set up to do business. I sent Spencer out to find an OP. We checked in by radio with him and he said he was about 3 miles away, in a farm. At first light 2 Me-109s flew over. One of the .50-calibers got one of them and a second later I saw the German position about 600 yards away. Fortunately the Germans were too astounded to react and we were able to execute the maneuver known as "cut your tail" without losing anything but my youth. I moved back about a thousand yards.

No sooner were we in position and dug in than a flight of 40 Ju-88s, 87Bs, and Me-109s came over. They worked on us for 45 minutes. My battery took the brunt of it, but miraculously we didn't lose a man. We kept the 4 machine guns and all the rifles going and toward the end the Germans figured our district was too hot—we actually drove the bastards off.

During the air raid the radio came to life and Spencer, who was a couple of miles behind them, had spotted their artillery. I called the kids out of the holes and we went to work on them. Spencer got us on them fast and we silenced them for the day. Each time they would come to life we'd pot them again and drive them from their guns. The countryside was lousy with the bastards and we ran the tails off them. Spencer returned shortly after his first shoot, safe but with his radio ruined. He'd been holing out with a French patrol. Men on each side of him had been killed but he beat the rap.

Kinley appeared from nowhere and set up an OP near the guns while Spencer was coming in. German planes returned to work us over 3 times during the day. We gave it to them each time, and on the later raids they pretty much avoided us.

During the afternoon I took a hitch on the OP and while there saw a French horse cavalry outfit charge the town down a road in column of twos. The poor buggers were cut off by 12 Ju-87s (Stukas), and ruined. There were 120 of them, with 96 casualties.

Toward dusk we were pretty sad sacks. The French wanted out, for they were out of ammunition and disheartened by their casualties. We were out of all ammunition, had one meal left and about 10 miles' travel in the gas tanks. We pooled gas to get a peep back and hoped it would get through without being caught. Meanwhile I took the battery with our 10-rounds-a-gun back another thousand yards where we set up behind a very deep wadi with a very good close-in ground defense setup. Toward 10 o'clock our outlook brightened when gas, food, and ammunition arrived. The situation was still up in the air, though, for the French were still shaky.

It was finally decided to pull the whole show west about 10 miles to a prepared French defensive zone on the high ground overlooking Ouid Zarga. My battery was to cover the withdrawal. We stayed in position, hooking it into the town of Medjez. Just as day was breaking we lifted the hook and headed back. At daylight we took up an 800-yard interval since we had learned to respect the Heinie planes. We rolled into our area as the sun rose and at the same time got a good look at the first real bombing of Beja. The damage was considerable — a lot of buildings and facilities, plus an untold number of Arabs and animals killed.

That night in a downpour we moved into another position, going in over a muddy, high-crown, narrow road with damn near no shoulders. A gun truck rolled over. I was scared, figuring I'd just lost a whole crew, for they were all mixed up with the heavy ammunition and a machine gun. Again I was lucky—the kids were all shaken up but nothing was lost. The next day was quiet but that night I had a bad case of the jitters. I fortunately took myself in hand and licked it. I've thanked God a thousand times for giving me the strength to do this, for I've been cool ever since. Luckily none of the men saw me—it was all a state of mind anyhow.

A few days passed and we went to Souk-el-Kemis to get ready for another go at Medjez. This time the Germans were better prepared. This time we supported a British battalion who did a fairly good job. It was their first show and they of course took heavy losses. In the first day's fighting they reduced 2 advance positions and closed on the town. Toward mid-afternoon the Germans counterattacked with several PzKw-III and a couple of PzKw-IV krieg-wagons. This knocked the British back and I spent the night antitank stalking. Next day some of Crittenden's playmates[1] showed up and the town fell. Incidentally, this was Thanksgiving. We took defensive positions to cover the infantry's reorganization. One day later we went after Tebourba. After one day my battery was jerked out to cover a valley leading northwest from Beja. Probably you know this as the "Hunt's Gap Area," named after a damn good guy named Hunt. Perhaps you read Kinley's article in THE FIELD ARTILLERY JOURNAL called *Tunisian Experiment*.[2] Well, I modestly confess to figuring out this scheme plus a couple of others. I could have done better

[1]Crittenden was an officer in the 1st Armd Div.

[2]Page 199, March, 1943.

with dynamite, but as it is a couple of British outfits used the idea. Of course it is only good for an armored patrol that doesn't know its game.

In brief, here is where I went and when. Sidi Nsir Station and vicinity of Hill 609 until late December. Then to Soukel-Kemis and Teboursouk (Touboursouk on Christmas day was a very dark hour). New Year's Eve I got my first letter since September and was on top of the world. From there back to the Sidi Nsir valley, Ksar Masour, Sidi Amenz, Fonetiere Foun—you'll find them all if you've got a good map. Then to Sened Station where I first saw a lot of American dead (very depressing), Gafsa, Feriana, Thelepte, Bou Chebka, Djernia, Sbiba Rohia, Sbeitla, Fondouk (very tough land), Pichon, Maktor, Ain Draham (very beautiful country), back to Ksar Masour, Hill 575, Hill 473, Hill 609, Eddekhilla, and then *finit la guerre* for a short while at least.

STRAIGHT FROM THE FRONT

Extracts from a recent letter from an artilleryman overseas

As our experience may be of value to you, I'll try to hit the high spots.

When you receive your orders, no doubt the helpful corps or other inspectors will check your equipment from A to Z. The spirit is grand, and they really do a thorough job—but don't surrender any items before you know what you get in return. This has particular reference to good old aluminum which may be replaced by a nice new item, but one of substitute material. Hang on for dear life to any old issue equipment which is in any way near serviceable; it pays in the long run.

You'll probably encounter the "helpful Henry" who advises you not to buy anything by the way of clothing or personal needs anywhere but at the POE. He'll tell you that anything and everything can be obtained there, and cheaper. You take a chance—and find stocks or sizes exhausted. They'll tell you it's sure to be had at the "next destination," but it's like finding a pot of gold at the end of a rainbow. Get what you need, when you can get it! Maybe you'll lug a bit of extra stuff which can be obtained later on, but you'll be sure to have it in case the contrary happens—and it usually does.

Rubber boots are worth about $100 a pair here, and one who owns them usually places a strong guard around them when not actually wearing them (which is very seldom).

The QM trench coat, having an exterior material similar to a field jacket and an OD blanket lining, is an indispensable article. (G— bought two, and one was stolen on him right from under his nose on a troop transport!) They take the place of a raincoat, overcoat, and mackinaw, and most important of all are a swell thing to use as a sleeping bag en route to and in operations at the front. All of our officers have them. They are (and are not) available in officers' PXs overseas, depending on how close to the front of a long waiting line you are when the stuff arrives, or if you are fortunate enough to even be in it!

Bring at least two complete sets of toilet articles: one which stays with you in a field bag, and another in the bed roll or "cadet" bag. Have at least a year's supply of razor blades, several bars of GI soap, and a few candles. Take tooth powder in preference to paste (due to the various grades of water you'd find, some of which will not dissolve paste).

Flint and wicks for cigarette lighters, and fluid as well, are mighty scarce articles.

T/BA in any form really is a nice bit of reading. Most units modify them to fit local real needs; as you've had the various experiences of Louisiana, there's no need for me to elaborate. Build whatever you can, to add to the convenience of your outfit, right smack in the vehicles concerned. Load and reload until it becomes second nature for all who are responsible: "everything has a place, and is in its place before a move." Night displacements can raise hell in lost equipment, from carbines to packs, etc.

In exercises (either fair or foul weather) teach everyone to dig—*dig deep*—it pays dividends. You may dig a thousand fox holes, slit trenches, etc., and have no need for them—but there will come that one time when it means the big difference. Men, especially when tired, are apt to take a chance; by all means keep 'em on their dogs until they're dug in. We need no prompting in that respect, having witnessed a gruesome example—best not to wait—better not have a gruesome and lifeless outfit.

Military courtesy—right up to and including the front lines—is paramount. There is a good reason for it: it keeps people plenty alert. This is absolutely necessary, and includes *all ranks*. The penalties for lack of discipline are sure, swift, and cold-blooded. One slip and a new CO is sure to take over, or a junior officer is bound to be light a few dollars for a lot of paydays. Just witnessed a court for a first lieutenant who talked when he should have been listening; result: $50 for six months.

Remember those brigade concentrations at Sill? They are miniature by way of comparison with those directed at Jerry in this theater. Sure is an artilleryman's war, and that is the truth. Plenty of action! Incidentally, have a versatile staff, with everyone knowing the other's job. You are on your own as far as relief is concerned, once committed. Work hell out of your air OP and train as many air observers as you can: they are worth their weight in gold.

Get rid of your "weak sisters" if you have any (officers or enlisted men) as early as it can be done. If you must, better face the cold reality of reclassifying them at your convenience rather than have them jeopardize your rank or the command as a whole. As CO you are the gent who suffers in the event of their breakdown, when it is "for keeps." The court martial manual is not tempered here: it's the works in most cases. Sentiment just doesn't fit into the picture, believe me!

"The book" is sound, its principles are proven, but get used to taking advantage of everything that can be seen even if it deviates from the book on occasion. One has to accept changes quickly, and use them to the best advantage. Experience, even if it is gained only by means of "bull session," helps a lot. The old-timer must pass his experience on to the neophyte.

Don't worry too much about infantry cooperation if it is lacking in exercises: you get the best of it up here. Most units bend over backward to keep you supporting them. They

welcome you like a long-lost brother and squeal like hell if you are forced to leave them. Fire one mission for a nearby outfit and they'll have a gent with a wire to your switchboard before the cannon has cooled. They'll do anything to keep you in good humor and friendly toward them. Ye Gods! it would take a switchboard like the set-up in Mother Bell's Broadway office to take care of all, down to and including the companies!

If possible train your FDC to be decentralized to the control of any of the three battery CPs (all of which should be up-to-the-minute with the Bn FDC). You'll remember it's an idea we worked out in the old —st back in '40, but is generally practiced by all battalions here with good results when the battalion is "out" or is displacing by bounds.

Train personnel from the service battery to operate an ammunition records set-up at your CP. (You'll remember we also had this feature in our old bn.) 'Most everyone here uses that system. It's far more reliable than having FDC people do it since the HCO is kept plenty busy on his own job, converting data from foreign maps, etc. Incidentally, be damn sure your chiefs of section keep a gun book according to par. 8, WD Cir 215/43. It's most important from a maintenance, ordnance, and daily record point of view. It's mighty embarrassing to try to correct an erroneous report once it has reached an Army headquarters.

In addition to the regular regulation library—bring your *Field Artillery Guide*. It's the most well-read book in these parts, and a damned good one. Also have your subscription to military publications follow you. It's surprising how often higher headquarters refer one to the *Guide* and the *F. A. Journal*. Better hang on to them on a "no lend" basis—they'll disappear if you don't, believe me!

Drill your lads to hell and back with any data you have on mines and booby traps. Jerry is a past master in this art, and even old soldiers unless constantly warned are apt to become particles of air (in which even the dog tags are not located after the smoke clears away). Every position must be searched and freed of mines before occupation, using personnel trained for that purpose.

The steel helmet is a good piece of equipment. K— recently had a casualty in his unit which could have been avoided if the man had had his helmet on. A good many soldiers who have sworn *at* the "tin derby" swear *by* it after it has saved them from creased skulls. Incidentally, the web strap is not worn under the chin, but is strapped around the rear of the helmet as a safety measure when subjected to concussion.

Salvaged batteries and headlamps do an excellent job of lighting a CP or other installation; better provide yourself with them. Generators of gasoline lanterns are not suitable for use with the high octane gas in general use. In like manner all field ranges must be modified with a suitable generator.

Property must be checked and controlled constantly. Everyone's needs are filled as rapidly as possible, but no consideration is given to the careless or negligent user. Statements of charges are as obvious here as anywhere else. Front line troops do receive the very best service and consideration, but priorities exist here as everywhere else.

Kitchen personnel must be prepared to operate on a 24-hour basis, working in whatever shifts are necessary and prepared to feed the whole battalion from one kitchen if the situation so directs. We have done it most successfully, but it does take planning and hard work.

The drape net camouflage works well, and no one need warn his drivers to use it. They slap it up automatically and with good results. The entire battalion installations should be checked from the air by one of the bn staff using the liaison plane, at the earliest possible time after occupation of position. Jerry doesn't miss a bet if he spots a carelessly occupied position; better be safe at all times.

When possible swap a few pistols for tommy guns (through ordnance channels). These are indispensable for your reconnaissance people and forward observers, who are apt to run face-to-face with roving Jerry patrols which do filter behind the MLR.

Recreation? Oh, yes—for diversion one can always wash one's clothing—or sleep—the latter being most popular.

"The Hymn of Hate"

By Lt. Col. Earl W. Huntting, Inf

American soldiers, in training, are taught to kill or be killed, but Americans by nature are not vicious. Without something to arouse them, they do not feel the bitterness or the hate necessary to get into the killer frame of mind. After all, Pearl Harbor is more than two years behind us; the Jap atrocity stories have run their course and will soon be forgotten; the war news is more favorable each day; as Americans, we have learned to forgive and to forget. This attitude, in time of war, is most dangerous. Our troops need some hate-food before going into battle. One name for this is called "singing the hymn of hate."

War Correspondent Jack Belden in a recent magazine article relates that on the eve of our attack on Salerno, the soldiers aboard the transports heard that Italy had surrendered and therefore expected an easy time of it. Too many officers and men thought it was all over but the shouting. A colonel said, "This alleged good news is bad news for us. Unless the officers go down into the holds and give the men a fight-talk they're going in there with their hands down."

How that frame of mind affected the Salerno operation will not be made known officially until that campaign is history and full reports are made public, but most of us have read enough from the communiques to give us a pretty good idea.

There was a chance for leaders of all echelons to have put into operation the method used by Lieutenant General Robert Lee Bullard when he was commander of the famous 1st Division in World War I.

To quote directly from General Bullard's own book: "Hate, a determination to kill and resist men who had introduced this system of frightfulness, was one of the forces of resistance. Accordingly, I had published to the troops during a long period of preparation and training, every recent instance of German frightfulness and cruelty that came to my knowledge. This was done upon my own initiative and without any suggestion or pressure upon the part of our General Headquarters

in France. Of course, it had its effect * * * * two or three instances of unnecessary harshness with which Germans had treated some half-a-dozen Americans captured in their first raid in October had a strong effect. These cases were the unnecessary stabbing to death of one American soldier, and the caging of others and exposing them to public observation and contempt in certain places in Germany * * * * it was a word of hate as certainly fitted to stir American hatred as ever was the German hymn of hate to move the German people."

General Bullard wrote those words in 1925, some eight years after he had used these tactics and during a period when the American public was not anxious to hear about the realities of war. If the description had been written in 1918, the statements would have been more positive. Of this I am certain, from talking to officers who served under the famed general and who, themselves, "sang the hymn of hate" to their men, with splendid results.

An example of the effect of the "hymn of hate" was brought back from Attu. When our task force approached the shores of Attu, the story of the Japanese execution of the captured pilots of the Tokyo raid was told them. The effect was just right. Hate flamed within the heart of each soldier as he rushed ashore, and the Jap defenders felt that hate in the fierceness of the fighting for days afterwards.

Why do the Japanese hate us with a fervor? Why do they willingly fight until they are killed? Why is it that few ever surrender? Is it due to their bravery or their superior military training? No. It is due to their psychological training, their being inoculated with a degree of hatred for the white race that is hard for us to comprehend. The Japanese soldier is taught to consider us as cruel butchers who kill their prisoners. Of this we have ample proof.

What do we do in turn? We make fun of the Japanese soldier. We call him "Charlie" when we should be referring to him as that "Yellow son — — ———" or some other appropriate name. We should never permit ourselves to forget what the Jap did to us at Pearl Harbor, or what is happening to our own troops that are Prisoners of War, what he did to the British civilians at Hong Kong, or to the Chinese population at Nanking. And if that isn't enough, let's go back to the inhuman treatment of the Koreans. It's all modern history.

Of the Germans, we are even more respectful. We have even forgotten the name "Hun," that was used in the last world conflict. Appropriately, we should always refer to the German soldiers as "Nazi Butchers," "Prussian Killers," or similar names that describe the atrocities they have inflicted upon the Poles, the Czechs, the valiant Greeks, and many other races.

It might be well for every commander to make a record of the atrocities committed by each of our foes, not overlooking the treatment of Prisoners of War, to study these over when preparing to go into battle and to "sing the hymn of hate" to his troops the night before battle and during every lull in the battle. He should seize upon every new case of maltreatment of our soldiers and play it up. He should teach his men to use their bayonets on every enemy soldier willing and able to resist—thus the timid men will overcome their fear of the use of the bayonet and develop that killer instinct that is so vital to modern warfare.

The Marquis of Queensbury rules went out on the morning of 7 December 1941, and will not return for the duration and six months thereafter.

When a soldier asks why we are fighting this war, what do you tell him? Next time, tell him the simple truth . . . because we were attacked! We are fighting for our very lives, our very existence. It is kill or be killed, so commanders, let's "sing that hymn of hate!"

OFFICERS ARE GENTLEMEN

Prepared by a field officer as a memorandum to all officers of his command.

A few incidents have recently come to my attention which indicate a lack of familiarity with the code of personal conduct required of an officer. I am writing this not in recrimination for any of these incidents but to reemphasize to you the ethics of our profession.

The Profession of Arms is an ancient and honorable one. The Homeric Warriors, the Knights of the Round Table, Jeanne d'Arc are part of our heritage.

The American Army has striven with notable success to exemplify the ideals of Duty-Honor-Country. Bunker Hill, Gettysburg, Bataan, and Tarawa are only a few of the incidents enriching that tradition.

By virtue of our uniform, we, as officers, enjoy not only the privilege of commanding this American Army, but the prestige of rank as well. We have thereby the obligation of contributing to that tradition by our devotion to duty, and of enhancing that prestige by irreproachable personal conduct.

The guiding principles of personal conduct for an officer, as for any gentleman, are honor, dignity, and courtesy.

Integrity of deed and statement is an important part of honor. To misrepresent facts in written or oral statements, whether to military or civilian personnel, is infamous to the Uniform. The signature of an officer is tantamount to truth—whether it be in a departure book, on a leave request, on an application for ration coupons, or on a check.

Dignity and courtesy must characterize our activities in public. In uniform our appearance and actions are subject to the closest scrutiny by enlisted men and by civilians. Vulgarity, intoxication, loudness, rudeness, unseemly familiarity, eccentric dancing in public places, all are detrimental to the esteem of an officer.

The enlisted men who entrust us with their lives and the public who depend upon us for their security and happiness have reason to demand these qualities. By tradition and by our obligation to them, we are enjoined, to paraphrase Cyrano de Bergerac, to be in all things worthy.

"Play the Game, Mr. King!"

A Hitherto Untold Story of the Hero of Bataan

By Maj. Herbert B. Mayer, CMP

In order that what follows may be understood it is necessary to dwell for a space in the background. And in the forefront of that background—forming a pattern that years later was to play a significant part in Bataan—was that rootin', shootin' old Rebel outfit, the Washington Artillery of New Orleans.

When Lee surrendered, of all the Confederate forces the Washington Artillery (which had fought its guns in every battle) alone refused to accede formally to the situation. Instead officers and men buried their guns, burned limbers and caissons, and rode the battery horses on home. Back in New Orleans, as soon as permission could be secured, the veterans formed "The Washington Artillery Veterans Charitable & Benevolent Association, Inc." Charity occupied Wednesday evenings, benevolence was reserved for Fridays. And as a means of keeping prying eyes from observing their good deeds the W. A. V. C. & B. reserved its privacy by posting pickets armed with clubs and knives at all approaches to their meeting hall.

Nor was this reticence as to their good works as extraordinary as it might appear since "charity" took the form of infantry squad drill and "benevolence" bore a weird resemblance to artillery section movements, with logs on wheels being dragged by the vets into "Action Front" to the accompaniment of sharp-voiced commands.

In 1870 the W. A. V. C. & B. held a grand combined meeting of Charity and Benevolence. Armed with shotguns and sticks, it moved at the head of a column of citizens and other veterans against Longstreet's Metropolitan Police with the objective of ending "carpet bag" rule in Louisiana. The leading patrols of the W. A. seized two small howitzers, made of brass and standing about a foot and a half high. There was plenty of powder and caps, but no ball. By breaking up cobblestones and iron pipes a very fair shrapnel was improvised, however. When this was turned on the "Black and Tans" the latter retreated to the stone Customhouse, which thereafter was stormed.

With the restoration of "white" government the Washington Artillery became part of the State Militia.

During the Spanish-American War the veterans who constituted its main membership permitted some of the younger men to form Kornbeck's Battery, which went to Cuba. But on its return, apparently believing that service with the federal forces had somehow contaminated the youngsters, the Veterans refused to take the battery back in a body, but only as individuals—most of whom, however, drifted into Battery B.

As a youngster of 14 or 15, and having the necessary Confed ancestors, I was admitted to membership and drilled on the old muzzle-loaders alongside the gray heads who had fought others like them on many a battlefield. In the course of time I was elected Second Lieutenant and Napoleon Bonaparte, J. Caesar, and other warriors had nothing which could excel my military pride as I moved at the head of my platoon of reddish-brown painted muzzle-loaders with the horses hired from the livery stable for the parade occasions, dragging limbers and caissons behind me with the thrilling sound of traces, chains, and wheels.

After many battles and in the course of time we younger men, against the massed protest of our comrades who had worn the gray, voted Washington Artillery into the National Guard under the "Dick Bill." Forthwith Allison Owen (now Brig. Gen. (N.G.), Retired) and other young officers came in and we drew our first instructor from the Regular Army.

In advance notices we knew only that "Second Lieutenant King of the Regulars" was coming. We dressed in our best uniforms—marine corps blues trimmed with red and "Prussian helmets" with red plumes—to receive him.

What we saw was a stoutish, smiling young man with a brown moustache. What we heard was a soft Georgia accent. What we gained was not only an instructor but a friend.

During those grim days of reorganization, when we threw off our dress blues and turned ourselves into khaki and gained new batteries of greenish-gray painted breech-loaders, this stoutish little second lieutenant became the bosom friend and confidant of every officer. Among the men, uncertain and raw, he moved with his air of cheerfulness, talking artillery dope and getting all of them interested in the new game called "A plus or minus N times P minus T."

In due time we went to our first camp at Alexandria, La., and fired our first problem (simulated). After we had done this, Lieutenant King came down to the officers conducting the fire.

"What was your target?" he demanded.

"Stone house near the bridge," someone answered.

"Show it to me!" said Lieutenant King.

"Why, it is there—right there, sir."

Lieutenant King smiled slowly. "I am going to mark your effort a failure and I am going to tell you why." With lengthened faces we listened.

"When I first became an officer I was given charge of a battery firing at a bridge. After my problem had been finished my Commanding Officer came up to me. 'Where is the bridge?' he asked. I pointed it out to him and he looked disgustedly in my direction, calling over his shoulder: 'Play the game, Mister King!'

"That lesson taught me a lot. I am passing it on to you. When you fire at a target—even in simulated fire—*think that you are destroying it!* The firing we are doing is not a game—*it is preparation for battle!*"

* * *

I wonder how much of what we learned that day was taught the Japs as the artillery guns on Bataan, commanded by Major General Edward P. King, Jr., fired to the very last into the yellow flood which overwhelmed them in all their glory.

A Better Way To Mass The Battalion

By Capt. Clyde W. Snider, FA

Maj. Dennis's recent article *Battalion Targets of Opportunity* (p. 132 of this JOURNAL for February, 1944) reached this light artillery battalion in time for use in Test I. The FD team was immediately put through intensive training in the new system, the only difficulty encountered being to get the computers to unlearn habits acquired in the system formerly used (App. E, FM 6-40).

A few changes and modifications were made as a result of trial and error. In order to facilitate range changes, the base point range is set on the GFT to the nearest 50 yards. Deflection shifts, initially and during adjustment, are made to the nearest 5 mils, helping HCO follow the shifts, and reducing the chance for error in adding and subtracting odd mils.

Initially, site is announced only to the adjusting battery. This figure includes difference in altitude of base point and target and proper height of burst. Non-adjusting computers command *Si 300*. VCO follows site changes and, when adjustment is completed, announces the final site to non-adjusting battery computers.

Instead of having HCO follow each range change, the adjusting computer announces the final range immediately after setting off the last range sensing of the adjustment on his GFT. This enables HCO to give his entire attention to following deflection shifts during adjustment.

Our experience with this procedure was entirely satisfactory. The time required to mass the battalion was reduced approximately 30 seconds, and effectiveness of the concentrations was doubled. The comment of the FD team after the initial strangeness had worn off was, "This is a lot better than the way we used to do it."

Which Round Is Mine?

By Maj. John R. Crossen, FA

"On the way," repeated the telephone operator, and the officer conducting fire raised his glasses to observe his bursts. About the time they were due to hit a series of rounds landed near the adjusting point. "Which rounds were mine? How shall I sense them?" groaned the observer.

"On the way" came over the radio to the observer in the Cub. "Lost," he finally sensed, "plane was not in position to observe at time shells lit."

Remedy: Telephone operator at the guns reports "Fired" the instant the guns crack. On hearing the "Fired," the computer at FDC instantly presses the stem to start his issue stop watch. Knowing the range fired, the operations sergeant, a relief computer, or anyone available reads the time of flight from the firing tables. The radio (or telephone) operator at FDC working with the computer makes his usual report, "Battery has fired." He is handed the running stop watch and told the time of flight. Five seconds before the shells are due to land he says, "Warning"—and at the instant of impact, "Hit."

We have fired many adjustments in the combat zone in this fashion. Various observers report that they cannot tell if they see the burst first or hear the word "Hit." Our observers both on the ground and in the air insist upon this sensing aid. They have picked out our bursts with ease when other battalions were firing all around the area. Several batteries or battalions can adjust on the same point at the same time with this aid, providing dust and smoke do not obscure the target. Pilots of the Cubs like the system as they thus have ample time to get in good position to observe. Ground observers do not strain their eyes uselessly for many seconds in fear that they may miss the burst. It is simple, the equipment is issue, and it works under fire.

INFANTRY and TANK

By Capt. Sydney S. Combs, FA

Editor's Note: Artillerymen are heartily terrain-conscious—but often just from their own immediate point of view, to include fields of fire, deadspace, and ricochet possibilities in additon to the obvous position areas, possible OPs, etc. The modern TEAM is not just infantry-artillery, nor is it merely tank-artillery. Now it is INFANTRY — ARTILLERY — TANK. Our technique may often vary, depending on what is in front of us. It is therefore especially important that we understand the effects of terrain on front-line attacking forces, as Capt. Combs so well outlines them here.

"Vesuvius in War"

The most important aspect of coordinated action between the doughboy and the tanker is the correct visualization of terrain and the mutual use of it. This cannot be emphasized too much; no one element can ever win without the wholehearted help of the other regardless of the type of terrain.

In all the fighting of Tunisia, Sicily, and Italy the German has been the defender and has been fighting a withdrawal action. He has naturally chosen the high commanding ground, and due to the superior observation given by this factor his defense has often been almost impregnable. Many feel that tanks cannot be used against these terrain blocks because the consummation of victory is not apparent and their proper mission—to break through and exploit the rear areas—does not seem a very likely possibility.

The tank must help the infantryman in every way to seize the objective and take the high ground away from the enemy. This type of warfare must be developed so as to weaken the Hun until he is ready to be exploited. As Necker explains in his new book *The German Army of Today*, original German tactics were to use tanks not only to protect the infantry from machine guns but also to break through supported by the airplane and envelop the enemy flank, disrupting communications and surrounding his now disabled forces. This has now been found to be out of date because the Russian and American forces have attached from 80 to 100 tanks to each infantry division and present a much different problem from the French who in 1940 were improperly armed and prepared for such attacks.

German tank tactics in Tunisia encompassed the conservative type of attack, employing the panzer grenadier (motorized—not armored—infantry) and striking for terrain objectives; a company seizes a knoll, a battalion seizes a hill, a division takes a mountain. Only after combat do you learn the importance of the possession of high ground.

We attempted to surround the Germans on a little hill at El Guettar and expected their surrender but they stayed and fought for 4 days while they caused serious casualties to a battalion of our force. It is easy to shoot down into a slit trench from the top of a hill, and remember—all the eyes have radios and all the radios have artillery and rocket mortars at their disposal. Breaking communication doesn't mean just surrounding men and cutting wires.

Tactics of the immediate future are conservative and require mass coordinated force of infantry and tanks backed up by very heavy artillery support.

The employment of tanks and infantry together as a team presents numerous problems, and their solution can only be accompanied by spontaneous friendship. Proper decisions never result from an infantry leader dictating tank tactics or a tank commander telling the doughboy exactly what to do. Their senior commander must take the two commanders to a position overlooking the terrain of the approaching battlefield. Getting each commander's viewpoint on how to conduct the battle, he congeals the ideas into a solid mass which deals entirely with the use of terrain by the arm best suited to its use. In other words, terrain determines whether the infantry shall precede the tanks or whether the tanks will precede the infantry. Here is the doughboy speaking: "We will cover your tanks from 100 yards behind across the flat space where the machine guns would get us. You tankers let us precede you through that minefield and belt of trees with you supporting us with your fire. From the other edge of the trees to the base of that sharp rise of the crest you precede us and we doughs will keep our eyes open for any AT guns 100 yards to your rear, and if one opens up we will neutralize him with our rifles just as well as you can with your 75s [this is true, incidentally]. Then from the foot of that crest we infantry will go up while you shoot in front of us with HE and machine guns and watch our flanks to prevent an enemy armored attack. OK, Tanker, let's have your ideas and we will consider them." Tanker says "OK, Dough, but remember that M-1 rifle of yours is mighty important. And don't hesitate to shoot those 60-mm mortars right on me, if necessary."

They took the hill—did what a whole infantry division had been smacking at for two weeks. Naturally all the artillery was backing up the whole operation, as was also every infantry machine gun, mortar, and cannon company.

Need I go on in explaining success? It was achieved by complete mutual *cooperation*, coordinating every arm available with no thought as to which unit would get the credit for success. If you ever get a chance to work with the doughboy in the front line you will know who deserves credit for the victory.

Armored Artillery Communication

By Lt. Col. E. H. Burba, FA

Considering the Tunisia Campaign as a whole, wire was the basic means of communication. Its advantages over radio as to security, dependability, and economy in use of enlisted operators have long been recognized. In all stabilized situations wire was run to OPs but in no situation was it deemed practicable to run it to forward observers with assault companies. In all operations the infantry lines were too fluid and subject to frequent change.

The usual wire net consisted of direct lines from FDC to batteries and a second administrative line to each battery from the battalion switchboard. Likewise two lines were laid from Division Artillery CP: one to battalion FDC for fire commands and one to battalion switchboard for administration. Use of the fire control net for administrative transmission was strictly prohibited but no restriction was placed on use of administrative net for fire control. Use of radio was particularly necessary during periods of heavy shelling and bombing, when one line was out most of the time. Supervision of reliefs for operators and linemen was necessary in order to insure the availability of fresh, alert personnel 24 hours a day. Laying of wire was generally poor, chiefly with respect to slack, anchoring, and crossings of roads.

Due to the dispersion required in the firing battery it was necessary to equip each gun section with a telephone (preferably head and chest set) and lay a party line to each section. Two methods were used by various batteries. One was a party line in series: i.e., each section laid a line to the section on its left and Section No. 1 laid a line to the executive officer's post. The second method was a trunk line laid by a ¼-ton wire truck through the position, with each section laying a short line to it and connecting with test clips. Light weight, expendable assault wire was preferred for this net because it required less stowage space and frequently in sudden displacements had to be abandoned. A better solution to this problem would be a 5- or 7-set net, depending on the number of guns in the battery, of the SCR-536 hand radio. Battle experience has definitely proved, however, that some means other than voice must be employed to insure prompt receipt of fire commands above the noise of battle.

Until wire could be laid or when wire communication failed, and throughout fast-moving operations, radio was used. Continuous wave code was used very infrequently—only when transmissions over great distances were necessary. The conduct of tactical operations entirely by radio (including all headquarters up to Corps) was frequently the case in the early stage of the campaign. Never was I unable to communicate by radio, although at times it was necessary to relay through one or more intermediary nets. For example, on May 2nd southwest of Mateur a tank company commander was driven into a small defiladed area from which there was no defiladed exit, by an 88-mm AT gun which had remained silent until he was past it. Having lost six of his tanks before finding cover, one of which was his own in which he had been badly burned when it caught fire, he realized he had to neutralize the gun before he could move. He checked radio communication to his combat command HQ, which had communication with my battalion by relaying through Div Arty. He then took a portable 509 set forward on foot, located the gun, and adjusted our fire on it by relaying sensings through his Company Executive, Combat Command Hqs, and Div Arty, to my FDC. The adjustment was effective; he moved the remainder of his tanks out while we kept the gun neutralized.

The following organization of SCR-193s within the CP of an Armored FA Bn proved to be most efficient:

C.O. half-track	—Combat Command Net
Exec half-track	—Battalion Command Net
S-3 half-track	—Div Arty Net
CommO half-track	—Reconnaissance Bn Net (Monitor)

An extension loud speaker and microphone was run from the Exec radio to S-3 vehicle around which FDC was located. An extension loud speaker was run to the Exec half-track from the CommO's radio, which was in the Rcn Bn net. A short telephone line was installed from Exec vehicle to FDC, over which messages were relayed to and from Div Arty radio. This set-up was completely installed within 8 minutes after the vehicles stopped rolling, and gave the following advantages:

1. The Executive Officer, S-2, or the Adjutant, one of whom was always on duty in the CP located in or near the Exec half-track, could keep abreast of the tactical situation by having all communications available at one place.
2. Situation map, kept at CP, could be kept posted continuously.
3. Circulation within CP was reduced.
4. Shelling and bombing did not interrupt operation of the CP.
5. Traffic around FDC was reduced
6. FDC Bn Cmd Net was made available for use in the event FD net failed.
7. Div Arty Net was made available to S-3 for receiving fire missions and reporting those completed.

German radio intercept service is excellent on both FM and AM sets. You may expect them to have our PMC broken down within 7 days after it is first used; it should therefore be changed more often. An example of this occurred prior to Sidi bou Zid, when the British picked up and decoded a German message concerning their attack to be launched Feb 13th at 1500. When one unit could not get into position another transmission postponed the attack until 1600 hrs, and this too was intercepted. Both messages were forwarded immediately by British and a warning was sent by radio using American PMC. This transmission was intercepted and decoded by the Germans, who immediately changed their PMC and called off the attack.

In another case an FM transmission was acted upon immediately after its interception. The Germans had taken an Arty radio out of a captured disabled ¼-ton the previous day, and evidently passed it immediately to their artillery. An excited assistant battery executive screamed over the FD net that an enemy battery was adjusting on his position and the last round landed 300 short. Jerry immediately fired another on that sensing and when the excited officer said "That was right in the gun position," another six volleys came in right away. Jerry also rides FD frequencies when his counterbattery information is not so good, and picks up adjusted data to plot back azimuths from coordinates where his observer says our fire was falling. Obviously simple codes will pay dividends.

When radio silence is prescribed provision must be made for communication after radio silence is lifted and during the period required to tune AM sets and open nets. Some commanders have ordered radio silence for 2 days or more and then expected their AM sets to function immediately when it is lifted.

TANKS AS AUXILIARY ARTILLERY

By Lt. T. P. Rand, FA

Employment of tanks as fire power to reinforce organic artillery has progressed beyond the experimental stage in our armored division. We find that only a little additional training for our survey sections is necessary to take care of the tanks.

On a recent field problem (which was held under extremely adverse conditions — freezing temperatures, ice storms, and snow) my battalion had attached to it one company of medium tanks. These were equipped with telescope sights M-38, none of them having azimuth indicators. The reconnaissance section of one of the firing batteries was given the job of running the position area survey for the tanks. The firing chart was a photo map.

Our RO was shown the area the tanks were to occupy after dark; it was approximately 500 yards wide and 200 yards deep. This he divided into 3 approximately equal parts, one for each platoon of 5 tanks. The formation chosen for the tanks was a modified W, leaving a minimum of 50 yards between any two tanks. To indicate the position of each one of the 15 tanks stakes were driven into the ground. A point identifiable on the photo map was selected; from it the reconnaissance section ran a survey to each one of the "base tanks" (tank nearest the center of each platoon). Direction was taken from an orienting line, which was staked in with a place-mark for each platoon.

In addition to running the usual connecting survey to the artillery batteries, the battalion survey officer also connected to the chosen point at the tank company's position. He received from the battery RO an overlay of the position area survey run for the tanks. Base angles were computed for each of the tank platoons. The direction from each tank to the base point was determined by laying two aiming circles reciprocally, one aiming circle being set up over the place mark, the other over the "base stake" for each tank (stake indicating the tank's position). Two more "directional stakes" were driven into the ground—respectively 50 and 100 yards from the "base stake"—so that the tank, being over the "base stake," could sight itself in on the base point. Luminous markers attached to the "base stakes" made it easier to find these stakes in the darkness, as the tanks were not due until late that night. All this work having been accomplished in about two hours, the battery reconnaissance section took a few hours off for rest.

