

The
FIELD ARTILLERY
Journal



DECEMBER, 1942

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The Field Artillery Journal

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

DECEMBER, 1942—Vol. 32, No. 12

OUR COVER is an action shot from Guadalcanal. The emplacement was taken from the Japs, and is now being used against them. Notice especially that the howitzer crew wears helmets, but no shirts; No. 5 is on the job, to shift the trail; protective sandbags have been mottled, and also have leaves to break their regular outline; there is good cover from air observation; ammunition is stored nearby, apparently in pits or small caves; the trail has been dug in, perhaps by recoil; and finally, the men look trim and happy.

SERVICE, especially to those in the field, is the aim of your JOURNAL'S staff. Units bound overseas are finding of considerable value the cuts from JOURNAL technical articles; they can be supplied quickly if they have been published within the preceding twelve months.

For example, we have just provided 500 copies of the charts on page 346 of the May, 1942, JOURNAL, as well as 500 copies of the slide-rule charts which appeared in October. In large quantities, the price gets as low as 1c apiece on most column-size cuts. Our printer is equally glad to cooperate in making quick deliveries.

REPRINTS of Captain Amory's excellent article on "Celestial Navigation" are still to be had at 25c, subject to members' discounts.

BOUND VOLUMES of 1942 JOURNALS can be had for \$10 per volume, as some additional copies of each issue have just come in. Unbound sets can be had for \$6. These prices, however, apply *only until January 31, 1943*, and are *net*.

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



Senior Field Artilleryman

Lieutenant General Lesley J. McNair, Commanding General, Army Ground Forces, was commissioned a second lieutenant of Artillery June 15, 1904. He has been a continuous member of the Association since its organization in 1910. General McNair became Brigadier General (temporary) October 1, 1918, and on January 1, 1937, he again reached that rank, this time permanent. December 1, 1940, he was promoted to Major General (permanent) and on June 9, 1941, to Lieutenant General (temporary).

General McNair wears the Distinguished Service Medal and the medal of the French Legion of Honor.



SOME MAJOR ASSIGNMENTS

<i>Dates</i>	<i>Assignments</i>	<i>Dates</i>	<i>Assignments</i>
☆ 1904-1905	FA at Ft. Douglas	1929-1933	Assistant Commandant, FAS
☆ 1905-1908	Ordnance (various posts)	1933-1934	16th FA, Ft. Bragg
☆ 1909-1913	4th FA, Ft. D. A. Russell	1934-1935	CCC, Camp Beauregard
☆ 1913	Observer in France	1935-1937	Executive, Office Chief of F. A.
☆ 1914	Funston Expedition to Vera Cruz	1937-1939	CG, 2d FA Brig.
☆ 1916-1917	Punitive Expedition to Mexico	1939-1940	Commandant, C & GS School, Ft. Leavenworth
☆ 1917-1919	1st Div.; GHQ, AEF; 1st Div. in Germany	1940-1942	Chief of Staff, GHQ, Army War College
☆ 1921-1924	Hawaii	1942	Commanding General, AGF
☆ 1924-1928	PMS&T, Purdue University		
☆ 1928-1929	Army War College		





HEADQUARTERS
 ARMY GROUND FORCES
 OFFICE OF THE COMMANDING GENERAL
 ARMY WAR COLLEGE
 WASHINGTON, D.C.

TO THE OFFICERS, WARRANT OFFICERS, AND ENLISTED MEN OF THE ARMY GROUND FORCES:

Our second war Christmas is near.

Our first year of war has seen many of the Ground Forces complete home training and move overseas. Many more will join them in 1943.


For those of you who are new in the Army and only just breaking home ties, I ask the friendly and wise help of your more experienced comrades. Thus you will learn the stern duties of the soldier quickly and well, and may appreciate both the privilege and the responsibility of serving your Country in its hour of need.

To the older soldiers, I send a plea for an all-out, unceasing effort in training. It will pay richly on the battlefield, bringing success to our arms and enhancing your own chances of returning home.

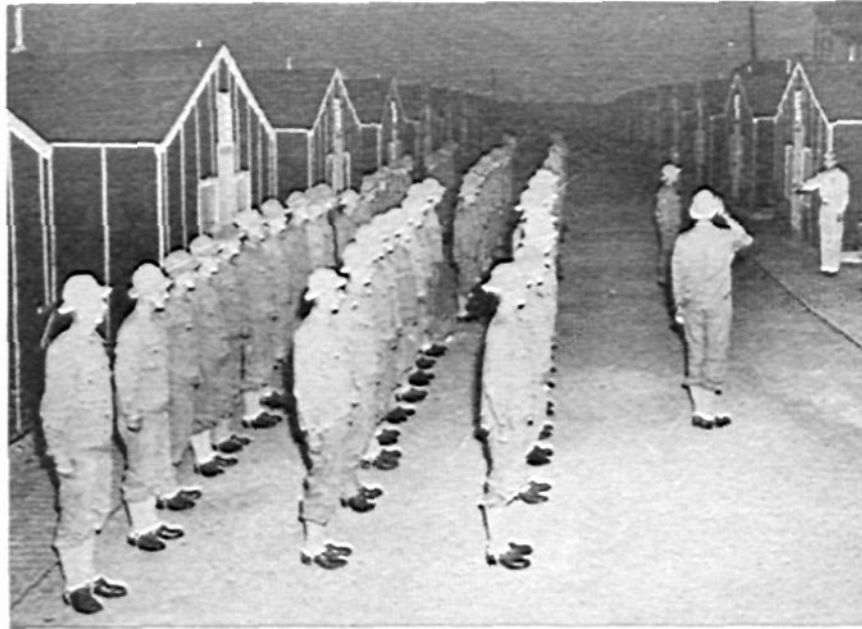
To the officers who are building our war army, your first duty is to make yourselves fit by study and training to command the finest soldiers in the world. Lend your men by your own example, by training them thoroughly and wisely, by instilling high ideals of discipline, and by your concern for their comfort and welfare.

To you all, my deepest thanks for your devotion and fine accomplishments during the past year. If the holiday season may not bring you the joys of former years, may your feelings be of satisfaction for duty well done, and of firm resolve for the critical days ahead.

My own humble appreciation of so fine a command.


 L. J. MCNAIR,
 Lt. Gen., U. S. A.,
 Commanding.





Standing reveille in hutment area

CANDIDATE TO OFFICER

By Major Wilbur S. Jones, FA

Perhaps Napoleon was not responsible for the statement, "Fusiliers are expendable, but artillerymen must have brains," but since that former artilleryman is in no position to deny the allegation the blame may more tactfully be attributed to him than to any of our contemporaries who might have expressed similar views.

With due allowance for the special qualities which each branch of the service believes that its key personnel must possess, there can be little disagreement that a real artilleryman, in the fullest sense of the word, must be a highly trained technician with a relatively good head for figures. Endowed by nature with the latter qualification, the prospective artillery officer can, with intensive training under modern simplified methods, aspire to the apocryphal standard of the First Consul. At least, so the experience of the Officer Candidate School at Fort Sill would indicate.

For the first time in the military history of our country—and probably to an extent hitherto not attempted in any other nation—the mass production of field artillery officers has become an actuality. On July 28th the first of the initial 500-men classes at the Officer Candidate School commissioned 418 second lieutenants. This rate of production is only the beginning. Already classes have been upped to 560, with an overall increase of 1,500 students in the offing. As the activation of new divisions is increased, the school stands ready to step up its output of well grounded junior officers—a far cry from the "ninety-day wonder" standard of 1917 from all reports. It is not

necessary to draw upon statistical data to realize to what extent the battery officers of the near future will consist of Officer Candidate School graduates. And while the "production line" is set up and in operation, it is obvious that the quantity and quality of the finished product can be maintained at a high standard only if the proper grade of raw material (the enlisted personnel sent in by the field forces and replacement centers) is forthcoming.

Just a little over a year had elapsed from the experimental beginnings of the first Officer Candidate Class when the first 500-man class received its commissions. And to Lt. Col. Carl A. Jark and Major T. W. Dunn, respectively Commandant of Candidates and Executive Officer, was given the privilege of seeing the fruition of the experiment they had started as captains.

In June of 1941 Captain Jark, Department of Motors, F.A.S., and Captain Dunn, Department of Gunnery, F.A.S., were detached from their departments by the then Commandant of the Field Artillery School, Brig. Gen. George R. Allin, given a staff of 25 instructors selected from the Battery Officers' Course faculty, assigned an area in the nearby National Guard Cantonment, and given complete charge of 125 aspiring candidates for commission rigidly selected from the enlisted ranks. Jark was in command of the school, its organization, discipline, and academic instruction. Dunn, as senior instructor in gunnery, was his right-hand man. The men were quartered in tents and every phase of their life was

closely scrutinized by the staff, which lived in the area with the students. Academic standards were of the highest, but the character and general suitability of the student were carefully weighed and rechecked almost daily. The mortality of the first class was over 40%. Three more classes were handled on this modest experimental scale. By the first of January, 1942, however, the die was cast and a transition to the bloc system of weekly 60-man classes was under way. Formerly all subjects had been taught concurrently, but henceforward each subcourse was to be taken in turn before passing to another. Meanwhile the academic departments began detaching sections of their B.O.C. instructors and sending them to the Officer Candidate School in preparation for the already-scheduled 500-men-per-week capacity of the school. February through May was the transition period, as the physical capacity of the school and the pool of instructors expanded to take care of 120, then 240, and finally 500 men per week. Finally, in July, the faculty had expanded to over 600 officers and the Battery Officer Course itself—now a relatively unimportant subdivision of the school—was moved over to the Officer Candidate School area. The academic departments now reported directly to the Commandant of the F.A.S. and Lt. Col. Jark had taken the post of Commandant of Candidates, devoting himself entirely to administrative and disciplinary duties. A staff of sixty-odd tactical officers, together with adequate supply, personnel, and administrative overhead, had likewise made its appearance, and a complex fabric of decentralized supervision was being evolved to preserve the close individual evaluation of each student.

Although constantly undergoing revision in an effort to improve instruction and keep up with latest developments, the course of instruction itself is substantially that of the familiar Battery Officers' Course (at present the two courses are identical). The various phases of gunnery constitute over 40% of the instruction, with motor transport, materiel, signal communication, and tactics dividing the rest of the time. The bloc system of instruction is followed: for the first ten days the students specialize in motor transport, marches, driving, maintenance, and trouble-shooting. Then follow five days of materiel, prior to six weeks of gunnery. A week of signal communication is then taken up, and the final three weeks of the course are devoted to the various subjects included under the general term "tactics." Failure to attain a proficiency of 65% in any of the subcourses—or a general low average throughout the course—can bar the candidate's right to a commission.

The question of academic standards is a vital one—and subject to much divergence of opinion. The conflicting demands of mass production of officers and rigid academic requirements must be solved in such a way as to maintain quantity without sacrifice of quality. To this end it may be freely admitted that the difficulty of the examinations upon which proficiency is determined has been relaxed. On the

other hand, the promulgation of instruction is carefully checked to see that its standards are not lowered.

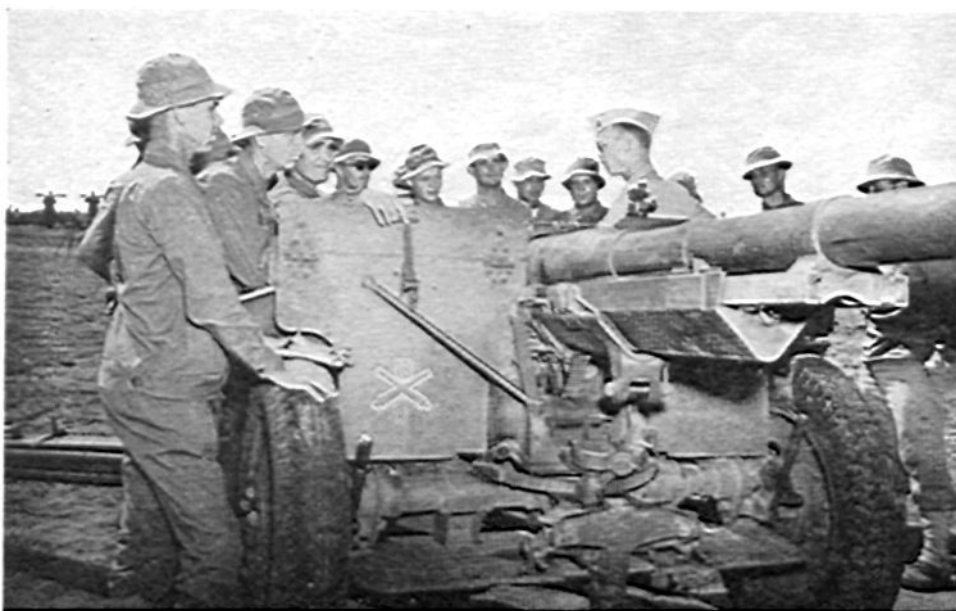
The composition of the larger classes and the difference in educational and military background, age, and responsibility is being studied with great interest. While generalizations are difficult to make, some conclusions as to the requirements a candidate should have become evident.

A knowledge of higher mathematics is unnecessary. However, no candidate who has a distinct aversion to figures—be it only simple arithmetic—can attack the work he will be confronted with on an equal basis with his classmates. Elementary algebra and plane geometry (the solving of simple equations and triangles) are essential. Trigonometry, while advantageous, is not mandatory to a quick-witted student. College graduates whose background has been largely devoted to the so-called cultural subjects, law, history, languages, etc., more often than not find themselves at a greater disadvantage than high school graduates who are "quick at figures."

Probably the most important requisite of a candidate is an alert mind and energy. The pace is fast, and the hours long. The plodder is often lost as the work accumulates, and unless he possesses unusual determination and energy he will often become confused and discouraged. Such determination rarely exists unless the man in question has a deep desire for a commission in the Field Artillery. Entirely too many men are voluntarily requesting relief from the school or have completely given up and accepted the inevitable "axe" because (1) they had no idea what to expect at the school (in other words the goal of a commission *only* at the expense of intensely hard work did not hold forth enough incentive to them) or, (2) they had been ordered to the Field Artillery School when their hearts were set on some other branch of the service. No man who has not such intense desire as to let nothing bar his way to his commission, and who is not willing to put out more effort than he probably has at any other time in his life, has any place at the school.

Preparatory school work such as given to candidates in some of the Replacement Centers, is most helpful to the men—particularly in the earlier stages of gunnery. Those who have the most trouble usually have spent much of their service in administrative work—supply, mess, clerical—although such lack of practical experience can often be overcome by the middle of the course.

Even the naturally brilliant student must possess the intense desire to succeed. He may have less trouble mastering K-transfers and computation of target offsets, but his daily routine is hardly one to promote relaxation. At 6:45 AM daily the candidates fall out in their battery streets for a reveille formation and fifteen minute drill (devoted to facings, posture, and mass commands). Breakfast is served in 1,000-man mess halls, cafeteria style, at 7:15. From this time until lights at 10:30 PM,



students are restricted to their huts, latrines, or the class rooms, where lights and relative quiet prevail until after midnight. Saturday afternoons are sometimes free, although special demonstrations, inspections, and various administrative formations are frequently scheduled on these days. No mention has been made of the multifarious minor orientation, delinquency, medical, and similar formations for which time must be found in the already crowded schedule.

It would be well for every aspiring officer-candidate to know full well what lies ahead of him if he would earn a commission—and earn it he must. For example, Col. Jark early appreciated the fact that for men of little or no practical artillery background an average of four hours' study a night was required in order to assimilate the material of the course. More than that time proved unproductive. A candidate whose grades are below class average is expected to demonstrate his sincerity of purpose by putting in this study time.

The disciplinary code is modeled after that of West Point. All previous rank, service, educational background, etc., is forgotten when a candidate enters the school. From that time he is on his own, and his ability to adapt himself

gracefully to the rigid discipline and the apparently petty harassment of minute inspection of person and quarters is heavily weighed in determining his fitness for a commission. Not only is a candidate's academic rating considered by the board which recommends commissions, but also is his disciplinary record and his qualities of leadership and character, as determined by a complex system of ratings by both instructors and fellow students.

The task of weeding out incompetents is made more difficult by the lack of uniformity of selection of the candidates who report to the

school. The system of quotas given to the field forces has resulted in an unjustifiably large number of men being sent to the school when they had utterly no desire to obtain a commission in the Field Artillery. Overzealous proselyting by battery officers and automatic assignment of men requesting other branches to the F.A. O.C.S. has resulted in a sizable number of candidates in each new class requesting relief from the school within two weeks of their matriculation. Most of this category have either no heart for the ordeal ahead or no knowledge or taste for the Artillery. Some do not care to assume the responsibilities of officership. It is unfair both to the service and the man to have this condition persist. The school will continue to produce creditable officers in spite of this condition, but its continuance can only slow down the process and hold back the great majority of energetic and able candidates. It is only by holding in highest esteem the privilege of obtaining a commission in the Field Artillery that the spirit of the school can be maintained, and thus the initial selection of candidates merits the painstaking attention of every responsible officer who has pride in the efficiency of his branch.

A CHRISTMAS PARTY GIFT

for the folks at home has been prepared by General Foods. News of it arrived too late for our November issue, but we'll be glad to handle immediately all orders received on this short notice.

This package contains all the makings for a Christmas party "feed" for at least 8 persons, as well as an attractive set of 8 tall, 10-ounce crystal tumblers decorated in blue with the Army seal. To enhance the gift's party flavor, the box also contains 12 paper napkins in Christmas design, 2 large red imitation candles, a large green table Christmas tree (paper), and 8 paper hats.

Food?—it sounds fine. Basic in the party menu are 24 packages of a dozen and a half popular food products. Among them are luncheon meat, shrimp, tomato juice, chocolate confections, syrup, cocoa, postum, and the "makings" for waffles, hot biscuits, jello, and layer cake.

This box will be delivered to any address in continental United States for your remittance of \$6.50. Every effort will be made to have it delivered before Christmas.

RUSSO - GERMAN WAR

PART VII

By Colonel Conrad H. Lanza

During the early winter months of 1942, the Germans impressed a large number of civilians into labor battalions and forced them to construct an extensive system of defensive works on their east front from Bryansk to Orel, both places inclusive. Trenches were dug, pill boxes built, barbed wire erected, the foreground cleared and covered with appropriate obstacles—antitank ditches, pits, etc. Very extensive mine fields were laid.

Through air photographs the Russian High Command learned of this. It construed the activity to mean that the Axis did not intend to attack Moscow during the following spring, when some kind of an Axis offensive was generally expected. As no important defensive works had been reported to north or south, it seemed probable that the enemy would attack in one or both of these sectors. Since it was commonly supposed that the Axis needed oil, found in Caucasia, it was assumed that the spring campaign would probably be in the south.

It was decided not to await such an attack, but rather break it before it started. This task was assigned to Marshal Semyon Timoschenko, commanding the South Group of Armies. He decided to attack Kharkov in sufficient strength to attract the majority of the Axis reserves in south Russian. He would then launch his major attack further south, from a bridgehead he held near Izyum and Barvenkova, with a view incidentally, if successful, of freeing the Ukraine through an advance toward Dnepropetrovsk.

As described in the August number of THE FIELD ARTILLERY JOURNAL, Timoschenko's attack on Kharkov which commenced on May 12th was stopped in about four days after making minor gains, but without having attracted the German reserves to this sector. While Timoschenko was assembling his troops near Izyum for his main attack, he was unexpectedly overwhelmed by a powerful counterattack which nearly annihilated him. According to his own report he lost in this entire campaign, which ended on May 30th, 70,000 men as prisoners and 5,000 killed. He was silent as to the number of his wounded. According to German reports he really lost over 240,000 men and about 1,200 tanks and as many guns.

The south Russian armies never recovered from this blow. It was impracticable for Russia to replace either the men or materiel she had lost. In the succeeding

The Summer Campaign

campaigns that part of the Russian armies which was south of Kharkov was short of men, was very short of artillery, and had almost no armored units.

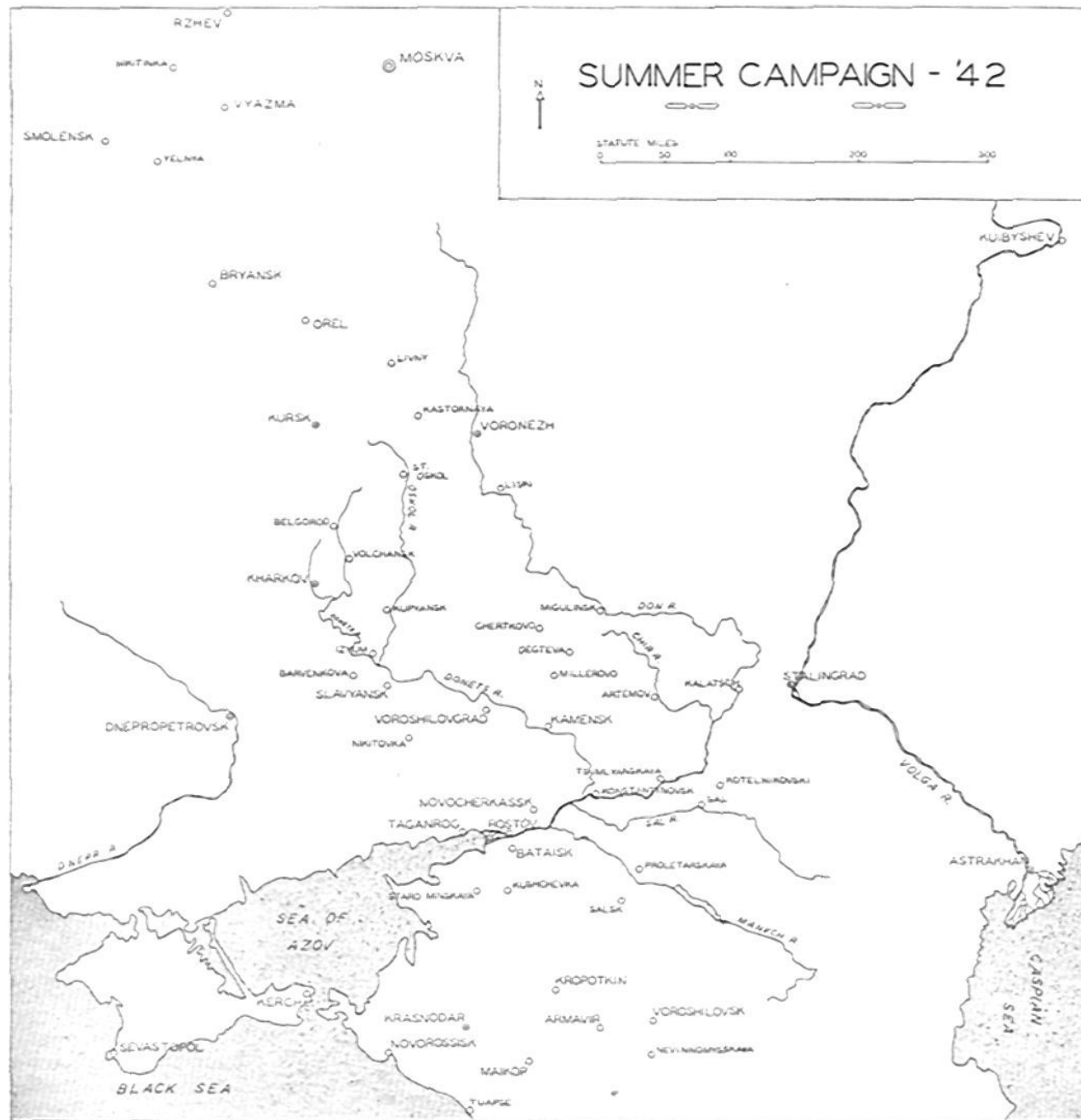
THE INITIAL GERMAN ATTACK

The German or Axis offensive, although later extended to a wide front, started on a small scale with the initial mission of securing a good line of departure for the proposed main attack. Consequently it was not immediately recognized as a major attack. In fact, many had begun to think, after the spring had arrived and gone, that there might be no Axis offensive this year—at least not on any grand scale comparable to that of the preceding year. But the Germans did have a plan of attack. Its execution was entrusted to Marshal Fedor von Bock.