Around 2300 hours, when the tanks were approaching their area, the section was alerted. Its personnel led the tank company into the position area, one man acting as guide for each platoon and taking one tank at a time to his "base stake." As a safeguard against any tank's using another tank's "directional stake," all sets of one "base stake" and two "directional stakes" had been tagged identically. It took about 45 minutes for the whole company to be laid on the base point. Laying was accomplished by sighting the tank in through either the sight or the tube on the "directional stakes," each of which had to be illuminated by a man with a flashlight (the luminous markers can not be seen through sight or bore).

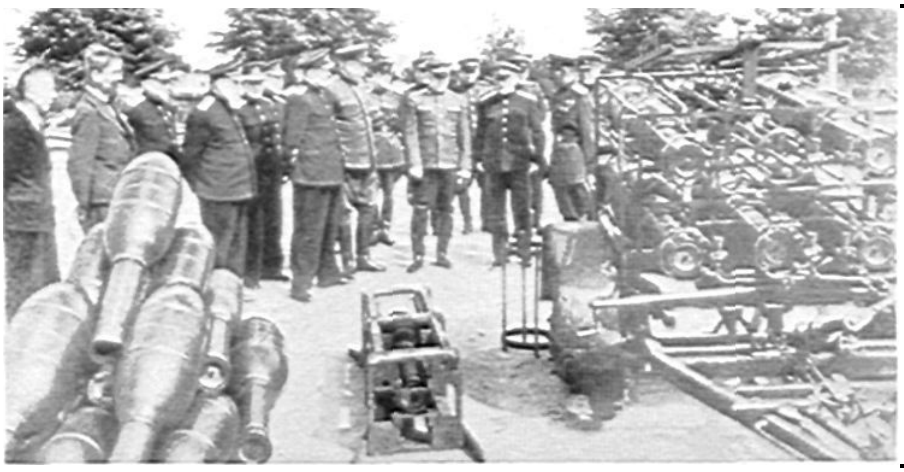
At dawn next morning the "base tank" of the center platoon fired a center-of-impact registration. Corrections determined from it were applied to data sheets which had been sent to the tanks during the night. The command to fire a certain concentration was given by the tank company commander, who with his tank and radio was located at the artillery battalion CP. The effect of the concentrations was perfect. The size of a concentration of all three tank platoons was no more than 200×200 yds.

COMMENTS

If azimuth indicators are available the procedure for laying the tanks is considerably simpler. In our problem 45 stakes had to be set out for just one company. Also, making ordered shifts will thereby be easier for tankers since the azimuth indicator works like a panoramic sight. In our problem some of the tanks simply used turns of the previously calibrated handwheel, others had put out stakes in the ground indicating shifts of 40 each which they had determined with their telescope sights.

For setting off the elevation all used gunners' quadrants.

On a subsequent problem the tanks were used in the same manner as an artillery battalion, an adjustment being made by one tank and all 15 tanks coming in on the effect. The communication set-up and the incomplete knowledge of artillery command nomenclature on the part of the tankers were the only problems then. But with close control executed by an artillery officer at the tank position this problem was successfully solved.



Interesting German rocket developments clearly show in this photo from Russia. Crate in center is fitted with "sedan-chair" handles to facilitate handling. Projector at the right is highly skeletonized, to reduce weight and save material. The rocket principle obviates any need for a tube, which would be useless in this case anyway because of the bulbous explosive head. Projector is mounted on wheels, like an artillery piece. Note ejection holes around the base of each rocket.

"OVER HILL OVER DALE,- OVER BRIDGES?"

By Lt. John A. Lane, FA

AUTHOR'S NOTE: This article is not intended to make Field Artillerymen bridge experts in one easy lesson, but to explain the use of the Engineer School's Bridge Card. After a little practice and experience in using the bridge card you will be able to say within a ton or two whether a bridge will safely hold your battery's prime movers and guns.

The writer is not an Engineer officer. He is a Field Artilleryman assigned on special duty with the S-2 section, 269th Engineer Combat Battalion.

You, a forward observer, are riding along a dusty trail and come to a rickety-looking bridge. You know that you can get your jeep over safely but you aren't sure about your battery's prime movers and guns. What would you do to determine, definitely, the tonnage capacity of the bridge?

That problem may confront you! Bridge and road reconnaissance is made by the engineers—but the engineers are busy people these days, what with bridging rivers like the Volturno and fighting as infantrymen when needed. That's neither here nor there as far as you're concerned. Bridges and roads may not have been reconnoitered, and it is up to you to get over on your own.

Rectangular Wooden Stringers with Timber Flooring. Safe Gross Load in Tons for Stringers One Inch Wide. Capacity of One Lane.

SPAN IN FEET	DEPTH OF BEAM IN INCHES									
	6	8	10	12	14	16	18	20	22	24
10	.19	.34	.55	.80	1.05	1.40	1.75	2.15	2.65	3.15
12	.15	.28	.44	.65	.90	1.15	1.45	1.80	2.15	2.60
14	.13	.24	.37	.55	.75	.95	1.25	1.55	1.85	2.20
15	.12	.22	.35	.50	.70	.90	1.15	1.40	1.70	2.05
16	.11	.20	.32	.47	.65	.85	1.05	1.30	1.60	1.90
18	.10	.18	.28	.41	.55	.75	.95	1.15	1.40	1.70
20		.16	.25	.36	.50	.65	.85	1.05	1.25	1.50
24		.11	.19	.27	.38	.50	.65	.80	.95	1.15
28		.09	.13	.22	.32	.42	.55	.65	.80	.95

Example: Determine capacity of one-lane bridge which has six 6" x 10" wooden stringers over a span of 18 feet: span = 18'; depth = 10"; value from table using 18' and 10" = .28: total width = 6 x 8 = 48 in.; .28 x 48 = 13.4 or 13 tons, safe capacity.

For Stringers of Round Timber: Use diameter of timber as depth. 0.4 of diameter as width, and use above table.

Figures Under Black Line: Should not be used for design.

Steel Stringers (Standard I) with Timber Flooring. Safe Gross Load in Tons for One Steel Stringer. Capacity of One Lane.

SPAN IN FEET	DEPTH OF BEAM IN INCHES									
	5	6	7	8	10	12	15	18	20	24
10	1.7	2.6	3.8	5.0	9.0	13.0	21.5	32.5	43.0	64.5
12	1.4	2.2	3.1	4.2	7.5	11.0	18.0	27.0	35.5	53.0
14	1.2	1.8	2.6	3.6	6.0	9.0	15.0	22.5	30.0	45.0
15	1.1	1.7	2.4	3.3	5.8	8.5	14.0	21.0	28.0	42.0
16	1.0	1.6	2.3	3.1	5.5	8.0	13.0	20.0	26.0	39.0
18		1.4	2.0	2.7	4.7	7.0	11.5	17.5	23.0	34.5
20		1.2	1.8	2.4	4.2	6.0	10.5	15.5	20.5	30.5
24			1.3	1.8	3.2	4.8	8.0	12.0	15.5	23.5
28			1.1	1.5	2.6	4.0	6.5	10.0	13.0	19.5
32				1.2	2.0	3.1	5.0	8.0	10.5	15.5
36					1.8	2.7	4.5	6.5	9.0	13.5
40						2.3	3.9	6.0	8.0	12.0

Example: Determine capacity of a two-lane bridge which has under each lane six 10" standard I-beam stringers over a span of 20 feet: span = 20'; depth = 10"; value from table using 20' and 10" = 4.2; 6 x 4.2 = 25.2 or 25 tons, safe capacity.

For Standard Railroad Rails Used As Stringers. Use values for 6" steel beams.

Figures Under Black Line: Should not be used for design.

Passage With Caution: In emergencies 25% overloads may cross provided vehicle reduces speed, stays on center of bridge, and does not brake or shift gears.

Data Used in Computing Tables: Safe unit bending stresses—2,100 p.s.i. for wood, 24,000 p.s.i. for steel. For other data see FM 5-10 (revised edition)

Bridges of Two or More Lanes: Posted to show capacity of one lane obtained by counting stringers under one lane only. For emergency passage of one vehicle on centerline of bridge, count stringers in two lanes, multiply by ¾, and use proper table.

It is recommended that the bridge card be cut out, pasted on cardboard, covered with oiled transparent paper, AND USED!

BRIDGE RECONNAISSANCE NOTES

Bridge Characteristics

Condition of approaches
Number of lanes, width of each lane
Number of spans, length of each span
Height of bridge above deepest part of stream bed
Overhead clearance for vehicles (very important)
Capacity in tons (gross weight)
Stream data:
- Width, depth, velocity, direction of flow
- Type of bottom, estimated bearing capacity of bottom
- Height, slope, nature of banks

Abutments: Type, dimensions, condition
Stringers: Number in each span, type, size, spacing, condition Flooring: Type, dimensions, condition
Sketch of site: If time permits a simple sketch showing concealment afforded, turn-arounds, parking areas, detours, expedient crossings

Bridge Symbols

Concrete, slab of beam	k
Concrete, arch	ka
Steel beam	sb
Steel truss	st
Steel girder	sg
Stone arch	sa
Wood trestle	wo
Wood truss	wot

* * *

wo	2W9	16 at 20
ht 22	H15	10T
	Good	

The above symbol if seen on a map beside a bridge would indicate:

wo	wood trestle
2W9	width, two lanes each 9 ft. wide
16 at 20	16 spans 20′ long
ht 22	height in feet above stream bed
H15	overhead clearance in feet
Good	general condition of bridge
10T	safe bridge capacity in tons, gross-weight of vehicle

LOOK FOR MINES FIRST

Before crossing a shaky-looking bridge in territory recently occupied by the enemy, stop your vehicle as close as you think is safe before actually crossing the bridge. No set rule can be laid down for this precaution. Advance cautiously toward the bridge, as trip-wires leading to mines may be planted on the road.

Look at the approach to the bridge. Notice if the earth is firm, or if rains have washed it away. Remember that rainy weather will soften earth at the approach, and the forward pressure created by future heavy traffic may cause the pilings underneath to move several inches, weakening the bridge.

Look at the pilings, beams, and flooring. Are they bent, broken, or cracked? Notice if the stringers are well seated on the sill at the approach, especially at the abutments. If they are not, then chances are that the trestle is leaning forward, or the stringers might have become loosened from the sill. Excessive moss may cover weakness not visible to the eye unless you scrape the moss away and take a good look at the timber underneath the growth.

SPAN OF BRIDGE EXPLAINED

When speaking of span, one ordinarily thinks of the total length. What is meant here (and what is meant on the bridge card) is the distance from support to support—support being wood or concrete piles, steel or stone piers, in short, anything that holds up the bridge or that the bridge is built upon.

A bridge across a small stream ordinarily has but one span. The length of that span will be measured (paced off) from the supports or pilings on one side of the stream to those on the other side.

Whether a bridge has 5 spans or 25 matters not, since it is the weakest span that will determine the tonnage capacity of the entire bridge. If you can't get across the one bad span you can't get across the bridge. Therefore the capacity will be determined by pacing off the length of the bad span, and getting certain other facts about it that you will have to know in order to use the bridge card.

HOW TO USE THE BRIDGE CARD

The bridge card has been made up for use in figuring the

AMMUNITION LOADING CHARTS

Logistics was a matter sadly neglected in most peace-time maneuvers. Even though commanders might have wanted to play that game, circumstances beyond their control frequently prevented their doing so. Regardless of the reasons for that situation, one result has been that this important subject had to be learned from scratch when we were plunged into a war.

Now we have the vehicles and wherewithal with which to handle this situation. We find, however, a wide variety of loadings used by different units. To yield maximum efficiency, including prevention of dangerous overloads, the schedules on these pages have been carefully worked out. They have the seal of approval, although we would especially mention that their use is not required. *These charts are for your information, as a guide only*. For special cautions concerning vehicle loading, see page 921 of this JOURNAL for December, 1943.

TYPE LOADS OF FIELD ARTILLERY AMMUNITION FOR STANDARD VEHICLES

Carrier	75 How	105 How	155 How	155 Gun	4.5″ Gun	8″ How	8″ Gun	240 How	Remarks
Caisson, light, M1	52								
Car, half-track, M3A2		15							
Carriage, motor, 105-mm howitzer, M7		69							
Carriage, motor, 155-mm gun, M12				10					
Carrier, cargo, M30				40					
Limber, light, M2	22								
Tractor, high speed, 18-ton, M4									
Prime mover				15		12		12	
5th section				30		20		12	
Tractor, high speed, 13-ton, M5									
Prime mover		*64	24		38				*Removed from clover leaves.
5th section		*64	24		38				
Tractor, high speed, 38-ton, M6									
Prime mover							15	14	
3d section							15	14	
Trailer, ¼-ton	‡21								
Trailer, ammunition, M10§	126	†54[1] †44[2]	18	18	32	7	5	5	§When Tlr, 1-ton, 2-wheel, cargo is substituted, type load is the same. †When used in Armd FA, type load is 50 rds of 105-mm How am.
Trailer, ammunition, 4-ton		120	72		108				[1]In clover leaves.
Trailer, ammunition, 10-ton				96		60	36	32	[2]In 2-round wooden boxes.
Truck, ¼-ton									‡28 rounds may be carried if removed from clover leaf.
Prime mover	‡21								
5th section	‡21								
Truck, 2½-ton									
Prime mover		36							
5th section	222	57	36	36	32				
Ammunition train	222	93	36	36	48				
Headquarters, Firing Battery			18	18	32	10	6	6	
Truck, 4-ton									
Prime mover			36		48				
5th section			54		64				
Truck, 7½-ton									*54 rds in 1st Trk, 7½-ton in 5th section; 108 rds in 2d truck, 7½-ton in 5th section.
Prime mover				36		21		18	
5th section				*		21		18	

tonnage capacity of the two types of bridges most frequently encountered: (1) wooden bridges, and (2) bridges having wooden floor and piles, but steel "I"-beam stringers.

For wooden bridges use the top card. The tonnage capacity of a bridge with wooden stringers is found by using the depth in inches of the average beam or stringer in one span (for example, 14″) compared with the length of the span in feet from support to support (for example, 15′, paced off). Looking at these two figures in the bridge card columns *Depth of Beam in Inches* and *Span in Feet*, we go across the card in the same manner as when using map coordinates and find the factor .70. Multiply the width of the average stringer in one span (for example, 3″) by the number of good stringers in one span (say, 8). Then 8 × 3″ gives you 24″. 24″ × .70 (from the card) gives the tonnage that the bridge will hold: 16.8 or 17 tons.

The card states that in emergencies 25% overloads may cross provided the vehicle reduces speed, stays on center of bridge, and does not brake or shift gears. Don't make the mistake of not "pointing off" for the multiple decimal. It will be an excellent bridge if it will hold 168 tons!

The bottom card is used for bridges with steel "I"-beam stringers. This card gives the strength of one I-beam for a given span; so you simply multiply the strength of the average steel stringer in the span (taken from the card) by the number of steel stringers you find in the span.

SAFETY FACTORS INCLUDED

Safety factors have been included in the bridge card that take into account some of the variables discussed above. If, however, according to the card you get an answer that the bridge will hold 13 tons, but on this rickety-looking bridge you have noted rotted timbers or stringers which cannot carry any load, then you must apply your common sense and "rule of thumb."

It is assumed that strong, well-built, concrete bridges in any part of the world will accommodate the prime movers and guns of an American infantry division. Such well-built bridges are not on roads usually used by the field artillery, however.

TYPES, CAPACITIES, AND MODEL NUMBERS OF AMMUNITION FRAMES FOR FIELD ARTILLERY AS AUTHORIZED FOR STANDARD VEHICLES IN T/O's AND E's

T/O & E	Unit	M14 (3 rds) 240-mm How	5 Proj Frame 240-mm How	M17 (18 rds) 155-mm Gun & How	M18 (8 rds) 8-in How	M19 (5 rds) 8-in How	M20 (10 rds) 8-in How	7 Proj Frame 8-in How	M21 (6 rds) 155-mm Gun & How	M22 (8 rds) 4.5-in Gun	M25 (32 rds) 4.5-in Gun
6-37	*Truck-drawn 155-mm How, Firing Btry*										
	Truck, 4-ton, prime mover			2							
	Truck, 2½-ton, 5th section			2							
	Truck, 4-ton, 5th section			3							
	Trailer, ammunition, M10									3	
6-337	*Tractor-drawn 155-mm How, Firing Btry*										
	Truck, 2½-ton, firing btry hq			1							
	Trailer, ammunition, M10, fir btry hq								3		
6-37	*Truck-drawn 4.5" Gun, Firing Btry*										
	Truck, 4-ton, prime mover									2	1
	Truck, 4-ton, 5th section										2
	Truck, 2½-ton, 5th section										1
	Trailer, ammunition, M10									4	
6-337	*Tractor-drawn 4.5" Gun, Firing Btry*										
	Truck, 2½-ton, firing btry hq										1
	Trailer, ammunition, M10									4	
6-39	*155-mm How, Service Btry, Truck-drawn*										
6-339	*and Tractor-drawn*										
	Truck, 2½-ton, ammunition train			2							
	Trailer, ammunition. M10								3		
6-39	*1.5" Gun, Service Btry, Truck-drawn and*										
6-339	*Tractor-drawn*										
	Truck, 2½-ton, ammunition train									2	1
	Trailer, ammunition. M10									4	
6-57	*Truck-drawn, 155-mm Gun. Firing Btry*										
	Truck, 7½-ton, prime mover			2							
	Truck, 7½-ton, 5th section			3							
	Truck, 7½-ton, 5th section			6							
	Truck, 2½-ton, firing btry hq			1							
	Trailer, ammunition. M10								3		
6-357	*Tractor-drawn, 155-mm Gun, Firing Btry*										
	Truck, 2½-ton, firing btry hq			1							
	Trailer, ammunition. M10								3		
6-67	*Truck-drawn, 8" How, Firing Btry*										
	Truck, 7½-ton, prime mover				2	1					
	Truck, 7½-ton, 5th section				2	1					
	Truck, 2½-ton, firing btry hq						1				
	Trailer, ammunition, M10				1			1			
6-367	*Tractor-drawn, 8" How, Firing Btry*										
	Truck, 2½-ton, firing btry hq						1				
	Trailer, ammunition, M10				1			1			
6-97	*Truck-drawn, 240-mm How, M1918,*										
	Modified Firing Battery										
	Truck, 7½-ton, prime mover	6									
	Truck, 7½-ton, 3d section	6									
	Truck, 2½-ton, firing btry hq	2									
	Trailer, ammunition, M10		1								
6-397	*Tractor-drawn, 240-mm How, Firing Btry*										
	Truck, 2½-ton, firing btry hq	2	2								
	Trailer, ammunition, M10		1								

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 WAR WITH JAPAN (21 January to 20 February 44)

SOUTHEAST ASIA

There has been a decided increase of activity along the 1,000-mile border between India and Burma. On 23 Jan the British forces along this border were organized into the 14th British Army, under Lt.-Gen. W. J. Slim. The British pushed their patrol activity in a most aggressive manner.

The mountains being high, jungle covered, and difficult, contact with the enemy was restricted:

In Arakan: along the coast, along the general line Maungdaw—Buthidaung—Kaladan; in the Chin Hills: in the vicinity of Fort White, Kalemyo, and Tamu; in the Hukawng Valley: in the vicinity of Taipha Ga.

Arakan Campaign

Arakan has been the most active sector, and the only one involving operations of larger units.

At the commencement of the period the British held Maungdaw and the Japanese Buthidaung. The British 7th India Division had encircled the latter from the west, around by the north to the northeast side. Its operations consisted in a series of limited attacks; the Air Force would bomb a selected locality, after which ground forces would attack. Small advances were made every few days.

On 28 Jan the British used tanks for the first time in this campaign. Due to steep slopes the tanks were confined to valleys. Their progress could be observed from OPs on the high ground, and artillery support adjusted. Because of the terrain it is presumed that the enemy could do the same.

As there had been much discussion in the Allied press regarding an Allied attack on Burma, the Japanese commander in that country apparently assumed that the formation of a new army, the assignment thereto of a new commander, and the increase of activity were preliminary steps to a general offensive. He decided to assume the initiative first.

On 4 Feb he launched an attack in a northwest direction from the vicinity of Buthidaung. This broke through the British line, whereupon the Japanese marched northward on the west side of the Mayu River. On the same day another Japanese column approached the Mayu River and crossed in the vicinity of Taungs Bazar, without opposition. It then marched south, also on the west side of the Mayu River.

On 5 Feb the two Japanese forces joined, and by the 7th had seized and held Ngakyedauk Pass across the Mayu Mountains, through which the British line of communications to the 7th India Division lay. A Japanese detachment, later estimated as about 2,000 men, marched southwest. On the 6th this force reached the coast and captured and demolished the Ngayangyaung bridge, on the British main line of communications leading into Maungdaw.

Up to this date the Japanese maneuver appears to have been a complete success. The Japanese were so pleased that they issued a communique announcing that the main British force was encircled and approaching elimination.

In view of this situation the 7th India Division, without surrendering any key points, assumed a hedgehog defensive. The 5th India Division was detailed to recapture the Pass, while other available troops closed in from all sides on the enemy detachment at the bridge. Emergency measures were taken to supply troops by use of air transport and by opening other routes. All lines were held. A detached force of West African troops was ordered to attack south in the Kaladan valley.

The British counterattack was started on 10 Feb, when Taungs Bazar was reoccupied without much opposition. The Japanese at the Pass and at the bridge dug in and erected centers of resistance. They attacked vigorously any British in the vicinity. Very confused fighting resulted. On account of the jungle, the enemy could not be satisfactorily observed from the air. The British had air superiority but it afforded little advantage under the circumstances.

By 20 Feb, when this account closes, the 7th India Division was holding all its positions and was attacking north and east of Buthidaung. The 5th India Division was still clearing Ngakyedauk Pass:

At the end of January RAF heavy bombers struck at Rangoon (1) while British and Indian troops pressed the foe back on the Arakan front on the Mayu Peninsula (2). There was continued fighting in the Chindwin Valley (3). American bombers gave support to American-trained Chinese ground forces attacking in the Hukawng Valley (4).

it had almost cleared the west exit and was within 2 miles of the east exit. Japs west of the Pass, including the detachment that seized the bridge, had been broken up into small detachments. Some were still bringing fire onto the road, but appeared to be on the way to being eliminated shortly.

After minor patrol engagements the West Africa troops in the Kaladan valley had reached several miles below Kaladan.

Chin Hills

Vigorous patrol activity is reported. The line appears to be along the Chindwin River from the vicinity of Tamu to Kalemyo, thence west to Fort White (Tiddim on some maps).

Hukawng Valley

Through this valley lies the Ledo road, under construction from India to an eventual connection with the Burma road. Allied troops in this sector are American-trained and -equipped China troops, with American engineers and other attached units. American planes furnish air support.

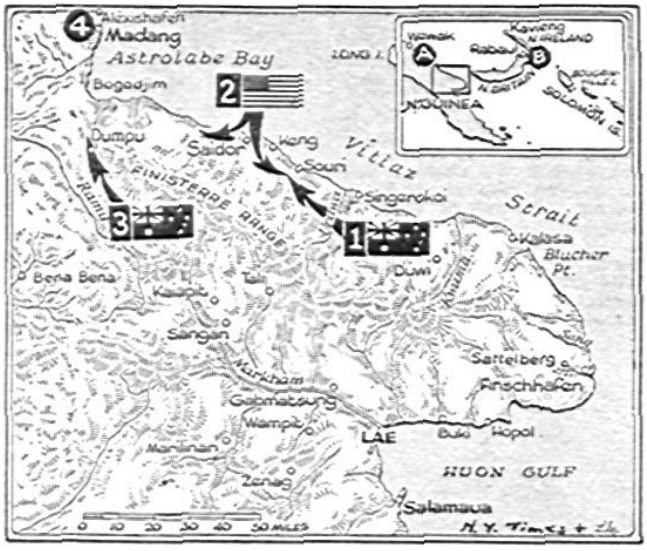
At the beginning of the period the Allies were approaching Taipha Ga. From there the line extended to Taro, in Allied possession. There has been constant contact with the enemy, with numerous engagements usually involving small forces of between a company and a battalion. Taipha Ga was captured on 1 Feb. By the 20th of the month Japs had been reported only 1 mile east of this place, but China troops had been 8 miles out to the east and south on previous occasions.

The Allied advance in this sector appears to be sufficient to cover the working parties on the road.

NEW GUINEA

On 20 Jan 3 Allied units were engaged on the north coast of New Guinea. In the Ramu valley an Australian force was advancing up the Faria River. On the coast, another Australian group was at Sio advancing westward; this force had American engineer troops and an Australian Citizens' Military Force attached. Units of the US 32nd Div had been previously landed at Saidor, in rear of the enemy who was facing the division coming from Sio; its mission was to act as an anvil against which the Australians would drive and break the enemy.

The Ramu valley saw the major engagements. The Australians attacked on 22 Jan, and in a series of engagements drove the enemy back from the headwaters of the Faria River, A saddle in the mountains beyond was cleared on 25 Jan. The division then commenced to descend the Moibjim valley. No report later than 2 Feb has been received regarding this force.



Australian troops struggling northwestward (*1*) *made a junction 14 miles east of Saidor with American forces* (*2*) *that landed near that coastal point 2 Jan. The Americans have also moved 10 miles westward and, together with Australian units in the Ramu valley* (*3*), *threaten the Japanese base at Madang* (*4*). *Alexishafen, near Madang, was bombed by the Allies, as were Wewak* (*A on inset*), *and Rabaul* (*B*) *and near-by Kavieng*.

The reinforced Australian force from Sio had an uneventful march along the coast, with occasional patrol contacts. It made connection with the 32nd Div near Saidor on 10 Feb. Along the way they counted approximately 1,200 Japanese dead, but had met practically no resistance. The enemy was supposed to have been a division of about 14,000 men. It was believed to have disintegrated through disease, starvation, injuries, etc. The combined Allied forces renewed the westward advance, and at the end of the period had made contact with the enemy at the Mot River.

On 14 Feb Rook Island (Umboi on some maps) was occupied by Allied forces. No enemy was found.

NEW BRITAIN

American forces previously landed, which had completed occupation of the areas around Arawe on the southwest coast and of Cape Gloucester and Borgen Bay, have exploited their gains. Contact by land has been established. As far as known no enemy remains in the west part of the island.

Japanese air establishments (including airfields) remain at Talasea and at Gasmata, respectively at about the center of the north and south sides of the island. The main Japanese base remains around Rabaul, at the northeast end.

Rabaul has been extensively attacked by air. Main Allied air forces come from the Solomon Islands. The flying distance from Bougainville is only 275 miles. The enemy has several air fields and a naval station; all are attacked by day or night or both, and almost daily. Naval forces have started to aid in attacking convoys bringing in supplies and replacements.

The tonnage of bombs regularly dropped, and the damage observed to shipping and barges, is extensive. The plan adopted apparently contemplates inducing the enemy to abandon New Britain without forcing the Allies to undertake a major expeditionary force to attack the remaining enemy posts. Should the enemy fail (or be unable) to do this, presumably there would be an expedition.

NEW IRELAND

The enemy maintains a major base at Kavieng, at the north end. This is over 400 miles from the nearest Allied fields. It has been and is being heavily bombed. An air blackade is being maintained over approaching shipping.

On 15 Feb New Zealand and American forces occupied Green Island (Nissan on some maps), which lies some 80 miles east of the south end of New Ireland and at a little less distance from the north end of Buka Island, which is adjacent to Bougainville. There was no enemy. In due course of time air fields will be available on this island; it will be one more Allied base in the South Pacific.

SOLOMONS

American forces hold a base around Empress Augusta Bay on the west coast of Bougainville Island. There has been considerable patrol and some artillery activity without much change in the situation.

Total enemy forces on Bougainville plus a detachment on Choiseul Island are estimated as 20,000 men. It is expected that with the capture of Green Island supplies for the enemy can be stopped, and that this will result in their capitulation.

NOTE: DATES IN REMAINDER OF THIS SECTION ARE THE LOCAL DATES. CORRESPONDING TO EAST LONGITUDE. DATES GIVEN IN USN COMMUNIQUES ARE HABITUALLY WEST LONGITUDE DATES. WHICH ARE ONE DAY EARLIER THAN LOCAL TIME.

CAROLINE ISLANDS

Army planes bombed Ponape on 15 Feb. One small ship was reported sunk. Ponape and Kusaie were bombed in another flight on the 18th.

The major attack was by a powerful Navy Task Force. On 17 Feb several hundred planes were flown from it against Truk. This group of islands is reported as the main base for Jap sea and air operations in the South Pacific.

Details of this attack are not available. The American and Japanese communiques are substantially alike, and give a summary. Our planes attacked on 17 and 18 Feb. Air opposition was encountered on the first day but none on the second. AA fire was heavy on both days.

Damage involved the sinking of 2 Japanese cruisers, 3 destroyers,

and 17 other ships, and a serious amount of destruction to shore installations. The Japanese admit the loss of 120 planes. We claim having downed 127, but also claim 50 others damaged. Our loss was reported as 17 planes, plus 1 ship damaged.

At date of writing the effect of this raid cannot yet be determined. It is a new and extensive increase in the range of American naval and air operations.

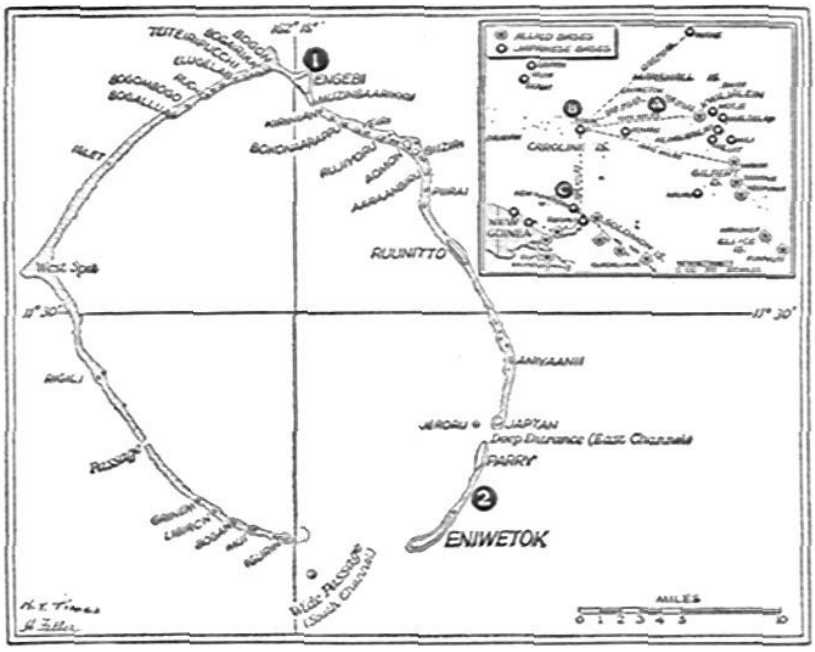
MARSHALL ISLANDS

The Marshall Islands consist of two parallel chains extending from northwest to southeast, about 150 miles apart. The eastern chain is the Ratak, the western, the Ralik. The former has 16 atolls, the Latter 18; the atolls extend over 600 miles from north to south. Each atoll is of irregular shape and of coral formation, and consists of a number of islets surrounding an interior lagoon. Depth of the lagoon seldom exceeds 150 feet. Outside the atoll the water drops quickly to great depths. All islets are low: the highest elevation reported is 33 feet, which is unusually high. The soil is sand, except for a few places where decayed vegetation is mixed with sand.

The administrative head of the islands has been Jaluit, an atoll of 50 islets near the south end of the Ralik Chain. Other atolls where the enemy had established airfields or other military works are:

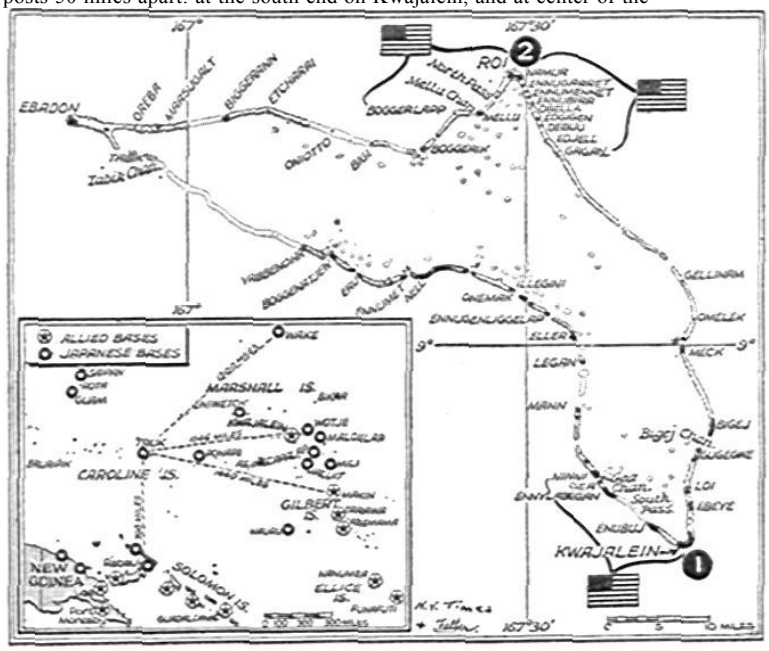
In the Ralik Chain: Ailinglapalap, Kwajalein, Eniwetok (or Brown); Radak Chain: Wotje, Maloelap, Mifi.

Military operations against these islands have centered about Kwajalein atoll, at the north center of the Ralik Chain. Its general shape is an are 80 miles long and 20 miles wide at the center, tapering off to the two ends which point nearly west and south, respectively.



American soldiers and marines, supported by capital ships and planes, established beachheads on the atoll of Eniwetok in the Marshall group. Its most important islands are Engebi (1), which has an excellent airfield, and Parry and Eniwetok (2). As our forces landed on the atoll (A on inset), the Japanese hinted at fighting on Truk (B), but Secretary Knox, reporting a big victory there, said the action had been solely an aerial strike. In the southwest Pacific Allied fliers completed the virtual destruction of a convoy off New Hanover (C), sinking twelve merchantmen and three warships.

The enemy's forces (of about 8,000 men) were divided between two posts 50 miles apart: at the south end on Kwajalein, and at center of the outer are on Roi and Namur, connected islets. Each of these posts had an airfield, a pier, supply dumps, barracks, and usual post accessories. Our expedition to capture Kwajalein was commanded by Rear Admiral R. K. Turner. Ground troops, consisting of a provisional corps of two divisions, were under Maj. Gen. H. M. Smith, USMC. The 4th Marine Division (under Maj. Gen. Harry Schmidt) was detailed to capture Roi and Namur, and the 7th Inf Div (Maj. Gen. Charles H. Corlett) was to attack Kwajalein Island.



Army forces were mopping up Japanese forces on the southern end (1) of Kwajalein Atoll, while marines at the northern end (2) had already wiped out all but a handful of the enemy and were proceeding with the completion of their task. A great United States fleet anchored in the huge Kwajalein lagoon. The inset map shows the relationship of Kwajalein Atoll to the central, south and southwest: Pacific areas, including the big Japanese base at Truk.

Prior to the attack an extensive bombing campaign was undertaken. In the period from 21-29 Jan 14 major air attacks were delivered against the 3 enemy bases in the Radak Chain, of which 7 were against Maloelap. During the same period 7 attacks were made against bases in the Ralik Chain, of which 2 were against Kwajalein.

The naval force covering the transports and landing craft transporting the two divishions included numerous aircraft carriers, battleships, and other war vessels. Air forces based upon the recently captured Gilbert Islands were in support. Naval air forces were commanded by Rear Admiral M. H. Mischer, army air forces (7th Air Force) by Maj. Gen. Willis H. Hale.

On 30 Jan the leading elements of the amphibious expedition, consisting of the warships and aircraft carrier force, arrived opposite the two selected objectives in the Kwajalein atoll and immediately started a vigorous shelling and bombing. Detached forces at the same time attacked Eniwetok, at the north end of the Ralik Chain, and Wotje and Maloelap in the Radak Chain. The enemy realized that a major attack was involved, but his communiques indicate that he was unable to determine where the blow would fall.

During the ensuing night (30/31 Jan) 45 tons of bombs were dropped on the Kwajalein objectives and 10 tons on Wotje. Minor amounts were dropped on Jaluit and Mili, at the south ends of the two Chains.

Preparatory fire started on the 30th and continued on the 31st. An air fight occurred around Roi Island

during which 18 enemy planes are reported as having been downed while 50 others were noted on the ground, burned out or damaged by the preparatory fire.

On 1 Feb the preparatory fire was continued all day on Kwajalein and Roi. Army planes also bombed Wotje and Maloelap, while Navy planes attacked Eniwetok. Under protection of the naval fire and air cover, troops started landing.

Shortly before 1000 hrs the 4th Marine Division landed 4 miles southwest from Roi on two undefended islets, Boggerlapp and Mellu. Between these two islets a good channel leads into the lagoon. As soon as it was ascertained that this was clear, ships passed in and debarked additional troops on three islets southeast of Namur: Ennugarret, Ennumennet, and Ennubirr. During the remainder of the day, besides continuing the preparatory fire on Roi and Namur, the division artillery was emplaced on the captured islets to be ready to fire by daybreak in support of the attack on Roi and Namur.

Roi Island is a quadrilateral with diagonals about ⅞-mile long; these were the airways. Except for hangars and other air accessories, and a coastal battery facing west, there was little else on this island. Namur is 400 yards southeast of Roi. The islets are connected on the lagoon side by a sand bar, and northeast thereof by a road parallel to the bar and 400 yards beyond it. On Namur was the post, and a coast battery facing north and east. Japanese coast batteries appear to have been completely neutralized by the preparatory fire.

On 2 Feb a regiment of Marines attacked Roi by landing on the south side of that islet. It was covered by naval shell fire, by its own division artillery on the islets taken the day before, and by air cover. Troops reached shore with only light losses. Artillery fire was displaced northward as troops moved inland. The right battalion was held up 200 yards from the beach by a strong point covering the approach to the road and sand bar leading to Namur. By use of flame throwers and tanks this was slowly reduced. By 1400 hrs the entire island was in American possession.

A landing on Namur met stronger resistance. The troops called for air assistance, which had not been needed on Roi. With the aid of troops from Roi, the south side of Namur was occupied in hard fighting. The enemy's main line of resistance was found to be about 200 yards back of the beach. Darkness stopped the advance, with the Japs holding the north half of Namur. During the night hours a number of Japs infiltrated into the American lines to constitute a sniper problem on the next day.

On 3 Feb the American attack was pushed on Namur. Troops used bazookas and flame throwers to reduce concrete pill boxes. Division artillery furnished general support. The advance proceeded without serious interruption and ended by 1300 hours. Except for snipers this ended the battle at Roi and Namur.

While Roi and Namur were being attacked, the 7th Inf Div attacked Kwajalein. On 1 Feb initial landings were made on undefended islands: Ninni, Gea, Ennylabegan, and Enubuj, which were from 10 to 3 miles northwest of Kwajalein. The division artillery was then emplaced. The landing on Gea was unintentional: it was made just before dawn in mistake for Ninni.

On 2 Feb a landing was made on Kwajalein at the southwest end, which was that nearest to the seized islets. Kwajalein has the shape of an are, with 2½-mile axis. The are centers around the lagoon. The end of the island where the landing was made had a coastal battery, found neutralized by the preparatory fire. In rear of this was the airfield, its far end being about a mile beyond the landing beach. The north end of the island contained the post.

The initial landing was not seriously contested, but strong resistance soon followed. Progress was slow. The average width of Kwajalein island is only ⅜ of a mile, so only a small number of troops could be deployed for the attack. They had, however, all the division artillery, strong air forces, and a most powerful naval fire. With this assistance the advance made about one mile.

On 3 Feb the attack was renewed but (due to the small front) in spite of the very strong artillery assistance available, progress was slow. It was therefore decided to attack Kwajalein from the north.

On the 4th, after suitable preparation fire furnished by the Navy and the Air Force, the 7th Inf Div landed troops on 3 islets north of Kwajalein: Gugegwe, Loi, and Ebeye. At all three islets opposition was met, but it was serious only at Ebeye, the nearest of the three islets to Kwajalein.

On 5 Feb the attack was renewed against both Ebeye and Kwajalein. For the Ebeye operation artillery on Enubuj supported the attack at a range of 13,000 yards. Naval fire aided. Enemy resistance was overcome during the afternoon.

On Kwajalein troops, with tanks leading, advanced under cover of an intense naval and artillery shelling. The Air Force bombed liberally. Japanese resistance crumbled and ended before the end of the day. Some Japs surrendered as the result of an appeal made over a loud speaker.

On 6 Feb isolated snipers were suppressed, and detached enemy forces at Gugegwe, Bigej, and Eller islets were overpowered. The other islets of the atoll were undefended.

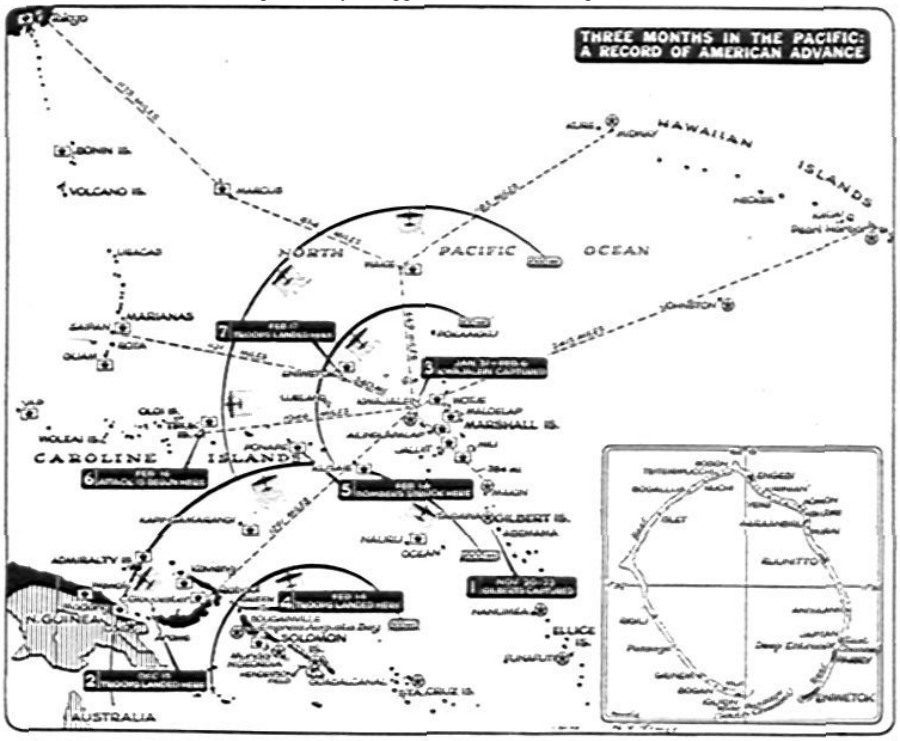
Casualties have been reported as:

	Killed	*Wounded*	*Missing*	*Total*
Americans				
at Roi and Namur	**129**	**436**	**65**	**630**
Kwajalein	**157**	**712**	**17**	**886**
Total	**286**	**1,148**	**82**	**1,516**
Japanese				
at Roi and Namur	**3,472**			
Kwajalein	**4,650**			

8,122; some prisoners were taken.

Eniwetok Atoll is at the northeast of the Marshall Islands. Like the others of the group it is a circular reef with a number of islets, roughly 25 miles in circumference, surrounding a lagoon. The enemy had an air base at the north end, on Engebi, a triangular shoped islet about 1½ miles on each side.

A Naval Task Force escorted an expedition consisting of the 22nd Marines and part of the 106th Inf. Rear Admiral R. K. Turner was in command. On 18 Feb the expedition delivered a strong artillery preparation against 10 islets close to and both east and west of Engebi. There was practically no opposition, and the troops were then landed.



At 0600 hrs on 19 Feb the Navy fired a strong preparatory fire against Engebi, then the 22nd Marines were ferried over from the islets. The shelling had killed a large number of Japs, and disabled most of the beach defenses. By afternoon all resistance had been overcome, but not before a short, sharp fight in which our casualties are reported as 150 killed and 350 wounded.

As this account closes, Eniwetok (less Parry, an islet at the east edge) has been occupied. Operations aaginst Parry are under way.

COMMENTS

1. Operations against Japan have been speeded. The Marshall Islands have been all but captured, and operations have been commenced against the Caroline Islands. Other operations toward New Ireland and New Britain and in New Guinea have been advanced. Only on the Burma frontier has progress been limited: due to the Japanese counteroffensive, what had promised to be a successful advance is temporarily delayed.

2. Operations against the Marshalls have differed from the preceding one against the Gilbert Islands. In the Marshalls care was taken to completely cover all targets with strong artillery fire in advance of the landing of troops.

Navy reports indicate that against Roi and Namur 5,000 tons of ammunition were fired by guns prior to the landing. The combined area of these two islets is about 7/16 of a square mile, or 280 acres. It took three days to fire the preparation. This works out as 143 tons of ammunition for each acre, or nearly 48 tons a day for three successive days. The enemy subjected to this fire is reported to have been killed, wounded, or stunned. Many survivors were unable to handle their weapons.

The enemy garrison was larger than that at Tarawa in the Gilberts. The casualties they were able to inflict on the Americans were much less. The artillery preparation accomplished its mission.

3. The naval forces used by the Allies in the Pacific have been so large that no enemy naval force dared to intervene. The Japanese have been unable to relieve any position of theirs which was attacked. They are well aware of this condition and are busy building a greater air force with which to cope with future Allied offensives. They have decided that they have a chance this way. They have no hopes of being able to build a navy comparable to that of the United States.

WAR IN RUSSIA (21 January to 20 February 44)

There has been no change in the strategical situation during the period. The Russian armies have been on both the strategical and tactical offensive, the German armies on the strategical defensive and usually on the tactical defensive; they occasionally assume the tactical offensive to force the Russians to maintain a reserve to meet sudden thrusts. If forces were not quickly available to meet these they might penetrate into Russian rear areas and cause considerable trouble.

The general result of the war has been decided Russian gains in the north and south sectors. Only minor gains were made in the center.

Operations will be considered by sectors:

North—Leningrad to vicinity of Novosokolniki (exc.)
North Central—south to the Pinsk Marshes
South Central—south to a line through Kremenchug and Kirovograd
South—south to the Black Sea

NORTH SECTOR

The line as of 16 Jan was

Gulf of Finland (with Russian beachhead around Oranienbaum)—Peterhov (German)—Uritsk (3 miles from Leningrad) (G)—Pulkovo (Russian)—Pushkin (line through this town)—Kolpino (R)—Petrushino (G)—Mga River (German bridgehead at Mga)—Lyuban (G)—Soltsi (R)—Volkhov River (German bridgeheads at Grusino and Novgorod)—Lake Ilmen—Polista River (with German bridgehead at Staraya Russa)—Utekhina (G)—Kholm (G).

Prior to this period the only activity in this area for a year had been raids for orientation purposes, and a German shelling of Leningrad which had started in October and continued day and night. This was an increase over intermittent shelling which had been going on since August, 1941. It now appears that this renewal of German artillery activity may have been a ruse to lead the Russians to believe that an offensive was intended.

From a British report, the German High Command decided to abandon the Leningrad area as early as last September. This, said the report, was ordered in August, the result of the conference at German GHQ (held between 29 Jul and 5 Aug) at which it was decided to withdraw from south and central Italy and from a large part of Russia. While the retreats were to be prepared for, they were not to be carried out any sooner than necessary. The enemy was to be induced to wear himself out by continuous offensives against prepared positions. It was hoped that with time this would result in a decrease of the Allied superiority in numbers over the Axis.

It seems probable that the decision to withdraw from around Leningrad was confidentially promulgated not later than August. Subsequent events indicate that the withdrawal did follow a plan. The lack of surprise on the part of Finland indicates that it was informed in advance, as Italy had been. The British report that necessary preparations for a withdrawal had been completed by September may be correct, but as no Russian attack came the front lines were held.

Rusisa prepared an offensive which was launched by 3 groups on 15 Jan:

Leningrad Army Group (Gen. Leonid A. Govorov) from the vicinity of Leningrad would attack toward the line Narva—Luga, both inclusive.

Volhovo Army Group (Gen. Kiril A. Meretskov) from the Volkhov River south of Volkhovo would attack toward the line Luga (exec.)—Shimsk.

The foregoing 2 Army Groups, between them, are reported to have had 40 infantry divisions and the equivalent of 20 armored divisions. Their distribution between the Army Groups has not been ascertained.

There was also a

Liaison Group, in the sector Soltsi—Volkhovo, which was to maintain contact with the main forces as they advanced.

German forces in this area were the 18th Army under Field Marshal George von Kuechler. According to Russian reports, the Germans had 23 infantry and 4 tank divisions. In line opposite the Leningrad Army Group on a front of 21 miles were 7 divisions, about 9 were opposite the Liaison Group on a front of 70 miles, and about 11 on a 45-mile front opposite the Volkhovo Army Group. All figures include divisions in reserve. The front was strongly fortified.

The winter had been unusually mild. Extensive swamps were only thinly frozen over; it was impracticable to move vehicles over them. Many stream lines, which ordinarily were frozen solid, were open. This condition prevented extensive movements over large areas. Between swamps, troops (other than ski troops) were confined to roads. These were so muddy that vehicles constantly bogged down. It was necessary to use large numbers of infantry to drag equipment forward.

All this greatly aided the defense. It enabled the Germans to withdraw under protection of rear guards as and when ordered.

Leningrad Offensive

On 15 Jan the Russian attack was launched

From Oranienbaum: main attack toward the east, secondary one toward the south;

From Pulkhovo: main attack toward the west.

The country in these sectors was generally flat, and covered with small towns, parks, woods, and streams. At Pulkovo is Hill 75, the only hill in the area; it was the site of the observatory. It happened that between it and the main German positions around Krasnoe Selo the country was more open than elsewhere. In this area over which observation was good, the main part of the artillery preparation was directed. This lasted for 4 days; it appears to have been precision fire.

Due to restricted space the number of batteries used was below the usual Russian standard: it was about 160 guns to the mile. To balance this relatively small number the guns are stated to have been mostly of larger calibers. Then they fired for 4 days instead of for 4 hours. Approximately 20,000 shells per day per mile of front

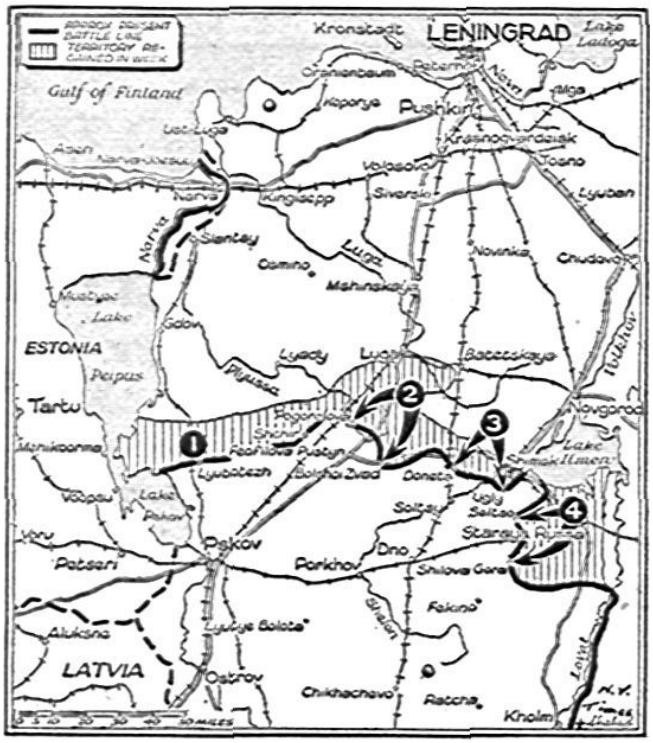
were expended, which required only 125 rounds per gun per day. At that time daylight lasted only about 6 hours.

Russian attacks advanced on 16 Jan. and thereafter each day. They occupied successive lines which had been battered by the artillery. Number of tanks used is reported as 40 per mile of front. Losses for 2 days on a 5½-mile front were 121 tanks, or 11 tanks per mile per day.

On 19 Jan the attack from Oranienbaum reached the line Peterhov—Ropsha, a 10-mile front, and that from Pulkovo reached the line Konstantinovka—Krasnoe Selo—Duderhof, a 6-mile front. The secondary attack from Oranienbaum teached Kusheritsy, 16 miles southwest of Oranienbaum. The average advance in the main sectors for 4 days was nearly 6 miles. In this situation the German High Command issued orders to withdraw southward from the sector attacked, and also from the Mga area.

On 20 Jan the 2 Russian attacks from Oranienbaum and from Pulkovo joined, and were refaced to advance toward the south. This started on the next day. At first it moved slowly. Pushkin, only 3 miles from the original Russian line, was not cleared until 24 Jan. A very hard fight followed, centering about Krasnogvardeisk (or Gatchina), which was occupied by the Russians on the 26th. This was a 16-mile advance to date. At the same time the Russian Liaison Group was advancing across the Mga River. This area contains large swamps, with restricted passageways across them. All were mined; the pursuit was slow. German rear guards used special combat groups of tanks and grenadiers (infantry in armored tractors). At suitable places, selected in advance, they would conceal themselves in the forest. When the pursuers came along the combat group would attack them from the flank by fire action, forcing a halt and the taking of protective measures. The combat group would then move off, having accomplished its mission of causing a delay.

The Russian advance was constant but slow, without major engagements. It reached Siverski, 13 miles from Gatchina, on 30 Jan, averaging about 2 miles a day. On 1 Feb the Russian right reached Narva (exc.) and the Narova River. This was an advance of 65 miles from Oranienbaum.



In conquering drives on the large junction of Pskov the Russians' nearest point remained Lyubotezh (*1*) *at the end of the period, but forces were advancing from other directions. To the northeast they took Pogorelova and Bolshoi Zvad* (*2*). *Farther east they occupied Donets and Ugly* (*3*). *Thrusts from the Staraya Russa sector encompassed Seltso and Shilova Gora* (*4*). *The immediate objective in this eastern area is the junction of Dno*.

On 12 Feb the left captured Luga, 80 miles south of Leningrad. The Luga River has steep banks. The country was water-logged. Only ski troops could operate off the roads; these were sent across the river above and below Luga and attacked from the flanks. The Germans then pulled out. Connection was made at Luga with the right of the Volkhovo Army Group which had arrived in the vicinity.

The southward advance was renewed, with the immediate objective the line Pskov—Dno. By 20 Feb the Russians had covered about half the distance to Pskov, having by then passed Plyusa, 124 miles from Leningrad. For the entire period the Russian advance gained about 4 miles a day.

Novgorod Offensive

The Volkhovo Army Group attacked on 15 Jan, the same day as the Leningrad Army Group. Its attack had an initial front of 19 miles, with axis of advance along the line Sheveleva—Luga. It was preceded by a powerful artillery preparation which was planned to clear the way for infantry and tanks by neutralizing or destroying many centers of resistance. But first it was necessary to force a crossing of the Volkhovo River as the attack was north of the German bridgehead.

The first crossing appears to have been effected on the 18th, which was expanded to include Podberesye next day. On that day the German High Command ordered the commencement of their withdrawal. This was the same date as that on which the order was issued for a withdrawal from the Leningrad area, with which this one was coordinated.

On 20 Jan the Russians started a new attack south of Novgorod, between that town and Lake Ilmen. This met little resistance: it circled around and came up in rear of the city. This cut off some Germans who had not yet abandoned Novgorod. Attempting to withdraw to the woods to the northwest they met other Russians coming down from the north. About 3,000 Germans were reported as captured, besides a considerable number killed. Thereafter the Russian advance moved steadily forward.

The Liaison Group

This command followed the German withdrawal, although handicapped by the small number of available roads. The Germans, surpassed themselves in creating road obstacles by felling trees and concealing under the snow, mines and hooks to catch the treads of track-laying vehicles. Swamps too soft for vehicles to traverse, and large forests, impeded detours. Under these circumstances, plus determined defense of all villages by German rear guards, the Russians just about kept up.

When the two Army Groups united near Luga on 12 Feb the Liaison Group appears to have been discontinued.

General

On 17 Feb the Germans withdrew from Staraya Russa. This had long been one of the best-defended places on the Russian front, and it had withstood many previous attacks. This withdrawal seems to have been unexpected by the Russians. They entered the town next day.

By 20 Feb, when this account closes, the Germans were still withdrawing between Lakes Peipus and Ilmen. The line then was

Narova River—Lake Peipus—Sheltcha River (R)—Plyusa (R)—Soltsi (G)—Shimsk (R)—Staraya Russa (R)—Sokolovo (G)—Kholm (G)—Utekhina (G).

NORTH CENTRAL SECTOR

At the beginning of the period the line was

Utekhina (G)—Novosokolniki (R)—Nevel (R)—Vitebsk (G)—Liozno (R)—Krasnoe (R)—Gorki (?)—Chausy (G)—Rogachev (G)—Zhlobin (G)—Kalinkovichi (R)—Mozyr (R)—Yelsk (R).

Three Russian offensives have been tried in this area. None succeeded.

The 2nd Baltic Army Group (Gen. Markian M. Popov) attacked northwest from the Novosokolniki area on 29 Jan. This force's designation indicates that its mission might be to advance to the Baltic Sea; however, this offensive was discontinued within two days. Little is known as to details but it is presumed that either the German resistance was found to be too strong to break through or that this was a feint.

Another Russian Army Group then attacked Vitebsk on 2 Feb. The Russians had a line extending from the northwest side around to the southeast side, and averaging under 10 miles out. Vitebsk is

a strong center of resistance. It had previously been repeatedly attacked. Once more it resisted attempts to capture it.

This Russian attack lasted continuously until 16 Feb. The Germans report that during this period they identified over 50 Russian divisions. The active front is about 30 miles, which would let about 15 Russian divisions be employed at a time. No important gains were made.

The third Russian offensive was between the Berezina and Pripet (or Pripyat) Rivers. This is a front of 45 miles. German identifications reported 30 Russian divisions in this area, not all in line at the same time. The space permitted using at one time 20 divisions in the usual Russian deployment. The attack started on 16 Jan, one day after the major attacks in the north sector. In 5 days this offensive advanced about 8 miles to a line beyond Osarichi. Then it stalled. Daily attempts were made to advance either on the right, on the left, or in the center. In spite of heavy fighting none were able to get forward. On 10 Feb this offensive was suspended, with no substantial change in the line except as to Osarichi.

In the north central sector the Germans gained what they termed a defensive success. This is to cause the enemy to suffer proportionately higher losses in attacks which are not decisive, than the defenders.

SOUTH CENTRAL SECTOR

The line at the beginning of the period was

Yelsk (R)—Petrikovo (R)—Mostva River (?)—Dombrovitsa (R)—Sarny (R)—Slucz River—Novograd Volynski (Russian bridgehead) (R)—Baranovka (R)—Liubar (?)—Ilanov (R)—Lipovets (G)—Zhivotov (?)—Zhaskov (R)—Tarashcha (G)—Kagarlyk (R)—Russian bridgehead on west bank of Dnepr River opposite Pereyaslav—Cherkasi (R)—Smela (G)—Medviedovka (R)—Yelisavetgrad (or Zinovievsk) (R)—Kirovograd (R).

The Russian 1st Ukraine Army Group (Gen. Nikolai F. Vatutin) covered the area north of the Pereyaslav bridgehead; the 2nd Ukraine Army Group (Gen. Ivan S. Konev) had the territory to the south.

A German counteroffensive had been in progress since 11 Jan. It was headed toward Kiev, and by 20 Jan had reached the vicinity of Zhaskov. Although advancing very slowly it was a strong attack.

Russian GHQ conceived a maneuver to relieve this situation. Opposite the Russian bridgehead below Pereyaslav the Germans held a salient 50 miles wide at the point and 65 miles wide at the base. It was decided to cut this off by striking simultaneously across both sides of the base and thereby encircle the German forces (estimated at about 10 divisions) within the salient. As the strong German force near Zhaskov might turn eastward and intervene, it was necessary to prevent this possibility.

The plan was for the 2nd Ukraine Army Group to attack northward from the vicinity of Kirovograd, breaking through the German defenses. Using motorized troops and keeping east of the line Kirovograd—Shpola it would then move rapidly to the rear of the German salient and, facing eastward, attack and destroy the enemy troops within. To assist this force the Russians within the Pereyaslav bridgehead and around Cherkasi would attack the German salient to hold the Germans while their forces from the south were taking position.

There was the possibility that the German forces engaged in their offensive, and estimated at not less than 15 divisions, might proceed east and thereby take Gen. Konev's divisions in reverse. To prevent this the 1st Ukraine Army Group was directed to disengage whatever forces were possible in front of the German offensive and, uniting these with others available, break through the German front in a southeastwardly direction between the Ros and Dnepr Rivers. Once through the enemy's lines it would swing to the right and take position in rear of and back-to-back with Konev's forces, prepared to oppose the German mass of maneuver then in the general vicinity of Zhaskov.

Timing and movements of the 1st and 2nd Ukraine Army Groups plus the contingents from Cherkasi and Pereyaslav, involving breaking through two hostile fronts in face of a German mass of maneuver, was a complicated problem. As will be seen, Russian GHQ successfully coordinated the movements without any force interfering with another.

Pending the assembly and preparation of this contemplated offensive the Germans continued on with theirs, unsuspicious of the Russian plan. Their mass of maneuver consisted of about 15 divisions (under Gen. Huber) on a 50-mile front extending from south of Pogrebishche to south of Zhaskov. It had been advancing and reorganizing since 11 Jan. but had made only small territorial gains. Its mission seems to have been to threaten the left flank of the Russian forces which had been advancing from Kiev to Poland, and at the same time to inflict as large losses as possible on the Russians while conserving their own strength. All movements were made with caution.

At the beginning of the period this force was reorganizing. It started a new offensive on 24 Jan by attacking northward with its left, then southwest from Pogrebishche. Next day the center attacked, and with the help of a strong air support penetrated the Russian lines. On 26 Jan the attack was further extended to include the right; it made new short gains.

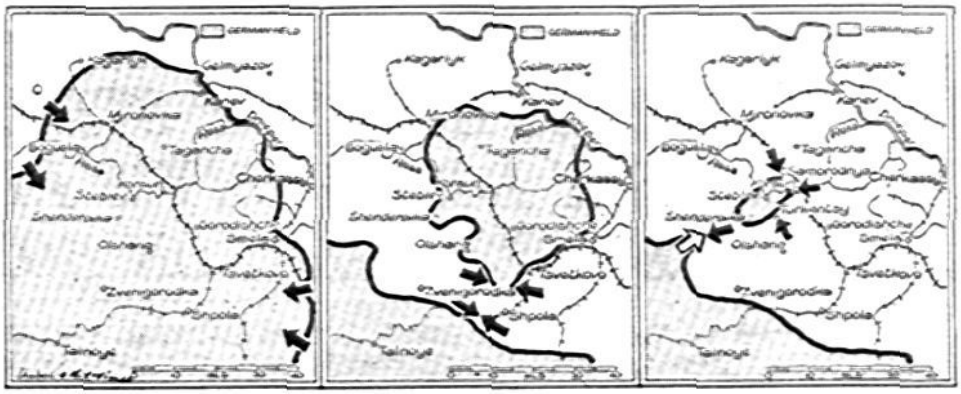
The German assaults were made by combat groups of about 20 tanks and one battalion of infantry, or 30 tanks with 2 infantry battalions. Self-propelled guns accompanied the column. Battle planes scouted ahead to warn against counterattacks and to locate weak points in the enemy lines. If resistance of a serious nature was met, the German artillery was called on to neutralize it. Assaults were not undertaken unless the risk appeared to be small.

During the next two days—27th and 28th—the German offensive was continued. The advance was limited, and in places Russian counterattacks recovered terrain. In view of the situation in other sectors the Russians withdrew on the 29th, although this involved abandoning some troops in forward areas. The Germans were thereby able to capture a few isolated posts. Next day they too discontinued their offensive.

For this 7-day battle—24 to 30 Jan—the Germans claim that the Russians lost 6,500 prisoners, about 8,000 killed, 700 tanks, 680 guns, and an unstated number of motor vehicles. The Russians state that the Germans lost 512 tanks and 175 guns, without giving other figures. For a 50-mile front these losses are not excessive.

Korsun Campaign

Korsun is a small town nearly at the center of the German salient which reached the Dnepr River on a front of 50 miles. It was divided by the Ros River, which flows southeast past Bel. Tserkov and Korsun parallel to the Dnepr, then turns northeast into the Dnept.



Before the Red Army sprang its trap the Germans held a wide area of the Ukraine abutting on the Dnieper River west of Cherkassy. Russian forces began closing in from the northwest and the southwest.

After the two Soviet forces had joined on 3 Feb between Zvenigorodka and Shpola, 10 German divisions were caught in a pocket surrounded by walls of Russian troops. The Russians started to compress the area.

By mid - February Soviet forces whittled the pocket down to about 100 square miles. They captured its core. Korsun, as well as Turkentsy and Samorodnya. The Germans were trying to break in from the southwest.

This salient was held by part of the German 8th Army (Gen. of Artillery Stemmermann, commanding). According to Russian accounts it contained 9 infantry divisions, 1 panzer division, and 1 Elite Guard brigade, motorized. The panzers were the Viking Division, reported as largely Norwegians and Danes. One of the infantry divisions was partly Belgian. The terrain of the salient was rolling, interspersed with woods and numerous villages. It had not been devastated; its inhabitants were on the land. The Ros River has steep banks. Due to a mild winter the ground was soft and rivers were not frozen over.

The initial Russian movement, under the plan already described, occurred on 24 Jan. The 2nd Ukraine Army Group launched an attack by several divisions northwest from Kirovograd, to secure a better position for a major attack later. This objective was accomplished by the following day, whereupon this offensive was temporarily discontinued. The Germans appear to have interpreted this to mean that the Russian attack had bogged down.

On 26 Jan the same Army Group launched another offensive southeast from Cherkasi, directed toward Smela. At the same time the 1st Ukraine Army Group launched its major attack from the vicinity of Bielo Tserkov, with axis of advance eastward toward Kanev. It made one penetration.

Both Russian attacks were continued on the 27th, that toward Smela being extended on the Russian right. Both made progress. On the 28th the Germans yielded Smela. The attack from Bielo Tserkov made considerable progress down the left bank of the Ros River, but the opposite flank did not do so well.

On 29 Jan the main 2nd Ukraine Army Group's force renewed the attack from northwest of Kirovograd. It was headed west. The 1st Ukraine Army Group pushed on eastward. Both Russian forces were in great strength, and contained numerous armored troops. Both succeeded in reaching German rear areas. The Russians from Smela attacked toward the west and northwest.

On 30 Jan the 1st and 2nd Ukraine Army Groups, having arrived in rear of the German lines, changed direction. The 2nd marched north, with its right directed toward joining its own forces near Smela, thereby starting a ring around the German 8th Army within the salient. The 1st turned to the south and advanced through Boguslav toward the line Zvenigorodka—Shpola, a 35-mile front. The strength of the two Russian forces has not yet been made known. The fronts, and the strength of the opposing German forces, indicate that each Russian force had 12 to 15 divisions, all motorized. They may have had more.

These two large Russian columns traveling through enemy rear areas were attacked from all directions by any German troops that happened to be around. Those by minor forces were not decisive but they did cause some delay.

The Russians from the south had about 60 miles to go, those from the north an average of about 50. These distances were covered in 4 days, which involved numerous fights. By the evening of 3 Feb the 2nd Ukraine Army Group had with its left passed Shpola, had joined with its troops from Smela, and was facing the Germans within the Korsun salient from the east and south. Other troops from the Pereyaslav bridgehead faced them from the north. The Russians united to encircle the Germans completely.

On the same day the 1st Ukraine Army Group reached its assigned position in the area north of Zvenigorodka, facing west, ready to prevent any German relief expedition from rescuing their comrades within the now cut-off salient.

Up to this point the Russian maneuver had been completely successful. The 2nd Ukraine Army Group was designated to complete the reduction of the encircled Germans. The 1st Ukraine Army Group was to prevent enemy interference from the outside.

The German High Command (under Field Marshal von Mannstein) acted quickly, although they were undoubtedly taken by surprise by the Russian maneuver and handicapped by the fact that the greater part of the encircled Germans were slow-moving infantry divisions, thereby slowing the movement of the entire force to their speed.

Gen. Stemmermann was instructed to concentrate his troops on the south side of the Ros River. He was then to fight his way westward along the general line Lisianka—Risino. A relief force was immediately ordered assembled. The Panzer Divisions of this force were under Gen. Breit, other divisions under Lt. Gen. von Vormann. The 8th Air Force (Lt. Gen. Seidemann) was in support. It was ordered to supply the encircled troops with food, ammunition, and gasoline, and to bring out sick and wounded. The relief force was to attack eastward along the same line but in the opposite direction as the encircled force.

Details of the ensuing battle are only partly known at date of writing. The Russian account claims that on 17 Feb the 2nd Ukraine Army Group had accomplished its mission by completely annihilating 10½ German divisions within the Korsun salient. The German account is that on that day the encircled troops and the relief force made connection, and that by 19 Feb the encircled divisions were reincorporated into the German defense line. The truth appears to lie between the two claims. The Russians specified that the German encircled troops had been completely accounted for as 52,000 killed and 11,000 prisoners. This total of 63,000 men is below the strength of 10½ divisions at normal figures, even making no allowance for corps and army troops likely to be within the area.

In an early report the Russians mention the name of the German commander of the encircled troops, but it is not given as among the prisoners or killed.

The day-by-day reports of places captured by the Russians from the encircled Germans list places generally in the order from east to west, which could be accounted for by the movement of the Germans in that direction.

The German account states that in this campaign the Russians lost 728 tanks and SP guns, 800 other guns, and several thousand prisoners. They do not state their own losses, which were probably severe. The German 8th Air Force reports taking out 2,400 wounded, while ferrying ammunition, food, and gasoline to the encircled troops. 32 transport planes were lost and 58 enemy planes are claimed as having been downed. One Russian report states that 15 transport planes were shot down in one day; of these one was found to be taking passengers out of the encircled area, the others were taking supplies in.

Regardless of the number of killed and prisoners, and of booty taken or lost, this campaign gained the Korsun salient to Russia. It drove the Germans 60 miles back from the Dnepr River on a front of over 50 miles.

Other Activity

Outside the Korsun Campaign, other activities in the South Central sector have been minor. Without serious fighting the head of the Russian advance in Poland pushed on to Rowne and Luck, which were occupied on 5 Feb. Shortly afterward Dubno was also taken without much opposition. Shepetovka was attacked by the Russians on 2 Feb, but here there was resistance and it was not taken until the 11th.

Lack of German resistance in this area may have been due to withdrawal of divisions sent eastward to join the Korsun relief expedition then under way. The first of such movements was ordered on or about 31 Jan, and involved 8 panzer divisions and an undetermined number of infantry divisions. Not all joined the relief expedition: some relieved troops who had been taken from nearer s ctors, and some may have been held in reserve. The Russians learned something about this movement, and their attacks mentioned above were the result. However, the Russians also were using troops in the Korsun area, and did not have sufficient forces elsewhere to exploit enemy weakness.

At the end of the period the line was

Yelsk (R)—Pripet River—Stalin (?)—Sarny (R)—Styr River around Kiwerce and Luck—Dubno (R)—Ostrog (R)—Shepetovka (R)—Polonnoe (R)—Kalinovka (G)—Priluki (G)—Kristinovka (G)—Zvenigorodka (?)—Zlatopol (G)—Kirovograd (R).

SOUTH SECTOR

At the beginning of the period the line was

Kirovograd (R)—Novaya Praga (R)—Petrovo (R)—Piatikhatki (R)—Miloradovka (R)—Alexandrovka (R)—Neuenberg (R)—Dnepr River to Black Sea with German bridgehead across the Dnepr, opposite Nikopol.

The Germans had a detached force holding all of the Crimea, less a Russian beachhead on a peninsula northeast of Kerch.

Two Russian offensives occurred in this sector, one against the Crimea and the other against Nikopol.

Crimea Offensive

This started on 23 Jan by a violent attack from the beachhead near Yenikale. At the same time an effort was made to land an invasion force by sea to establish a new beachhead. The sea force was driven off, but the attack from the beachhead made some progress and at one point reached through the German line.

On the 24th the Russians abandoned the sea project and concentrated on the initial success. They were able to exploit this during that and the following day. 26 Jan brought a German counterattack, supported by unusually strong artillery fire. With this help the Russian advance was stopped.

On the 27th the Russians renewed their attack. They also commenced a new offensive against the narrow Perekop isthmus at the north end of the Crimea. Neither venture succeeded. Both were renewed on the 28th, without success. This offensive was then abandoned.