The first move came on June 10th, when two divisions north of Kharkov, supported by about 400 planes, attacked on a narrow front. The intensive action of the air force on a restricted space caused the attack to move rapidly north to in rear of a bridgehead over the Donets River held by the Russians. According to the Germans, the bridgehead garrison surrendered or was captured, yielding 20,000 prisoners, 169 trucks, 113 guns, etc. Russian accounts ignore their losses but claim to have killed 2,850 Germans and to have destroyed about 40 tanks and 18 guns.

The Germans then turned and attacked a single Russian division, which seems to have intervened to save the bridgehead and gotten itself surrounded. By June 22d it had been driven off, after losing most of its materiel and most of the personnel. The Germans report that only about 1,000 prisoners were taken in this operation. Another attack on a larger scale followed on the 23d, the Russians admitting a partial withdrawing.

A satisfactory line of departure now having been acquired by these preliminary operations, an Axis attack from the entire Kharkov front, in great strength and with strong armored forces and air and artillery support, was launched on the 24th. The Russians recognized this as a major attack, although its mission was not yet clear. The attack made very rapid progress from the beginning. As usual, the Air Force preceded the ground troops, dive bombing Russian positions and batteries and locating weak spots. After a strong artillery and air preparation the Panzer Divisions rushed through the selected weak spots, making gaps in the Russian lines. The Panzers stayed no longer than necessary to make these



gaps, then went straight on—deep into the hostile rear areas, disrupting CP's, reserves, dumps. Infantry divisions followed the Panzers into the gaps, then turning right and left broke down what remained of the Russian line.

By the end of the next day the Axis advance had penetrated 50 miles into the Russian positions. Rumanian motorized troops circled around north of Kupyansk, railhead and depot, and then attacked this place from the rear. Panzer Divisions came up, and before this appearance of strength the Russians withdrew—that is those in rear areas did. Those in the forward areas were attacked from

all sides, and this part of the Russian front collapsed. The Germans report 21,827 prisoners were taken, with about 100 tanks and 250 guns.

On the 25th the Axis attack was extended southward to include the Russian bridgehead near Izyum. This Russian force was threatened by the arrival of the enemy at Kupyansk. Confronted by a strong attack, they evacuated their positions, and the bridgehead was occupied by the Axis by evening of the 26th. To relieve the pressure the Russians started local offensives near Belgorod to the north and near Taganrog in the south. As far as the present record shows, these attacks had no influence

on the main event. By the 27th, despite Russian counterattacks, the Axis held the line Belgorod—Volchansk—Kupyansk—Oskol River.

THE ADVANCE TO THE DON RIVER

A major Axis attack in the Kursk area started at 3:00 AM June 28th. It had been prepared with great secrecy and appears to have been unsuspected by the Russians. The German air support arrived only just before H-hour. The plan was to pierce the hostile front by three columns, each led by one or two Panzer Divisions on a comparatively narrow front and closely followed by motorized divisions. The columns were directed respectively on Livny, Kastornaya, and Staraya Oskol. They were accompanied by strong air forces, which operated in waves, continuously reconnoitering and/or attacking ground forces and driving Russian planes from the sky. High level and low level attacks were made. Where resistance was strong, dive bombers joined with the artillery in a preparatory reduction fire. Direct radio communication was maintained between ground and air commanders. On this first day, the attacking columns made considerable progress.

On June 30th the Axis attack was extended along the Oskol River and was made continuous from north of Kursk to well below Kharkov. The Axis plan remained to pierce opposing lines on narrow fronts with heavy Panzer Divisions, followed by motorized troops which, proceeding through gaps, could fan out and attack in flank or reverse what had been the defending lines. The Air Force, operating in reliefs, attacked without cessation day and night.

By July 2d Russian resistance in the zone of attack was nearly broken. No reserves remained. Roads were blocked, railroads interrupted, supplies not arriving. The Russians fought bitterly; they used tank brigades freely to counterattack. According to their own account they lost the fight through the interposition of the great fleet of German battle planes. They had nothing to equal the German tank-plane-artillery combat teams. By night the Russian front had been pierced in numerous places over a front of 100 miles, and swarms of enemy armored troops were dashing around rear areas disrupting command and defense. The line then was Livny (to Russia)—Kastornaya (Axis)—Gorschechenove (doubtful—very fierce fighting here)—St. Oskol (Axis). The Germans' losses in this battle were high, apparently higher than they had expected, but there are as yet no reliable figures as to actual losses on either side.

On July 3d Axis armored forces advanced about 40 miles toward the Don River. They ignored large numbers of Russians in their rear, remnants (now without a base) of the former front. These were left to be overcome by the infantry divisions charged with mopping the battlefield. They encircled the isolated Russian detachments and gradually eliminated them.

On July 4th the Panzer Divisions made another 40-mile jump, and at places arrived on the Don River from opposite

Voronezh to below Liski. Few Russian troops were on the river, for the Axis surprise attack had been too rapid. The Don here is a slow stream, not technically difficult to cross. Within the next two days a crossing was made near Voronezh, which was captured on the 7th and where a good-sized bridgehead was established for future use. There was no Axis crossing below Voronezh.

The rear infantry divisions completed mopping the Kursk-Kharkov battle area by the 7th. They report having rounded up 88,689 prisoners, 1,007 tanks, 1,688 guns, and corresponding quantities of other booty. If correct, these figures indicate a total loss to the Russians since June 10th of over 130,000 prisoners, 1,100 tanks and 2,000 guns—a sizable disaster, and explanatory of the rapid advance the Axis made of about 100 miles in four days, including the initial day of attack during which only slight advances seem to have been made.

In another attempt to relieve the pressure a strong Russian attack had been delivered on the 5th in the vicinity of Orel. It ran up against that strong defensive line which had been constructed during the winter and was stopped without attracting reserves away from the main field.

On July 7th the Axis offensive was extended still further southward, as far as Slavyansk. The Germans who had crossed the Oskol attacked southeast, with the Donets on their right. This threatened the security of the Russians on the south side of the Donets. In view of the situation to the north and the fact that apparently no armored troops were available in this sector to oppose the advancing enemy who was well equipped in this regard, Russian reports state that their troops were ordered to fall back across the Donets. Whether this order originated with General Lvov, who commanded locally, from Timoschenko, or from GHQ is not known.

The Axis forces followed in pursuit. Their Air Force flew on ahead, blew up bridges to impede the retreat, attacked railroad trains and traffic on roads, destroyed dumps, and mercilessly bombed troops found on the roads.

Taking advantage of information secured from air observation, Panzer Divisions, able at this season to operate across country, directed their advance around hostile rear guards and road blocks and reached the Russian rear areas. As usual they caused enormous confusion. Then they doubled back and attacked the rear guards from the rear while infantry divisions attacked them from the front and the Air Force from above. Some Russian divisions were cut off and several were isolated and reduced. German parachutists were dropped far in the Russian rear to destroy key points which would materially interfere with transportation.

While this was going on in the south, the infantry divisions who had been mopping the Kursk-Kharkov battlefield were in part relieved and hurried forward to the Don, where they commenced to arrive on July 13th. They relieved the Panzer Divisions, and then proceeded to

organize the front into a defensive position from Voronezh, inclusive, thence along the west bank to the vicinity of Migulinsk, in all about 200 miles. The Panzer troops were regrouped for a new operation.

Some Russian remnants were still in rear areas, as far back as the old Kursk-Kharkov line, resisting Axis mopping detachments. New Russian troops brought from other sectors were placed in line on the Don, from before Voronezh toward the south. The first Russian reaction to the enemy's success was to recapture Voronezh, and enormous efforts by almost daily attacks were made for this purpose without accomplishing any important results.

By July 17th, the Germans and their allies had reached



the general line Migulinsk—Millerovo—Voroshilovgrad—Taganrog, all inclusive. Rain had set in on the 16th, and the unpaved roads became bottomless. The advance was temporarily suspended.

THE NEW AXIS PLAN

Reports received at German GHQ indicated large Russian concentrations of troops were in progress, and contemplated, along the line Voronezh to Stalingrad. According to press reports from Moscow, Russian GHQ intended at the proper time to launch a major offensive southwest from the vicinity of Voronezh and thereby cut off any Axis advance toward the Caucasus. The continuous attacks and the strong forces constantly increasing around Voronezh lent plausibility to what may have been propaganda. There were no reports indicating that the Russians were reenforcing their armies before Caucasia, which were known to be weak. There was only one railroad left open for this purpose; this extended southwestwardly from Stalingrad. The water route via the Caspian Sea was available. Neither route seemed to be used except for supply purposes.

Sevastopol had fallen by this time. Supplies for the right of the Axis forces could now be shipped via this excellent port, or they could be sent by water to Taganrog, which has a good port. If the right of the Axis advanced, new ports would become available as the troops moved forward. The railroads could concentrate on supplying the Axis forces further north.

With this situation before them, German GHQ determined on the following plan for Marshal von Bock's South Group of Armies:

a. The front Bryansk—Orel—Voronezh—Don River toward Stalingrad would remain on the tactical defensive. It would be strongly held, have proper reserves, and be charged with preventing any enemy breakthrough.

b. Army of General Paulus—estimated by the Russians as including 1 Italian Army (6 divisions), 1 Croat division, and maybe 10 German divisions: South Boundary—Degteva—Artemov—Chir River. Mission: advance on Stalingrad, clearing out the left bank of the Don.

c. Army of Lieut. Gen. Viktor von Schwedler—estimated by the Russians as including 1 Italian Corps (3 divisions), 1 Rumanian Corps (2 divisions), 1 Slovak Division, and maybe 10 to 12 German divisions: North Boundary—same as South Boundary for item (b). South Boundary—Kamensk—Konstantinovsk—Sal River. Mission: cross the lower Don in vicinity of Tsimlyanskaya, advance to the railroad Sal-Kotelnikovski, then turn north and attack Stalingrad from the south; cover against Astrakhan.

d. Army of Colonel General Paul Ludwig von Kleist—estimated by the Russians as including 1 Rumanian Corps (2 divisions), 1 Slovak Division, and 10 Infantry and 3 Armored German Divisions: North Boundary—same as South Boundary for item (c). Mission: cross the lower Don and advance into and seize west Caucasia.

e. Air Fleets—that of Colonel General Baron von Richthofen was at the disposition of Marshal von Bock, to aid any task force as required. GHQ retained other Air Fleets at its disposal, which would be loaned as necessary.

f. GHQ would cover the left of von Bock's forces by maintaining a strong defensive front from the Arctic Ocean south to Bryansk. It would be prepared to give quick and substantial assistance by use of Air Fleets, as indicated in (e).

The rains of the 16th having stopped, the foregoing plan was started in operation on July 19th.