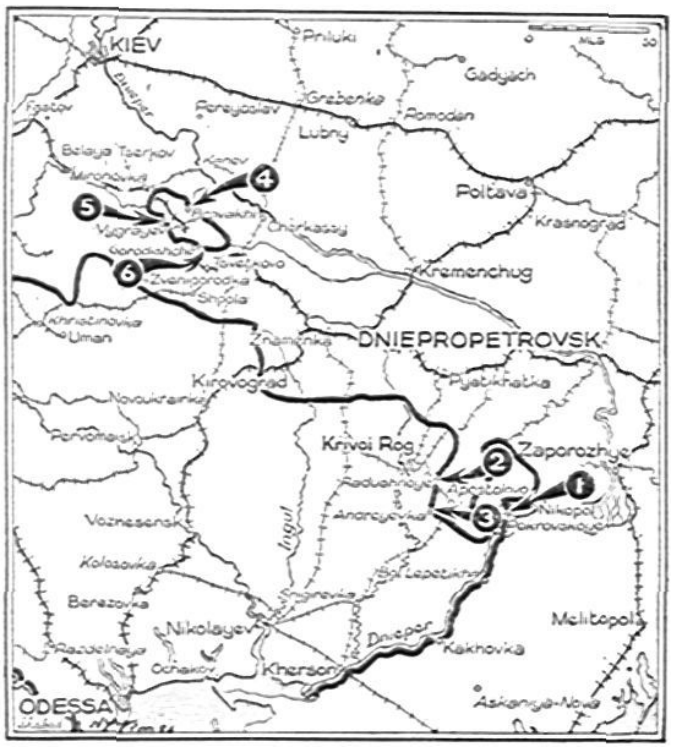
Attacks from the beachhead and at the isthmus had previously been tried several times. They have never succeeded, the fronts available being so restricted as to make it impracticable to deploy a force superior to that of the enemy.

Nikopol Campaign

Two Russian Army Groups were involved. The 3rd Ukraine Army Group (Gen. Rodion X. Malinovsky) held that part of the front which was east of the Dnept River and north of Nikopol. The 4th Ukraine Army Group (Gen. Feodor I. Tolbukhin) was on the east side of the Dnepr, opposite the German Nikopol bridgehead.

Attacks on the bridgehead had been made previously without success. The Russian High Command now ordered a coordinated movement, a renewal of the attack directly against the bridgehead coupled with an attack by the 3rd Ukraine Army Group down the right bank of the Dnepr. As in the case of the Korsun Campaign, movements of the two Army Groups about Nikopol were well planned and executed.

On 30 Jan (when large German forces were engaged in the Korsun campaign) the 3rd Ukraine Army Group attacked from the line



Pushing out from newly won Nikopol, the Russians captured Pokrovskoye (*1*). *They smashed to a point 13 miles from Krivoi Rog by taking Radushnoye* (*2*) *and also moved westward to Andreyevka* (*3*). *In the gradual compression of the ring around the German Eighth Army on the middle Dnieper the Russians advanced to Brovakhi* (*4*), *Vygrayev* (*5*), *and Gorodische* (*6*).

Alexandrovka—Neuenberg in the direction of Krivoi Rog, about 55 miles away. This attack was delivered by several armored divisions supported by infantry divisions. The attack made one penetration, which may have been all that was planned.

Continuing the battle on the 31st, no great gain was made, but on 1 Feb the Russians were able to make a considerable advance, the leading elements reaching the vicinity of Sofievka. Still further advances were made on the 2nd.

On 3 Feb Gen. Malinovsky's right was east of Krivoi Rog, his center was approaching Kamenka, and his left was north of Nikopol. On the 4th, Russian armored troops (which included large motorcycle formations) found a gap in the German lines. Pushing through, they reached Kamenka.

On the 5th the Russian advance was far ahead of its support, the main body being then near Sofievka. The 3rd Ukraine Army Group made no important advance pending arrival of other troops in forward areas. The 4th Ukraine Army Group attacked the Nikopol bridgehead on its entire front. This covered an area 75 miles long from B. Snamenka (above Nikopol) to B. Lepetikha on the south side. The maximum depth was 22 miles, held by 7 German divisions under Gen. Schoerner. The 100-mile front was protected by a triple line of trenches, wire, mines, and other obstacles, thereby enabling divisions to hold up to 15 miles of line.

During the night 5/6 Feb the Russians opposite Krivoi Rog broke off their attack to drive southward toward Kamenka. The Russian center, at Kamenka, cleared this place in time by driving south to the Dnepr River below Nikopol, which they reached near Novo Vorontsovka. Leaving a detachment at this place the main force doubled back to attack a German force at Apostolovo. The Russians who had in the meantime arrived at Kamenka from Krivoi Rog, kept on and attacked toward Apostolovo from the north. Russian reserves from Sapievka passed through Kamenka later. Taken between two strong Russian forces the Germans at Apostolovo (reported as about 2 divisions) retreated, leaving 5 other divisions in and around Nikopol, announced by the Russians as encircled.

On 7 Feb the Russians closed in on Nikopol, and on the 8th captured it by assault. At date of writing it is not clear how the German divisions astride the Dnepr at Nikopol got away. All appear to have done so, without loss other than of non-tactical equipment, of which much was abandoned. The locations of towns where fighting occurred indicates that the Germans went west to across the Ingulets River, 40 miles distant. If sufficient motor equipment was available this might have been made in one night. Gen. Schoerner's forces appear to have crossed the Dnepr River, which was not frozen over, by bridges near Girly and Bolshe Lepetikha.

Continuous fighting developed in the sector thereafter. All of it is reported as being southeast of Krivoi Rog. The initial Russian attack in that area was on 11 Feb. It was continued daily to include 16 Feb, without important changes of the line. On the 17th the Russian 3rd Army Group, having reorganized, began a major offensive leading toward the reduction of Krivoi Rog. It made a penetration on that date, probably as planned, and proceeding onward had by the 20th (when this account closes) reached within 5 miles of Krivoi Rog, still on the southeast side. On the 19th a German combat group broke through the Russian front, raided numerous installations in Russian rear areas, and then returned to its own lines by another route—where it found itself in rear of a Russian force which had gone through the German line. This battle had not been concluded at the end of the period.

On Jan 20 the line was

Kirovograd (R)—Navaya Praga (R)—Petrovo (R)—Anovka (R)—Krivoi Rog (G)—Apostolovo (R)—Girly (R)—Dnepr River to Black Sea, with German detached force holding the Crimea less a Russian bridgehead near Yenikale.

COMMENTS

1. Russian maneuvers in the South Central and South sectors, involving the 4 Ukraine Army Groups, have been of a high tactical order. They returned large areas to Russian control by excellent maneuvers and fighting.

2. A report from the President of the local Leningrad Soviet states that in the 29 months of the siege of that city the casualties caused by shelling and bombing amounted to approximately 5,000 killed and 15,000 wounded, 80% bring due to artillery fire and 20% to air bombing. The largest factory in town, which was within 4,500 yards of the German lines, was hit 5,000 times by artillery shells. This

caused a loss of 137 killed and 973 wounded, or nearly 5 shells to one casualty. The number of workers, which had been 35,000, had been reduced to 10% of this number.

A majority of Leningrad buildings had received at least one hit. There was neither water, heat, nor electricity in non-public buildings. Malnutrition caused more deaths than shells.

3. A Swedish report based on statements of correspondents in Berlin states that as of last September there were only 145 German divisions in Russia, including 15 in rear areas. The only other information as to German strengths is the Russian report. None has been issued for some time. Last September the Russians reported over 200 German divisions in Russia.

If the Swedish report is correct, the Germans have only half of the force of the Russian army. If their losses are in the same proportion, there might eventually arrive a period when the Russian armies would be exhausted. A German report of 14 Feb states that this is what is happening. The German army is represented as in control of the war in Russia. The danger of a general Russian offensive, while not entirely over, was said by the Germans to be nearly so. At the present rate of Russian losses it was believed that the Russian army was approaching a period when it would no longer be able to stage major offensives except in limited areas.

WAR IN ITALY (21 January to 20 February 44)

ANZIO CAMPAIGN

Last month mention was made of the desire of the High Command in Italy to turn the enemy's strong line across the Italian peninsula. This could be done only by an amphibious expedition. Italy's west coast offers a better prospect for invasion than the east coast: the east coast is narrow, is right up against mountains, and has no worth-while objectives nearby; also the sea is shallow, requiring transports to anchor far out.

Italy's west coast has good ports, some good beaches, and south of Spezia the mountains are some distance inland. In between are cultivated country and some very important cities, of which Rome is of special interest. Turning the enemy's right (then on the Garigliano River) by landing an expedition north thereof was planned as a profitable measure. It was believed to be preferable to continuing with the slow step-by-step advance up the peninsula through rough mountains, which were nearly ideal from the defenders' point of view.

About the first of the year transportation was made available, and an expedition was arranged. The landing area selected was Anzio and Nettuno.

These two places are seashore resorts, about 2 miles apart and 36 miles south of Rome. At both places good beaches extend north and south. Ports are small; in normal times they are used by yachts and fishing boats. There is good anchorage off shore. An excellent road leads to Rome, passing through Aprilia and Campoleone, 15 miles from Anzio. Another road leads to Cisterna, 17 miles northeast of Nettuno. Together the 2 resorts have about 15,000 inhabitants. Both towns have large resort hotels.

Through Campoleone and Cisterna extends the main railroad from Rome to Naples. This is a high class, double-track, electrified line: passenger trains normally travel at 75 m.p.h. An excellent motor road follows this railroad in a general way. It was evident that a successful advance from Anzio and Nettuno would soon interrupt this railroad. It was hoped that this would interfere with the enemy's supply system sufficiently to induce him to abandon his lines on the Garigliano, and enable the Allied main army to advance rapidly in pursuit.

However, the enemy had an alternative line of communications. This was a double-track steam railroad and a motor road from Rome to Naples. Opposite Anzio these pass 20 miles inland, on the far side of an intervening range.

According to reports from correspondents, the High Command in Italy considered the question of attacking Rome. It was believed that the citizens of that city would rise spontaneously and could be counted upon to seize the occasion to attack the Germans. This is what had happened at Naples at the beginning of October. It seemed reasonable that it would occur again.

Troops for the invasion were assigned to the U. S. Fifth Army (Lt. Gen. Mark W. Clark). This same army held the position on the left side of the line in the south, from the sea approximately half way across the peninsula. This assignment assured cooperation between the Allied Army to the south (in following the enemy northward, should he retreat) and the Anzio force (which would be in the enemy's rear).

The initial landing was made at 0200 hours on 22 Jan on a wide front including the two resort towns. The naval forces—which included Greek, Dutch, and French ships in addition to British and American—furnished an artillery preparation. The Allied Air Force covered the air. Ships were about 3 miles off shore.

There was no opposition. After daylight the air force was unable to find any enemy, so the landing proceeded according to plan. Not even a hostile plane was seen. Patrols reached the vicinity of Campoleone, and went beyond to within 16 miles of Rome. The Allied Air Force reported that it had severed railroads north from Rome, and that it would be difficult for the enemy to assemble forces to attack the Anzio beachhead.

On 24 Jan, no enemy having yet appeared except minor patrols, Gen. Sir Henry Maitland Wilson inspected the newly won beachhead. This general, who commands all Allied forces in the Mediterranean area, had assumed command only earlier in the month. He explained his estimate of the situation.

General Wilson stated that the new beachhead was intended to get away from the difficult terrain and winter weather which had been delaying the main army. The belief of Allied commanders was that the main German force might swerve from their present positions to the rear, toward the Anzio beachhead. When this occurred the Allies would spring from the beachhead and attack the enemy as he fell back. Gen. Wilson, for himself, believed it possible that the enemy would not retreat. In this case he felt the enemy main body in the south would adopt a hedgehog formation. However, latest reports indicated that the enemy was withdrawing.

Published accounts of Gen. Wilson's remarks make no reference to Rome. The front of the beachhead was about 12 miles out, with patrols several miles beyond. Contact was had with German patrols which captured some prisoners.

On 25 Jan German troops had the beachhead surrounded. They made raids to secure identifications. The Germans were strong enough to prevent our patrols from going far out. German artillery on high ground beyond the electric railroad commenced to shell the beachhead. German planes bombed the beaches and shipping. The Allies secured an identification from the German 29th division, last reported in line to the south; this was interpreted as confirming that the enemy was withdrawing his main body.

On 26 Jan the enemy had about the beachhead a complete line strong enough to stop strong reconnaissance detachments. He secured more identifications. His artillery increased its fire, and his air force its bombing.

Gen. Sir Harold R. L. G. Alexander inspected the bridgehead on this day. This general commands the Allied Central Mediterranean Force, a new designation for the 15th Army Group; it includes all Allied troops in Italy. Gen. Alexander stated that the operation had been planned and mounted by the American Fifth Army. It had gone off like a field day. He was very satisfied. Besides the withdrawal of the German 29th Division, the Herman Goering Panzer Division had been identified as en route to Rome from the south. He added, "Everything is very encouraging. Everything is going wonderfully."

Shelling and bombing of the beachhead increased daily. It became nearly continuous day and night. German patrols were aggressive and took prisoners, but they in turn lost quite a number to the Allies.

The Allied divisions, less some artillery and armor, completed their landing on 28 Jan. One day had been lost due to rough seas. Supplies poured ashore. Despite the growing enemy reaction the bridgehead increased in strength. On the 28th the naval force shelled the enemy's artillery and his flanks, which were now solidly located just beyond the beachhead. Thereafter naval support was supplied frequently.

A period of lesser activity followed. The enemy established a constantly stronger line along the electric railroad from the vicinity

of campoleone to near Cisterna. The Allied main line of resistance was substantially parallel to the railroad and about 4 to 5 miles from it, through Aprilia, with advance troops well forward. On 31 Jan the Allies were in close contact with the enemy main line. They then undertook to pierce this line.

British divisions were on the left of the beachhead and American divisions on the right. They attacked respectively toward Campoleone and Cisterna. There was strong air and artillery support, and tanks were used. Enemy resistance was strong. Only minor progress was made. On 2 Feb the enemy made minor counterattacks, in series, directed to a common point within the Allied lines—converging. An advance of one attack threatened the rear of troops opposing the others. The Germans only made minor gains. After this day's battle the Allied attack was suspended. It left the Allies with two spear-heads: a British one which had reached to beyond the Campoleone RR station, and an American salient with point nearly at Cisterna.

On the night 3/4 Feb the Germans attacked the British salient. An artillery preparation begun at 2300 hours lasted for 20 minutes. It was concentrated on the sectors to be attacked, and was very heavy. The Germans attacked with tanks leading in columns, converging on a point approximately half way between Aprilia and the railroad at Campoleone station. No column appears to have had over 6 tanks and one company of infantry.

Some of the German attacks were stopped, others got through. Coming from the left they were across the Aprilia—Rome road by midnight. They were driven back by 0230 hrs. At daylight enemy tanks were found to be adjacent to the road on the right (east), while those on the opposite side were only a short distance away. Although not on the road, the enemy was so close that it was impracticable to forward supplies to troops at the tip of the salient. The British attacked the enemy to the left. Germans poured in on the right. Heavy fighting developed.

Troops in the vicinity of the enemy's attack being unable to drive off the enemy, a relief attack was started at 1600 hrs from the main line of resistance through Aprilia. This moved north astride the road. It was too late in the day to get through.

In the meantime the tip of the salient was under heavy artillery fire. Enemy tanks attacked the British therein from the rear. German tanks ran over foxholes and trenches. When directly over the infantry crouching underneath, a tank would wheel to crush in the sides of the trench and the men in it. Due to rain and low clouds, air support on this day was negligible.

The British lost the forward half of their salient. The Germans reported the capture of 899 British prisoners and 15 tanks.

There followed several days when activity was limited principally to artillery and the air force. The Germans increased their shelling and bombing of the bridgehead. Their 170-mm guns were able to bring ships under fire. They shelled Allied installations heavily.

On 7 Feb the enemy made a series of raids to orient himself. On the night 7/8 Feb a new German attack was launched, using the same tactics as the previous one. After a short but strong artillery preparation the enemy attacked at 0210 hours, in both British and American sectors. There really was a series of converging attacks, each consisting of 2 or 3 tanks plus 100 to 200 infantry. The country is rolling and contains numerous pines, affording some concealment. At first the Germans made some advance. After daybreak the fighting became very heavy. German artillery fire was the strongest yet met. The enemy advanced cautiously from point to point. His tanks furnished immediate artillery support to the infantry by utilizing pine clusters, ridges, and the occasional farm buildings. At the end of the day the enemy had made a slight advance in the American sector and a considerable one in the British sector, arriving close to Aprilia. The Germans claimed taking 700 British prisoners, but they lost an unstated number in the American sector.

On 9 Feb the Germans continued the battle. It was extended by new attacks at the north and south bases of the beachhead near the sea. The main enemy effort was against the British. Allied naval forces were called upon to shell the flank attacks. All available planes were sent out to attack the enemy's efforts between Aprilia and Cisterna. American troops with tanks counterattacked westward from the Cisterna sector in order to relieve the enemy's pressure around Aprilia, which was under attack from the north and west. This attack was stopped by the enemy's artillery. The main effort of the air bombing was the parallelogram Albano—Velletri—Cisterna—Campoleone, all inclusive.

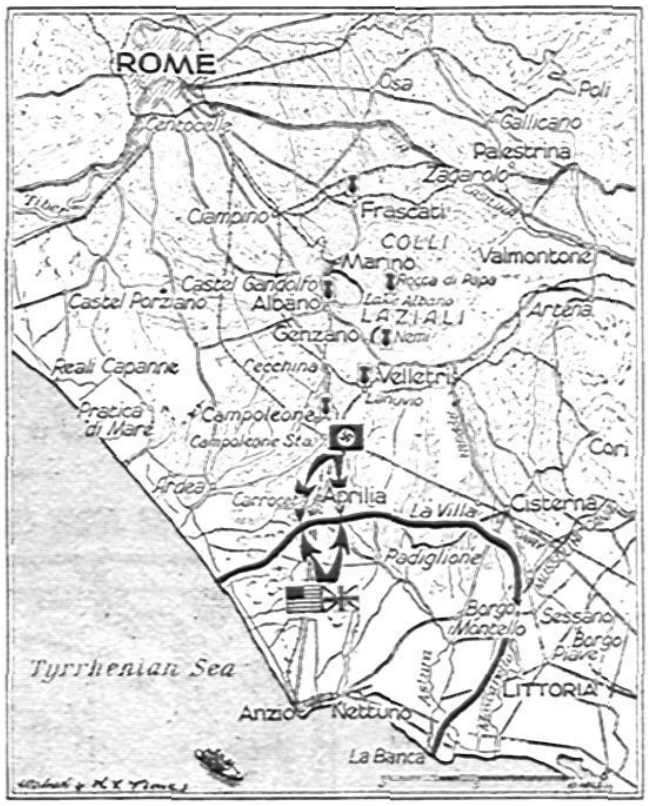
German flank attacks made progress, and at the end of the day the Allied right was at La Banca on the coast and the left about 7½ miles north of Anzio. The enemy's batteries had cross fire and enfilade fire on all Allied positions.

On 10 Feb the Germans entered Aprilia, but the day was devoted principally to artillery activities. The Allies concentrated all batteries available onto selected targets in turn, for 2 minutes of fire at maximum rate. This was repeated several times. Front line positions were the principal targets. The enemy's artillery gave much attention to shelling rear areas, including beaches over which supplies and replacements were being landed. An Allied counterattack was ordered for the following day, to drive the enemy away from the vicinity of Aprilia.

Next day (the 11th) was cold, with rain and sleet, low clouds, poor visibility, and little air support. Nevertheless the counterattack was launched. As it moved out from the Aprilia area it met cross and enfilade fire from artillery and infantry weapons. Although well supported by tanks and very strong Allied artillery fire (including naval fire), it failed to get forward. Perhaps the bad weather had much to do with the lack of Allied success. Certainly, it prevented effective air support.

The battle was renewed on the 12th. The greatest activity centered near Aprilia, particularly around a small village named Stracciapanni. Allied tanks led the attack, which made small gains. A German counterattack was in turn led by flame throwing tanks. Both sides used self-propelled guns and tank destroyers on roving missions. The line fluctuated back and forth. At the end of the day Aprilia and Stracciapanni remained in German hands.

The battle of the 11th and 12th led to certain pessimistic reports from newspaper correspondents. At this date there had been no



German forces launched an offensive below Rome in an effort to drive down the Carroceta-Anzio road and split the Allied forces. To shatter the attack the greatest Allied air effort yet put forth in the Mediterranean theatre blasted the area just above the beachhead between Campoleone and Frascati. Some of the points attacked are indicated by bomb devices. In addition, British warships lying off Anzio shelled enemy positions.

Allied defeat, and the beachhead was not in danger. On the other hand it was hemmed in. All parts of it were subject to enemy artillery fire. Some enemy batteries were able to shell ships off shore. The German air force, greatly inferior in strength to that of the Allies, managed to drop bombs on the beaches over which supplies were landed, and on ships and landing craft. As the country was flat this hostile activity was visible all over the beachhead, and it continued day and night. It created an impression which may not have been justified.

In view of the reports, the local commander-in-chief, Gen. Alexander, made an inspection of the beachhead on 14 Feb. He announced, "there is absolutely no Dunquerque here—there's no basis for pessimistic rubbish. I assure you the Germans opposite to us here are a very unhappy party. The Germans realize they've lost the battle, tho' events have not gone as swiftly as we ourselves hoped. Had everything been perfect, we might have gone straight through to Rome. . . . We will pull it off. Don't compare this situation to Dunquerque or Salerno."

As far as present records show, this was the first time that the troops around Anzio had been told that the mission of the expedition was Rome. No report has been received that the Italian population started, or attempted to start, an insurrection in Rome, as had occurred at Naples.

According to identifications secured by the Allies the Germans had 6 divisions in line around the beachhead, and it was believed 3 additional divisions were in army reserve. It had been ascertained that this was the 14th German Army, commanded by Gen. von Mackensen.

On 16 Feb the Germans started a major attack, with main effort astride the road from Aprilia to Anzio. As a result of the battle of the 11th they had been able to consolidate an east-west line through Aprilia, which was now their line of departure. A very vicious artillery preparation preceded the attack. The enemy had OPs on high ground which overlooked the beachhead. His rear establishments were beyond the range of our artillery, but everything that the Allies had was concentrated in a relatively small area. This gave enemy artillery numerous targets, and a strong probability of hitting something wherever they fired.

Then came a German tank attack. Allied tanks moved forward. An extended tank battle resulted, with tanks doing considerable roving, looking for openings where their supporting infantry could find a gap to advance. SP and AT guns also roved around, taking position within farm buildings, in clumps of trees, in any available places from which fire could be directed while concealment was afforded. The Germans made a slow but quite steady advance.

The local commander called for more air support, and more artillery fire. The Air Force was thereupon directed to use heavy and medium bombers against the enemy's rear areas, while the Navy undertook to supplement the existing artillery fire. The Air Force responded with a terrific bombing along the enemy's line of communication from Frascati, through Albani and Campoleone, to Aprilia. The Navy shelled the enemy's flanks on each side of the beachhead.

On 17 Feb the battle was resumed. The enemy made gains, but not to an alarming extent. The Air Force aided with the heaviest bombing program ever used in the Mediterranean theater, while the Navy furnished strong fire support on the flanks. A German diversionary attack in the vicinity of Cisterna, an American sector, made but slight gains. In the Aprilia sector the fighting tended to die down, with the German line held at about 5,000 yards below Aprilia.

On the 18th the fighting declined, but the artillery activity greatly increased on both sides.

On the 19th the Allies counterattacked, with American troops moving west from the Cisterna area toward Aprilia and British moving north against the same objective. Both movements made gains, and resulted in the German line being moved north by about 1,000 yards. Several hundred German prisoners were taken. Continuing onward on the 20th, the German line was pushed back to 3,000 yards from Aprilia.

At the end of the period the line of the beachhead was

South side of the Incastro River—a line almost due west-east passing 3,000 yards south of Aprilia to a point 2 miles southwest of Cisterna—a line south to the coast near Borgo Sabotino.

As this account closes the beachhead is being subjected to day and night shelling and bombing, on an extensive scale.

SOUTH CAMPAIGN

At the beginning of the period the Allied Central Mediterranean Force (a new name for its predecessor, the 15th Army Group) was holding the following line across the Italian peninsula:

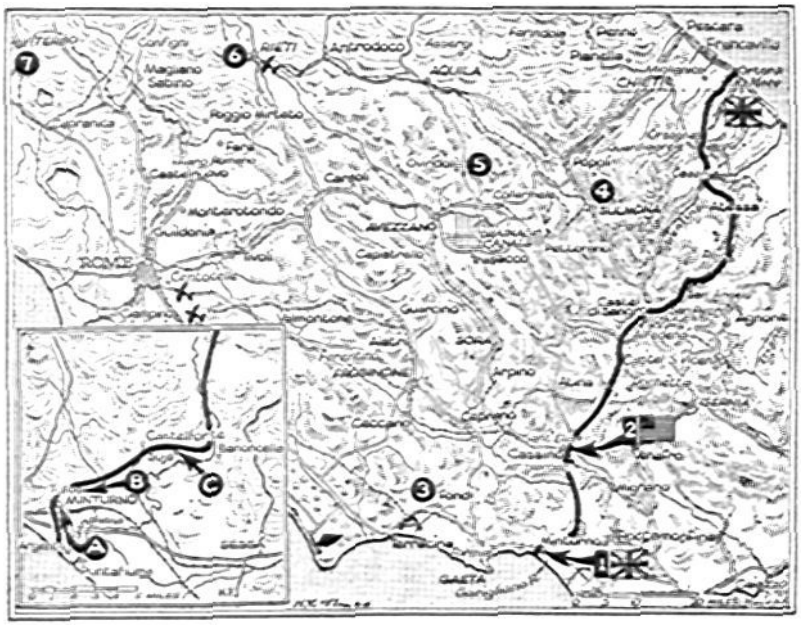
Minturno (Allies)—Castelforte (German)—Banoncella (A)—Rocca d'Evandro (A)—Rapido River (German bridgehead at Cassino)—Sant' Elia (A)—Alfedena (A)—Castel di Sangro (A)—San Angelo (A)—Toricella (G)—Casoli (?)—Orsogna (G)—3 miles northwest of Ortona.

Under Gen. Sir Harold R. L. G. Alexander the line was held by the American Fifth Army (Lt. Gen. Mark W. Clark) on the left half of the front, and by the British Eighth Army (Lt. Gen. Sir Oliver W. H. Leese) on the right. The enemy opposite was the German Tenth Army (Gen. Heinrich von Vietinghog, commanding); this was part of a German Army Group under Field Marshal Albert von Kesselring. There were an average of 9 enemy divisions in line or in local army reserve.

The larger part of the front lay in the Apennine Mountains. At this season the higher areas were snow-bound, lower areas subject to alternate thaws and freezes. Roads in lower areas were mud, ground on slopes very slippery. Rains, sleet, or snow were frequent. Bad weather impeded air observation, and operations were in general nearly frozen.

There was one exception: an important offensive was under way against Cassino. This village, with a population of about 7,500, is located on the west side of the Rapido River, but the railroad station is on the east side. This railroad and an adjacent motor road are from Rome, 87 miles away. This is an alternate route between Rome and Naples.

An attack on Cassino had been initiated on 5 Jan, at which time the Allied line was beyond Mignano. At the beginning of the period, and after hard fighting, the line had reached the high ground overlooking the Rapido valley opposite Cassino. The sector was held by American troops. The British held the front from south of Cassino to the sea. French troops were to the north with their left boundary along the line Sant' Elia—Viticuso, both to the French.



A January push across the lower Garigliano gained ground (*1*). *In that sector the British captured Argento and swept on to enter Minturno* (*A on inset*), *which town the Germans said they had abandoned. Other British units closed in from the north after having taken Tufo* (*B*). *Still other British troops seized Sujo* (*C*). *North of Cassino* (*2*) *more American patrols crossed the Rapido River. Allied planes, in addition to hammering airfields in the Rome region (airplane devices), blasted railroad facilities at Fondi* (*3*), *Sulmona* (*4*), *Rieti* (*6*) *and Viterbo* (*7*). *Near Ovindoli* (*5*) *nine of a group of ten enemy gasoline trucks were destroyed.*

The Allied plan was to push forward along the main road toward Rome, troops on the flanks aiding. It probably was hoped that the enemy, known to be holding a strong position, would voluntarily evacuate it after the proposed Allied expedition landed near Anzio and thus threatened his line of communications.

On 21 Jan American troops south of the Rome highway, known as the Via Casilina, reached the Rapido River and crossed it 3 miles below Cassino. The river was 40 yards wide and not fordable. Enemy fire was strong. Terrain was full of rocks, liberally strewn with mines. There was much wire, and the entire area was peppered by enemy machine gun, mortar, and artillery fire. To the north the French made an advance also; they had some American artillery and engineers attached; they also had their own mule trains, found to be most useful in the rough mountain country. The British to the south moved forward in coordination with the American effort.

On the next day, the 22nd, the Germans counterattacked against the Americans on the west side of the Rapido. Strong artillery fire cut off reinforcements and destroyed the bridges which the engineers had laid. Mines floated down the river, blew up boats. The German wire was several hundred yards west of the Rapido. The Americans were never able to get over the river in strength. When the Germans counterattacked a confused area resulted within which both Americans and Germans were mixed together. The Allied artillery lifted its fire for fear of hitting its own men, who were scattered. In the afternoon a second German counterattack came. The order to withdraw the American troops to the east side of the Rapido was given. Men swam over in the icy water; others drew themselves over on wires; still others formed human chains. Most of the equipment was lost. The Germans claimed to have taken 700 prisoners.

Turning Cassino from the south having failed, an attempt around the north was undertaken. American troops on 25 Jan crossed the Rapido opposite Cairo against light opposition, after an initial foothold had been destroyed by a German counterattack.* The French supported this advance, and their right reached Mt. San Croce. Brutal hand fighting took place on this mountain, with the Germans remaining in possession of the summit. The French left was opposite Mt. Belvedere. An attack on this on the 26th, failed.

On 27 Jan the Americans were well over the Rapido, and began to scale the high ground just west thereof. The French moved around south of Mt. Belvedere, generally following the road to Terelle. The Americans were south of this road, which is a steep mountain road with numerous sharp turns and steep grades. Against strong and increasing opposition progress was made on the 28th. American tanks were brought across the Rapido.

*An American patrol moving south reached Cassino, and even entered it before it was fired upon. It then withdrew. This minor incident was wired to the Anzio bridgehead, and was construed to indicate that the enemy had already started a withdrawal from the Cassino area. The enemy's main line of resistance was not on the river, but in rear of it. It was possible for small parties to move close to the river on the enemy's side without attracting opposition.

On the 29th it was definitely ascertained that the enemy was not withdrawing from Cassino, but was firmly defending this place. He completed damming the Rapido, flooding the valley as far as (and including) the American point of crossing. The water was very muddy, made a quagmire of varying width, and increased supply difficulties. Troops were delayed by mines in irrigation ditches, which were hard to find in the swirling water. Enemy artillery caused considerable trouble. Nevertheless, the Allied advance pushed straight toward the west. By evening of the 30th it had gotten beyond Cairo, as far as Hills 223 and 167. The line then passed around the hamlet of Monte Villa on the Rapido. Encircled on three sides, the Germans still held this.

On 31 Jan there was some change of troops in line on both sides. The Germans attacked Hills 167 and 223 and the French to the north, but failed to shake the Allied hold on these points. The Germans appear to have evacuated Monte Villa.

The French attacked northward from Sant' Elia on 1 Feb and made a slight advance during which they captured 100 prisoners. The fighting in the mountains just north of Cassino became very bitter, with both sides attacking and counterattacking. Tanks found it difficult to operate, as slopes were slippery and steep. Mud, cold, rain, sleet, or snow made life hard for the front line troops, and impeded the supply of warm food, supplies, and ammunition. Constant hostile fire interfered with the removal of wounded, who had to remain without care until darkness made it possible for help to reach them.

On 3 Feb the Americans—having secured what seemed to be a satisfactory line of departure north of Cassino and at right angle to the Rapido—attacked toward the south from the newly won positions in the mountains. Troops following the right bank of the Rapido crept up to Cassino and found it to be strongly held, with enemy in concrete pill boxes. Troops first mentioned the Abbey of Mount Cassino, almost due south of Hill 167 and about a mile away. It overlooked the country on the north and northwest sides of Cassino. It was reported as an enemy OP. As the attackers had a tough time under German artillery fire, it seems to have been assumed that the accuracy of this fire was due to observations made possible from the Abbey.

On 4 Feb, with both sides using tanks roving, individually, the Americans entered the north side of Cassino. They were unable to hold it. A new attack in the afternoon secured a triangular area of about three blocks. German artillery shelled this area, but the Americans held on. Due to rain the front line troops were generally soaked and cold. Bitter fighting continued in the mountain area. Both Americans and French repulsed enemy attacks and made a slight advance. This hard fighting continued through the 5th without material change in the line.

During the noon hours on 6 Feb Cassino was shelled by 25 Allied batteries, including some 240-mm howitzers. Mount Cassino Abbey Hill was also shelled. Shells struck the Abbey and started a fire. Infantry attacks following failed to cross a gulch 300 yards from the Abbey and made no advance in Cassino. On both sides the artillery was very active.

There was not much change during the next day. Enemy tanks and SP guns dodged around inside Cassino, firing out of wrecked buildings and continually changing place. American tanks followed the same tactics. The enemy was generally in cellars, covered by concrete; shelling the house overhead did not affect the personnel sheltered beneath. The ruins of upper stories formed a mass of debris which exploded shells fired later. The debris blew up into the air, to fall back again as a protective cover to the fortified place underneath. There was a medieval castle on a hill just outside north Cassino; Allied artillery shelled it, and again next day.

On the 8th the Americans gained a wedge between Cassino and the hills to the northwest. The artillery pounded the medieval castle, although it was not clear whether Germans were inside. Orders were issued not to fire at the Abbey nor enter its premises (as it was Vatican territory and neutral) unless the enemy was inside.

On 9 Feb the American infantry crept and clambered toward the Abbey (Hill 519) and the castle. The Air Force bombed the vicinity of the Abbey. The enemy made numerous attacks; the day was largely spent warding these off—no advance was made.

On 11 Feb after an extensive artillery preparation a new coordinated attack was launched against Cassino and the high ground to the north. The weather was bad, observation was poor, and there was no air support. Soon the attack bogged down. Some progress was made in Cassino.

A survey of the situation made on the 12th showed that the Americans held about 1/3 of Cassino; progress here was very slow. On the mountain slopes beyond the Abbey the battle was stalemated. Enemy artillery was very active. His 170-mm guns were being used for interdiction fire in Allied rear areas. Enemy snipers were above and around, in and out of caves, behind crags and rocks. His tanks and SP guns were continually appearing from new positions and firing against men from unexpected directios. Supplies could be brought forward only with difficulty. American tanks entered Cassino each morning by descending a corridor west of the Rapido; they fought during the day, and scuttled away at dark. It was believed that the attack was unduly hampered by the restriction prohibiting firing at the Abbey, commonly believed to be the enemy's principal and most useful OP.

Interviews with soldiers in the front lines developed the following information. Near the medieval castle, which was between Cassino and the Abbey, the line was only 75 yards away. Some soldiers at night had been within 15 yards of the castle; the enemy rolled grenades down. Some of our own shells slid off bare rock to burst below, and so did some bombs. No enemy could be seen, but he could be heard. In this way the troops had ascertained that the Germans within the medieval castle had stoves to warm them, and received hot meals each night delivered by truck.

With respect to the Abbey, the line was 600 yards away. No Germans had been seen, and it was too far off to hear sounds. Everyone was certain that the Abbey was the key to the German defense of the area and should be blown off the map.

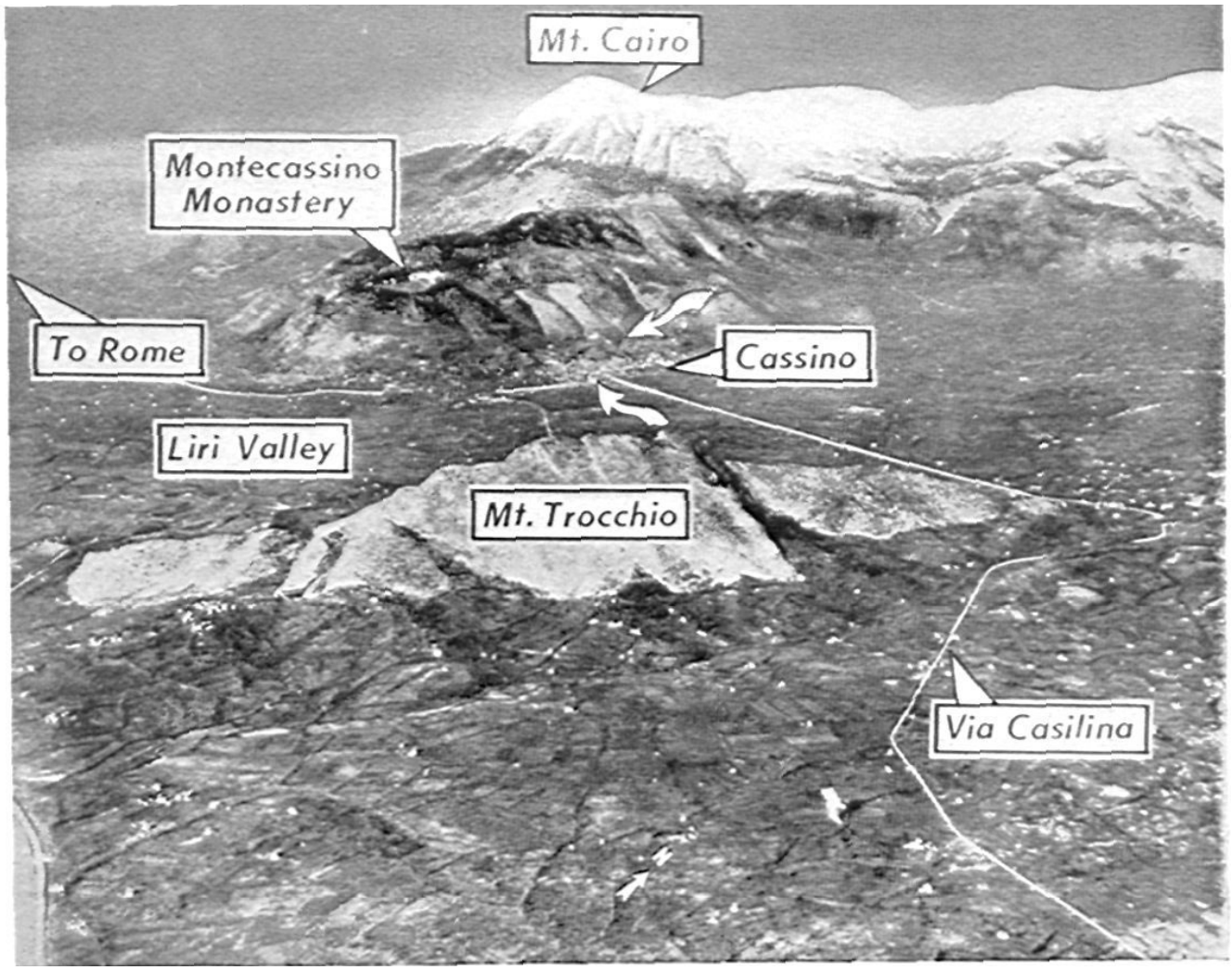
It was decided to destroy the Abbey, as according to the best obtainable evidence it was an enemy key point. On 14 Feb notices were fired over the Abbey warning of the intent to shell and bomb, and advising the personnel therein to evacuate.

At 0930 hrs on 15 Feb the Air Force started to bomb the Mount Cassino Abbey. Between then and 1330 hrs 8 attacks were made which dropped over 500 tons of bombs. Between air attacks the Abbey was shelled by 155-mm guns and 240-mm howitzers. The Abbey crumbled slowly into burning ruins; at the end only fragments of walls remained standing. An attack followed by infantry who had previously been withdrawn 1,000 yards in order to avoid all danger of being hit by our own fire. Neither the attack toward the ruined Abbey nor in Cassino made progress. The usual German artillery and machine gun fire appeared to be about as before.

It was now decided to try an attack using fresh troops.

On the night of 17/18 Feb the Allied artillery fired a tremendous artillery preparation starting at 2130 hrs. An India Division replaced the Americans and attacked on the north side of Cassino, south toward the ruined Abbey. A New Zealand Division attacked toward and across the Rapido River south of Cassino. The Americans within that part of Cassino in Allied hands were not withdrawn, but remained there. The infantry advance started at midnight under a crescent moon. Progress was made. The Cassino RR station (which was east of the Rapido) was captured before daylight, with its garrison of 18 Germans. South of Cassino the New Zealand engineers had two bridges across the Rapido ready by 0145 hrs. Day broke with clear winter weather.

The India troops captured Hills 593 and 444 north of Cassino; the higher hill dominated the Abbey (Hill 519). On the south the New Zealanders passed around Cassino and approached the Via Casilina west of the village. The Abbey was not carried. The enemy had announced that although he had not previously had troops



within, now that it was in ruins he had incorporated these into his lines.

During the afternoon German counterattacks came both north and south of Cassino. The Germans recaptured Hill 444, partly as the result of a withering artillery fire and partly in hand fighting. The Indians withdrew under a smoke screen. Three German tanks crawled up Mount Cassino and helped drive off Indian troops headed for the ruined Abbey. They then crawled down again, came around the base of the hill, went through Cassino, and aided in the recapture of the RR station.

The Germans continued their counterattacks on the 19th, recovering the ground around the RR station, and on the 20th recovered the bridgehead south of Cassino which had been taken by the New Zealand troops.

* * *

Aside from the Cassino campaign, only minor actions occurred.

British troops along the lower Garigliano at various times engaged the enemy in small actions. In the Eighth Army patrol activity was constant and artillery fairly so. The only important change in the line was a straightening out (in favor of the Allies) near Toricella.

At the end of the period the line was

Minturno (Allies)—Castelforte (German)—San Ambrogio (G)—Cassino (G)—Cairo (A)—Terelle (G)—Mt. Santa Croce (G)—Alfedena (A)—Castel di Sangro (A)—San Angelo (A)—Toricella (A)—Casoli (A)—Orsogna (G)—3 miles northwest of Ortona (A).

COMMENTS

1. The invasion of Italy at Salerno was caused by the belief that the German Army was to the south, and could be cut off by blocking the roads leading to north Italy. It turned out that the Germans were not to the south, and a hard battle developed around Salerno. At the conclusion of this campaign the Allies held Naples and a line thence across the peninsula with the enemy to the north.

According to statements made, and previously discussed in this *Journal* for January last, the Allied Army being ashore found itself committed to a step-by-step advance up the peninsula. Any early hopes that Rome could be reached within a month, and the Po Valley by the end of the year, had to be abandoned. Enemy resistance soon developed which made such advances impracticable.

This resistance being favored by the terrain and the winter season, early attention was given to turning the enemy's positions. This was only possible by an amphibious expedition. According to the speeches of Prime Minister Churchill, Gen. Alexander presented a plan for such a turning movement with request for the necessary sea transportation. At a conference held at Carthage, Tunisia, on 25 Dec this plan was approved and the transportation was ordered.

The number of troops in the expedition to Anzio was fixed by the amount of transportation available. The original plan looked to turning the enemy's right, either by a voluntary retreat on his part (which it was hoped would take place) or else by a movement from the beachhead south against the enemy along the Garigliano River from Cassino to the sea.

As at Salerno, this plan failed as the enemy did neither of the things expected of him. Then, as at Salerno, a new mission was given the expedition, which was the same as that subsequently given after Salerno: an advance against Rome. As this is written both Allied forces in Italy have Rome as their objective.

2. The terrain of Italy has brought out new tactics. In the rough mountains, armor was not employed initially. It soon was brought forward. Its use is increasing. Mostly confined to valleys or to flat terrain of restricted size, armor is being used by single tanks or cars, or by at most a few vehicles at a time. These precede infantry, scouting and fighting.

When the enemy is located tanks rapidly fire a few rounds from positions affording as much concealment as possible, and then proceed to a new position. They are rovers. Both sides have used tanks in demolished villages, plowing through ruins and opening fire by surprise as opportunity offers. Results are reported as good.

Self-propelled guns, including tank destroyers, rove around too, seeking their targets.

3. Ski troops have been reported in only one sector. These were German—their 5th Mountain Division. Principal duty has been patrolling.

4. In more open terrain, as at the Anzio beachhead, armor was employed on a more extensive scale but still by separate small columns rather than in solid masses.

5. There has been a great increase of artillery activity. Both sides are using artillery concentrations where up to 20 or more batteries will simultaneously cover the same target. Usually the maximum rate of fire is employed for about 2 minutes. Fire data is calculated, as it would be impracticable to register so many batteries without attracting the enemy's suspicions and causing the target to move away or disperse.

There have been no good reports as to the results of this fire. OPs who could see the target have reported that the target disappeared, and supposedly was destroyed. Disappearance is not conclusive proof of destruction. Additional evidence is needed, and will probably soon be forthcoming.

A CORRECTION

The account published under this heading in this JOURNAL for October, 1943 (page 766), relating to the battle of Troina in Italy, stated that the 1st Division in its attack lacked artillery support.

Later information indicates that this was in error. Both the artillery and infantry commanders have now reported that at no time did the infantry of the 1st Division lack proper artillery support.

Regret is expressed that a contrary opinion, based on early accounts, gave an erroneous impression.

THE *JOURNAL* AS A COMBAT AID

Our constant effort is to publish material that will be of direct and immediate benefit to troops in the field, wherever they may be. Members overseas have cooperated magnificently in sending accounts of their problems and solutions, and of their operations. We hope that all will continue this practice. It is definitely of help, as is shown by the following extract from a letter from a major of field artillery who for some time has been in combat "down under":

"The JOURNAL is pretty widely studied out here, for most of the articles are based on actual operations. We have encouraged several of our officers to send material to the JOURNAL, as some of the ideas developed in this island warfare might help those who follow."

TRAINING FILMS

2-1261—Scouting and Patrolling, Part II—Mounted Patrol, Horse

5-1242—Assault Boat River Crossing

5-2039—Passage of Mine Fields, Part I—For All Arms

7-1266—Infantry Weapons and Their Effect

8-1297—Personal Health in Snow and Extreme Cold

9-1259—Recoil Mechanism Principles of Operation, Part I—Hydro Spring Type

9-1264—Automotive Clutch—Principles of Operation

9-1269—Automotive Transmission—Principles of Operation.

9-1282—Automotive Gears—Principles of Operation

11-1234—Telephone Switchboard Operation

16-2037—For God and Country

21-1289—Locating the Enemy

21-2025—Mechanized Patrolling

30-1314—Chatterbug

31-1231—Parachute Jump Training

31-1255—Basic Training of Glider-borne Troops, Part III—Flight Training

55-1287—Troopship

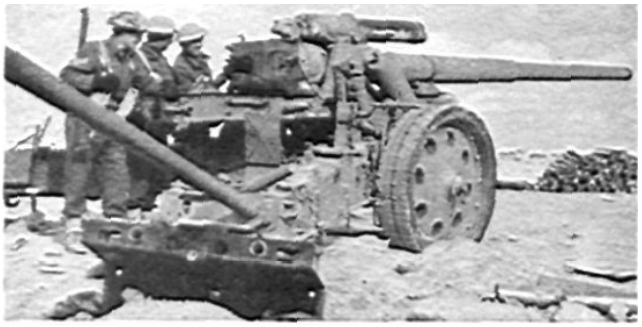
Artillery,

105-mm Class

Ansaldo developed for Italy a mediocre 100/17 howitzer (100-mm bore, tube 17 calibers long). Tractor drawn, it has pressed disc wheels (cut out to reduce weight and save metal) and a modified box trail. It weighs 2.2 tons in traveling position, 1.4 tons in firing position. Traverse is 5° 21', elevation runs from —8° to + 48°. Maximum muzzle velocity of 1336 f/s yields a maximum range of 10,125 yds.

Germany's 10.5-cm howitzer L.F.H. 18 is her counterpart of our 105-how. In traveling position it weighs 4,260 lbs. Tube is 22.8 calibers long, recoil is hydro-pneumatic. Split trail permits 28° traverse to both right and left; elevation range is 7°-47°. Lowest charge gives m/v of 565 f/s; the highest one yields 1,524 f/s for a maximum range of 11,675 yds. Photo at left shows a Guardsman examining the sliding wedge breech block of a specimen captured at Knightsbridge. Below is one emplaced in England. Above is a complete round, with its reusable metal shipping container.

Know Your Enemy's Weapons



← Germany's 10-cm gun (M33) is considerably larger and heavier than the howitzer of corresponding caliber. Compare the tube lengths of the two, and their cartridge cases, for an idea of the range difference.

Artillery in the Breakthrough of a Defense Zone

By Maj. Gen. F. A. Samsonov

TRANSLATED FROM "ARTILLERIISKII ZHURNAL" ("ARTILLERY JOURNAL") FOR JANUARY, 1965

EDITOR'S NOTE: *Conventional "meeting engagements" between large forces largely ended for this war in Tunisia. Our coming to grips at other points on the European mainland will be through special types of operations. Thus our Corps Artillery's emphasis must turn more to the lines followed by the Russian artillery, which long has been up against strong and well fortified positions. Constant and continuous reconnaissance of enemy batteries is needed. Offensive plans to include use of direct fire artillery must be made for attacks against long and strong fronts. Gen. Samsonov gives a clear account of the conditions we will meet and some of the things that will be required of our artillery in the future.*

———

Our army was ordered to break through German defenses and reach a certain line which would threaten the communications of a great German troop concentration. The neighboring forces on the right were on the defensive, while those on the left were conducting a simultaneous offensive with the same goal in view.

GERMAN SITUATION

Units of two German infantry divisions opposed the Army. Enemy operational reserves consisted of approximately one infantry division, and in addition the Germans could bring reserves from the neighboring sectors of the front. These, on the basis of rough calculations, could not exceed a depleted tank division and two infantry divisions. Also, the enemy could receive reinforcements amounting to two tank divisions not at full strength, and three infantry divisions, from the forward reserves. The reserves were expectd to arrive on the third or fourth day of the operation. Preparations for the offensive had to be particularly thorough, surprise had to be achieved, and rapid action was necessary in order to force the Germans to split their reserves and thus lose their effectiveness.

Our army was faced by a well-developed system of field fortifications running in 3 lines. Due to the open character of the terrain, we reconnoitered the first one quite well. A forest deep in the enemy defense belt concealed the other lines. We could only surmise their nature. The Germans made strongpoints out of several populated places, which were usually located on elevations and at a distance of a half to one km. from the edge of the forest.

The defensive lines were composed of a network of full-depth entrenchments, with communication trenches in between. Shelters for personnel were constructed in these deep trenches. They were covered with 3, or 4, or even 6 layers of earth. Only separate firing positions in the depth of the defense were located in pillboxes.

Sound and flash units were our only available means to locate enemy batteries. The reconnaissance battalion of the army artillery located the positions of 54 guns and howitzers and 38 mortars out of the expected totals of 66 and 151 respectively.

RUSSIAN SITUATION

The battle formation of the army was in two echelons. The first one consisted of 5 infantry divisions, 4 of which were deployed in the direction of the main effort. The divisions of the leading echelon were reinforced with tanks and had frontage of 2 to 2.7 kms. in the direction of the main blow, and of 10 kms, in the holding area. A part of the tanks composed a special mobile group designed to exploit the breakthrough. Two distinct plans of action were prepared for the mobile group; the choice was to depend on the exigencies of the situation.

1. The Army Artillery Group included 18 heavy artillery batteries.
2. The Army Antiaircraft Artillery Group consisted of 2 antiaircraft artillery regiments and a separate AAA battalion. One of the regiments was to be attached to the mobile group and subjected to its commander as soon as the mobile group entered the battle.
3. The remaining reinforcing artillery and the mortar units were attached to the divisions *participating in the attack*. Artillery regiments of the divisions belonging to the second echelon were shifted to support the divisions of the first echelon striking the main blow.

The artillery was concentrated at the rate of 50.5 guns, howitzers, and mortars (not counting the infantry mortars) per km. in the direction of the main blow, and 15.6 heavy artillery pieces per km. in the holding direction. In certain sectors the concentration was as high as 84.3 guns, howitzers, and heavy mortars per km.

Missions of the artillery were stated in an order to the army and covered the following: engaging enemy artillery, silencing defensive firepower including antitank weapons, protection of the mobile group at its entry into the breakthrough, and repelling enemy counterattacks. An order to the army artillery, the plan for the artillery offensive, the plan for the advance of our artillery units with the development of the attack, and the plan for the supply and expenditure of ammunition were all included in the order to the army. In addition, a number of particular orders was issued concerning reconnaissance, the exact missions of separate artillery groups, the supply services, and so on. Special orders dealing with plans for the artillery offensive were also issued in division and army artillery groups.

PRELIMINARIES

The period of preparation lasted approximately 7 days and was full of activity. At that time the sector of the intended breakthrough was reconnoitered, the units reinforcing the army were shifted, our units were concentrated in the prescribed areas, supplies were brought to the front lines, and the units of the first echelon moved up to the line of departure and got set for the offensive. The complexity and the scope of these operations are evident from the fact that 5 infantry divisions, several tank brigades, 6 GHQ artillery regiments, and several mortar units were brought into the zone occupied by our army. All movements were made in marching order, mostly along 2 roads. Ammunition and supplies necessary for the operation were brought by the same 2 roads.

Movement and concentration of our troops and other preparations for the offensive were effectively concealed from the enemy. This was confirmed by information obtained from prisoners of war and the lack of countermeasures on the part of the enemy. We were assisted by the army on our right, which was on the offensive and commanded the attention of the enemy. Moreover, our march discipline was excellent, the movements usually took place at night, and vegetation on our route offered abundant cover from aerial observation for our units at a halt and in assembly areas. Rains made roads impassable for motor transport and difficult for horse-drawn vehicles. The command quickly took measures to combat this threat to our operation. Roads were repaired at top speed and new bridges were built to replace those washed away. In a number of sectors where damage was particularly heavy, powerful tractors towed motor cars and trucks which could not pass under their own power. All this complicated the problem of concentrating men and supplies and upset our schedule. We could not be certain of the timely arrival of ammunition and other supplies. To add to our troubles, a crossing across a river on the front line was washed away on the eve of the projected offensive. The operation was postponed for 2 days; this time proved sufficient to complete the preparations.

ARTILLERY PREPARATION

The artillery preparation was planned to last an hour and a half. It was divided into 3 uneven periods: the first period of suppression, 20 minutes; the second period of suppression and destruction, 45 minutes; the third period of suppression and destruction, 25 minutes.

During the first period the artillery attached to the breakthrough groups and the army artillery concentrated on enemy firing positions and batteries. In the second period they continued their work, while certain guns and batteries—detached for the purpose—were destroying strong fortifications of the enemy. In the third period the barrage was increased by the action of new guns which fired directly at enemy pill-boxes from advanced open positions. During the last 10 minutes our heavy mortars joined the cannonade. The mortar fire was so very effective that the strongpoints against which it was directed were completely destroyed. Our infantry passed through them without a single shot or a bayonet charge.

From an OP overlooking the attack sectors of 2 infantry divisions it was seen that after the artillery and aerial preparation only 1 enemy artillery battery, 2 mortar batteries, 2 separate guns using direct fire, and 4 machine guns remained in action. After 7 or 8 minutes of direct fire by our supporting artillery the guns and machine guns were destroyed, and the army artillery silenced the one remaining enemy artillery battery. Two mortar batteries alone could not be located and continued the fight.

Artillery and aerial preparation was similarly successful on sectors of other divisions of the army. This was due to a thorough perliminary reconnaissance of the first German line of defense, the correct apportioning of firepower for various missions, and the accurate and sudden fire of our artillery and aviation.

THE ATTACK

After the artillery and aerial preparation, the infantry attacked. The supporting tanks were actually unable to participate in battle during the first two days because they became stuck in mud and could not move. The infantry was accompanied by its own mortars and supporting guns. The latter were assisted in their advance by infantrymen, who were detached for this purpose by army order. But for a few exceptions, the supporting artillery kept up with the forward infantry elements. Half an hour after the end of the artillery and aerial preparation, forward enemy positions were occupied along the entire front. The attackers met little German resistance, quickly overwhelmed front-line enemy fortifications, and penetrated the wooded and marshy sector of the terrain. A battle in the forest began. After 3 or 4 hours our forces advanced to the depth of 4 kms. and reached the second German defensive line.

Batteries of the divisional artillery started to cross the river following the infantry. Bad roads and narrow crossings upset all schedules for shifting artillery battle formations. The entire divisional artillery left its positions and advanced in disregard of the schedule. It was completely deployed on new lines only at the end of the day, so the batteries of the divisional artillery took practically no part in the battle during the second half of the day. The batteries of the Army Artillery Group did not change positions till the end of the day. By the morning of the second day about a third of the army artillery formations had changed their location. Thus the entire artillery was ready to support the attack of the infantry and tanks.

The infantry forced its way through the forest belt in the depth of the enemy defenses. It was supported by accompanying guns. During this period our divisions rarely asked for support from the army artillery, but these requests increased greatly in number when they reached the edge of the woods and approached the second line of enemy defenses. During the second part of the day army artillery and GHQ mortar

Russian OPs are well organized and equipped for close-in defense.

In "woodlot" country German AT guns (like this PAK 40) are often emplaced in the open—for a good field of fire—but camouflaged to resemble the small scattered growth.

units had to crush strongpoints in the second enemy defense line and bear back counterattacks. This mission they accomplished successfully.

No enemy reserves were brought into battle during the first and second days. Evidently the German command could not decide upon the best use of the reserves. All this provided favorable conditions for the accomplishment of operational missions. The Germans were in the following plight: Their artillery and mortars were silenced; their defending units suffered heavy losses, became demoralized, and ceased organized resistance; their reserves were too far away. The enemy command had to deal immediately with this very dangerous situation. Aviation was the only means available to contest our advance. Intensive German air attacks began on the very first day of the operation, as soon as our second echelon started to advance. The Germans made 16 such raids on the first day, 18 on the second, only 10 (but in larger groups) on the third. The targets of air attacks during the first day were the crossings, the tank brigades, and the divisions of the second echelon moving to the field of battle. Only a minor part of the attacks was directed against our leading units, which were then coming out of the forest. During the second day most of the enemy air blows were aimed at our forward units.

In the second day of the offensive our troops fought for the second and the third defensive lines. Enemy air attacks were made by groups of 6 to 9 bombers during the first and the second days, of 12, 18, and 24 planes during the third. German aviation was engaged by our fighter planes and antiaircraft ground units. Our fighters were outnumbered and during the first day they had no appreciable effect on the struggle with enemy aircraft. On the second day they had begun to strike at the German bombers, but still their achievements fell short of our hopes. The antiaircraft units were thus forced to bear the burden of fighting off enemy bombers.

ANTIAIRCRAFT ASPECTS

The projected plan of operations of the antiaircraft units took into account the possible actions of the enemy aircraft. It stated the successive missions which were to be performed in the course of battle and required a certain maneuverability on the part of the antiaircraft units. The missions were formulated as follows, in the order of their importance: prior to the beginning of the offensive the antiaircraft units had to protect areas of tank concentration and artillery positions; when the attack began they were to cover the units of the first echelon and crossings; after the first enemy positions were smashed and the fighting raged in the depth of the defenses, they had to protect the crossings and the advancing units of the second echelon of the army; after the first echelon crossed the river and the second echelon approached the first the defense was to shift to the new assembly areas; when the mobile group and the second echelon entered the battle they were to receive protection from the antiaircraft units.

These antiaircraft units had the following artillery: 13 medium guns (76- to 85-mm caliber), 39 light guns, and 43 multiple-barrel AA machine guns. These numbers are obviously small. Still, the antiaircraft units as a whole achieved the following results: not a one of our crossings was destroyed by the enemy; almost half of the dive bomber raids passed without dive bombing, or with bombing from only high altitudes, which decreased the effect of such attacks. During the first 3 days of the offensive more than 15 enemy airplanes were destroyed.

During the second and the third days our offensive developed successfully. Enemy attempts to strike at our right flank, protected by a river 120 m. wide, failed. These attempts were stopped by the careful planning of our command and the resulting timely arrival of a division from the second echelon, reinforced by artillery and mortars. Our fire halted all enemy assaults. Since the enemy had to bring units from the neighboring sector for the counterattack, the army next to ours was finally able to resume its offensive. It advanced successfully and brought up its flank with the Nth Army.

RESULTS

In less than 3 days the army accomplished its mission. It advanced 40 to 50 kms. along the entire front without substantial losses, without bringing the mobile group into battle, and without employing reserves except for one infantry division. Two German infantry divisions were completely destroyed, the German counterattack was smashed, and the successful development of our operation permitted the neighboring forces to carry on an offensive of their own. The enemy began to bring up operational reserves and throw them into battle one unit after another as soon as they arrived. The struggle became protracted; the operation entered its second phase.

We are not going to consider the further development of the offensive. Suffice it to say that in the next 8 or 10 days all missions were fully accomplished. The enemy had to employ all the above-mentioned operational reserves to combat our developing offensive. In addition, the enemy started an offensive on the neighboring sector, which forced him to withdraw several tank and infantry divisions from the south and thus decrease the tempo of advance in the Northern Caucasus and on the Stalingrad front.

CONCLUSIONS

1. Our success was determined by a number of factors. Our movements were well concealed and the blow was sudden. The breakthrough was organized on a wide front (the initial attack of the 2 armies was on a sector 40 kms. wide), which prevented the enemy from shifting his firepower and his men. Our forces were formed correctly and the reinforcing units were properly distributed.

2. Reconnaissance brought exact information about the first enemy defensive line, as well as about the location of the operational reserves. But it obtained no data about the presence of the second and third defensive lines and the separate strongpoints in the defensive depth. Therefore our aerial and ground reconnaissance failed to protect our forces against "unexpected

occurrences" in the course of battle. Artillery reconnaissance provided the precise plan of targets and the first defensive line. Sound and flash reconnaissance gave quite exact coordinates of enemy batteries. Because the enemy left his artillery on its battle stations, we could compare the actual location of the guns with that obtained by sound reconnaissance. Sometimes the correlation was perfect. In most cases, reconnaissance by sound guaranteed the accuracy of Army Artillery Group fire. No observation planes were used for artillery reconnaissance or fire adjustment.

3. The artillery was grouped correctly and the missions were intelligently distributed. The creation of an Army Artillery Group at the disposal of the army artillery commander proved successful. We should also note the fine employment of direct laying. A part of the artillery concentrated on destroying enemy positions during the period of artillery preparation, while a considerable part was made ready for direct fire and *immediately to accompany the infantry units*. It went into action only when the infantry attacked. This method was so successful in silencing enemy firepower that in a number of cases infantry units passed through the first enemy defensive line without firing a single shot and without any losses.

4. Experience confirmed once more the necessity of a brief artillery and aerial preparation. Accurate and sudden fire (the artillery preparation was opened by a salvo of the entire artillery firing simultaneously with a marginal error of only one minute) led to a thorough neutralization of enemy defenses. The power and the concentration of artillery fire reinforced by that of mortar units was so great that in certain sectors the Germans ran away even before our troops attacked. The German will to resist was broken along the entire front of the offensive.

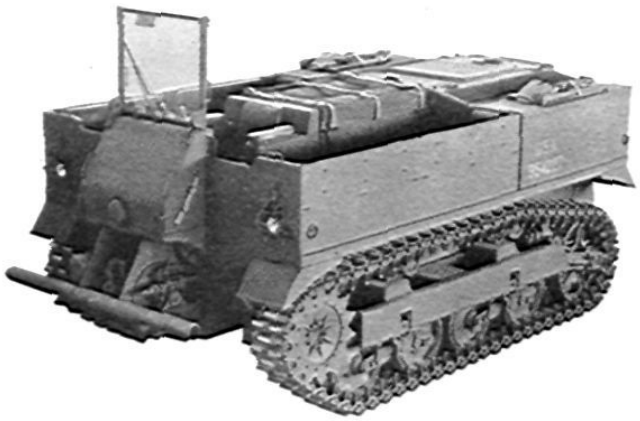
5. In spite of extremely unfavorable meteorological and topographical conditions, the artillery kept up an *incessant* fire during the battle through the whole depth of the enemy defenses. This means of fire included weapons of the Army Artillery Group and numerous supporting guns and mortars, which advanced within the formations of the attacking infantry.

6. The struggle against enemy aviation was not effective enough. To a certain extent the guns and the machine guns of the AA units relieved the situation of the units of the Army, but they were few in number. It seems that at least 8 AA machine gun companies and 12 light and 6 to 9 heavy antiaircraft gun batteries, are required to protect an army on a similar front. This estimate concerns the troops only and does not include additional protection necessary for stationary objects. Experience gained from this operation confirmed the fact that it is more practical to create an Antiaircraft Army Group, rather than scatter AA defenses among divisions. The former system leads to greater maneuverability of antiaircraft units and permits their immediate concentration to protect a particularly important object.

7. The entire operation required only a small expenditure of ammunition. During the first 3 days, infantry mortars used up 140,000 rounds, the supporting artillery 56,000 shells, and the divisional and general support artillery approximately 112,000 shells. As a whole, outside of the Army Artillery Group, 1.5 days' ammunition supply was expended. The heavier guns used up to 2.8 days' supply of ammunition.

HIGH SPEED FIELD ARTILLERY TRACTORS

M-4 tows a 155-mm gun, 8″ howitzer, or 10-ton ammunition trailer. It weighs 29,100 lbs. when unloaded, and will pull a load of 31,800 lbs. →



M-6 is prime-mover for the 240-mm how. M-1, 8″ gun, or two 10-ton trailers in tandem. It weighs 62,600 lbs. unloaded, or 85,500 lbs. when coupled to a T-29 trailer with the 240-mm how. aboard. It will pull 50,000 lbs. on a full trailer, or a semitrailed load of 28,000 lbs. →

← M-5 is for the 105-mm how., 4.5″ gun, or 155-mm how. Weighing 27,600 lbs., it will pull 12,000 lbs.

Attached Automatic Weapons Bn (AAA)

By Maj. Harold J. Bluhm, FA

Editor's note: Quite complex problems arise when antiaircraft units are attached to the field artillery. Major Bluhm's imaginary conversation should help clear up some of these. He is well qualified to speak, having attended the AA School at Camp Davis and now being assigned to the AA Section, Department of Materiel, Field Artillery School.

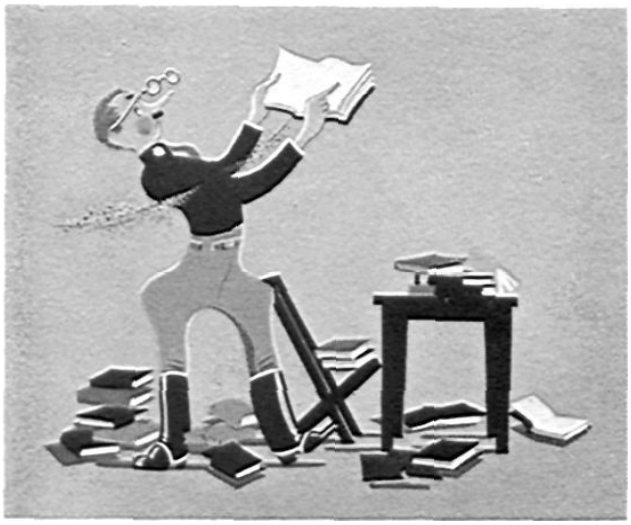
It was a week before the first maneuver problem of the Umpty-Blank Inf Div. Brig. Gen. Blink, Div Arty Comdr, had just finished a telephone conversation with the Div Comdr. Now he sat in his chair scratching his head in some perplexity. Presently he spoke to his S-3.

"Colonel, what do you know about an Automatic Weapons Battalion?"

The colonel was able to answer this one quickly. "Nothing," he replied.

"Well," said the general, "I've just been informed that we are going to have one attached to Division Artillery for maneuvers, so it might be advisable to find out just what this AA battalion consists of, what it can do, and how we can use it."

S-3 took down a bound volume of T/Os, rummaged through it, and finally discovered what he was looking for.



"Here it is," he announced. "The Automatic Weapons Battalion consists of a headquarters battery and 4 weapons batteries. These weapons batteries are subdivided into 2 platoons, and each platoon has 4 fire units in it. A fire unit consists of a towed Bofors 40-mm gun, a multiple cal. .50 machine gun M51, and a crew of 15 men."

"Think it over," said the general, "and within a day or so I'd like your recommendations for the employment of this battalion."

S-3 was lucky! Many Field Artillery organizations have been confronted with this problem for the first time in combat, on only a few hours' notice, and with no previous experience or knowledge of how to solve it. With a couple of days in which to study the problem this S-3 of the Umpty-Blank Div Arty was able to accumulate a good deal of information.

The general reintroduced the subject.

"Well, Colonel, what about these Ack-Ack boys? Have you any additional information?"

"Yes, sir, I have. I've been discussing this problem with the AAA Bn commander and also with some of our officers who have worked with these units. It seems there is more to this than meets the eye.

"The 4 weapons batteries fit in with our 4 battalions, and it's my recommendation that we attach one battery to each of our battalions. This will eliminate any AAA protection for our CP but I believe that the battalions need the protection more than we do."

"Yes, I agree with you. We'll make those attachments. Now, is there anything else that we should do?"

"Yes, sir, there is. Our SOP limits the number of vehicles which a battalion can use on reconnaissance, but I think we should allow an additional vehicle for an AAA party to accompany the battalion commander. In this way they will be able to select their positions too, and unless they do they won't be able to furnish us with AAA protection during the occupation of position when we will be most vulnerable to air attack."

The general reached over to the desk and picked up his notebook.

"I've made some notes on this subject, and believe we should get this information to the battalion commanders. When you mention the occupation of position, it occurs to me that if the AAA units are at the rear of our columns they won't arrive at the position in time to give us protection during the initial stages of occupation. It seems to me that we will want them well forward in the column. By the way, can the Bofors fire while the column is moving?"

"No, sir, they will generally have to emplace before firing, but they can do that very quickly. I heard of one unit in North Africa that fired the Bofors from the wheels by traveling with the outriggers extended, but normally they will emplace before firing.

"This M51 seems to pack a lot of fire power. It has 4 cal. .50 machine guns coaxially mounted in an electrically operated turret mounted on a 4-wheel trailer. It is fired from the wheels, and in column can fire to the flanks or rear but not to the front because the prime mover is in the way. However, the prime mover can pull off the road at right angles to the column and clear the field of fire to the front."

"That information is most important, colonel," interrupted the general, "because very few of our officers have any conception of the characteristics and limitations of the AAA. This maneuver will give us a good chance to do some experimenting with this problem. I think we should get as much information as we have down to the battalions before the problem starts. By the way, what is the effective range of the Bofors?"

"2,000 yards. To be mutually supporting these guns should not be separated by more than a thousand yards.

"The M51," continued the S-3, "is used to help in the defense but normally it should be so located that it can defend

the fire unit against attacks coming from the direction of the dead sector. This dead sector is caused by the director which is placed on one side of the Bofors. If the gun is fired in this direction at an elevation less than 30° the director and the personnel operating it would be endangered. The M51, therefore, should be located so that it can cover this sector. If the director is not being used, these considerations do not apply."

"Well, that clears up a few questions which I had on this dead sector," commented the general. "Now let's look at these weapons batteries. How will the 8 fire units fit in with one of our battalions?"

"That is rather difficult to predict, but a solution might be to attach 2 fire units to each of the firing batteries and 2 to headquarters battery. This of course eliminates service battery, but they will be able to depend on dispersion more than the other units can.

"There is another possibility, however, and that is a situation where the battalion area is limited and the batteries are close together. In this case it may be desirable to have the BC of the weapons battery organize and control an area defense for the entire battalion."

The general consulted his notes again.

"That brings up another point, colonel. If we attach these fire units to the batteries, will our batteries be able to supply them?"

"That is a problem, sir," replied the S-3. "If we attach 2 fire units to a battery, that means 30 additional men and their weapons and vehicles. The prevailing opinion seems to be that our transportation is down to rock bottom now, and this additional supply problem looks like it might be the final straw. I do think, though, that it can be worked out. They have an ammunition section in their headquarters battery—of 4 2½-ton trucks and 4 trailers—which should be available to haul ammunition.

"The attached units should mess with our batteries. This will insure better control and eliminate a good deal of confusion which may result if there are two messes in one area."

"I agree with you, colonel, but there is another point which you've omitted. If the men mess together, they will be more likely to get acquainted, discuss their mutual problems, find out what the other fellow is doing, and how they can help one another. After all, this is a team we have here, and teamwork is most important. Frankly, I think that when the men from this AAA battalion and our men are calling each other by their nicknames we will have made a long step toward developing this team spirit. We have gone a long way with this in the Infantry—Artillery team and we must also develop it in the Field Artillery—Antiaircraft Artillery team.

"I believe that we are going to have more and more association with AA units, and we must make every effort to anticipate problems which may arise so we won't have them pop up on us when we are in combat and catch us entirely unprepared. I realize that each situation may indicate an individual solution, but there are basic principles which if known will assist us in arriving at the most practical solution.

"Along this line there is one problem which seems to be quite difficult and which could easily result in considerable friction. That is 'fortifications.' I've heard considerable comment from FA officers that AA fortifications will reveal the position if they are located close to our installations. They are handicapped with their camouflage because anything overhead will interfere with their firing, and consequently must be of the type that can be removed quickly. This seems to preclude the possibility of complete camouflage. However, the AAA people feel that because their men must stick to their guns and fight it out with any attacking planes, they must be protected. There is considerable merit on both sides of the question and I don't believe an arbitrary decision can be made that will cover all situations. We must be aware of this problem, however, and of the factors involved.