THE ADVANCE INTO CAUCASIA

Without meeting much resistance, von Kleist's Army reached the vicinity of Rostov on the 21st. The Russians elected to defend this city, which was an important agricultural and industrial center and a port. It was also a desirable bridgehead if the enemy could be stopped, as was hoped, along the lower Don. The German Air Fleet concentrated its efforts on this sector. It destroyed the bridges over the river and bombed roads and railroads day and night. Not all the Russians were yet across the Don, and the situation was critical for them. The Axis attack on Rostov was strongly resisted and failed at first. On the 23d Axis troops were within the city, and by the 25th the last of the Russians were overcome. Rostov, a large city of about 500,000 people, soon became available for Axis use for receiving supplies by water. On the same day that Rostov fell, Novochoerkassk was captured and the Axis thereby secured the entire Don River line.

The Axis crossed the Don immediately along the entire front south of the junction of the Sal River. There seems to have been next to no resistance. At this time the reason for this is not known. It may have been due to the weakness of Lvov's troops and their known shortage of artillery and armored troops. The Russian air forces also seem to have been mainly retained in the north. Undoubtedly the Russians were in a more or less disorganized order due to the circumstances of their retreat. What

remained of the Russians concentrated opposite Rostov and offered a strong rear guard defense.

von Kleist determined to take these Russians in flank. He crossed his armored divisions north of the Manych River, where there was little opposition. The Manych valley is the site of several irrigation projects, and the river is dammed at places, with lakes above each dam. At least one large dam was blown up in time; it caused damage and death to the settlers who were drowned in the resulting flood below, but it caused no damage to the enemy and only a few hours' delay in their crossing, which took place on the 27th. In view of this menace the Russians opposite Rostov abandoned their position covering Bataisk and withdrew southward.

On July 29th the Axis crossed the railroad at Proletarskaya. On the 31st, Kushchevka and Salsk were occupied and there was a substantial bridgehead over the Don, with a good line of departure for the next movement forward. In six days the Axis advance had varied from about 50 miles on their right to 100 miles on their left.

von Kleist, placing his armored divisions on his left, moved now in a southeastwardly direction. On August 3d Panzer troops, making another 100 miles in three days, attacked and captured Voroshilovsk. It took the right four days to make the same distance—on the 4th they seized Kropotkin. The Germans made great use of their air forces. Planes flew in advance far ahead, making high and low level attacks on rear guards. Dive-bombers attacked strong points and batteries. They located road blocks. The Panzers detoured around the carefully prepared Russian blocks and ambushes and attacked them in rear while the following infantry divisions attacked from the front and the dive-bombers from above. The Russians limited their defense to main highways. At this season of the year it is practicable to use minor roads, or even go across country. Limitation of the defense to selected points favorable for resistance against an enemy coming from their front created traps when the enemy detoured and took them in reverse.

By August 5th the invaders had the line Staro Minskaya—Kropotkin—Armavir—Nevinnomysskaya firmly in their possession. The Russian High Command now decided to abandon west Caucasia. Those troops who were west of a north and south line about Armavir were to proceed across the mountains, covered by appropriate rear guards, and embark on transports at Novorossisk and Tuapse. Those east of Armavir received instructions not yet ascertained.

The Axis discovered this plan on August 7th, when air reconnaissance showed troops embarking at the Black Sea ports. The Air Force at once initiated attacks against the ports and transports. Their own reports indicate considerable success. Axis troops reached and seized the Maikop oil fields on August 8th. Their advance thereafter has been slow. Russian rear guards covering the mountain passes to the coast have been strong enough to accomplish

their missions. The Russian withdrawal seems to have proceeded about as planned.

Maikop oil fields normally produce about 30,000 bbls. of oil per day. A pipe line extends from the field to Nikitovka, 110 miles northwest of Rostov. The Germans may have extended this to Dnepropetrovsk, about 140 miles, from where river barge transportation is available all the way to Germany. The Russians claim to have completely destroyed the Maikop field. Assuming that wells and pumps were destroyed as stated, new wells that have to be sunk and new pumps provided. It is impossible to tell how long this will take, but it must be presumed that the Germans foresaw and provided for this situation. It certainly will take time, but from a technical point of view should not be difficult.

THE OFFENSIVES OF GENERAL PAULUS' ARMY

General Paulus, starting on July 19th from the line Migulinsk—Degteva, was opposed by two large Russian forces west of the Don. One, estimated at 10 divisions, was holding a bridgehead centering around Kalatsch, due west of Stalingrad. A second and smaller force was some 50 miles northwest of Kalatsch, holding another bridgehead centering around Kletskeya. Paulus' first move was to advance rapidly and interpose between these two hostile forces. He completed this move by making a 125-mile advance in six days, apparently without important opposition. Paulus' supplies appear to have come by motor transportation from rail heads between Chertkovo and Millerovo, and to have been regularly received by him without substantial interference from the Russian air force.

On July 27th, losing no time, Paulus started a violent attack on the Kalatsch bridgehead, simultaneously from the north, south, and west. He borrowed von Richthofen's Air Fleet, which had just finished assisting von Kleist across the lower Don. The German planes attacked at low levels, except that dive-bombers were used against fixed fortifications. In spite of the ferocity of the assault, the Russians fought fiercely and the Axis troops gained ground but slowly. Yet they gained, and it was obvious that the situation for the Russians was becoming critical.

The Russian High Command thereupon decided upon a diversionary attack. The size of the Kalatsch bridgehead was such that it was already completely filled by the 10 divisions already there, so instead of sending more troops to that place the Russians sent them to Kletskeya, with a view of launching an offensive toward Paulus' left rear. As the Russian attacks on Voronezh, which had been continuous every day up to this time, suddenly ceased on July 31st, while the attack from the Kletskeya bridgehead developed on August 2d, it seems probable that the new troops came from the Voronezh sector. Very serious fighting followed. Paulus had not overlooked this possibility. His troops opposite Kletskeya retired slowly, but the Russian gain was small and failed to save Kalatsch.

The Kalatsch bridgehead, always resisting strenuously, was gradually reduced in size by the concentric Axis attacks. As it shrank it became constantly more vulnerable to bombing and shelling, which was conducted incessantly day and night. There was no rest for the besieged; their materiel became unusable; supplies were unable to reach them. The end came on August 11th, when human endurance could stand no more. The Germans reported taking 57,000 prisoners in this operation, with 1,000 tanks and 750 guns. The large tank force reported would indicate that these Russians had hoped to assume the offensive themselves.

Paulus at once turned his attention to the Kleitskaya bridgehead, now apparently containing about 8 divisions. This time the Axis attack was from east, west, and south. The Don River was again at the back of the Russians. At first the Axis advance was slow. Again the Air Fleet came to aid. And as at Kalatsch, every little move forward compressed the Russians into a smaller space and made ever deadlier the constant hail of shells and bombs which fell on them from three directions. The attack was continuous by night as well as by day. And again there came a time when it was impossible to longer endure the terrific strain of a modern battle.

On August 14th the Russians at places gave way. These points, discovered by the Axis air reconnaissance, were reported by radio. As quickly as possible armored troops dashed at these weak spots and enlarged them. Pushing onward and backed by infantry and artillery, they reached the Don, forming a wedge separating the Russians. Some Russian units counterattacked the wedge from its flanks, hoping to reduce it. Others stayed in place and resisted the continuing attack. Still others seem to have lost much personnel, who escaped across the Don. The Axis wedge held, and a new one was put through. The Russians appear to have lacked leadership. They fought back. Many died for their country, but there was no organized plan to alter a hopeless situation. The end came on August 16th, when the last organized resistance vanished. The German report of captures here shows 12,800 prisoners taken, but only 47 tanks and 252 guns. These figures would indicate that unless the Russians saved more materiel than seems probable, they were very short of artillery and armored troops. The major strength had been concentrated immediately in front of Stalingrad.

THE OFFENSIVE OF GENERAL VON SCHWEDLER

von Schwedler reached the Don on a broad front on both sides of Tsimlyanskaya, a good 100 miles or more, in five days (by July 22d). Few Russians had been met in his zone of action and only weak hostile forces were on the other side of the river.

Preparations were immediately made for crossing. There were indeed but few Russian troops in opposition, but strong Russian air forces flew south. This air force was very active and bombed and destroyed the bridges laid

over the Don about as fast as they could be completed. The planes broke up ferries so thoroughly and continuously that the Axis troops were greatly delayed. It became necessary to ferry troops and materiel over in small parties at haphazard intervals, and gradually assemble units on the far bank. It was a tedious process and greatly delayed the advance.

Once over, there was little opposition; the Axis pushed eastward to seize the railroad extending southwest from Stalingrad. This was occupied on August 5th. As by this date this rail line had been captured by von Kleist north from Rostov, it is presumed that it has become a line of supply for the Axis forces in the area east of the Don.

von Schwedler now turned north and advanced on Kotelnikovski, but his delay in crossing the Don had given the Russians an opportunity to assemble a large force south of Stalingrad. Up to August 20th von Schwedler had made no great progress. Whether he was really attacking or was merely helping Paulus' operations by detaining large hostile forces around Stalingrad is not yet known.

A right flank guard detached from von Schwedler's army was by August 20th well on its way toward Astrakhan, finding only light opposition before it.

Commencing on July 26th, the German Air Force regularly bombed along the Volga River, sinking ships, lighters, and barges. This river has been a most important artery of supplies, but can no longer be counted upon.

MINOR CAMPAIGNS IN RUSSIA

Several campaigns have been fought north of Orel. They have involved large forces and serious fighting and in previous wars would have attracted more attention. In this global war, only minor attention can now be given to them.

The Volkhov River

During the 41/42 winter the Russians won a bridgehead on the west side, as an initial step to raising the siege of Leningrad. This project never got further, but the bridgehead lasted until June. German operations to reduce the bridgehead were started about June 1st and were completed on the 29th. The area involved was covered with forests and swamps. Slow woods fighting by infantry and artillery—not by tanks—was employed. The Germans took only 1,100 prisoners, but straightened out an embarrassing dent in their line. The Russian 2d Army's commander, Lieut. General Vlasov, escaped temporarily by taking to the timber. He was found and brought in by the Germans on July 13th.

The Germans on their part had a bridgehead on the east side of the Volkhov. The Russians have been attacking this since June 3d. They have used guns, tanks and planes. After six months the bridgehead is still German.

Rzhev

This city is the center of a strongly fortified German bridgehead over the upper Volga. Repeatedly attacked during the winter, it never fell. Large Russian forces

then by-passed it and went on to the southwest toward Smolensk. The Russian plan to recapture Smolensk provided for a pincer movement: one arm was to extend from Rzhev through Nikitinka, while another moved northwest through Yelnya. The jaws of this pincers have at times reached Nikitinka and Yelnya, but they never closed. The Germans held the line from Smolensk to Vyazma.

On July 2d the Germans initiated operations against the north claw of the pincers, by cutting through its base west of Rzhev. Having accomplished this, they next proceeded with a hedgehog reduction operation against the Russians now cut off from their base. This campaign was completed within 11 days. The Germans reported 30,000 prisoners, 218 tanks, and 591 guns as taken. The German line was materially shortened and improved.

On August 2d the Russians commenced a series of unusually strong attacks north and south of Rzhev, over a front of about 100 miles. The mission appears to have been to force the Axis to draw troops from the south. Similar attacks were made at the same time against Vyazma, on the Volkhov, and elsewhere. They have been referred to as relief attacks.

Renewed day after day, these attacks neither pierced the German front nor drew troops away from south Russia. It has, however, been necessary at times for German GHQ to furnish air fleets to hard pressed sectors. The intervention of the air forces by attacking ground troops in constant waves has been effective in restoring situations. In some cases the air attacks have been reported as decisive. Counterattacks by infantry, armored troops, and artillery have been also necessary to maintain the front against the very heavy Russian assaults.

Bryansk and Orel

Notwithstanding that this sector is particularly strongly fortified and the Russians are aware of this, they attack it from time to time. Changes in the line have been immaterial.

COMMENTS

Use of Air Forces

Perhaps the outstanding feature of this year's campaign in Russia has been the employment of the Axis Air Fleets. They have been used primarily *on the field of battle*,

- a. as a general reserve, rushed to wherever needed;
- b. to aid the ground troops in battles, by close and continuous cooperation;
- c. to harass the enemy and support own forces, by operating 24 hours a day in waves.