"There are numerous other questions which will arise and which we must solve before we will have the teamwork necessary to make this a smooth-working combination. The subjects which we have discussed should be studied by all of our units and our combined experiences should then give us much useful information.

"This maneuver is a phase of training, and as this is the first time that we've had an opportunity to work with an AAA unit we must make every effort to become acquainted with their problems so that we achieve the maximum efficiency in employing the team."

* * *

The problem is over and the general critique has been held. Warning orders have been issued for the next problem and the units are moving into new assembly areas. Gen. Blink has called his staff and battalion commanders together and is conducting his own critique. One of the problems being discussed is the use of the AAA. The general is addressing the group.

"Before this maneuver started we recognized the fact that having AA units attached to us was a new experience and consequently would introduce problems with which we were not familiar. This, I believe, was evident in the exercise which we have just completed. As a result of this experience, we should be able to improve on our methods for the next problem.

"Initially, we authorized the battalions to include a vehicle for the AAA party on reconnaissance. As a general rule, however, the batteries did not include any AAA personnel in their parties. This is a mistake, and must be corrected so that the attached AAA units will not be deprived of their reconnaissance. Every reconnaissance detail should include a representative from the attached unit. I am stressing this point because reconnaissance is just as important to them as it is to us.

"On the march we discovered that these fire units can be most helpful to us. It was our belief that it would be very unusual for the Bofors to be fired from the wheels. This we now know is not true, as I believe we have all seen instances where the fire unit went into action while on the road and the chief of section commanded *Action from wheels*, indicating that there was not time to emplace the gun. Information which

I now have indicates that this is a normal command. This is most important to us as it indicates that they can take planes under fire with a minimum loss of time.

"As to the place in column—this was generally well handled and the AAA was kept well forward. One of our batteries, though, put them in the same position for a night march. I don't agree with this, as our resistance at night must be mostly passive and I think that the fire units should not be any further forward at this time than the rear of the fifth section. We might experiment with this but I think that the howitzers and ammunition should have first priority on a night movement.

"One battery made a daylight displacement in this manner. One fire unit preceded the prime movers while the other fire unit remained in position and protected the evacuation of the old position. It then limbered up and followed the tail of the column. On reaching the new position the first fire unit went into previously selected positions and furnished protection for the occupation. The second fire unit reinforced this protection when it arrived.

"This gave us a fire unit near the front of our column and another one at the tail. This distribution creates a weakness in the middle of our column which we must recognize and attempt to overcome by judicious use of our organic cal. .50 machine guns on the vehicular mounts.

"Axis planes have discontinued the practice of strafing the length of a column but, instead, prefer to hit a column from the flank, selecting an individual vehicle as a target. After passing over the column they make a large S and hit the column in another spot. For this reason we should, if possible, avoid putting all our eggs in one basket, thereby creating bare spots in our defense. If we do, the chances are excellent that the enemy will find them and exploit them to the fullest extent.

"It is impossible to find the perfect solution, and we will establish certain priorities which will determine our plan, but we must avoid becoming unbalanced if we can.

"This leads us to a discussion of our own cal. .50 machine guns and where they fit in the defensive setup. The attachment of AAA units does not mean that our machine guns have no further function and can be disregarded. On the contrary, they can be quite helpful and should be used to supplement the fire power of the AAA. This cannot be done if the FA and AAA organize separate defenses. Instead, the two must be coordinated. One method to accomplish this is to have the AAA officer submit his recommendation for the use and control of the machine guns and (after the decision has been made regarding their use) place the entire coordination and operation of this defense under his control. These men have been specially trained in this field, and full use should be made of their experience.

"One instance was noted where one of our machine guns was in position alongside of an M51, which as you know has 4 cal. .50 machine guns. It is questionable whether 5 machine guns could accomplish much more than 4, but the point is that there were other sectors which were completely undefended and where this single gun could have been used to good advantage.

"But we must not interpret this to mean that we turn the defense over to the AAA officer and forget about it. The responsibility remains with us. This officer serves as a staff officer while his unit is attached, and although he should make his recommendations and supervise the execution, the responsibility and the decision rest with our commanding officers. We must therefore be prepared to accept or reject the recommendation, depending on whether or not it will accomplish our purpose and not interfere with or hinder our main mission of providing support for the infantry.

"We must also recognize the fact that our problems are as unfamiliar to them as theirs are to us. Therefore let us not assume that, when we are hazy about the solution, we will be able to throw the whole problem in the lap of this AAA officer and have him make the decision for us. He will normally be a junior officer and won't be so well acquainted with our problems as we are. Therefore any attempt to shift the responsibility to him is unwise and unreal.

"In another instance one of our battalions employed an area defense, utilizing a weapons battery to defend the battalion area. This decision was sound, but again coordination of defense was lacking. This was further emphasized when the battalion displaced by battery—the first battery moved out in daylight without AAA protection while some AAA units were still protecting a vacant piece of ground where the battery had been located. Centralized control is desirable for AAA as well as FA, but it is questionable whether this is practical when units are displacing. In this case the fire units should have been attached to our batteries when the displacement was contemplated. When this was completed the attachments could have been terminated and the fire units returned to control of their own battery, if desired. The stability of the situation and the area being covered should influence this decision.

"We do not intend to indicate that this is a complete analysis of the AAA problem. Instead, we are inviting your attention to deficiencies which have been noted and of which we should be aware. All units will not experience the same difficulties, but as some problems continue to recur we should find ourselves more versatile in our viewpoint as a result of our experiences, both individually and collectively.

"We will find that some items can be included in our SOP and we should do this at the earliest opportunity.

"During maneuvers it is difficult to assess casualties as a result of air attack. For this reason we are apt to disregard this threat to our security. Therefore we must force ourselves to find these problems and solve them, so they won't rise and haunt us when we can't afford the experience."

DON'T LET 'EM LET YOU DOWN!

To often we have word from families that a member has gone overseas and his JOURNALS should be stopped. Those people mean well, but they simply don't understand the true situation: your JOURNAL will be even more useful to you overseas than you found it here. This is emphasized by letters like this one:

Somewhere in New Guinea

The Journal has certainly come in handy over here. I have read some very pertinent articles lately on jungle fighting and the pointers contained in them surely have helped both me and my unit in getting along over here. I have especially liked the articles on survey in the jungle.—Major, FA

A Method for Target Survey from Dual OPs

By Lt. Col. J. S. Letcher, USMC

To locate points or targets in a target area accurately, a survey is necessary. If the survey of a point or target can be effected simultaneously from the two ends of a base line it can be accomplished very quickly. The difficulty of a survey party at one end of a base line being able to identify the same point or target to a party at the other end of the line has generally prevented a simultaneous measuring of angles from the ends of the base line to the target. Our method greatly facilitates this phase.

PRELIMINARY

Establish OPs (which will be the ends of the base line) at such a distance apart that the angles formed by them at the prospective targets will be greater than 150 mils.

Accurately determine the exact yardage between these OPs.

Accurately determine the difference in elevation between OPs in yards.

Fill in Deflection Angle Correction Table (Fig. 1). Take the distance between OPs to the nearest 10 yards. For example, if the exact distance is 613 yards use 610 yards. Reduce this distance to mils for each range from 1,000 to 10,000 yards. Put these figures opposite each range in the first column to the right of the range column. To fill in the remaining columns, multiply the figures in the first column by the obliquity factor above each column. First fill in the column under the obliquity factor of 1. Then complete columns for .9, .8, .7, and .6 by multiplying the values in the 1 column by these factors. For the .5 column divide in half the figures in the 1 column. Values for .95, .85, .75, .65, and .55 can readily be determined by interpolating between their respective adjacent columns. Columns .45 down to .05, inclusive, can be completed by halving the full-tenth columns from .9 down to .1. Filling in the Deflection Angle Correction Table usually requires about 40 minutes if all computations are made with pencil and paper. Use of a slide rule should speed up the process.

Fill in Angle of Site Correction Table (Fig. 2). Take the difference in altitude between OPs and reduce the difference to mils for each range from 1,000 to 10,000 yards. Enter these figures in the correction column opposite each range.

Set up aiming circles at each OP. At the right OP set 4800 on the aiming circle and sight on the one at the left OP. At the left OP set 1600 on the aiming circle and sight on that at the right OP. When this has been done turn both aiming circles to 0 and materialize their 0-3200 lines on the ground.

Establish telephone communication between the OPs and from each OP to the FDC.

PROCEDURE

The observer at one OP, seeing a target, sets the cross-hair of his aiming circle on the target. He reads the deflection angle from the aiming circle and also the angle of site to the target, and makes a careful estimate of the range to the target.

He then turns to that range in the Deflection Angle Correction Table and notes the correction which applies to the deflection angle which he just read. From the location of his OP (depending upon whether it is the right or left one) he determines whether the correction should be added to or subtracted from the deflection angle, applies the corection properly, and records the resultant figure.

Then he looks at the estimated range in the Angle of Site correction Table and takes the correction from the Correction column. From the location of his OP (higher or lower than the other one) he determines whether to add the correction to

ANGLE OF SITE CORRECTION TABLE

When your OP is higher than other OP.
If the angle of site to target is plus *add* correction.
If the angle of site to target is minus *subtract* correction.

When your OP is lower than other OP.
If the angle of site to target is plus *subtract* correction.
If the angle of site to target is minus *add* correction.
Difference in altitude of OPs ---------- yards.

RANGE	CORRECTION
1000	
1500	
* * *	
9500	
10000	

Figure 2

DEFLECTION ANGLE CORRECTION TABLE

If you are at Right OP add the correction to the angle that you read to the target.
If you are at Left OP subtract the correction from the angle that you read to the target.
Distance Between OPs: ..... yards.

Obliquity Factor	1.	.95	.9	.85	.8	.75	.7	.65	.6	.55	.5	.45	.4	.35	.3	.25	.2	.15	.1	.05	0
Aiming Circle Reading	0	340	580	735	855	950	1030	1100	1155	1205	1250	1290	1325	1355	1385	1405	1430	1445	1465	1480	1490
	340	580	735	855	950	1030	1100	1155	1205	1250	1290	1325	1355	1385	1405	1430	1445	1465	1480	1490	1600
	6400	6060	5820	5665	5545	5450	5370	5300	5245	5195	5150	5110	5075	5045	5015	4995	4970	4955	4935	4920	4910
	6060	5820	5665	5545	5450	5370	5300	5245	5195	5150	5100	5075	5045	5015	4995	4970	4955	4935	4920	4910	4800

RANGE	
1000	
1500	
* * *	
9500	
10000	

Figure 1

or subtract it from the angle of site which he read, applies the correction properly, and records the resultant figure.

Next he calls the other OP and gives the observer there the corrected deflection angle and the corrected angle of site. When the other observer has set these off on his aiming circle, the observer who saw the target gives him a description of the target so it can be identified. The other observer sets the cross-hairs of his aiming circle upon it and reads the exact angle to the observer who first saw the target.

This observer then calls the FDC and gives his deflection angle, the deflection angle of the other observer, and the angle of site from his OP; he also describes the target. With this data the FDC can compute the exact location and altitude of the target and bring fire upon it.

EXAMPLE

Distance between OPs is 610 yards.

Right OP is 18 yards higher than the left OP.

The observer at the right OP sees a target, let us say enemy mortars. He sets the cross-hair of his aiming circle on the target; reads the angle of 710; reads the angle of site as—9; and estimates the range to be 2,700 yards.

In the Deflection Angle Correction Table he looks in the column under 580 to 735 because the angle which he read, 710, is between these figures. In this column he sees that the correction for 2,500 yards is 220 and for 3,000 yards is 183; for 2,700 yards he interpolates and calls the correction 205. As his OP is on the right the correction must be added, so 710 + 205 = 915. He records this figure.

From the Angle of Site Correction Table he finds that the correction for a range of 2,500 is 7 and for 3,000 is 6; he takes 7 for the correction. His OP is higher than the other OP and the angle of site that he read was —9 so he subtracts the correction of 7 which gives him 2.

He calls the observer at the left OP and says, "Deflection Angle 915, Angle of Site Minus 2." When the observer at the left OP has set these angles on his aiming circle he asks for a description of the target; when he identifies it he finds, let us say, that he has to move his aiming circle until the reading is 941 to set his vertical cross-hair upon it. He reports to the observer at the right OP, "Target identified, Deflection Angle 941."

The observer at the right OP then calls the FDC and reports, "Right Deflection Angle 710, Left Deflection Angle 941. Angle of Site Right OP, Minus 9. Enemy mortars." The computations necessary to locate the target are made at the Fire Direction Center by using these angles, with the distance between OPs as a short base.

COMMENT

Successful use of this method of surveying targets depends largely upon accurate range determination. To be certain that the target will be in the field of vision of an observer's instrument every possible means should be used to obtain accurate ranges from OPs to targets. A 1-meter base range-finder at each OP would be of great value because such an instrument is quite accurate up to 3,000 yards—and the largest errors in correction angles are introduced by range errors for ranges between 1,000 and 3,000 yards. Another aid to accurately obtaining the range to targets would be to determine the range to several easily distinguishable objects at varying ranges and then use these figures to help determine the ranges to other targets. Maps if available, and personnel trained in range estimation will also aid in obtaining accurate ranges. If the range which is used is even fairly accurate, however, the target will generally be in the field of vision of the aiming circle of the observer at the second OP after he has set on his aiming circle the Deflection Angle and the Angle of Site which were given to him by the other observer. When the target is described to him he can recognize it and center his cross-hairs upon it.

This method of survey of targets proved successful during field tests even when the target area was one in which there were no easily identifiable targets or reference points, and where the determination of ranges from OPs to targets was made by estimation only. During those tests aiming circles were used at the OPs, but if BC 'scopes are available their larger field of vision and greater magnifying power should make them much superior to aiming circles.

The Deflection Angle Correction Table (Fig. 1) and The Angle of Site Correction Table (Fig. 2) can be mimeographed and reproduced in whatever quantity desired. The same sheet of paper can be used for both tables, one on either side.

FIRING ON WATER-BORNE TARGETS

By T/4 John L. Denning, Jr., FA

Our mission included the covering of an almost circular coast. This made it necessary to be capable of all-around fire. In view of this, FDC constructed a circular firing chart with the battery positions in the center (see diagram).

Each battery established OPs to view the maximum amount of coastline. Site tables were made at each OP, using Angle of Site to determine ranges to sea level. Using this method the range to a target can be determined instantly with a fair degree of accuracy. A range and chart azimuth are used to locate a target only when the target is visible from only one OP. A more accurate method to locate targets is by Long Base Intersection, taking chart azimuth readings from two or more OPs—which in our case is nearly always possible as the OPs are far enough apart to give a good angle of intersection.

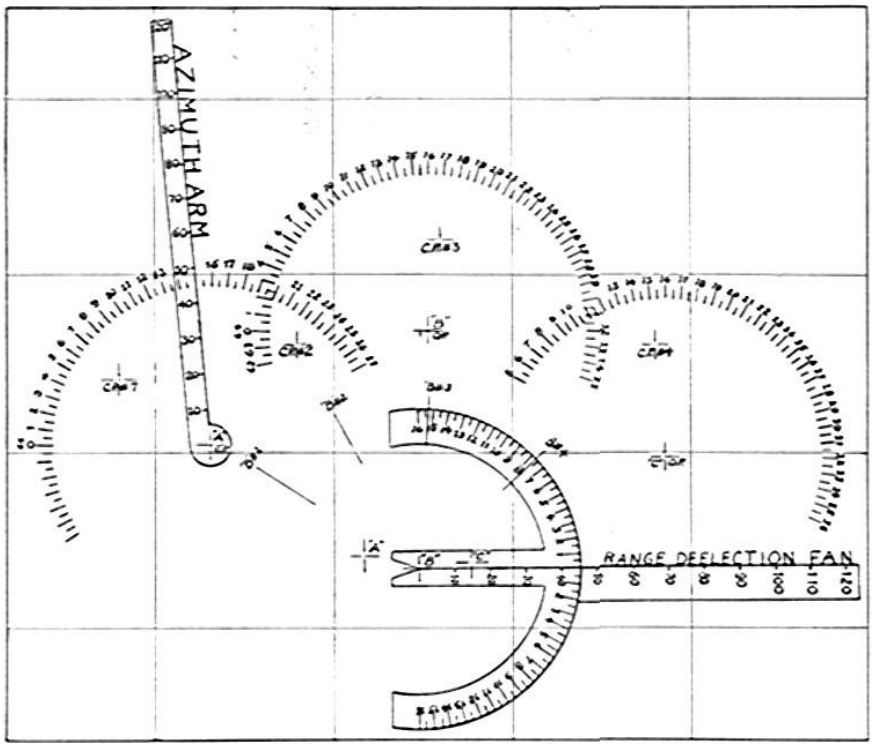
Azimuth ares were plotted around each OP on the firing chart (see diagram). This eliminates the clumsy and slow use of a protractor. Azimuth arms were made from plastic graduated in the same manner as a range deflection fan. A pin through the azimuth arm into the OP position acts as a pivot for the arm; this makes it possible to measure azimuths on the firing chart in a matter of seconds. BC 'scopes at each OP are laid on a reference point with a chart direction taken from the firing chart; this proved to be a more accurate way of locating targets than a true azimuth.

A timing telegraph set (ML-110) from the metro section of Division Artillery is set up in FDC, and time coordinated there. This is so installed that the time buzz could be heard at all OPs and GPs. With this system OP observers can take their instrument readings at exactly the same instant. The instrument buzzes for five seconds ending on the minute every

minute; readings are taken at the end of the buzz. Initially four or five readings were required to determine the course and speed of the target.

The target's position has to be estimated two minutes in advance (set forward point) plus the distance it will travel during the flight of the projectile (predicted point). This distance is drawn and measured along a line to conform to the direction of the course of the target.

A table was made to determine the distance the target travels during the time of flight. At the mean range of the batteries we enter this to a column that gives the distance a target would travel during the time of flight—this column is for a target traveling at the speed of the one to be attacked. For example, if a target travels 100 yds/min the column listed "100 yds." gives the number of yards it travels during the time of flight of the projectile for the range in question. The distance (yards traveled per minute) is measured from the firing chart between several plots, to obtain an average distance; once determined it rarely changes. Most vessels travel around 200 yds/min, incidentally.



Site tables (including the "complementary angle of site") were made for sea-level, to eliminate any loss of time computing sites. The VCO works with the HCO on the firing chart, each setting an azimuth arm as an instrument reading is obtained. HCO reads the range, VCO the deflection.

As soon as a target is located an approximate range and deflection shift are given the computers and the guns are so laid at once. In one minute two instrument readings are reported from the controlling OPs. The intersection of the readings is plotted, and ranges and deflections read to all computers. In the following minute the computers send the guns a shift and new elevation; the guns set these off and fire at the end of the minute. A battalion volley can be repeated every two minutes as long as the target travels in a regular course. It is not necessary for the target to travel in a straight line—which was rarely the case. Two instruments are used at each OP: one tracks the target and the other reads azimuths to splashes. Corrections are applied to the next volleys to improve accuracy. Using this method the second volley is always on the target (predicted point).

Telephone lines run directly to each individual gun from the executive's post. The chief of section repeats the commands to the gun crew and gives the command to fire at the end of every 5-second buzz he hears, provided he has reported his gun ready. The computer can connect the buzzer to his GP line by means of a switch, but he does not connect it unless he is ready for his battery to fire.

COMMENTS

Speed is of the utmost importance at the OPs and in FDC. Every second lost decreases the possibility of good results. It requires quite a bit of time and work to perfect this method. It is, however, good training for the personnel—they take an interest in it and enjoy doing it.

As the firing chart takes quite a bit of abuse it is almost necessary to countersink something hard around the GPs and OPs to keep the pin holes from becoming too large. Our chart is also covered with Dura-seal and lacquered.

The range deflection fan shown in the diagram was made to fit the chart. It works exceptionally well as it is easy to handle. The issue type range deflection fan is too wide at maximum ranges: it interferes with the smooth operation of the azimuth arms. With our type the base-line extensions are formed neatly around the GPs, easily found and distinguishable yet far enough away to interpolate deflections accurately. Our fan also facilitates the reading of large deflection shifts. "B" Btry base line extensions are illustrated in the diagram for check points 1 to 4.

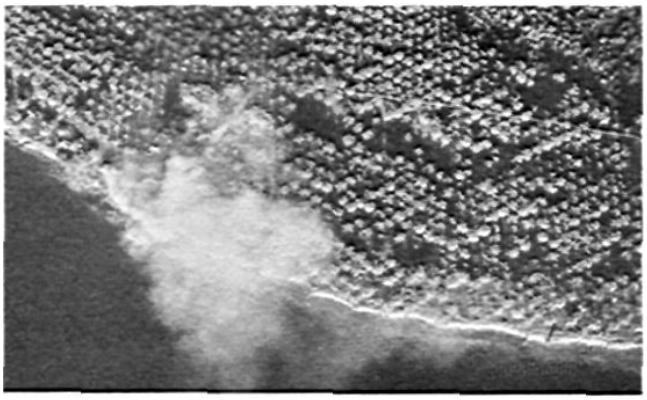
A buzzer system is not necessary as long as the time is coordinated. Using the words "Ready -- take" works very well with the OPs, and the command "Fire" can be given to the guns by the computers.

Corrections are determined from firing CIs on check points (grid intersections in the water). They are kept up to date with meteorological data which is received regularly; consequently no previous adjustment is necessary.

Fire for effect is started as soon as possible.

NEW YEAR'S WELCOME, FIFTH ARMY STYLE

On the stroke of midnight 31 Dec 43—1 Jan 44, the Brigade and all VI Corps artillery fired a coordinated New Year's Greeting of 3 volleys per gun on German battery positions. The Brigades fired their New Year's Greeting during the afternoon 1 January on 8 counter-battery targets.



Naval bombardment explodes Jap fuel and ammunition dumps, as well as topping palm trees and battering installations in general.

Aerial Observation, SW Pacific Style

By Capt. William B. Craig, FA

Editor's note: Throughout the New Georgia campaign Lt. Craig served continuously as an air observer, even though he was shot down on July 24th and again on the 26th, crash-landing into the water near Munda both times. For his splendid work he was awarded the Distinguished Service Cross on Armistice Day—the only such award received in his outfit (the 192nd FA Bn of the 43d Div). He also wears the Purple Heart.

When one speaks of aerial observation for the Field Artillery, there immediately comes to mind a picture of an observer in a grasshopper plane soaring 600 feet over the battery position, unexposed to enemy AA fire and ready to drop quickly to the ground should enemy planes appear. Observers are thoroughly trained in this procedure at Fort Sill, and it is, of course, the ideal way IF proper conditions exist. During the New Georgia campaign, however, the "eyes of the Artillery" faced a quite different setup, and different methods had to be employed.

For the Munda operation, the nearest base from which planes could operate was 140 miles from the target area, at the Russell Islands. (Actually we had to operate from Guadalcanal, 200 miles from Munda.) There was no opportunity of making emergency landings anywhere near our gun positions except on the water, which is slightly hazardous and impractical in a land-based plane. In this situation, the use of Piper Cubs or any similar observation craft was out of the question; we had to resort to faster, more durable aircraft. We couldn't hover comfortably back and forth over our gun positions because the majority of our targets were in jungle-covered terrain so it was impossible to see what you wanted to shoot at unless you flew in fairly close to the enemy installations. This was not always a very healthy method, but from experience we learned where the active AA positions were located and we would try to remember to keep just out of their range whenever possible. The main problems that we had to contend with, then, were operating from a distant base and observing in difficult terrain. A brief discussion of our operation will show how these and other difficulties were met.

Five days before D-day (June 30) three observers from the 43d Div Arty were sent to Henderson Field to report to "Operations" for instructions and some preliminary training if possible. We arrived, and after the usual wandering and inquiring we found the proper officer. In charge of all Navy and Marine planes stationed at the field, he was rather busy at the time as there were numerous "strikes" going out, but he arranged for our quarters and told us that as soon as possible we would have a chance to familiarize ourselves with the planes we were to use.

We had no trouble in getting together the necessary equipment. Flight gear—that is, a helmet with earphones, life jacket (Mae West), and parachute—we borrowed at the field. Field glasses, map case, and web equipment we had with us. That is about all one needs. We always took along a canteen, first-aid pack, and pistol, in case we should be forced down and have to spend a few days on a lonely isle; later on they proved very handy indeed.

At first it was planned to have us fly in Douglas dive bombers, commonly known as SBDs, and we were to be combination rear gunner, radio man, and observer. With this in mind we were duly checked out the next morning and briefly introduced to the mysteries of the rear seat of these dive bombers. The night before D-day we were briefed and then informed that we would set out in the morning in the middle cockpit of a Torpedo Bomber, or TBF. Being long accustomed to sudden changes of plan in the Army we simply nodded and said, "Yes, Sir." Eventually we were shifted over to SBDs as originally scheduled, so our training as rear gunners was not a waste of time.

Our first pilots for the TBFs were Navy men who had had some experience in "spotting," as they call it, and they had a pretty good idea of what we were trying to do. These planes are larger and faster than the SBDs and carry a radio man and turret gunner to do the dirty work, so all we had to worry about was observation—but that proved enough to keep us quite busy.

Div Arty wanted to have a plane over the target area at all times during the daylight hours, which meant that there had to be five flights, each staying two hours over Munda. As the round trip from Henderson Field required about 2½ hours, we found that the planes were in the air 4½ to 5 hours on each mission. At first we had only 3 observers, so 2 of them had to be up from 8 to 10 hours every day. We found this rather tiring, but the situation was rectified later on when they sent down three more officers, cutting each observer's time in the air to about 4½ hours. This permitted more efficient and accurate observation because there was less fatigue.

Our first few trips proved to be a little more than reconnaissance flights, as the batteries had not yet gotten into position, but these proved most valuable in familiarizing us with the terrain and also in getting us used to the motion of the plane. It is hard to keep your mind on observation if you feel a bit nauseated.

On D+2 we commenced firing. We had made a thorough study of the available photomaps and knew the location of

many of the targets and the various gun positions as well. As the targets were designated to us in the air, we had little trouble in picking out the spot on the ground and establishing the gun—target line. Adjustment of fire was fairly simple if the initial round landed in the water and we could shift from there, but when they landed in the dense jungle we couldn't see the bursts. We soon got into the habit of adjusting with smoke and then bringing in the HE for effect; there was little difficulty on that score afterward.

Our first targets were designated to us by the FDCs on the ground which had good single vertical photos with targets marked on them by photo interpreters. As we carried in the plane a lithographed photomap similar to the one used as a firing chart, targets could be given us by coordinates after they had been restituted from the single verticals. From terrain features we were able to pick out the desired area and adjust the fire, at least in most cases. Often it was difficult to identify target locations on the ground from the photomap: it was poor for detail, and aside from the airfield showed only water or jungle. The coastline was an invaluable aid in orientation, and the one thing we could always depend on.

After firing the initial assigned targets we were asked to locate targets of opportunity and fire on them by a shift from the base point. We strained our eyes searching, but because of the jungle growth and the good camouflage discipline of the Japs couldn't pick up much that looked like an enemy installation with activity about. It is surprising how little one can see when traveling over an area at 100 m.p.h. The only effective way we found to pick up positive targets was to fly over the enemy until he was tantalized into firing at the plane, and then spot where the gun flash was coming from. The Japs soon caught on to what we were doing and would not fire at a single plane unless well aroused. We tried strafing a few times; it worked at first, but then the little yellow men smartened up and laid low. They kept on laying low after that and let us fly around as we pleased until we came well inside of range where they thought they couldn't miss either, and twice their .50-cal. and 20-mm. shells tearing through our plane forced us to crash-land in the water. The pilot and I were both lucky in being rescued practically uninjured, but we lost one radioman and two others of the crew were injured. It was a high price to pay for experience, but we learned to stay a respectful distance from hostile installations after that, whether we saw activity there or not. At an elevation of 1,000-2,000 feet and at a range of 3,000 to 4,000 yards from the enemy, observation is satisfactory for well-defined targets.

Communications presented another problem. At first we operated on the same frequency as the bomber control, but as there was too much interference from other stations we had to change over to a separate channel for artillery only. This unfortunately was different than the frequency at the control tower at the field, and it meant that frequencies had to be changed after the take-off—a difficult procedure, and the plane was often several kilocycles off. After a while the control tower established the policy of maintaining radio silence and controlling traffic with lights. This enabled us to set our radios at the proper frequency before leaving the ground, and communication was better. The 284 (which theoretically is used for air-ground) proved to have too short a range and was not practical since the planes had to operate at some distance from the battery positions. The 193, on the other hand, was used with good results.

At times the receiver in the plane would go out of order but we found it satisfactory to continue the adjustment with one-way communication, the battery firing when ready and the observer sending back the proper sensings. To operate in this way the observer of course must know the target and must keep on his toes constantly to avoid missing any rounds. Use of panels was not at all practical; first, it was almost impossible to find a place to display them on the ground near the guns, and second, even if they were displayed the plane was never in a position to see them while conducting a problem for (as mentioned before) it was not possible to get good observation while flying directly over the battery positions.

Although the necessity never arose, we were on call to observe fire for naval surface craft. With this in mind, it is a good idea for any officer assigned as aerial observer in an amphibious operation to know Navy as well as Army procedure. The Navy, instead of sensing the burst in relation to the target, gives the shift necessary to bring the burst on the target;

Reversing Lt. Craig's situation, a navy photographer made this photo from an army plane. Taken from 14,500 feet, it well illustrates how clearly island shorelines appear. Although detail in the interior is scanty, a careful study of water depths, plantations, and general growth will often (as here) reveal the major ground formations. Three Jap cruisers are in Buka Passage, at the upper right.

they do so in hundreds of yards, giving range first and deflection second. For example, if a round landed 200 right and 300 short of the target we would sense it in that manner, while a Navy observer would give "Up 3, Left 2." Should the range or deflection be correct they would give a command such as "Up 2, No change," or it might be "No change, Left 3." When the adjustment is complete they, as we, say "Fire for effect."

At the outset it was hard to judge distances on the ground accurately while flying at an altitude of one or two thousand feet. Experience is the only way to obtain accuracy and confidence, but if you can locate a prominent terrain feature the length of which can be measured on the map, you have a valuable yardstick which greatly facilitates sensings. Distances on water are deceiving and it always pays to be bold. Once you get your bracket, the task is simple.

On August 6th Munda fell, and in no time at all the field was put into operation by the SeaBees. We moved our stuff up from Henderson and landed there, right in the middle of our old target area. It was quite a thrill. From then on we worked with the artillery through the Arundel-Vila campaign until Kolombangara was evacuated, when we returned to our units. All in all, we had a lot of fun. Now we're hoping we will be putting on our flight gear and climbing into a TBF again soon.

In summary, if you should suddenly find yourself assigned as artillery air observer in a joint Army-Navy amphibious operation in the South or Southwest Pacific, it may help you to keep the following things in mind:

1. The Marines and Navy will be flying you. Get to know them, and familiarize them with artillery and its objectives. They show a great interest and will often pick up things out there that you miss. They can substitute for you in an emergency, too. On one occasion, when communications failed between observer and ground, the pilot of a liaison plane which was flying near the target area successfully adjusted fire on several targets.

2. Two to three hours is the maximum time an observer can operate efficiently at a stretch. Remember also that the pilot gets tired flying in circles for any great length of time.

3. Good photomaps are essential. Insist on having them furnished to you. Single verticals (1:10,000) with the latest interpretations marked on them are even better. The observer should be thoroughly acquainted with the location and type of all targets before leaving the ground, and this can be done only by preliminary study of all available photos and maps. Don't depend too much on firing at targets of opportunity, because you can't see much—especially under a canopy of jungle growth. Let the PIU (Photo Interpretation Unit) show you where they *know* there is enemy activity, and fire on that rather than on where you *think* there might be activity.

4. The pilot should know the location of the battery positions as well as the target area. Without this knowledge he is apt unintentionally to fly in front of the guns or get you in a position from which you cannot observe.

5. Use smoke for adjustments on targets in jungle-covered areas. HE is almost impossible to see in such terrain.

6. Be cautious about where you fly. Stay out of enemy AA range, and don't get in front of your own guns. Remember, 105 and 155 howitzers have a high trajectory. Few pilots realize this fact.

7. Good communication is necessary. The radio set should be calibrated on the ground, preferably with a frequency meter, and you (as observer) should do all transmitting. Relay between the plane radio man and observer is not practical. The 193 is the best set for the ground station, and only voice should be used. Few observers know code, and it is too slow anyway.

8. Don't expect observation to be like it is on an OP. Your position is constantly changing, and you must keep on your toes so that you always know where you are and where the GT line is—especially when the battalions you observe for occupy dispersed positions on different islands.

9. As a last word, remember: Be bold in your sensings when firing over water, and don't forget the value of surprise fire. The Japs always have plenty of deep dugouts they can duck into when they see the rounds creeping closer. They *must* be caught unawares.

HIGH ANGLE FIRE IN FDC

By Capt. Robert P. Wills, FA

This article covers a procedure for handling high angle fire through Fire Direction Center, particularly when adjusting with one battery and bringing the battalion in for effect. It has been found workable in the field.

Three principal problems present themselves: selection of charge, variation in drift at different ranges, and elevation corrections. They are taken up individually and followed by a practical example. The weapon in mind is the 105-mm howitzer, battery front 100 yards, and battery registered with center piece.

Problem of Selecting Charge

If batteries are echeloned in depth more than 800 yards one charge may not suit all batteries of the battalion. Then too, the adjusting battery might start with one charge and complete adjustment with another. Since there is so little choice in charges there is no reason why the computers cannot do the selecting themselves. If S-3 substitutes "High angle" for "Charge —" the computer can select the proper charge, if in doubt choosing the lower of two possible charges. Computer of the adjusting battery announces this charge as usual. Computers for non-adjusting batteries, however, cannot select their charge until they receive corrections and determine their adjusted elevations. So in initial commands, instead of announcing a charge they say "High angle." This advises the battery that charge will be announced later.

Problem of Drift

So long as all batteries fire at the same range with the same charge drift offers no difficulty, but as these conditions are the exception rather than the rule a method must be devised to correct drift the proper amount for each battery. To accomplish this drift is generally kept separate from map shifts, the computer for the adjusting battery correcting his original HCO shift for drift at the initial range fired. After adjustment, drift at the adjusted elevation is removed from the deflection correction, leaving only the correction due to unknowns and to error in location of target. When going into fire for effect each computer for a non-adjusting battery applies to this correction a correction for drift corresponding to his adjusted elevation, and announces it to his battery.

When it is necessary to change charges during adjustment, there occurs a sudden change in effect of drift. This change should be compensated for in order not to distort what appears to the observer to be the gun-target line.

PROBLEM OF ELEVATION CORRECTION

Since batteries might be using different charges the correction must be expressed in yards rather than in mils, being determined by comparing initial range with adjusted range.

PROCEDURE

S-3 announces "High angle" (instead of "Charge —"). HCO follows with (for example) "Baker, 5800, Right 200; Charlie, 5400, Right 185; etc." B (adjusting) computer commands, "B ADJ SH HE, CH 4, FQ, BDR 162 [HCO shift R 200, drift correction L 38], SI 300, BR, ELEV 1010." B computer enters in the "L" column on his computer's sheet the 38 which corrected for drift. Adjustment is carried on the same as in low angle, reading elevations off the GFT rather than using *c's*. When adjustment is completed the computer reads the drift at *adjusted* elevation and enters it in "R" column. These entries of drift in "L" and "R" columns have the effect of correcting for drift at the first elevation fired and removing the net drift at conclusion of adjustment, thus leaving the correction free of any drift. He then totals "L" and "R" columns, obtaining the correction for the other batteries. By comparing adjusted range with HCO range, the correction in yards is determined. Computer announces, for example, "Right 25 [algebraic sum of L & R columns], plus 450 [difference between HCO range and adjusted range]."

Computer C's initial commands are, "B ADJ, SH HE, High-angle, FQ, BDR 185, SI 300, B 2 RDS, DNL, ELEV 1075" [elevation to correspond with charge most likely to be used]. It may be noted that no correction was made in drift: computer does not know either range or charge until he receives corrections from the adjusting battery, and consequently does not know drift. When corrections of "Right 25, plus 450" are given he moves his index up 450 yards, selects the appropriate charge, combines deflection correction with drift correction, and announces it and follows with new elevation. Continuing the above example he commands, "CH 4, L 12 [R 25, L 37], 1000."

Although the explanation of this method may sound a bit involved, its practical application is simple. The computer of adjusting battery has but four points to bear in mind: he (1) selects the charge; (2) corrects initial data for drift and enters it in "L" column on his sheet; (3) when changing charges, notes drift at last elevation fired, compares it with drift at next elevation, and gives a compensating deflection command (drift increases go left, decreases go right); (4) enters final drift in "R" column. Computer for a non-adjusting battery has 3 points to bear in mind: he (1) substitutes "High-angle" for charge in initial commands; (2) when going into fire for effect, announces charge; (3) corrects for drift the deflection correction received from adjusting battery before sending it to his battery.

EXAMPLE

S-3: HIGH ANGLE, CONCENTRATION 3, BN, B, 3 VOLLEYS, AT CENTER RANGE, WHEN READY

HCO: *Baker, 7300, L 138*
Able, 7100, L 130
Charlie, 7150, L 145

VCO: *Site Baker —5*
Able —2
Charlie —2

Commands by computers:

B	*A*	*C*
BATTERY ADJUST	BATTERY ADJUST	BATTERY ADJUST
SH HE, CH 5, FQ	SH HE, HIGH ANGLE, FQ	SH HE, HIGH ANGLE, FQ
BDL 178 [L 138, L 40]	BDL 130	BDL 145
SI 295	SI 298	SI 298
BL	B 3 RDS, DNL	B 2 RDS, DNL
ELEV 1030	ELEV 1055	ELEV 1050

Observer: *400 right, 800 short*
Computer B: CH 6, L 65 [L 55, L 10 diff. in drift], 1115
Observer: *200 left, 400 over*
Computer B: R 25, 1147
Observer: *50 right, 100 short*
Computer B: L 7, 1140
Observer: *50 over, fire for effect*.
Computer B: B 3 RDS, 1143. Corrections: L 33, plus 450.

Computer B's work sheet appears as follows:

Sensings	***Commands***			***Elevation***	
	L	***R***			
	40				
	[drift at 1030]				
400 right, 800 short Chg. 6	**65**			**1115**	
200 left, 400 over		**25**		**1147**	
50 right, 100 short	**7**			**1140**	
50 over, fire for effect			**B 3 RDS**	**1143**	
		54			
		[drift at 1143]			
	112	**79**	**Initial Range:**		**7300**
			Final Range:		**7750**
					450

Corrections: L 33, plus 450

Computer A: CH 5, L 70 [L 33, L 37], 993
Computer C: CH 5, L 69 [L 33, L 36], 985
Computer B: Data for replot: L 171 [L 138, L 33], 7750.

RECENT FILM STRIPS

6-35—The 105-mm Howitzer M2, Part IV—Care, Cleaning, and Lubrication.
6-43—Laying the Field Artillery Battery.
6-45—Sensing of Field Artillery Fire.
6-47—The 75-mm Howitzers M1 and M8, Part II—Mechanical Functioning.
6-48—Sighting and Laying Equipment Tests and Adjustments—4.5-inch Gun M1 and 155-mm Howitzer M1.
6-49—Field Artillery Conduct of Fire—Axial Precision.
8-23—Medical Battalion.
8-61—Mess Sanitation.
8-70—First Aid for Non-Combat Injuries.
17-30—105-mm Howitzer M2 Mounted on Self-Propelled Mounts, Part II—Functioning and Lubrication.
17-31—Identification of U. S. Army Armored Vehicles, Part II—Half-track Laying and Wheeled.

Something New in Gunnery

By Lt.-Col. T. A. Lowe, D.S.O., MC

LATE OF THE HIGHLAND LIGHT INFANTRY: WELL-KNOWN BRITISH JOURNALIST AND MILITARY CORRESPONDENT OF THE LONDON "DAILY MAIL." "TIMES OF INDIA." AND "STRAITS TIMES."

Bombardment units have introduced something new in the British Army. They were born in May, 1941, when 12 Royal Artillery Officers were sent to a training center to act as Forward Observation Officers and Bombardment Liaison Officers. They were ill-equipped then, in that their contact with the Royal Navy at the Gunnery School lasted only 5 days.

The initial plan was scrapped, but the officers did not return to their units. They had learned enough to realize the importance of their mission. Working with the navy they trained on, becoming an efficient unit.

An immediate sequel was seen in Madagascar. Eleven Royal Artillery Officers went there as F.O.O.s (or B.L.O.s, for they are interchangeable), and their training enabled them to bring naval support for the landing troops in a manner in which it had never been brought before. To their surprise they found themselves with an additional and unsuspected role—they provided the Force Commanders in the flagships with the latest and best information about the progress of the battle.

After Madagascar the 11 officers went on to India and there founded the nucleus of another training unit.

What is this new organization of F.O.O.s and B.L.O.s?

The unit is small and is composed as follows:

On land: A captain (Royal Artillery) in command, with small party of naval and military signallers.

At sea: a captain (Royal Artillery), known as the B.L.O., in every bombarding ship. His job is to interpret calls for fire received from the F.O.O. on land, and to keep the ship posted with military information from the shore.

Each Forward Observation Officer on land is in direct radio communication with his attached bombarding ship.

So much for the organization. How does it work?

British and Canadian Army F.O.O.s landed on the beach at Dieppe, but were unable to bring heavy supporting fire because troops were unable to leave the beach. Two F.O.O. officers were killed, three wounded, and two taken prisoner. But the lessons learned were invaluable.

The Gunners went into training again in April, 1942. They formed a bombardment unit, with a headquarters of their own and 3 troops.* This expanded with experience gained, and a general policy was laid down.

At Oran, the bombardment by Britain's battleships neutralized a powerful coast defense battery.

At Algiers, an enemy battery which Britain's infantry and commandos had been unable to capture was bombarded by a cruiser and a destroyer—and attacked from the air by the Fleet Air Arm, all at the same time. As a result it capitulated, and within 15 minutes of the bombardment's ceasing the troops had captured Cap Matifou. During this engagement most of the information received by the higher command came through the F.O.O.s.

*U. S. batteries.—Ed.

For the invasion of Sicily F.O.O.s were attached to all assaulting parties, although these sailed from widely dispersed areas: the 51st Highland Division was embarked at Tunis, the Canadians sailed from England. In spite of this dispersion difficulty, a large number of F.O.O. parties were landed. During the initial assault not a great deal of firing was necessary, but this stage did not last long. Later, when things became difficult at Catania, naval bombardments played a large part in assisting the army. This bombardment was carried out by nearly every class of warship, including monitors with their 15″ guns.

In Sicily some F.O.O.s (previously trained) were dropped with air-borne troops. One unit was the only means of communication with HQ for 36 hours—and in addition, it carried out 5 really good shoots in the interval. It is now considered essential for Commandos to have F.O.O. parties, as without them the positions of the forward troops are not known with accuracy. The campaign in Sicily also proved the necessity of training the naval personnel in fieldcraft in F.O.O. units; this is now being done.

At Salerno the F.O.O. organizations triumphed again. They operated with both British and American troops, and during heavy German counterattacks were the means of directing heavy naval gunfire on vital enemy positions. The Germans were more than surprised to be greeted with broadsides of 15″ "bricks"; they had been told to expect nothing bigger than 3″ mortars.

One outstanding feature of the Salerno battle was the speed with which calls for fire from the ships were answered. For this the B.L.O.s were largely responsible. Close liaison with the R.N. Gunnery Officers was achieved, and the Royal Navy was delighted by the smooth manner in which the bombardments were carried out. All the prejudices born in the old Gallipoli days, when there was little liaison between assaulting troops and naval support and the ships' guns were sometimes directed against their own infantry, have now completely disappeared.

A high rate of fire is one characteristic of Naval gunnery. It is not unusual for a cruiser at long range to have 3 broadsides of 12 guns each in the air at the same time. This is a tremendous concentration in comparison to any field-gun standard, and the Germans simply could not stand up to 36 "bricks" arriving on a target at about the same time. Morale seemed to crumple under such bombardments.

In the American Army, shore control parties are larger than in the British. And they use different methods, in that they correct the ships' guns onto targets, whereas the British observe the fall of the shot and leave the control of the shoot to the ship.

Both armies, however, have adopted yet another method of observing by using air OPs working in conjunction with the F.O.O. when he is not in a position to observe from the ground. The policy is still fluid, in that every engagement with the enemy brings new experience. And analysis of every battle leads to new and progressive conclusions.

USE OF BASE-EJECTION SMOKE SHELL

EDITOR'S NOTE: *We are glad to present this authoritative material on use of base-ejection smoke shell with our own weapons. Previously we have published articles on the 25-pdr smoke shell, parts of which are applicable to our howitzers (see p. 745 of this* JOURNAL *for last October, and p. 162 of last month's issue*). *Here, however, are the first authentic notes which pertain specifically to our own materiel.*

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Separate firing tables for BE smoke shell have not been published. Since the weight of the complete round is the same as HE shell, the firing tables for Shell, HE, M1, are appropriate up to times of flight obtained with the 25-second time fuze: for Shell, Smoke, BE, M84, use FT 105-H-3.

BE smoke shell should always be fired with fuze settings to obtain air bursts in order to insure maximum screening effect from the burning of the canisters and to insure the ignition of the canisters. If a round bursts on impact after striking on ordinary compact soil, it is probable that the canisters will be buried and the screening effect will be lost. If the ground is hard, the force of impact will frequently cause the canisters to be expelled from the base of the shell before they have been properly ignited by the charge. All rounds should burst in air. To insure air bursts, an initial fuze setting of from 1 to 2 seconds less than that used for zero height of burst for time shell should be announced. Since the canisters follow the trajectory very closely, height of burst should be adjusted by increasing or decreasing the time setting.

The lowest possible charge should be used to obtain a large angle of impact and low striking velocity in order to minimize the tendency of canisters to bounce on hard ground or bury themselves in soft ground. Maintaining the mean height of burst well above normal will produce the most favorable results. The lighter weight and less efficient shape of the canisters cause them to lose velocity after being expelled from the shell case and to drop slightly short of the shell casing.

Although BE smoke shell can be used for adjustment, it is preferable to adjust with HE shell in order to obtain surprise, conserve smoke ammunition, and avoid obscuring the adjusting point before adjustment is completed. The adjustment should be made on the upwind side of area to be screened. The smoke and dust from HE shells will usually give sufficient indication of the direction and speed of the wind in the target area. When changing from HE shell to BE smoke shell, the range adjustment should be verified to correct for any difference which may result because of change in powder lots and weight of projectiles.

The canisters should be dropped so that the smoke screen is formed immediately in front of the enemy observation to be blinded. Rounds of HE shell fired into the smoked area will prevent hostile troops from leaving shelter to extinguish the canisters.

A wind blowing parallel to the front to be screened provides the most favorable conditions for effective screening with the least expenditure of ammunition. Under such conditions, canisters may be dropped from rounds as much as 400 yards apart. A wind perpendicular to the front to be screened is the least favorable, and in order to maintain an effective screen it may be necessary to drop the canisters from rounds not more than 30 yards apart.

In order to insure that an adequate screen is quickly formed, at least 2 rounds from each piece should be fired as quickly as possible. Thereafter, the rate is held at the minimum necessary to maintain the screen. The required rate is influenced largely by the velocity of the wind. A guide—but only a guide—to the proper rate of fire (for Shell, Smoke, BE, M84) is:

Wind Velocity	***Rates of Fire per Point of Impact***
3 mph	**1 round per minute**
10 mph	**1½ rounds per minute**
15 mph	**2 rounds per minute**

In order to build and maintain the most effective smoke screen, the fire must be observed. An effective smoke screen can be maintained employing unobserved fire methods if a safety factor is provided by greatly increasing the rates of fire and the area of the smoke screen.

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NEW YEAR'S RESOLUTIONS OF FIFTH ARMY ARTILLERY

Be it resolved by all gunners and redlegs that:

a. Fire missions be observed whenever possible.

b. Reading and plotting of coordinates be more accurate.

c. Trigonometric constant corrections be applied to map coordinates or, better still, radial plot coordinates be used.

d. Latest available metro messages be used.

e. Calibration factors always be applied to individual pieces.

f. Pieces be grouped within battalions or regiments according to approximate equal wear on tubes.

g. Transfers of fire be made only within transfer limits.

h. Immense concentrations be not fired on targets whose value warrants only a much smaller one.

i. Precision adjustments be made where indicated.

j. Air-ground communication be checked frequently, and always before attempting an air adjustment.

k. Ammunition be sorted by lots and drawn from ASPs by lots when possible.

l. Ammunition be kept clean and grommets be kept on shells until they are prepared for use.

m. We maintain those high standards of accurate shooting that we have achieved in the past year with a view to improving as we gain experience.

Number One Out, Sir!

By Lt. John J. Pullen, FA

This war is a tough one on material. Weapons are landed through surf and winched over mountains. They are punished under such conditions as the freezing cold of Attu, the heat of the tropics, the mud of Italy, the abrasive sand of North Africa, and the humid, rust-accelerating air of the South Pacific islands.

Usage has been hard. Many guns and howitzers in North Africa were fired for days at a time using nothing but maximum charge. If there is anything wrong with the maintenance of a weapon this sort of hammering will soon knock it loose.

Moreover, it has been discovered that the enemy is a sufficient source of trouble without having the materiel go haywire. It has been proved that infantry cannot advance against a modern, determined foe without artillery support. Failure of even one gun may be a serious matter. A report like *Number one out* signifies simply that over a hundred artillerymen have lost 25% of their combined fighting power. Any such failures because of neglect are usually unnecessary. And the time to forestall them is in the training period.

WHERE THE TROUBLE STARTS

Training and maneuver reports on materiel maintenance have not been particularly favorable over the past two years, even though 1943 showed a big improvement over 1942.

There have been too many reports from maneuvers about firing mechanisms covered with grease (to avoid daily cleaning and oiling), elevating arcs clogged with dirt, recoil indexes receded, and other conditions that went uncorrected because everyone understood that no actual firing was to be done.

Here the danger is we'll form bad habits that will arise later like Banquo's ghost. It should be realized that preventive maintenance, like every military activity, requires proper training. If the right habits are formed early and bad habits corrected on the spot, maintenance will cause very little trouble. Otherwise it will be a headache for the-duration-and-six.

"LET ME SEE THE GUN BOOK"

Many battery commanders have had their tails twisted recently because the inspector was not pleased when he looked in the gun books. In fact, neglect of the gun book has been rather widespread and so WD Circular 215 (16 Sep 43) has appeared to call attention to this important little record.

An Artillery Gun Book is issued with every weapon. Right in the front is a page of clear, simple instructions for making the proper entries, so keeping up the gun book should not be hard.

The life of each artillery weapon is measured in *full service rounds*. A full service round is one round fired at maximum charge. Each smaller charge counts as a certain percentage of a full service round. In the gun book and also in the firing table for each weapon is found a table of these equivalents for use in figuring up the number of full service rounds each gun has fired. For example (105-mm howitzer M2):

Number of Rounds Fired	*Type of Round*	*Equivalent*	*Full Service Rounds*
3	Ch 3	.025	.075
9	Ch 4	.05	.45
4	Ch 5	0.1	.4
6	Ch 7	1.0	6.

Total full service rounds fired 6.925

The estimated average accuracy life of a 105-mm howitzer M2 is 7,500 full service rounds. It is necessary to keep track of the full service rounds the gun has fired, since Ordnance regulations require that all cannon shall be star gaged after 10% and 90% of their estimated average accuracy life, and thereafter at each 10% of the estimated accuracy life. This precaution is to insure safety and accuracy.

Other entries pertain to the carriage. For example, there should be a record of seasonal changes of lubricant and recoil oil in sufficient detail to prevent duplication of effort and afford proper identification by the inspector.

The gun book will be kept with the weapon at all times. According to WD Circular 215, during transfer or shipment the gun book will be kept in a waterproof envelope securely fastened to the cannon with waterproof tape. Under one of the wrappings of tape one end of a small tab will be inserted, reading: "Gun Book Here."

NOTE TO THE S-3

In prolonging the life and accuracy of the tubes, S-3 is the gentleman who can do the greatest good if he will always use the lowest charge that is consistent with his fire mission. The differences in erosion effects between the various charges are tremendous. For example, here is the estimated average accuracy

life of a 105-mm howitzer, figured for 3 different charges:

Charge 7— 7,500 rds
Charge 5— 75,000 rds
Charge 3— 300,000 rds

During heavy firing, the bore should be swabbed with water to cool the metal, remove dirt, and retard erosion. The necessity for this is not apparent with our limited expenditures of ammunition in training. But during a long sustained barrage in combat, overheating causes a barrel to wear out very rapidly.

Dirt on the ammunition is a source of excessive and often dangerous erosion. That this is not a new problem is shown by the following extract from a memorandum issued from the Headquarters of the 1st FA Brig in France, 13 Feb 18:

"In view of the recent explosion of a gun in this brigade, it must be impressed upon everyone concerned that these explosions have been attributed to dirt on the projectile more than to any other cause. A cloth that is free from dirt will be kept at each emplacement and every projectile will be wiped off before being loaded."

That was good advice 25 years ago and it is good advice today. Also, any burrs on the rotating band should be removed with a file.

In the early days of the war in North Africa many tubes swelled and became unserviceable because sand and grit (blown up by the wind or by muzzle blasts) settled in the bore. A well greased paper, stuck over the muzzle during lulls in firing, was found to be the best prevention. When the piece is fired the blast blows the paper off harmlessly.

Many situations will develop where no water is available, but that is no excuse for not cleaning the bore after firing. A bronze bore brush can be used to break up deposits (CAUTION: Use of a *steel* bore brush is *forbidden*, except under Ordnance supervision). Oily rags, fitting tightly, can be passed through the bore until it is clean, and followed by dry rags.

The Two Villains

Dirt and rust are the two greatest enemies of maintenance. The only answer is daily, habitual cleaning, lubrication, and inspection. Chiefs of section should be made responsible.

It is not enough to oil over a speck of rust. The rust will only progress, like an infection, underneath the film of oil. Every trace of rust must be removed from the metal before oiling. An hour's hard rubbing with a crocus cloth or an oily rag on the end of a stick will impress the average cannoneer with the folly of allowing rust to start in the first place.

Concerning cleaning, the experienced executive would give you the following tips:

If you have no soda ash and must clean the bore with a GI soap solution, be sure to rinse it thoroughly. Otherwise the soap may leave a gummy residue and the free caustic in the soap may corrode the metal.

After scrubbing and rinsing the bore, be sure that it is wiped *completely dry* before oiling. Otherwise you have a source of rust in the water particles remaining.

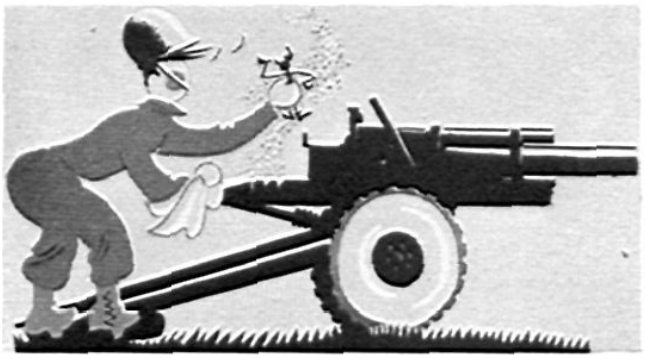
When cleaning a cold gun tube with the temperature below +32°F, it will be necessary to make an antifreeze solution by adding denatured alcohol, grade A glycerine, or compound antifreeze to the normal water-soda ash solution. To ten parts by volume of cleaning solution, add the indicated number of parts of one of the following:

Temperature F	*Alcohol*	*Glycerine*	*Compound Antifreeze*
20	2	2½	2
10	4	5	3⅓
0	6½	6½	5
—15	9	10	7¼
—30	16	13	10
—40	27	16	12

On weapons using separate loading ammunition, clean the breech mechanism after firing with the *water and soda ash* solution, not with solvent. The soda ash solution is necessary it cut the powder fouling.

Extreme care should be exercised in cleaning gas check pads. Ordnance regulations say that the gas check pad will be wiped clean with a dry cloth and then oiled lightly with a clean cloth wet with engine oil (SAE #30 above +32°F, or SAE 10 below 32°F). Excess oil causes rapid deterioration, and therefore gas check pads should not be soaked in oil. Never allow solvent (or any other cleaning solution) to touch a gas check pad.

Be especially careful about keeping recoil slides wiped clean. The smallest piece of grit may be a villain. During recoil



grit goes "B-r-r-r-r-r-r-" and you have a scored slide before you know it.

The Hot Oil

The "hot oil," or latest information on lubricants, is usually contained in the big red, black, and white War Department Lubrication Guide issued one per weapon. Be sure that each chief of section has and uses one. Field Manuals and Technical Manuals also contain information on lubrication, but it is wise to examine their dates because the hot oil therein may have been superseded by hotter oil from a more recent WD Lubrication Guide. The dates of the latest WD Lubrication Guides are listed in WD Circular 211, September, 1943. Training Circular 45, 1942, is a valuable reference; it explains in detail how to prepare materiel for use in cold climates.

With this wealth of literature as a guide there should be no doubt as to what lubricants to use, when, where, and how. But it is helpful to know the peculiarities of the various lubricants issued. A few recent changes in lubrication policy will be noted below.

Oil, engine. Used generally on all exposed bearing surfaces. SAE

30 is used where the prevailing temperature is above +32°F and SAE 10 from +32°F to 0°F.

Oil, lubricating, preservative, special or light. Used on small arms. It is also used at temperature below 0°F where engine oil is prescribed for use above 0°F, NOTE: *Oil, lubricating, preservative, light,* is discontinued and is being replaced by *oil, lubricating, preservative, special.*

Grease, OD. For grease lubrication of light and medium artillery. No. 0 is used where prevailing temperatures are above freezing. Below freezing No. 00 works well down to very low temperatures.

Grease, general purpose, Nos. 1 and 0. Prescribed for grease lubrication of 155-mm materiel and larger. No. 1 is specified above +32°F and No. 0 below +32°F.

Grease, general purpose No. 2. Used in wheel bearings at all temperatures.

In hot, humid climates, such as may be encountered in the South Pacific or even in certain sections of the United States, rust will set in rapidly. Salty, moist air is particularly corrosive since the salt has a tendency to emulsify the oil and destroy its rust preventive qualities. Under these conditions normal lubrication will not be sufficient. The oil or rust preventive compound used must be changed often. Oiling 2 or 3 times a day may be necessary. Frequent inspection for rust is essential.

BIG KICK

Someone has figured out that the recoil system of a light artillery weapon does a job equivalent to stopping a heavy car going 100 m.p.h. in 3 without damaging the car. It is easy to understand why a weapon may be damaged seriously if it is fired with the improper amount of recoil fluid in the cylinders.

It should be a deep-drilled habit for every chief of section to check the recoil fluid before firing, verify it frequently during firing, and constantly watch the action of the piece in recoil.

In hot climates recoil oil may expand and cause the weapon to slam into battery. It may be necessary then to bleed off a little recoil oil. The same thing may happen when the gun overheats in firing, and the same remedy is applicable. When the gun cools off the amount of oil should be returned to normal.

Weapons using *oil, recoil, heavy,* usually have a short recoil at temperatures of 0°F or lower and return to battery slowly because of reduced gas pressure and stiffening of the oil. A push will help speed the tube back into battery. Careful cleaning and lubrication of the recoil slides will also improve counterrecoil time.

A new oil, called *oil, recoil, special,* has proved satisfactory in temperatures from —35°F to +150°F. It is now replacing *oil, recoil, heavy,* in all recoil mechanisms for which *oil, recoil, heavy,* is prescribed. The change to *oil, recoil, special,* in a recoil system is performed by Ordnance personnel.

One word about the care of recoil oil. It should be kept in containers that are air-tight and as near full as possible (to avoid condensation in the can). Different types of recoil oil should not be mixed together. The can should be marked *recoil oil,* otherwise it will be only a matter of time before someone puts engine oil into the recoil system and recoil oil into a crankcase. This, in either case, will result in what Jimmy Durante would call a "catastrostroke."

HAND ME THE CROWBAR, JOE

Archimedes once said that if he had a place to stand on, he could move the world. The average cannoneer can apply leverages that would amaze Archimedes. Giant barrel locking ring wrenches have been twisted out of shape like taffy. Pliers are shattered, other tools mangled. And if they can do this to the tools, what must happen to the poor howitzer!

This damage may be serious. For example, if the threads in the filling aperture of a recuperator are mashed up, the howitzer will be put out of action as a result. Many other injuries, that might be of small consequence in the US, would be a calamity in combat on some isolated Pacific island.

Some common abuses include: striking metal parts with a steel hammer, without interposing a bronze drift; using the wrong size wrench, or using pliers for wrenches, thereby rounding off nuts; using a steel punch where a bronze drift should be used; damaging screw heads with screwdrivers that are too large or too small; crossing threads while inserting oil screw fillers; and applying excessive leverages by one means or another.

In general it can be said that a tool is made for one specific purpose, and if it is used for any other damage will result.

It will be hard or impossible to replace tools once they are lost or damaged. Tools simply are not available in sufficient quantities. And you cannot unscrew a nut with a statement of charges.

PREPARATION FOR SHIPMENT

Before shipment by rail or water all unpainted surfaces on the weapon must be protected by the application of rust preventives. Two types of compound are used for short-term protection.

Compound, rust preventive, light, is applied to interior surfaces such as the breech mechanism and bore. It may be applied by slushing or swabbing, heating the compound if necessary.

Compound, rust preventive, heavy, is applied to exterior surfaces for domestic shipment. It must be applied hot.

Compound, rust preventive, thin film, is applied to exterior surfaces for shipment by water. It can be applied cold by brushing or spraying.

Before the preventives are applied all lubricants, rust, and dirt must be cleaned off the metal with solvent. Then the metal surfaces should be thoroughly dried.

Gloves should be worn to protect the bare metal from acid stains and corrosion resulting from body perspiration.

Muzzle and breech ends should be sealed with two layers of *paper, greaseproof, wrapping,* and one of *paper, kraft, wrapping, waterproof,* and taped securely with *tape, nonhygroscopic, adhesive,* for shipment if not crated. If greaseproof paper is not available, use canvas impregnated with *compound, rust preventive, heavy or thin film,* and tie or strap it in place.

Before preparing weapons for shipment or storage, it is always a good idea to consult Ordnance personnel. Their advice and experience may be extremely helpful. This is particularly true if the weapons are to be landed through surf and require waterproofing, or if other special conditions prevail.

THE ARTILLERY MECHANIC

A battery commander sent back word from the South Pacific, "Better have a good artillery mechanic if you come down here." This individual, so often an inconspicuous gnome during

the training period, can rise to a stature of great importance in combat—if he is given a chance. Properly trained, the enlisted artillery mechanic can do the following things:

Supervise preventive maintenance.
Make authorized tests, adjustments, and repairs on materiel.
Care for mechanics' tools and spare parts not issued to the section.
Make proper use of references, such as SNLs and TMs.
Teach the men how to use tools properly.
Do the necessary painting of materiel.
Supervise the loading of weapons and vehicles for rail or air transport.
Apply camp and road expedients.
Supervise the care of ammunition.

Yet there are continued reports of organizations that waste these abilities by assigning the mechanic to duty as a cannoneer in the fifth section, as a general handyman around the battery, or in some other capacity which interferes seriously with his normal work.

Taking care of the weapons in a battery is a full-time job. The artillery mechanic should be left free to go from one weapon to another during firing, checking the recoil, watching for malfunctions, and being available to supervise maintenance of all materiel, including small arms. Only in this way can he render the great service of which he is capable.

EASY ON THE PAINT

A recent AGF directive orders that the repainting of vehicles and materiel merely to maintain a new appearance will be discontinued. Until further notice, vehicles and materiel pertaining to Army Ground Forces will be repainted only to the extent necessary to protect such equipment or parts thereof from deterioration.

SMALL ARMS

The loving care which the seasoned infantryman lavishes upon his personal weapon is not yet a pronounced characteristic of the field artilleryman. There have been instances already of men who have found themselves defenseless in combat because their gummy, dirty carbines would not fire.

It is absolutely necessary that these weapons be kept clean. This was found to be true on a small arms range where many carbines fired 2,000 rounds per gun per week. If the weapon is not cleaned powder residue clogs the chamber, the face of the bolt, camming surfaces, and grooves until it reaches a point where the carbine stops firing. General cleanliness is the main thing to remember in maintaining these weapons.

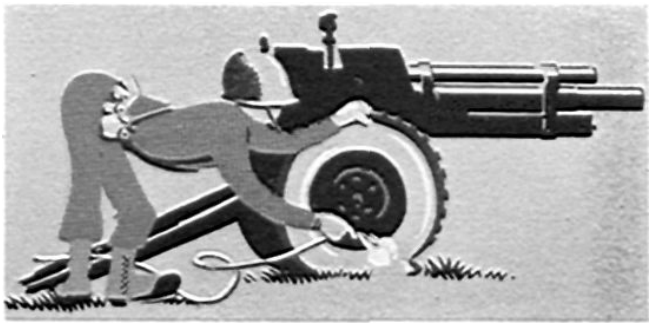
Some difficulty may be encountered with small arms in extremely cold climates. Contraction of the metal increases any tendency of moving parts to bind. Oil thickens and makes operation difficult (or often impossible) if dirt is present.

Under these conditions small arms may be disassembled, cleaned in solvent, dried thoroughly, and operated either dry or very lightly oiled with a rag that has been dipped in *oil, lubricating, preservative, special or light,* and well wrung out. Ordnance should correct any parts that bind. Also the cold weapons should never be taken into a warm room. This can be readily understood by anyone who on a cold-day has stepped into a warm mess hall wearing glasses and had the lenses suddenly fog up. The same type of condensation affects all the inner working parts of small arms and eventually causes rust. An unheated room should be provided for the small arms racks.

TIRE PRESSURES

Finnegan, the railroad man, never was "off and on agin" as often as the prescribed tire pressures have changed within the past 2 or 3 years. Since many of these pressures may be in doubt among members of the using arm, the following table (extracted from Change 1, TM 31-200, the latest at this writing) may be helpful:

Weapon	*Tire Size*	*Type*	*Pressure*
75-mm How M8	6.00 × 16	Standard	20
75-mm How M3, M3A1, M3A2	6.00 × 20	Standard	30
75-mm How M3A3	8.00 × 16	Combat	30
Caisson, light, M1	6.00 × 20	Standard	30
Limber, light, M2	6.00 × 20	Standard	30
75-mm Gun carriage, all types	7.50 × 24	Standard	35
105-mm How M2	7.50 × 24	Standard	35
105-mm How M2, M2A1	9.00 × 20	Combat	35
105-mm How M3, M3A1	8.00 × 16	Combat	30
4.5-in Gun M1	14.00 × 20	Combat	55
155-mm How M1917, M1918	13.00 × 24	Standard	40
155-mm How M1	14.00 × 20	Combat	55
155-mm Gun M1	11.00 × 20	Standard	35
Heavy carriage limber M2	11.00 × 20	Standard	60
155-mm Gun (GPF) M2, M3	14.00 × 24	Standard	60
Heavy carriage limber M3	11.00 × 20	Standard	60
8-in How M1	11.00 × 20	Standard	35
Heavy carriage limber M2	11.00 × 20	Standard	60
240-mm How M1918A2			
Cannon Transport Wagon M4	13.00 × 24	Standard	55
Cannon Transport Wagon M5	13.00 × 24	Standard	55
240-mm How M1			
Cannon Transport Wagon M2	14.00 × 24	Combat	75
Cannon Transport Wagon M3	14.00 × 24	Combat	80
Ammunition Trailer M10	9.00 × 20	Combat	40



Tire pressures should be properly adjusted before operation, daily, since the prescribed pressures are based on a cold tire, with a safety factor provided for increases in pressure during operation. The practice of "bleeding" tires when pressure rises while running is a snare and a delusion. Bleeding actually makes tires run hotter, and may cause sudden failure. When a bled tire cools, it is dangerously underinflated.

"SEND FOR THE ORDNANCE"

When this cry goes up on the battlefield, just who and what will arrive to answer it? It is possible that some field artillerymen expect too much of Ordnance.

For example, the Ordnance Light Maintenance Company of the Infantry Division is rather limited as to both personnel and equipment available for repairing materiel. The armament platoon consists of 1 first lieutenant and 18 enlisted men.

They have a couple of 2½-ton trucks, a ¾-ton WC, a couple of 1-ton trailers, a couple of jeeps. Because of limited time, their repairs to materiel in the combat zone will usually take the form of unit replacements. This can be understood, considering that there are over 100 cannon and more than 14,000 small arms and machine guns in an infantry division.

The main job of the armament platoon is to provide technical advice and assistance, issue supplies, make inspections and minor repairs, establish salvage collecting points, and notify supporting Ordnance units (4th echelon shops in rear of the combat zone) when the work is beyond their capacity.

When weapons are sent back for repair they are often torn apart or tampered with in the field and arrive at the Ordnance shop partially disassembled. This is bad practice, since small parts are often lost in transit.

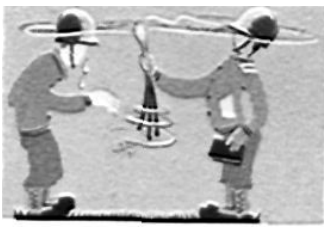
One other thing that helps Ordnance speed up repairs is beforehand knowledge of the complaint. If each piece of equipment is tagged with the complaint, much unnecessary testing can be eliminated and much valuable time saved.

KNOW-HOW

Often the main difficulty lies in the fact that battery personnel do not know exactly what they are supposed to do about maintenance. This information is readily available in publications which are authorized as part of battery equipment. As an absolute minimum, each battery should have, for each type of weapon:

Technical Manual
Field Manual
Standard Nomenclature List
War Department Lubrication Guide (per weapon)

In addition, there are many other publications that are available and authorized. For example, TM 9-850, on *Cleaning and Preserving Materials,* is a helpful little book. No space is available for a further discussion of Army publications, which now outnumber the sands of the sea. (Ordnance alone puts out several thousands.) However, there is a new Ordnance book



that does simplify the search for information. This is OFSB 1-1, which combines all Ordnance indexes under one cover. It includes a list of all weapons, and under each weapon are listed all the publications pertaining thereto. Ordnance keeps the indexes up to date by issuing a new OFSB 1-1 every two months. The unit Ordnance officer probably would be glad to provide one of these handy indexes and also, perhaps, a copy of OFSB 1-8, *General Publications for the Ordnance Man,* which explains Army publications clearly and simply.

Just a word about these OFSB's (Ordnance Field Service Bulletins). They are published for Ordnance troops to keep them up to date on changes and new developments. Later the same information is incorporated in FMs, TMs, and WD Lubrication Guides for the using arm. However, the field artillery officer who wants the very latest hot oil can usually get current OFSBs by requesting them from his unit Ordnance officer. Two good ones are OFSB 6-4 (*Artillery Lubrication, General*) and OFSB 6-5 (*Cold Weather Lubrication*).

INSPECTIONS

No program of maintenance can be successful unless it is kept alive by frequent and intelligent inspections. If the officers of a unit are not sufficiently interested in the conditions of the materiel to take a look at it, the men will not worry much about it either.

Check lists may or may not be a help. Commanding officers might do well to inspect the materiel first-hand instead of inspecting check lists or other maintenance records. They can then make constructive suggestions, handing our orchids where deserved, or scallions at the scene of the crime.

There is no magic formula, no cure-all, except daily, diligent work. But frequent inspections are vital, and most important of all are CORRECTIONS ON THE SPOT.

BRITAIN'S 6″ HOWITZER

By Maj.-Gen. H. Rowan-Robinson, C.B., C.M.G., D.S.O.

The 6″ Howitzer, which was the principal weapon of British medium artillery until the advent of the 4.5″ gun (see front cover), is still rendering yeoman service in the field even though only slightly modified from the original design of 1915. Its range is limited to 11,600 yards, but it is an accurate and reliable piece firing a 100-lb. projectile at a normal rate of one round a minute.

In the last war, provided with mechanical traction, it became the most mobile of British artillery equipment and was often far ahead of horse and field batteries. Now that all guns are either tractor-drawn or self-propelled it has lost that advantage, but it is still mobile enough for all ordinary purposes and no battery armed with it has any desire to exchange it for any of the more modern weapons.

The following are some of its principal characteristics:

Weight of piece—1 ton 5½ cwt.
Total weight behind tractor—4½ tons.
Shipping tonnage—26 tons—36 cubic feet.
Maximum elevation—45 degrees.
Width of carriage over axle: 8 feet 5 inches.

Ammunition ordinarily used is HE shell fuzed with either graze action or delay action fuzes. On appropriate occasions star shells, fitted with time fuzes and filled with an illuminating composition with parachute, are employed. Cartridges are made up in sections so as to enable suitable charges to be used for obtaining the angles of descent required at particular ranges.

The special tactical tasks of the howitzer are counter-battery work, counter-preparation, and the destruction of Axis fieldworks.