The advantages of the foregoing tactics are obvious. Axis air forces have not been used, as in the past, to bomb cities outside of the theatre of operations.

Russian Strategy

The overthrow of Timoschenko's armies in May in the ill fated Kharkov campaign, played into the hands of the enemy. It

weakened the very sector in which the major attack came later. Why, if Russia was unable to restore this sector by replacements during the 50 days available, they did not organize in time a defensive line along the lower Donets and the Don, is not known. They held the old lines until the last minute, with forces too weak, and until it was too late.

Strength of the Defensive

The long stretch of Axis defensive front of about 575 miles, from Orel to Leningrad, has not been broken despite repeated intensive attacks. The explanation seems to be that a modern front, protected by mine fields and other obstacles and covered by machine weapons, can not be overcome unless the attacker has



In attacking this small village, Soviet infantry has the direct, close support of at least one AT gun. Heavier artillery also appears to be firing on the buildings, with infantry (rather closely massed) pushing up close to the maximum advantage of this neutralization. Stone walls remind one of New England fields.

overwhelming superiority in tanks, artillery, and in the air. This is still more true where the defenders, as in this case, can on only a few hours' notice receive large air-force assistance.

New Axis Fronts

The new Axis front from Orel to Stalingrad, is roughly about the same length as the former line from Orel to the Sea of Azov. Probably it is a better line, if it is to be held defensively. It would make a good line of departure for an eventual offensive moving from the Don, northeastward and west of the Volga River.

To protect the front to Stalingrad the Axis may extend it to Astrakhan, about 250 miles. Apparently this is still being attempted. This looks like a big addition to an already long front. However, the Volga River covers the extension. On the far side the country is largely barren, with a few roads and railroads. It would be difficult for the Russians to assemble a large force in this area for launching an offensive, and almost impossible to prevent the Axis finding out about such an attempt before preparations could be completed. The extension of the front may not therefore require many troops.

The Caucasus will be a new front. The Caucasus Mountains are a formidable obstacle, which can be crossed around the ends and at but few points in between. It is not yet known whether the Axis intends to hold the mountain range or go on this year into trans-Caucasia. Wherever the line may be established troops will be required to hold it. From Tuapse, which the Axis is approaching at date of writing, the line to the Caspian Sea would be 600 miles long. As there are but few points where this long line can be crossed, the number of troops to cover it will also be relatively small.

As against the new fronts, the Axis has saved the former active fronts in the Crimea, around Kerch and Sevastopol.

Russian Line of Supply

The enemy's advance this summer has already cut the land line from Iran into Russia, over which Lend-Lease and British supplies have been moving. It is still possible to forward supplies via Astrakhan, but it now looks as if this route too may soon be closed. One other route remains open—by water across the Caspian to Gurev on the Asiatic side, thence by a long detour over a single track railroad. The passage across the Caspian will be subject to raids from the air. The capacity of this line will be limited.

In the territorial losses of this summer, Russia has lost valuable agricultural country and some of its oil, and is now confronted with the difficulty of forwarding oil still available over longer and unusual routes which are also needed for Lend-Lease supplies. This condition makes the supply question in Russia a grave one.

Losses

There is no reliable evidence as to what the losses on either side have been. The losses as known, or estimated, by the Russians are given below, for what they are worth.

<i>Period</i>	<i>Men</i>	<i>Guns</i>	<i>Tanks</i>	<i>Planes</i>
Germans—15 May to 15 July	900,000	2,000	2,900	3,000
15 July to 15 Aug.	350,000	2,000	490	1,000
	1,250,000	4,000	3,390	4,000

Russians—15 May to 15 July	399,000	1,905	940	1,354
15 July to 15 Aug.	207,000	1,257	1,300	844
	606,000	3,162	2,240	2,198

The only Axis figures available are German reports as to Russian losses, known or estimated. These are for the period of summer ending on August 12:

Prisoners taken	1,044,741
Taken or destroyed—Guns	10,131
Tanks	6,271
Planes	6,056

The Russian figures were issued three days after the German were announced. It will be noted that as to materiel, the Russian figures are uniformly just about one-third those of the Axis.

Regarding the very large number of prisoners claimed by the Axis, there are now available some secret letters smuggled from German camps by French prisoners of war stationed with Russian prisoners. These letters, all dated prior to the present summer, state that the number of Russian prisoners announced by the Germans is approximately correct. However, due to the fact that the Russian prisoners were sent to the rear, regardless of the weather, in cattle cars opened only once during a voyage averaging about two weeks, the mortality among the prisoners from hunger, contagious diseases, and exposure was large. The prisoners also included a very considerable number of Russians who were not soldiers.

SURPRISE ARTILLERY ATTACK*

By Major V. Tupakhin

With skillful selection of artillery positions and full utilization of the advantages of terrain, the battle is half won.

The enemy's troops were effectively concealed in dugouts, block-houses, and trenches. 'Way back in the rear, out of range of Soviet artillery, he was moving troops and supply columns without any attempt at concealment. In several villages a long way behind the forward positions, large concentrations of troops were observed. Soviet artillery was ordered by a sudden attack to inflict loss on the Germans and destroy their lines of communications.

This task was entrusted to the brigade commanded by Senior Lieut. Kurakin. There was no point in changing all the battery positions, and in fact (owing to the character of the terrain) this was impossible. It was therefore decided to periodically advance individual platoons to covered firing positions in close proximity to our forward lines. Firing positions were selected in ravines and gulleys adjacent to our front lines, sometimes at a distance of one or two kilometers. A couple of days before the planned attack, gun crews dug full width gun emplacements, deep pits for their own protection, and pits for ammunition.

Guns and ammunition were brought up during the night. All ranges and particulars for shifting fire were calculated by commanders beforehand.

Precisely at 4 AM, before sunrise, Soviet howitzers fired their first volleys. Their main target was Nekrasovo, a village where our scouts had reported a large concentration of Germans. Fire was shifted at intervals of two divisions of sights (100 meters). Shells accurately struck their mark, the

whole area of the village being covered with their bursts. Germans could be seen scurrying about the village in confusion, and a few minutes after the attack began scores of groups of men, carts, and trucks were seen scattering in all directions, raising clouds of dust. Several fires broke out in the village.

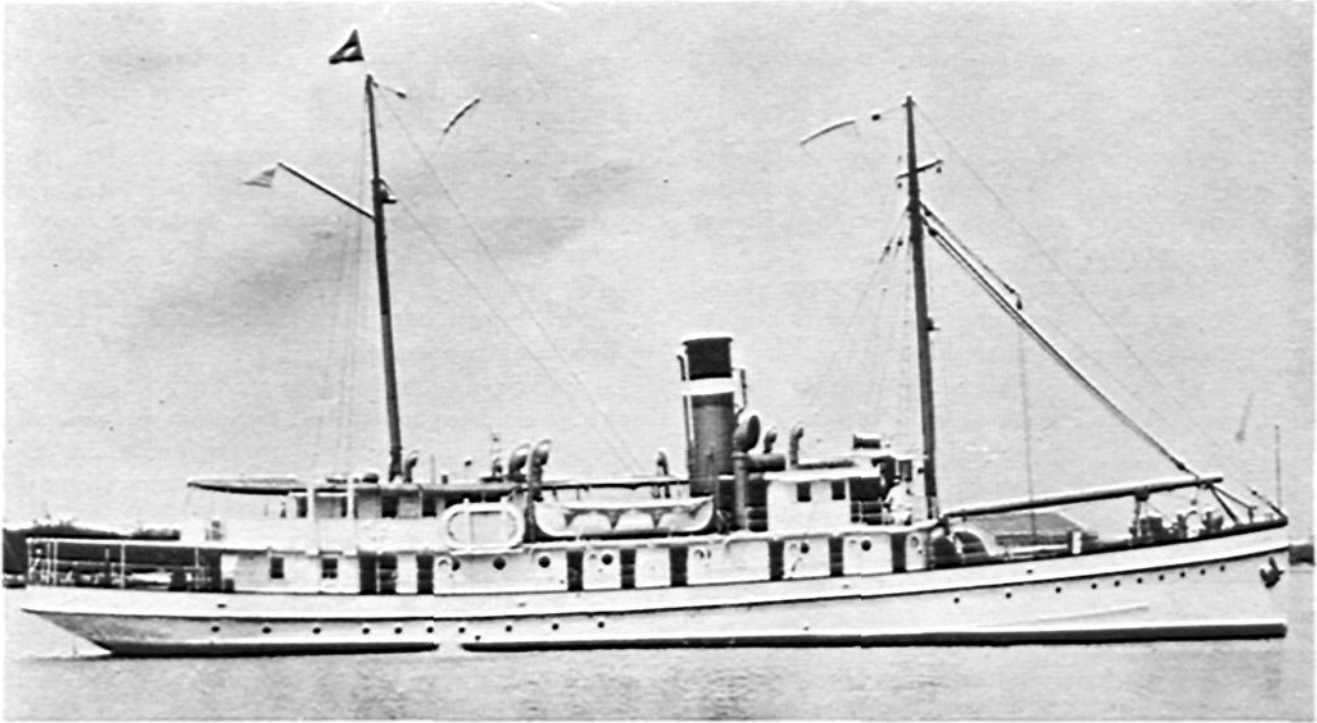
The second target attacked was Zikeyevo, in which village were known to be stationed a headquarters staff, large stables, and a trench mortar battery. This time not only had the gun positions to be advanced, but supplementary observation posts had to be arranged as the targets couldn't be seen from the principal ones.

Lieut. Markov, together with a scout and telephone operator, advanced at night beyond the Soviet barbed wire entanglements and in no-man's land fitted up an OP from which all targets were perfectly visible. Thanks to the surprise of the artillery attack, the enemy's staff headquarters were wrecked, his stables destroyed, and his general, officers, and men killed. The German battery tried to return our fire, but after a second shot was silenced.

After these attacks our Chief of Artillery was able to bring a long range battery up to these positions; with it we could shell larger objectives.

How disturbing these attacks were to the Germans could be judged by the fact that their artillery for a long time conducted mass fire on what they supposed to be Soviet firing positions. They fired six or seven hundred shells, but our batteries had already changed their positions and suffered no damage.

*By radio to the Embassy of the Union of Soviet Socialist Republics.



U. S. A. T. *Royal T. Frank*

Requiescat in Pace

By IDA CALHOUN BURRITT

It was with mixed feelings that many a member of what shall henceforth be known as the Old Army heard the news of the sinking of the *Royal T. Frank*. All were saddened by the loss of thirty-three lives, added to the terrible world total, but we have no information as to who died or what the circumstances were. So the main thing that is called to mind is the personality of that cantankerous ex-minelayer, the ship herself. She was like a dramatically onery beast whose determined recalcitrance earned the grudging but deep-seated respect of every opponent. It still seems highly improbable that the Japanese have sunk this doughty vessel. Everybody considered her too mean to die.

For people stationed in Hawaii, it was definitely *the thing* to ride the "*Rollin' T. Frank*" to Hilo. Some people had to ride it, but the vast majority of its suffering human cargo rode through choice. I do not mean to intimate that anybody ever undertook the trip just for the ride (it was incidental to a visit to Kilauea), but still nobody wanted to miss the experience. Air travel was available, but riding the *Royal T. Frank* had most of the good and bad features of

an operation—bad while it lasted, but wonderful for subsequent conversation.

No veteran can sit quietly listening to the account of anybody else's voyage until he has had a chance to tell about his own. It is always the worst on record, unless a third party happens along with a contribution.

In my time at Schofield, the first step toward making the water-level (whaddya mean, "level"?) trip to Hilo was to apply to a certain compassionate and genial medico for his comforting prescription known among the vulgar as "Barrow's Pills." If an applicant were returning to the mainland, he received a moderate supply of this medicine. If he were going to Hilo, his need was recognized, and he was furnished with corresponding abundance.

On my trip I took my twelve-year-old daughter and her ditto friend. They both consumed large quantities of buckwheat cakes at the Young Hotel just before embarking—and long bemoaned the extravagance.

Our initial mistake was thinking that perhaps we did not really need any "sea-sick pills." Our major misfortune

was a cigar-smoking fellow traveller who stood at the windward rail.

Let us pass over the gay leave-taking, the brave passage from the harbor, the staunch determination to round Diamond Head still on deck, the gradual wilting, the sudden departure. By all means let us pass over the unscheduled rail interlude.

Not everybody gets smacked flat by a wave on the lower deck, but *I* did. With any lingering spark of fight quenched, I crept wetly and weakly to the hold. Just how many of my dripping clothes I removed, I don't quite remember; but I crawled into a top bunk soggy and partially clothed. Within a short while all twelve bunks were filled with wretched femininity in various stages of undress. Assorted fathers, husbands, and stewards came and went for the rest of the day, unnoticed and presumably unnoticed. In any case, I am sure they were not allured.

I remember hearing, before I sank into sleep or coma (I don't know which), one of the most devoted mothers I have ever known renounce all interest in the welfare, whereabouts, or even existence of her two small children—

all by means of weak moans in answer to the questions of her harried husband. At the time, this seemed to me an entirely natural frame of mind.

The next thing I clearly remember was the frantic calling of my name. Hauling myself back into the misery of consciousness, I answered. My young guest had suddenly become aware of the thud of a chronically faulty propeller.

"Mrs. Burritt, Mrs. Burritt, listen!" she moaned, "the ship's being knocked to pieces."

I am known far and wide as a gentle soul and a lover of little children; and all will agree that this reputation is deserved when I solemnly affirm that I only said, "Shut up!" and embellished this simple exhortation with a few mild expletives.

For the record, I should like to state that nobody in our cabin died on that trip; but it was a near thing.

On the return trip we had a stiff round of Captain Barrow's capsules and went to bed before we left the pier. I highly recommend this procedure, though the need for it is greatly diminished with the loss of the good ship *Royal T. Frank*.

906TH FIELD ARTILLERY BATTALION

SHIELD: Per fess or and gules on the first a fleur-de-lis of the last between two caissons sable, in base a shell-burst or smoked of the third.

CREST: On a wreath of the colors (or and gules), the Lexington Minute Man proper. (That for the regiments of the Organized Reserve.)

MOTTO: You asked for it.

In popular terms the insignia is a shield with the upper third of gold. Centering the gold sector is a red fleur-de-lis, flanked by two black caissons. The lower third of the shield is of red with a gold and black shell burst built around a core of red. The crest is the Lexington minute man, standard for Reserve divisions. Scroll is of gold with the motto in black.

The fleur-de-lis with the caissons represent service of the parent organization, the 306th Ammunition Train, which served with the 81st Division in France in World War I. The bursting shell depicts fire power. The motto indicates a two-fold mission of punishing the enemy and giving required artillery support to friendly troops.

The 906th Field Artillery Battalion was originally constituted as the 306th Ammunition Train, 81st Division, of World War I, and was organized at Camp Jackson, South Carolina, in October, 1917. The Train served overseas and was engaged in battle in the Meuse-Argonne Operation from 8 to 11 November, 1918. After the war the Train returned to the United States and was demobilized at Camp Jackson, South Carolina, 28 June, 1919.

In order to perpetuate the history and traditions of the 306th Ammunition Train (old 81st Division), on 28 October, 1936, it was reconstituted and consolidated with the 306th Ammunition Train which was constituted as a unit of the Organized Reserves in June, 1921, and allotted to the Fourth Corps Area. The 306th Ammunition Train was redesignated the 906th Field Artillery Battalion, pursuant to letter from the War Department, AG 320.2 (1-22-42), dated 30 January, 1942, and ordered to be made active at Camp Rucker, Alabama, as a component of the 81st Division, effective 15 June, 1942.

The 906th Field Artillery is entitled to a streamer in the colors of the Victory Ribbon, inscribed: Meuse-Argonne.



Lighting The Way for The Troops

By Lt. Comdr. R. C. D. Hunt, USN



The always difficult operation of landing troops on a hostile shore may well be attempted during the hours of darkness. Indeed a landing of infantry and field artillery gives more promise of success at night than in daylight. Once the field guns are ashore, they can deliver supporting fires from the best positions available at that time. Battery positions will be taken at first within the limited beach areas occupied by our forces, and will initially be extremely vulnerable. The infantry has not yet had sufficient time to push far inland and establish a beachhead from within which the field artillery can open fire from carefully selected positions. At this stage the possibilities of disclosure of our field gun positions on the beach are extremely dangerous. The landing force will need the fire of those batteries. The enemy is out there, somewhere beyond, in the dark, firing from unfamiliar terrain. Our field artillery and other troops ashore want to know the situation. Where are the enemy's shore installations and defensive positions? It is still dark. How can we find out?

To seaward the men-of-war have completed initial gunfire support in the early stages of the landing when the first waves of troops forced their way onto the beach. The darkness has limited the naval gunners' effectiveness due to lack of observation, except in the rare instance at night when a target can be spotted and specifically assigned by aircraft under conditions of low visibility, and "blackout." Or possibly the ship's guns have, until now, remained wholly silent in order that advantage may be taken of the element of surprise in such a night operation. The darkness will give some cover to the transport of the field guns to

the shore, and once on the beach the artillerymen can give the close support. What now should be the mission of the gunfire support capable of delivery by the Naval Attack Force?

Illuminating projectiles fired from offshore by ships' guns can light the way for our troops to the establishing of a secure beachhead and the confusion of the enemy's defense. For many years the need of satisfactory means of lighting the enemy in night battle has, of course, been apparent. This has led to developments along two lines—first, the increase of power and range of electric searchlights, and second, the use of illuminating projectiles. With the invention of the electric arc the high-powered searchlight became a practicability. Great strides have been made in this development, until at the present time the vessels of our own and foreign navies carry searchlights capable of illuminating enemy vessels at ranges of several miles.

The use of the searchlight for night battle presents, however, two difficulties. The beam of the light on board the vessel, no matter how well screened and how well focused, exerts a confusing and dazzling effect upon observers near by. In addition, and most important, the searchlight indicates all too clearly the position of the vessel, so that the enemy has a clearly defined and continuous point of aim, rather than the intermittent flash of gunfire which, in the absence of the searchlight, would not necessarily prove a means of his locating his target.

A method for illuminating the enemy without either betraying our own position and furnishing him with a

point of aim or dazzling our observers, is clearly necessary. The illuminating projectile fulfills this purpose. This projectile is fired from the ship's guns to the vicinity of the target, where it bursts and illuminates the target; or, in case of the suspected presence of an enemy, illuminates a large area wherein his presence may be confirmed.

Illuminating projectiles have been developed for the secondary batteries for ships of the Navy and are issued for 3"/23, 3"/50, 4"/50, 5"/25, 5"/38, and 5"/51 guns. The 3"/23 projectile is designed for the antiaircraft guns of destroyers and for the main batteries of submarine chasers and other light vessels carrying those guns. The 3"/50 projectile may be used in the antiaircraft guns of capital ships and also in the 3"/50 guns of destroyers, cruisers, and gunboats. The 4"/50, 5"/25, 5"/38 and the 5"/51 projectiles are used in these guns wherever mounted.

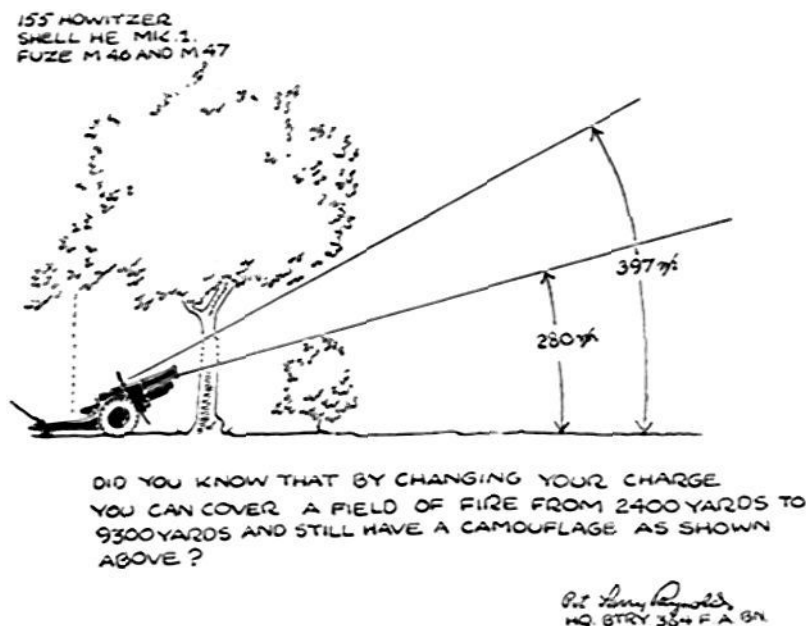
Starshells will serve best to illuminate the target in silhouette. Projectiles bursting before the target will throw illumination and lighted terrain between the field guns and their target or aiming point, and may hinder rather than assist the fire of our batteries. Projectiles bursting directly over the enemy's defensive positions will throw light upon a target, but will throw a lighted area partly behind and partly in front of his defenses. Projectiles thrown beyond the target will, however, give brightly lighted areas against which moving targets will be cast in silhouette. In dealing with enemy mechanized targets and permanent defense installations, the most striking silhouette of the targets will occur directly in the reflected path of light from the illuminant to the observer, but the target will be clearly visible anywhere in line with the illuminated area. Bursting starshells will disclose the nature of the terrain ahead of

our advancing infantry and assist the unit commanders in disposition of attacking troops. With these principles in view, the tactical use of illuminating projectiles is clearly indicated.

Range tables are available to give angles of elevation of the gun to produce bursts at the various heights. The best fire control, with illuminating projectiles, is done from aloft, since a greater illuminated background is presented. Consequently with naval armament, director and spotting from aloft positions will give best results.

For examination of suspicious objects, a single projectile may be used. For firing at a target, continuous illumination is necessary. For general search purposes, illuminating projectiles are expensive and slow for all-around-the-horizon searching. They will, however, reach greater ranges than searchlights. For a search of a limited arc they are very efficient. In searching, the maximum range of the gun should be used and the projectiles burst at intervals, in azimuth, of 5° for the 3-inch, and 10° for the 4-inch and 5-inch projectiles. Each ship should fire its own illuminating projectiles, because the shots from one ship will be too far off, in deflection, from the lines of sight of other ships to be satisfactory. A more or less complete "light barrage" may be made by rapidly firing illuminating projectiles.

If the landing force is to receive full benefit of the illumination provided by naval gunfire during the hours of darkness, the ship's control officer must be kept informed, and the combat areas to be illuminated definitely assigned. So here again, as in all landing operations, close liaison must be maintained between the forces afloat and the troops ashore. The fundamental element is always teamwork.



SOVIET ARTILLERY

VS.

NAZI ARTILLERY

Antiartillery action is one of the basic tasks confronting the Soviet artillery in its present war against the German army. Lessons learned by the Nazis on the eastern front during the summer and autumn of last year compelled the Nazi high command to change its opinions regarding the use of artillery in modern warfare. Moreover, last winter demonstrated a distinct increase in the number of artillery pieces brought into action. Events show that artillery duels and counterbattery actions play an important part in this year's fighting.

Up to June, 1941, certain military experts were inclined to think that the Air Force was the strongest weapon with which to combat enemy artillery. Actual fighting experience, however, refutes this assertion. One need only point to the defense of Leningrad and of Moscow through the autumn and winter of last year. During that period Nazi panzer and motorized divisions were compelled either to completely curtail their operations or to retreat, when faced by an organized artillery defense which no amount of Luftwaffe pressure could demolish.