BRITAIN'S "PIAT"

To replace the old 35-lb. AT rifle, British (and Canadian) troops have adopted a low, inconspicuous, 33-lb. Projector, Infantry, Anti-Tank—or "Piat." Its projectile is a 2¾-lb. bomb filled with HE, and will penetrate 4″ of the finest armor plate. Fins and drum tail give stability in flight. Unlike the bazooka, its propellant is a cartridge in the bomb's tail assembly.

Essentially the Piat is a light steel tube enclosing a spring developing a pressure of 200 lbs. When released, this spring carries forward the firing pin; it absorbs most of the force of recoil, thereby recocking for the next round. When cocking by hand, the spring is compressed by the rod visible in photo at upper left.

Carried by one man, the Piat can go into action almost instantly. A second man carries the bombs and reloads the weapon when in action.

Designed to penetrate and stop any German tank at 115 yds., it is also effective against concrete emplacements up to 350 yds.

Not in the BOOK

EDITOR'S NOTE: ***This feature is devoted to ideas sent in by our readers describing methods or devices which, though not specified by official literature, have proved useful in service.***

SPEEDING SITE COMPUTATION

Action "somewhere in Italy" brought the problem of converting meters to yards in computing sites, as available maps give altitudes in meters. The time-consuming task of tracing indistinct contour lines to arrive at an altitude for a particular target, when added to the necessary tasks of converting coordinates, plotting, measuring ranges, etc., made preparation of firing data rather complicated and lengthy. Short-cuts were definitely in order.

As Vertical Control Operator for an 8″ howitzer battalion, I have solved the problem of speed-up with a site chart. While the accompanying chart is applicable only to Charge 7 for the 8″-how, the idea can be quickly adapted for lighter or heavier artillery. An example will demonstrate its simplicity.

Altitude of target is 235 meters, altitude of battery 140 meters; range is 14,500 yards; complementary angle of site for each + 1 mil of site, + .12 mil. Difference between altitudes of target and battery, + 95 meters. Looking under the range of 14,500 yards in the chart we find that the site plus complementary angle of site is + 8 mils.

The chart has accomplished the tasks of converting meters to yards, dividing by the range, and applying a complementary angle of site appropriate to the charge and range used.

With the aid of a slide rule and the following formula we can arrive at the answer to the problem above:

$$\frac{1.115 \times 95}{.9144 \times 14.5}$$ = plus or minus 8 mil site. The factors are: 1.115 = 1 mil site + comp. site (.115 is the mean between -.11 and +.12 and is used to simplify the chart); 95 = difference in altitude in meters; .9144 = conversion factor (meters to yards); 14.5 = range in 1,000s of yards.

The mean reading between = comp. site is used to simplify the chart, but where the difference is significant—as in the longer ranges within a charge—allowances are made. The site chart can be worked out in closer detail for greater accuracy or simplified without appreciable error.

A recent fire mission necessitated modification of the chart. Altitude of target was 1,249 meters, or a difference in alttiude between target and guns of + 1109 meters. Range was 14,600 yards. Site and comp. site for 100 meters was ± 8.4 mils. Site and comp. site for 9 meters was ± 1 mil. 11 × 8.4 = 92 mils + 1 mil = site and comp. site of + 93 mils.

T/4 TRAVIS L. SCOTT, FA

SITE CHART

8″ HOW—CHARGE 7

Altitude Difference in Meters	Range in Yards															
	10500	11500	12500	13500	14500	15500	16500	17000	17400	17400	17800	17800	18000	18000	18100	18100
	± mil	± mil	± mil	± mil	± mil	± mil	± mil	± mil	+ mil	- mil	+ mil	- mil	+ mil	- mil	+ mil	- mil
5	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1
15	2	2	1	1	1	1	1	1	1	1	2	2	2	2	2	2
20	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2
25	3	3	2	2	2	2	2	2	2	2	3	3	3	3	4	3
30	3	3	3	3	3	2	3	3	3	3	3	3	4	3	5	4
35	4	4	3	3	3	3	3	3	3	3	4	4	5	4	6	4
40	4	4	4	3	3	3	3	4	4	4	5	4	5	4	6	5
45	5	5	4	4	4	4	4	4	4	4	5	5	6	5	7	5
50	5	5	5	4	4	4	4	4	5	5	6	5	7	6	8	6
55	6	6	5	5	5	5	5	5	5	5	6	6	7	6	8	7
60	6	7	6	5	5	5	5	5	6	6	7	6	8	7	9	7
65	7	7	6	6	5	6	6	6	6	6	8	7	9	7	10	8
70	8	8	6	6	6	6	6	6	7	6	8	7	9	8	10	8
75	8	8	7	7	6	6	6	7	7	7	9	8	10	8	11	9
80	9	9	7	7	7	7	7	7	8	7	9	8	10	9	12	10
85	9	9	8	7	7	7	7	8	8	8	10	9	11	10	13	10
90	10	10	8	8	8	7	8	8	9	8	10	9	12	10	14	11
95	10	10	9	8	8	8	8	8	9	9	11	10	13	11	14	11
100	11	11	9	9	8	8	9	9	10	9	12	10	13	11	15	12
Mult. of 100's	10.8	11	9.2	8.8	8.4	8.3	8.5	9	10	9	12	10	13	11	15	12

BLACKOUT TRICKS

1. A GI flashlight can be effectively "blacked out" by placing 2 or 3 carbon sheets from a Message Book M-210 between the lens and the reflector. These carbon sheets, having previously served their original purpose, should be cut just the size of the lens since any excess carbon paper behind the reflector may make a short circuit and cause a slow but constant drain on the battery. If initials or other symbols are traced in the carbon sheets before placing them under the lens, identification of flashlights, personnel, or units is made quickly and silently by flashing the light.

2. One of the problems of blackout driving, especially in units having armored vehicles, is that of moving the vehicles in close quarters in bivouac areas. These movements must be controlled by some system of signals to the driver. Here is one solution that is simple, logical, fast, and practical:

Draw an arrow on the lens of a blacked-out flashlight with a black china-marking pencil, or trace it in the carbon sheets if the method in (1) above is used. Lines of the arrow should be ¼″ wide so the arrow can be seen from a distance of several yards. Using the following signals singly and combined, 1 man in sight of the driver (and 1 to the rear when moving backward) can with a minimum of noise and confusion maneuver a vehicle to the exact location desired.

Signals

1. Forward—Move light up and down, arrow pointing upward.
2. Backward—Move light up and down, arrow pointing downward.
3. Right (left)—Move light up and down, arrow pointing in direction vehicle should move.
4. Stop—Move light horizontally from side to side.

CAPT. AULTON E. ROLAND, FA

Diary of War Events

(As Reported in the American Press: Edited by B. H. W.)

FEBRUARY, 1944

1st U.S. Army and Marine troops land on Roi and Kwajalein Islands in the Marshalls. Large Air and Navy forces support the landing.
U.S. 5th Army in Italy advances to the outskirts of Campoleone and Cisterna.

2nd U.S. forces capture Roi and advance on Kwajalein.
Allied fliers destroy 34 Jap planes in a raid over Rabaul.
U.S. and French troops break through the German Gustav Line north of Cassino.
U.S. Liberators bomb Pas-de-Calais area of France.
R.A.F. bombs Berlin.

3rd Red Army traps 10 German divisions in the Cherkassy-Smela sector.
U.S. Marines capture Namur and 4 adjacent islands in the Kwajalein Atoll.
Spain announces that she will remain neutral.

4th Germans launch heavy counterattacks against 5th Army in Italy. Allied troops repulse each attack with some of the bloodiest fighting of the Italian campaign.
The 8th Air Force bombs Frankfort-on-the-Main.
War Department reports that 3 Nazi blockade-runners were sunk last month in the South Atlantic by a U.S. light cruiser and 2 destroyers.

5th U.S. forces clean out remaining Jap resistance on the 3 islands of Kwajalein Atoll in the Marshalls.

6th 100 Russian bombers raid Helsinki, the Finnish Capital.
Counterattacks of the reinforced Germans in Italy slow up Allied armies.
U.S. bombers raid Pas-de-Calais area of France.
U.S. 14th Air Force attacks a 9-ship Jap convoy off southeast China and sinks 6 vessels.

7th U.S. Navy shells Paramushiru Island, Jap home territory.
In the battle for Kwajalein in the Marshall Islands U.S. troops kill 8,122 Japs and take 264 prisoners. Lose 286 killed, 1,148 wounded and 82 missing.
Allied fliers bomb Rabaul on New Britain and Madang on New Guinea.

8th Allied Flying Fortresses again raid Frankfort-on-the-Main and the French invasion coast. Shoot down 19 planes, lose 12 bombers.

9th Germans inforce their line at Cassino and slow up Allied advancements.

10th U.S. heavy bombers raid Brunswick. Shoot down 84 planes, lose 29 bombers and 8 fighters.

11th Rainy weather slows up Allied progress in Italy.
U.S. heavy bombers raid Frankfort-on-the-Main. Shoot down 37 Nazi planes. Lose 5 bombers and 15 fighters.
U.S. Navy fliers bomb Wake Island.

12th Allied troops on the Anzio beachhead in Italy receive reinforcements and the situation on both fronts improves.
U.S. fliers bomb Pas-de-Calais of France.
Allied fliers shoot down 59 Jap planes in raids over Rabaul and Kavieng.

13th Allied troops in Italy make slight gains in face of bitter opposition.
Greatest U.S. Air Force bombs Pas-de-Calais area of France. Shoot down 7 planes. Lose 4 bombers and 2 fighters.
Aerial activity continues in the Southwest Pacific on Rabaul and other Jap bases.

14th U.S. Thunderbolts bomb GilzeRijen airfield in the Netherlands. Invasion coast also hit by Allied fliers.

15th Allied air and artillery power destroy the Nazi position in the historic Abbey atop Mount Cassino.
U.S. and New Zealand troops under Admiral Halsey capture the Nissan Islands, 135 miles due east of the Jap base of Rabaul.

16th Estimated forces of 1,000 R.A.F. bombers drop 2,800 tons of explosives on Berlin. 43 planes fail to return.
Red Army pushes to within 27 miles of Pskov.
U.S. carrier task force attacks Japs' South Pacific fleet and air base at Truk in the Caroline Islands.

17th War Department reports sinking of Allied Transport with loss of 1,000 lives, mostly Americans.
Joint Marine-Army task force destroys 201 Jap planes and 23 ships since attacking Truk on the 16th. We lose 17 planes.
A joint Marine-Army force landing on Eniwetak Atoll in the Marshalls, 669 miles northeast of Truk.

18th MacArthur's forces destroy 17 ships of a Jap convoy trying to reinforce their bases in the Bismarck Archipelago.

19th Marine-Army force captures Jap air base on Engebi Island off Eniwetok Atoll. Capture 10 neighboring islands without loss of a single man.
U.S. and R.A.F. make heavy raid on Leipzig. Lose 79 planes.

20th Allied Air Forces bomb Rabaul, New Britain. Destroy 13 planes.
More than 2,000 U.S. bombers raid Leipzig and several other cities deep in Germany. Shoot down 61 planes, lose 22 bombers and 1 fighter.
Allied fliers in Italy shoot down 26 Nazi planes. Lose 3.
British planes and surface craft sink 3 U-boats trying to force their way through the Strait of Gibraltar into the Mediterranean.

21st Allied fliers destroy 9 ships of a second Jap convoy in a week off Kavieng, New Ireland.
Allied fliers from the Solomons shoot down 26 Jap planes over Rabaul.
Tojo takes over duties of Japan Army Chief of Staff as a result of the Truk invasion.
U.S. 8th Air Force bombs airplane factories at Hanover and Brunswick. Shoots down 33 planes. Loses 20.

22nd U.S. heavy bombers raid aircraft factories at Regensberg, Germany. Shoot down 51 planes. Lose 41 bombers and 11 fighters.
U.S. Pacific Fleet attacks Jap naval and air base at Saipan in Marianas, 1,300 miles from Tokyo. Destroy 135 planes and sink 1 cargo ship and damage 10 others. We lose only 6 planes.

23rd U.S. fliers based in Italy bomb German aircraft plans in Steyr, Austria.

24th Allied fliers from Britain and Italy again bomb German aircraft industries in Gotha, Schweinfurt and Steyr, Austria.
Red Army completes the capture of Dno and White Russia.

25th U.S. heavy bombers from Britain and Italy raid Frankfort-on-the-Main, Regensburg and Stuttgart. Shoot down 27 planes.

26th Summation of Allied air power against Germany for one week is as follows: Drop 17,500 tons of bombs on 14 industrial centers. Destroy an estimate of 80% of two-engined and 60% of fighter construction. Shoot down 608 planes. We lose 400 bombers and 3,500 men.
U.S. destroyers raid Jap base at Kaviengion, New Ireland. Sink one ship and set fire on 2 others.

27th U.S. destroyers shell Rabaul harbor.
Soviet planes bomb Helsinki for 10 hours.

28th Russian troops advance to within 10 miles of Pskov.
British troops in Italy capture 2 German strong-points southeast of Aprilia.
U.S. 8th Air Force and R.A.F. raid northern France. Lose 6 heavy bombers.
Allied troops in Burma destroy a Jap force of 8,000.
Allied fliers destroy or damage 14 barges in a raid on Rabaul.
U.S. bombers destroy 29 Jap planes in a raid on Wewak, New Guinea.
U.S. troops land in the Admiralty Islands and seize the airfield of Momote, 700 miles from Truk.

29th Red Armies advance to the outskirts of Pskov.
U.S. 8th Air Force bombs the Pas-de-Calais area of France. Loses 1 bomber and 8 fighters.

BOOK REVIEWS

WINGATES RAIDERS. By Charles J. Rolo. 197 pages; photographs; endpaper map. Viking Press. $2.50.

Rarely has a more "timely" book appeared. Nor, for that matter, one so chock-full of direct military meaning and lessons.

For several years the sweep of the desert held all attention. Tanks maneuvered and fought like ships at sea. Tunisia's heights made us think of the European mountains, in some of which our forces are now engaged. Lately the tempo of the Pacific has picked up—New Georgia, Tarawa, and Kwajalein are only a few of the names, but these are special preliminary operations to the great task of driving the Japs from Burma, Thailand, the Malay States, China. And there we will find New Georgia and New Guinea magnified a thousandfold, with vast and extensive jungles and magnificent mountains. In raising the curtain on operations in that area, *Wingate's Raiders* is of inestimable help.

About every generation the English produce an eccentric military genius. Such a man was "Chinese" Gordon. So too was Lawrence of Arabia. In this war Orde Wingate is the man. Open minded, utterly unorthodox in meeting new situations, without a trace of the hidebound, he is like a skilled locksmith in having the gifted touch to solve the impossible. In Judea he quelled Arab unrest by boring from within, so to speak. With a tiny force, great strength of character, and a fair share of judicious bluffing, he restored Haile Selassie to Addis Ababa in '41. Then a major, he was raised to brigadier by Wavell and given the task of studying Britain's defeats above Singapore, correcting the defects which caused them, and then leading an expedition deep into Burma. All these things he did both thoroughly and brilliantly. This book touches lightly on the first two, concentrates on the third to tell all that can now be revealed.

It was a motley, average crew that was assigned to Wingate for his trek. His men were a fair cross-section of the British levies, except that they perhaps averaged a little older and came from more sedentary routines back home. In addition there were members of the Burma Rifles (excellent native troops), some soldiers who had undergone the long retreat into India, and a few officers of Wingate's own stripe.

This force underwent intensive training—truly intensive training, so strenuous that the long campaign into enemy territory was in some respects a respite. Wingate is a true leader, and more: not only is he willing to do anything any of his men might be called upon to do, but he always does it better than any of them can. His vision, powers of analysis, and ability to apply his solution are nearly uncanny. In training all possible eventualities were foreseen and rehearsed; one result was that no "new" situation arose to plague any of the eight columns in their 1,000-miles-plus trek.

Communicating by radio and supplied solely by plane, this force moved cast from the Chindwin River for six weeks before being ordered to return. Moving through the heart of enemy-occupied territory, they suffered appalling hardships. Casualties were suffered, of course—but they were far lighter than had been expected, and even lighter in comparison with results.

This expedition relieved heavy pressure on the Chinese to the east, loosened the Jap grip on the Kachin Levies in northeastern Burma, and staved off a threatened invasion of India. It heartened the Burmese and made the Japs lose "face," that thing so important in the East. It proved our cunning on the ground, in jungles and mountains. It developed, tested, and proved means of supplying roving columns solely by air. The columns obtained information which led to tremendously important air raids into Burma—and carried out vital secret missions east of the Irrawaddy.

These are among the things detailed in enthralling fashion by Mr. Rolo. In view of our future missions in the Far East, they are matters which deserve early attention and considerable consideration by all our troops.

LEND-LEASE—WEAPON FOR VICTORY. By Edward R. Stettinius, Jr. 334 pages; appendixes; index; illustrated. The Macmillan Co. $3.00.

Mr. Stettinius, the former Lend-Lease Administrator, has told a forceful and dramatic story of the rise of Lend-Lease, divulging for the first time facts that hitherto had been military secrets.

The author is now Under Secretary of State, and had been for some few months while finishing this book. It is to be regretted that so many other implications implicit in "Lend-Lease" have been neglected. Too much stress has been placed upon the dollar value of the happenings, and not enough upon the economic, social, and state principles arising from Lend-Lease.

Lend-Lease is a many-sided structure: *economic,* in that it prepared and paved the way for the eventual participation of the United States in the struggle now underway; *political,* in that it provided an education to the political and public majority in the fact that it could no longer live as an homunculus totally suspended outside the realm of world affairs; *state,* in that new concepts of diplomatic and international principles had been enunciated through military necessity.

Lend-Lease has been more than a one-way shipment of goods both civilian and military to countries actively engaged in battling the Axis forces of oppression. It has signalized the active participation of the United States as a responsible partner in the world congress of nations.

That Mr. Stettinius was able to publish the book at this time augurs well that the American public has been deemed sufficiently

adult to swallow hard and fast facts of national and international polities. There should have been, however, stronger indications that Lend-Lease was in no way to be connected with the abortive attempts of World War I to collect in full measure the *dollar* value of goods received from the recipient. The most important indication of the basic principle underlying the Lend-Lease Act is Section 3-b wherein Congress, enunciating the terms of participation in Lend-Lease benefits and repayments thereto, stated as follows: "The terms and conditions upon which any such foreign government receives any aid authorized under subsection (a) shall be those which the President *deems* satisfactory, and the benefit to the United States may be payment or repayment in kind of property, or any other direct or indirect benefit which the President *deems* satisfactory" [emphasis by this reviewer].

The book is worthy of considerable study from the educational as well as from the informational viewpoint. There should be some indication, however, that the entire story is not yet available, and will not be until the military story of Lend-Lease—if it is ever deemed advisable to publish it—is either integrated into the Stettinius story of Lend-Lease or published to supplant this present work. A. E. G.

THEY SHALL NOT SLEEP. By Leland Stowe. 339 pages; index. Alfred A. Knopf. $3.00.

This is an exciting book! The readers enter China in a Lend-Lease caravan over the "fabulous, mountain-buckling, gorge-diving" Burma road in October, 1941. Leland Stowe, a fair but fearless friend of both England and China—at last free from censorship—reveals the disastrous results of British lack of control and of Chinese "squeeze."

Fascinating chapters tell about the Flying Tigers; the Chinese people and their leaders; the poverty, the cruel inflation, and the heroic patience which are China today; the disintegration of an outworn system in India; the organization, purpose, and efficiency in the land of the Red Army where everyone over fourteen is directly involved in all-out war effort.

This Pulitzer-prize-winning dean of round-the-world war reporters, author of *No Other Road to Freedom,* ends a great book with three significant chapters contributing toward understanding the world that is now being shaped and the peace that may or may not come. "Can We Live with Soviet Russia?" "Shall We Win the War, but Lose the Peace?" "Tomorrow Is a Different Day." His carefully considered conclusions, after recent months of lecturing throughout the United States, are moving and provocative:

"Physically the United States of America leads the world. Politically and socially—and in some senses perhaps morally—the world is in the process of passing us by." F. B.

IT'S 'ARD TO KEEP STRAIGHT IN THE NAVY. Verses by Kay Grant, sketches by Anne Drew. 64 pages. Wm. Morrow & Co. $1.00.

Last spring a little book of lively verse hit us right between the eyes. *It's 'ard to go Wrong in the Cactus* was its name, and it was written by a gal living 'way down in Sydney, Australia. Her mind was spry, and she'd gotten to know our GIs about as well as she did her own Aussies.

It's 'ard to Stay Clean in the Country was the next collection to be published here. Good as *'Cactus* was, *'Country* clicked even better.

'Nary, just off the press, is right up to snuff. You'll want to get better acquainted with Clarice, who is classy but careless. Miss Grant gives some good pointers on agility. "Hangover Blues" may be little consolation when you're in that fix, but it's swell reading! And so on through the book.

Most of these lines have a swing and a sway that demand reciting aloud. Don't hesitate. Your friends will be after you for them—and they'll make you learn 'em by heart since they'll swipe your copy the minute your back's turned!

FEDERATION: The Coming Structure of World Government (A Symposium). 234 pages. University of Oklahoma Press. $3.00.

This book is a product of combined authorship coordinating into a well-rounded discussion the views of some of the foremost political and social thinkers of our time on the subject of world federation. It includes chapters by Henry A. Wallace, Wendell L. Willkie, and

T. V. Soong. Its discussion takes into account the forward strides in world developments with their various far-reaching effects, and comes to focus in a broadly general agreement that the waning nationalism of individual countries is shaping toward a global pattern of government.

The several authors are not in full agreement as to how this may be accomplished; they represent a considerable range of view on practical questions of how a political organization of such scope might be implemented and how its provisions could be administered to afford the largest possible measure of security and justice to the component states. The analogy drawn by some of them between our national system of united states and the proposed world federation seems a little too rough for ready acceptance. An adaptation of the essential principles of our national federation might be worked out eventually, however.

This collaboration on the subject has produced concrete suggestions including a proposed Constitution of United Nations. Despite some questionable points it represents world-conscious vision and an earnest striving toward conditions fostering world peace. F. E. J.

THE INNOCENTS AT CEDRO. By R. L. Duffus. 163 pages. The Macmillan Co. $2.00.

Near Stanford University stood Cedro Cottage, for a time the home of Thorstein Veblen. With him lived the author, his brother William, and Harry George during the school year of 1907-8. It was an unusual menage, this: the great economist and philosopher, two college sophomores, and their older, brilliant, and frail fellow working-student. These four, together with horses, cows, chickens, and cats.

That year of idyllic intimacy is the theme of this book. Mr. Duffus recaptures the spirit of an age gone and nearly lost, whose passing left a void in our spirits (both as individuals and as a nation) that has yet to be filled. Not that the author says this. He doesn't. But his memoir inescapably underscores the fact.

Mr. Duffus is too much in tune with some of Veblen's beliefs to feel that those days ever could or ever should return. In that he is right. Change is the only changeless thing. Society can never be static, and acceptance of the fact makes evolution the more acceptable. The important thing is that it result in true progress for humanity, not give the mere illusion of benefit.

Veblen the man definitely emerges, even though the portrait is blurred. After all, memory alone furnishes source material for the book; in spots it is bound to be rather veiled. This fact, together with Mr. Duffus's frank acceptance of it, furnishes part of the book's charm. And charm and humor it certainly has. To read it is a delight.

AMEN, AMEN, By S. A. Constantino, Jr. 184 pp. Harper & Bros. $2.00.

Guff and gush pour from the presses. Grandiose "plans" are met at every turn. Most of these are idealistic. They are something remote, and depend on "letting George do it."

But true idealism, maintenance of Americanism and that "American way" to which so much lip-service is given, and the hope of a livable future—these all boil down to *individual* honesty and decency. In dealing with these, Constantino gets right down to cases. He isn't maudlin, and he isn't sentimental. He just tells straight-out what he and lots of others think about today's major, basic matters: religion, sex, and money. He is honest. And that approach makes his book flow, with obvious truth.

Who is the author? Just an ordinary, 23-year-old mid-Westerner who is now an ensign getting his wings. That means he's no professional uplifter or moralizer. He speaks only from his own thoughts and reasoning. And that's why he has the *right* to speak, and why his words strike such a clear, ringing note—a note with which we should all get acquainted.

ELEMENTS OF TOPOGRAPHIC DRAWING. By Roscoe C. Sloane and John M. Montz. 246 pages; index; profusely illustrated. McGraw-Hill Book Co. $3.00.

In 1930 the first edition of this extremely practical handbook was published. This new edition revises all symbols to confirm to current practices, and adds a discussion of the use of the polar planimeter and the elements of the common forms of map projection. Although some of the topics go beyond the subjects required of field artillery

draftsmen, practically every point touched upon will be of great use. All manner of conventional signs are shown in large enough size to facilitate learning to draw accurately the different types of vegetation, for example. Much practical help is given in the use of drafting instruments, lettering maps, drafting and using contour maps, etc. A chapter on copying, duplicating, and reproducing describes the various processes and offers many practical hints. Another on "Suggestions for Office Practice" is chuck full of practical aids. A copy of *Elements of Topographic Drawing* should be in every Field Artillery unit.

THE SIEGE OF LENINGRAD. By Boris Skomorovsky and E. G. Morris. 196 pages; photographs; endpaper map. E. P. Dutton & Co. $2.50.

This book was prepared to commemorate the first anniversary of the lifting of the 515-day siege of Leningrad in January, 1943. Heavily loaded with propaganda of the crudest sort, it gives a fairly interesting picture of an embattled city. R.G.M.

THE SEVEN MYTHS OF HOUSING. By Nathan Straus. Alfred A. Knopf. 314 pp.; index; appendix; illustrated. $2.75.

Nathan Straus, the former administrator of the United States Housing Authority, has written a book which covers the entire field of subsidized public housing. He has gone into detail to attempt to destroy the fallacies surrounding the subject—and very persuasively, too. He shows that only through subsidy can the slum areas be cleared, but that such subsidation actually will not retard private enterprise in the building world. Not only does he tell why public housing is necessary (as well as not harmful to private enterprise), but he goes farther and actually has a definite plan for how the end (slum clearance) should be accomplished.

The book contains readable statistics, mostly in the form of charts and tables. There are also some pictures of a few of the completed projects.

This is a book which should be widely read by all people having an interest in housing of any nature. The subject is one which will be with us for years and the more we know about it, the more intelligently we shall be able to deal with it from the practical, the economic, and the social standpoint. Mr. Straus's book is a very logical starting point for the acquisition of that so-essential knowledge. J. M. C.

RETOUR AU FEU (The Return to the Battle). By Andre Labarthe. Maison Francaise. $1.75.

M. Labarthe has written (in French) a timely and useful book on the part the French Army took in the recent conquest of Tunisia. He starts with the year 1940. Many patriotic Frenchmen foresaw the eventual intervention of the Allies. They did not know whether they would invade France or North Africa first. They worked secretly for both possibilities.

Arms and munitions which should have been surrendered to the Axis by the terms of the Armistice, were hidden. Whole batteries were concealed in the hills of Algeria and Morocco. Infantry, artillery, and native cavalry trained with old model weapons, and presented these for verification and inspection by the Axis Control Mission. Modern weapons were kept in the houses of civilians; the troops trained with these when enemy inspectors were not around. In more than two years no one in North Africa betrayed what the French were doing to maintain a well-trained but camouflaged army.

It thus happened that when the British and Americans arrived in North Africa in November, 1942, a French Corps—the XIX—of three divisions was soon in line. True, they lacked tanks, antiaircraft artillery, and many other things that would have been most helpful, but they took the field. They covered the east Algeria border while the Allies were debarking. Thereafter they took a noble and brave part in the campaign which followed. They suffered heavily, but they carried on.

This book is the only account to date available of the part played by our French Ally. Until something better is produced it will be essential for a correct understanding of the Tunisia campaign.

C. H. L.

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THE CURTAIN RISES. By Quentin Reynolds. 353 pages. Random House. $2.75.

Quentin Reynolds has covered an amazing amount of ground during this war. In so doing he has become well acquainted with all ranks of political and military people—and more important, with what they seek to do and how they go about it. He also has a knack of telling these things in a flowing, easy way that both makes grand reading and also carries a punch.

From last spring to December he spent time in Palestine and Russia, then in the Sicilian invasion first saw American troops in action (in previous years he had seen only British and Red Army units). He liked what he saw, especially of our men. After a stay in Algiers he went into Italy at Salerno. Late fall found him back in New York, and this book well under way.

Throughout *The Curtain Rises* you have a feeling of intimacy with whomever or whatever Reynolds is talking about. His sidelights and detours round out the tale. Unlike some writers, he doesn't emphasize either the picnic aspect or the gruesome. He's well-balanced—including his sense of humor. Perhaps it is his perspective of the war, as a result of three years of intensive coverage, that makes his writing so appealing to military men. Whatever the cause, he's good enough for my money.

MY LIFE WITH THE ENEMY. By Phyllis Argall. 290 pages. The Macmillan Co. $3.00.

Miss Argall has spent most of her life in Japan, thereby knowing the people and their country almost better than she does her native land. She taught there for 7 years, first in Tamsui, Formosa, then in Tokyo. She joined the staff of the American-owned *Japan News-Week*, and acted as correspondent for an English periodical in Shanghai, for the London *News Chronicle,* and for other periodicals in the United States and Japan. It was as managing editor of the anti-Axis *Japan News-Week* that she was arrested on December 8, 1941, imprisoned, and sentenced to 18 months at hard labor. Through the good offices of Ambassador Grew she was repatriated on the *Gripsholm* the following June.

Her story is interesting as well as authoritative. M. K. W.

INCOME TAX AND ARMY PAY (*6th Ed., 1944*). *By Col. J. H. Doherty. 66 pages. Military Service Publishing Co. 50c.*

Col. Doherty and his publisher continue to keep this practical booklet right up-to-the-minute. Those already familiar with earlier editions will want this revision immediately, to help them with their problems throughout the year. Newcomers will welcome its practical approach, straight and understandable language, resume of recent tax legislation, and helpful examples.

THE WHITE BRIGADE. By Robert Goffin, 199 pages. Doubleday, Doran & Co. $2.00.

All of the material in this authentic account of the Belgian underground and of the people's resistance to Nazi occupation has been carefully documented from underground sources, and all of the characters are real. Names have been changed only where the person is still alive and active names have been changed.

The author tells of the *La Libre Belgique*, famous underground newspaper, the blowing up of the Tessenderloo industrial works, and the aid given to downed RAF fliers in smuggling them out of Belgium.

This is a moving document of history and a magnificent tribute to a courageous nation. M. K. W.

INTRODUCING AFRICA. By Carveth Wells. 211 pages; appendix; index; endpaper map. G. P. Putnam's Sons. $2.50.

This global war has brought in its sweep an awareness of Africa and its relationship to the test of the world. Previously, Africa somehow has stood a little apart from the main current of world events. It has had a quality of remoteness that was never wholly dispelled by colonial exploitation and incidental contacts.

Carveth Wells is contributing to this new awareness by his vivid descriptions of the "dark continent." *Introducing Africa* is a compact, smoothly-written book with the natural interest of the strange, far-away places it describes. It develops the popular notion of a lusty, uncivilized elephant-and-jungle country into a realization that this little-known continent has an astonishing range of variety in climate, peoples, and conditions of living, that elephants and jungles are only a small part of the whole.

The 160 millions of people distributed over an area about three times the size of the United States are sharply divided into original native and colonial elements. Each of these elements is subdivided; the natives into hundreds of tribes with tribal traditions and characteristics, the colonials into different nationalities. The widely diverse population in the setting of a country no less diverse in its physical features becomes a fascinating study as it takes on lively reality through the author's descriptions.

This book is truly an introduction that serves the purpose implicit in its title, giving the reader a sense of acquaintance with a part of the world that has come sharply to the forefront through the developments of global war. F. E. J.

POWER AND FLIGHT. By Assen Jordanoff. 310 pages; index; profusely illustrated. Harper & Bros. $3.50.

Mr. Jordanoff has a remarkable flair for explaining technical details in simple, direct language. He has a knack, too, for getting the most suitable drawings and photos to illustrate complex mechanisms and their relationships.

In *Power and Flight* he jumps right into a full explanation of how and why the modern power plant functions. This part of his discussion is as useful to automotive folk as to fliers and their mechanics, as he covers internal combustion, Diesel, steam, and turbine engines. And this of course is the meat of this book, although it also covers the remaining element, the propeller. All in all, it's a fine job that has been done here.

HOW TO WRITE A MILITARY LETTER. By David Klein. 133 pages; index. The Military Service Publishing Company. $1.25.

In a foreword Cpl. Klein explains that in the preparation of this book he has tried to give the reader a grasp of the essentials in conducting military correspondence; to "take some of the 'army' out of AR 340-15."

The pages that follow are evidence that the author has kept his objective consistently in mind. Points of general weakness in letter writing are examined with particular reference to military correspondence, and numerous suggestions are offered for improvement. Clarity and brevity are stressed in a plea for crisp, streamlined letters in keeping with the best military manner. F. E. J.

FORWARD OBSERVER. By Edwin V. Westrate. 179 pages. E. P. Dutton & Co., Inc. $2.50.

It is a common saying that forward observers are expendable. Nevertheless, many field artillery officers will tell you that it is one of the best assignments in the Army.

Mr. Westrate, a forward observer in the last war, gives us the first authentic inside story of our present forward observers. His combat accounts are extremely interesting and exciting. After reading it you will wonder no longer why forward observers are called the Army's expendables. B. H. W.

SOLDIER'S TAX GUIDE. By "Taxpert" (Robert D. Ross). 32 pages, Barrister Publications. 60c.

A mighty handy book to have around when you file your tax return. In a sense it does not clear up all the complexities of filing a tax return, but it does explain many of the essential points commonly misinterpreted. The best advice is to have a tax expert help you in preparing your return, but if this is an impossibility then your next best assistance is *The Soldier's Tax Guide*. B. H. W.

A PICTORIAL HISTORY OF THE MOVIES. By Deems Taylor, Marcelene Peterson, and Bryant Hale. 338 pages; appendix; index. Simon & Schuster. $3.95.

Over 700 pictures, most of them from the films themselves, develop the birth, growth, and development of the movies. For them Deems Taylor has written witty captions which include fascinating background comments which tie the whole thing together. Nostalgic?—of course! Names familiar, forgotten, or vaguely familiar, names of films, actors, directors, actresses, producers . . . . Scenes

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from milestone pictures, from titans that still rank in the fore-front, from comedies, and from dramas, from Mack Sennett and D. W. Griffith. The gaudy and gay panorama is all here; you *feel* the surge and sweep of the fast-growing industry. Best of all, the old favorites are here too. It's a grand book for relaxation.

TOWARD A BETTER WORLD. By Jan Christian Smuts. 308 pages. Duell, Sloan & Pearce. $2.75.

Among the great men welded into the British Commonwealth, perhaps greatest is Jan Christian Smuts. Throughout a long and distinguished life he has ever worked for South Africa and for progress. Never has he been too weighted by details or administrative matters to lose his freshness and vigor of mind. With the passage of time he has matured and mellowed; he can truly be called a philosopher, in the best sense of the word.

With all this he has definitely kept his feet firmly on the ground. 1899-1902 saw him a general of the Boers in their war with England. In the last war he took the field as a lieutenant general, broke Germany's East African power, and rightly earned his post and prestige on the British Imperial War Cabinet. Now he is a field marshal in Britain's army, prime minister of his dominion, minister of defense, and C-in-C of the South African forces. Such posts demand respect for present realities as well as the ability to look forward to what is yet to come.

Toward a Better World is a collection of addresses. Speeches, they might be called, but they come closer to being lectures: "speech" implies a need to hear inflections and observe gestures in order to gain the speaker's true meaning, but such is not the case here. These addresses make for good reading. Most valuable, however, is their content, which covers a vast range of subjects. They inform but they also stimulate—a rare quality. Through them all runs the true sincerity of a great man's belief in progress, in development, in God, and in man's having a definite place in the general pattern of the world and its history.

SEACOAST ARTILLERY: Basic Tactics and Technique. 891 pages. Military Service Publishing Co. $3.00.

For seacoast artillerymen, and especially for field artillerymen and marine units assigned to coast defense missions, *Seacoast Artillery* should be splendid. It covers weapons and materiel, ammunition, and service of the piece; fire control and position finding; drill of the range section; gunnery, elementary tactics, signal communication, field fortification, and rigging. All this material is drawn from official publications on the subjects, and is pointed squarely at the seacoast artillery applications. A glossary explains the meaning of the many technical seacoast artillery terms used.

ALMANAC FOR AMERICANS. By Willis Thornton. 418 pages; illustrated. Greenberg Publisher. $2.75.

This book does not contain the zodiacal data usually found in an Almanac. In name alone the book is misleading. Its dealing with days of the month is confined to those everyday events which have been significant and memorable. The author has made this book a reminder that history is not made on the great days we customarily celebrate, but on every day. You will enjoy the authentic events as presented here. B. H. W.

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