A no less significant example is Stalingrad. To illustrate this point I would call the reader's attention to one of the many incidents connected with the defense of this Volga town. A tank attack launched by the Nazis was repelled by Soviet artillery. Thereupon the enemy directed sixty dive-bombers against one Soviet battery which appeared particularly active, with instructions to destroy it at all costs. Following this vigorous air attack tanks were again hurled into battle, but only to be repelled by the same battery which this time disposed of six Nazi panzers.

Tanks can not independently cope with artillery, and themselves require artillery or air support. The task of combating enemy artillery can most effectively be executed only by artillery. Let this not be understood to mean that the Air Force shouldn't be employed against artillery. That would indeed be far from the author's opinion, since aircraft can and do render very essential service and should always be employed to supplement and add force to artillery fire.

The success of action against enemy artillery depends on well organized reconnaissance, well chosen artillery positions, and a thoroughly planned artillery offensive.

The following example of offensive operations at the Soviet-German front should help explain the system of combating enemy artillery.

As soon as it was decided to launch an offensive, the officer commanding the artillery ordered the staff of his long range units to work out plans for action against the enemy artillery. The first step in this direction was to undertake a thoroughgoing reconnaissance of all enemy gun positions. In addition to ordinary reconnaissance groups, several long-range reconnaissance groups were assigned to each sector. By the time scheduled for the beginning of operations, artillery headquarters possessed data on the location of enemy artillery — and this data furnished the basis for determining the quantitative and qualitative makeup of the long-range groups assigned to each sector.

But this data wasn't in itself sufficient to guide the operations, since enemy batteries could change their positions so that data given our batteries beforehand would no longer be applicable. In addition, the enemy could bring up additional batteries, whose location had not been determined. Lastly, some enemy batteries may not have revealed their whereabouts by opening fire and thus escaped our sound detectors. Consequently our artillery headquarters ordered all its reconnaissance details to keep careful watch on enemy artillery activity and immediately report any changes in location of German gun positions or detection of new batteries. Aviation supporting the artillery was ordered to make detailed photographs of the German gun positions, and to continue periodic photography throughout the preparatory stage. A similar task was assigned to sound detector units. All data dealing with enemy artillery was concentrated in the headquarters of the officer commanding our long range guns.

As our reconnaissance progressed, headquarters received information on every known enemy battery. This data was registered on special cards kept for each battery, and which contained such details as how the battery was detected when first found, how long it was active, number of guns actually firing, their caliber, the exact position of the battery or the direction from which it fired, type of fire, locality against which this fire was concentrated,

By Maj. Alexander Petrov

**By radio from Moscow, directly
to *The Field Artillery Journal*.**

results of this fire, how frequently the fire was repeated, and what drew enemy fire.

After careful analysis and summing up, this headquarters could determine the reliability of information received and the reasons for opening of German fire—whether the Germans were merely registering their guns, attempting to silence Soviet artillery, hinder movements along roads, etc., the direction of fire, and the nature of targets. This data defined the sector against which a given battery concentrated. At the same time, headquarters could judge the type of the German positions (temporary, dummy, or basic).

Study of this data enabled headquarters to work out a chart of enemy artillery fire which gave all commanders a clear idea of its direction and concentration, the location and sectors of each battery, their targets, and also how many batteries the enemy could concentrate against any specific target.

This reconnaissance was particularly painstaking on the unit's flanks, for ignoring the artillery centered on a neighboring unit could disrupt the entire operation and lead to unnecessarily heavy losses in manpower.

This work yielded a vast amount of material covering all phases of the enemy's artillery action, and served as a basis for the final grouping of the Soviet guns. Soviet long range artillery was divided into two groups operating along the axis of the main blows of our attacking units. The number of batteries in each group was commensurate with the tasks assigned that particular sector. Direction of artillery was centralized.

Long range artillery was assigned areas for gun positions and observation posts which facilitated effective action against the chosen objectives. In selecting gun positions the

commander bore in mind also the possibility of operating against enemy batteries firing at his neighboring unit, and countering enemy flanking fire concentrated on the approaches to the German front lines. This was vitally necessary, for German artillery extensively uses flank and criss-cross fire.

Having grouped our artillery and chosen gun positions, headquarters proceeded to plan the actual fires, with special regard to the following basic considerations:

registration of our guns, silencing enemy artillery, and countering the blows of enemy batteries not detected prior to the battle.

In offensive operations large masses of artillery are concentrated to support the main blow. This artillery must verify its pre-battle data by test fire. Obviously this huge mass of guns can not begin test shooting on the day of the attack. Registration by all batteries beforehand would disclose their location to the enemy and would reveal the nature of the planned operation. Consequently, test shooting must be organized according to a carefully worked out plan.

In this case the element of secrecy was skillfully introduced by organizing the test shooting by guns of identical caliber and

thus creating the impression that the shots were fired by roving guns. This was possible only because the firing locations were well located. Subsequently, German prisoners declared that they didn't suspect any mass concentration of artillery, and that they regarded our test shooting as the fire of roving guns. Test shooting of the entire system—which certainly couldn't imitate roving guns—was effected by singling out separate guns as range-finders for batteries.

A basic factor in planning long range artillery fire



Loading a heavy German mortar

was the selection of specific targets. Barrage fire to cover any definite area was precluded. All detected enemy batteries were assigned to artillery battalions making up the long-range group. To facilitate proper ranging and correction of fire, each long-range group was provided with a sound detector unit which enabled the battalions to chart the precise positions of enemy batteries. This method is most reliable and rational, since it also affords an element of suddenness.

Finally, the plan of the artillery offensive provided for the employment of the supporting Air Force, which was under the commander of the long range artillery group and was used for locating enemy batteries and to correct the fire of our own guns.

The volume of fire per group was calculated in such a way as to give its commander a reasonable margin to counter any previously undetected German batteries.

The plan also provided for signals in directing artillery fire, should ordinary communications fail.

Enemy gun positions, particularly in wooded and rugged country, are usually unobservable from ground observation posts. As soon as an artillery scout plane appears, the guns cease fire and, being well concealed,

their detection is extremely difficult. Hence on a stable front the most effective means are sound detecting installations. These make it possible to keep a constant watch on enemy batteries, range them, and conduct effective fire. Best results are obtained if concentrated fire is opened immediately after the enemy battery reveals its location.

The struggle against the enemy artillery began in the early preparatory period, although action against Nazi batteries was carried out only by guns emplaced in a given sector so as to conceal our preparations. Silencing enemy guns began at the initial stage of the offensive by a powerful barrage against all German batteries previously detected by reconnaissance. Subsequently, careful watch was kept on every German battery throughout the whole period of the artillery preparation. In the period preceding the infantry attack all batteries concentrated on a five-minute intensive shelling. The enemy artillery was silenced and Soviet infantry went into the attack suffering no losses from German guns.

On capturing German artillery positions we found shell craters caused by our long range guns, and many Nazi guns were seriously damaged.



Cadet Colonel Walter H. Lupke, Jr., Purdue University; distinguished student of Chemical Engineering; member: American Institute of Chemical Engineers, Scabbard and Blade, The Purdue Order of Military Merit, The Purdue Order of Zouaves, and Varsity Yell Team.

ASSOCIATION MEDAL WINNERS



Cadet Second Lieutenant Dwight O. Nicolen, Oregon State College; honor military student; expert gunner; Scabbard and Blade Red Service Bar; Oregon State Rifles Purple Service Bar; Gold Star Award; member: Oregon State Rifles, Scabbard and Blade, Xi Sigma Pi.

R.O.T.C. Cadets are eligible for membership in the U. S. Field Artillery Association.



GERMANS OVER THE RIVER

By Major Fairfax Downey, FA

There they were on the other side of the river. Germans, and no doubt about it. Over there on the other side of an American river, holding the American town we'd retreated from and given up to them.

It couldn't happen here. Plenty of people would have told you that. But there they were: honest-to-goodness Heines, actual Krauts. I saw 'em with my own eyes. I even shot at 'em. A squad started to launch a boat to come over and take a look at our bank. My gun heaved some hardware at 'em and they decided it wasn't jolly boating weather.

How come there was a German Army on American soil? While you couldn't say we were particularly friendly, we hadn't declared war on each other. How did they get here? Where was our Navy when this G.E.F. was coming across?

Search me for the answers. How would I, just a sergeant of artillery, know when there hasn't been any real news for anybody since this ruckus started? The whole country is in the damndest confusion. Riots, sabotage, pitched battles

with fifth columnists, everything disorganized. And in the midst of it here is a German Army on our home grounds—crack troops who have been polishing off European opposition since the time of Freddy the Great. In spite of the fact that they are invaders, they're far better supplied and equipped than we are. Our whole supply system has been broken down under inefficiency, graft, dirty work at the political crossroads, and what not. It's a disgrace, considering our national resources, that an American Army should be in the shape we are: poorly armed, hungry, ragged, and cold.

Just the same we're going to attack, and that's no latrine rumor. We're going to have a go at those birds over there beyond the river. It's a wild risk. We've got only a slim chance. But there isn't a file in this man's army who isn't rarin' to go. It's dawned on a lot of us at last that this land of ours is worth keeping and that to keep it we've got to fight for it now that these German sons have come over to take it away from us. If only we'd been readier and met 'em more than half way! But it's too late for that now.

There are no bridges over this river, and we've got most all the boats. Brother Boche is content to wait on the other side till it freezes over, which will be any day now. Then he'll walk across and smash us. He's as cocky as that about it, and the hell of it is he probably can do it. He's in strong force there in the town—infantry, artillery, and cavalry—with heavy reinforcements up the line. A spy of ours says that for the first few days they stood to arms in full equipment—infantry sleeping that way and artillery horses harnessed and hitched all night. After a bit they relaxed, but they've got plenty of pickets out. The old Prooshian in command holds formal guard mount every day, his band going full blast. The music drifts to us across the river and sounds grand. We've got nothing but buglers, all terrible. But with all their guard mounting, the Germans haven't fortified either the river bank or the town. Our scouts report that their sentries aren't any too alert at night because of their general feeling of contempt for Americans. We're no soldiers, they say, just a bunch of farmers.

Okay, we're farmers. As a matter of fact, a lot of us farmed before we joined the Army, including, they say, the Commander-in-Chief who, though he was a gentleman farmer, took it serious and made it pay. But farmers are fighters, and don't let anybody tell you different. They'll fight to hold ground, the land they've ploughed and sweated over to make a living out of. So farmers and all of us who've seen some of the burning and looting the Germans have done are going to ferry over that river tonight and sock 'em.

Tonight's the night. Orders are out. It must be surprise and a quick knockout before help can reach them. If we fail tonight we may never get another chance.

We break camp in the dark. Marching order at night is bad enough, but now there's sleet and it's freezing cold. The snow is crusty underfoot, and a lot of the boys have no shoes but only sacking wrapped around their feet. Those infantry columns passing us will be leaving blood-stained tracks long before we get where we're going tonight.

"Sergeant!" That's my Battery Commander popping up beside me. Kind of runty but a game little guy and he knows his stuff. "Sergeant," he orders, "mount up and take your gun down to the river for embarkation."

I salute and we mount up and roll. Down by the river our broad-beamed artillery brigadier is bawling out the orders given him for transmission by the tall figure at his side. It's the Commander-in-Chief himself, they say. I get a good look at him when he's reading a dispatch by a sheltered light. Man, he's one cold looking general—pinched face, red nose, and all. It gives you a feeling of confidence to see him taking it with the rest of us, not inside hugging a fire.

A regiment of marines is manning the boats and barges for the ferrying. Seacoast men, fishermen and so on, this

is their stuff and they're doing a job. If you doubt it, they, being typical marines, will tell you. But it's something to see — the way they're shoving off loaded to the guards with infantry on that black river, a stiff wind churning up waves and ice cakes grinding and banging away.

Back shoots a skiff with good news. Our vanguard is over and has established a bridgehead which they'll hold till the whole outfit gets across. And no alarm has been given! Where are those Krauts, letting us catch 'em asleep like this? Thought they were better soldiers. I up and ask the Captain.

"Sergeant, the enemy is engaged in festivities this evening," he says in the highfalutin' talk he likes. "In short, the foemen have abandoned themselves to revelry, not to say debauchery. At this moment vast quantities of the potent local brew are gurgling down Germanic gullets and they are becoming obfuscated."

"The Captain means they're throwing a party and getting cockeyed?" I interpret with a sigh of envy.

"Correct, Sergeant," says he. "And can you doubt that the General counted on that very circumstance? By now they are well liquored. When we arrive—"

"Will there be any left, sir?" I'm asking anxiously when our talk is broken off. It's our turn to embark.

My squad manhandles our gun aboard a barge and lashes it fast. Then it's time to lead on the team. Our big stallions don't like the idea of a voyage. They cut up and take considerable persuasion. First chance I get I'm going to trade 'em for a team of geldings off some other battery's picket line. Fire and spirit are all right in their place, but this isn't it. But at last we manage it and shove off, rowed through the black, icy river, gunwales nearly flush with the water and the blame barge like to sink any minute.

A light boat eases past us. Our brigadier is in it, I can tell by his foghorn voice talking to the C-in-C. I prick up my ears. Maybe the General will say something historic I can repeat to my kids when they ask what daddy did in the great war. Now what do you think he comes out with to our fat brigadier? Our dignified General calls to him, "Shift your tail and trim the boat."

It got a laugh fit to wake the dead or the Germans. That General of ours is human, which is more than you can say of some of 'em. It's no brasshatted stuffed-shirt that's running this show tonight.

Now we land. The ground sure feels good. Hitch and limber up. Off we roll after the infantry through the night. It's bad footing for the horses, and the gun carriages slip and skid to hellandgone. But it's silence in the ranks now, and nobody even cusses out loud. You wouldn't think a long column could move so quiet. Miles are ticked off. Looks like we're going to circle around and hit the town from the other end where the Krauts least expect us. Walk 'em out, drivers. We've got to get into position before dawn.

Once the whole show is close to being given away. A dog dashes out of a farmhouse barking, but all of a sudden it's choked off: some doughboy has clouted the poor beast. Still it beats me why some fifth columnist hasn't spotted us and warned the enemy. As a matter of fact one of those babies tried to, we learned later. He saw us and double-timed into town, howling for the Commanding Officer. They wouldn't let him in the house, so he sent in a note. The head Heine, pretty well potted by that time, was shooting craps. The bones must have been hot for him, for all he does is say "Don't bother me" in Dutch and stuffs the note in his pocket, unread.

Well, we're about set to bother him plenty, shortly. We split into two columns, and my battery and two others move up to head off the column on the main road into town. There I catch another glimpse of our General. Some infantry officer is complaining to him that his outfit's ammunition has been lost. "Damn it!" snaps the Old Man. "You've got bayonets, haven't you? Use them!"

Snow muffles hoofs and wheels as we take the lead. Now it's the half-light before dawn. We can't go undiscovered much longer. We'll be in action any minute now. I get that dryness in the throat and the funny feeling in the pit of the stomach you do before a scrap. You know you're going to be scared as hell and hope to heaven you won't show it. Somebody's going to get killed in this ruckus, but you console yourself that it'll be the other fellow, poor guy.

Shots rattle up ahead. The party's on.

We top a rise, and there are the roofs of the town, white with snow. It looks clean and cosy and pretty—like my home town. There are women and kids in those houses—like I've got at home. I hope the townfolks are down in the cellars by now. There'll be hell to pay down there soon. I get thinking what might happen to my town and my family. There's no telling whether they'll be out of the path of the invasion. God, we've got to stop these German bastards here and now!

Off to the flank I see an enemy outpost detail come boiling out of a farmhouse, catching up their stacked arms and opening fire on our doughboys. Big fellows, those Boches, looking like they deserve all of the tough rep as fighters that came ahead of 'em. We're just a citizen army tackling professionals, but we're so fighting-mad we forget that. We've caught 'em off guard and we rock 'em back on their heels. All their pickets are driven back in on the town, our sharpshooters picking off their officers and noncoms.

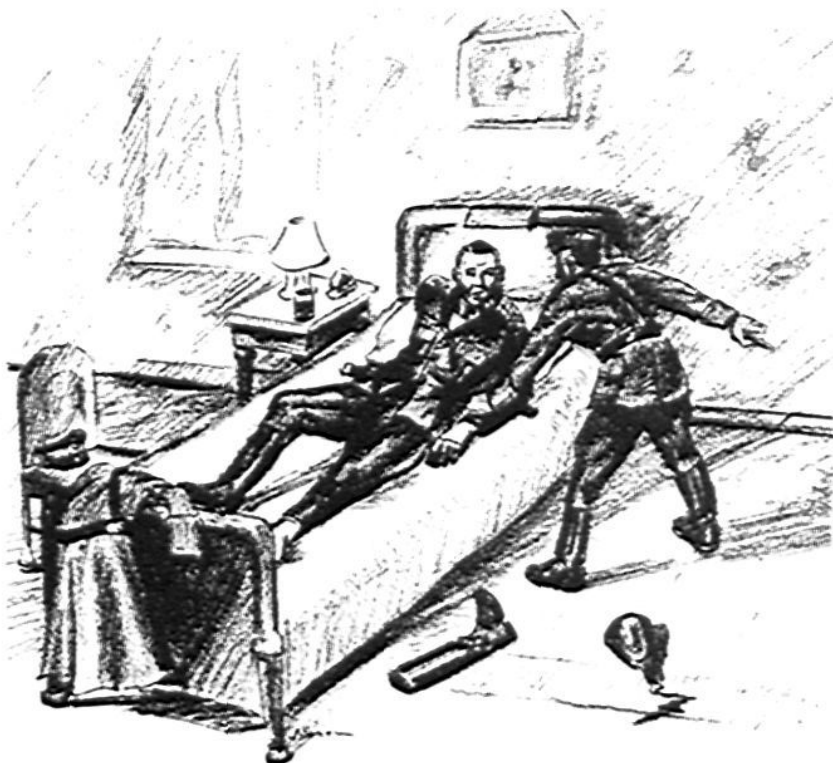
We roll past a lieutenant, dying by the side of the road. Just a kid—can't be more than 18. I feel kind of sorry for him even if he is a Boche. All along the line we're pushing them in, giving them no chance to rally.

Our guns are in action now, dropping shells in among them. Suddenly two German guns come dashing forward. The sharp, black eyes of my little Battery Commander spots 'em. Quick orders, and we let 'em have it. We catch one of their gun teams at the dead gallop and fair ruin it. Horses, gun, and cannoneers pile up in a mass of wreckage. The other piece unlimbers and fires six rounds before we get the range and smash it. When the smoke clears away, only the platoon commander and the gunner are still on their feet. They leave in a hurry, abandoning the gun.

Our lads sweep into the town, and it's house-to-house fighting. You've got to hand it to these Heines, though. Surprised as they are, the steady, disciplined regiments form up and blaze away with volleys. The streets are so dense with powder smoke it looks like a heavy fog's come down. The smack of bullets against brick walls mingles with the rattle of hailstones on roofs to sound like a thousand rolling drums.

They say the German commander was still asleep when our assault on the town began, and his adjutant had to rout him out. In spite of a terrific hangover, the old boy pulls on his uniform, climbs on his horse, and starts to rally his men.

Four guns of another battery and two of mine get into position on a rise of ground where we command the



full length of two streets jammed with Germans. Man, we bowl ironware down 'em like bowling balls, and there aren't many pins left to be set up in the other alley. Our infantry floods along in a charge. I see an American captain get shot through both hands. He keeps going just the same, leading his company. So does a lieutenant who's hit in the shoulder. The way the blood spurts it must be an artery, but he clamps it off with his fingers and never stops. You can't beat nerve like that.

Hand-to-hand fighting rages through the narrow streets. The Krauts give way before American bayonets. Our infantry swarms over their guns and silences them. German remnants are trying desperately now to break through our encirclement. Wherever they emerge, our artillery blasts them, and rifle fire rolls up their flanks. Down in yonder orchard the German commander is riding around trying to get his men to turn and counterattack with the bayonet. But they're dropping by the dozen and they haven't got what it takes anymore. Some of our sharpshooters crack down on the commander, and he topples out of his saddle with two bullets through the belly. He'll soon be under the American soil he's tried to take from us.

The Germans are in full retreat now, trying to break through and make a getaway. Everywhere they turn our boys are waiting for them. We've got the fords, the roads, the passes. A German officer tries to parley, but a general of ours snaps at him: "Tell your commanding officer that if

you do not surrender immediately, I'll blow you to pieces!" That's the kind of language they understand. Guns are tossed away, and hands begin to go up. One outfit after another surrenders. We've got most of them. Very few escaped. We've captured 868 officers and men. The German casualties in killed and wounded are 106. And our loss is only four wounded.

As battles go, this isn't such a big one—this one we've won. There are a lot more Germans over here, and we'll have to be taking them on. But on this winter's day we've beaten them to a frazzle. They can be licked, and Americans can do it!

* * * * *

This story of a German invasion and a battle on American soil is not fiction. While told in modern language and as if it were happening today, it is an historically accurate account of the Battle of Trenton, December 26, 1776. The sergeant-narrator is the only fictitious character. The Commander-in-Chief is of course George Washington, and the broad-beamed artillery Brigadier is General Henry Knox. The Battery Commander—Alexander Hamilton. That officer who gallantly continued to lead a charge in spite of a bullet-severed artery in his shoulder is James Monroe, who survived to become President and establish a Doctrine to the effect that America is for Americans.

It did happen here. The moral? Roll your own, men.

PLEASE look about and see if you have an extra (spare, surplus) copy of the JUNE, 1942, issue. If you have, send it on and we'll be glad to pay for it. Demand for that issue is high, but our stock is low.

While you're searching, take a good look at that address label on the JOURNAL envelope. The legend (like "DEC") at the lower right indicates the EXPIRATION issue of your membership (or subscription, in the case of organizations and civilians).

Is the address correct? If not, send us a LEGIBLE change and we'll take care of it immediately. The Circulation Department worked overtime last month, making *over twelve hundred* changes of address, cutting stencils for nearly a thousand new members.

The JOURNAL staff appreciates this constantly growing interest on the part of all concerned—artillerymen, tank destroyers, Marines, the Field Artillery School, unit commanders, everyone.

BESSEL (ITALIAN) RESECTION

By Capt. Edwin J. Selbert, FA

The tendency today seems to be to ignore Bessel resection, although that method is generally acknowledged as the most accurate. We hate to think that the method is beyond any Field Artilleryman, so we must assume that the reason for this loss of popularity is due to the fact that a map or grid sheet on a plane table makes the Artilleryman in combat feel a trifle conspicuous.

The answer to the problem of retaining the Bessel accuracy seems to be a geometric solution, which can be plotted at leisure under cover, from measurements made on the ground with aiming circle or transit. All that need be done in the presence of the enemy is to measure the two angles giving the relation between the three known points.

The article "Easy Does It" in the September '42 JOURNAL mentions one case of the geometric solution, and calls attention to a more comprehensive discussion by Capt. DuPuy in the March-April '40 issue. Neither article, however, answers all cases which may be met.

As Capt. DuPuy mentions, we should so letter our three known points A, B, and C that the line AB is the most distant of the three sides of the triangle formed from the point to be located, P. This assures us of a reasonable location of point D. The possible locations of the point P will lie in the shaded area of Figure 1 if we so letter.

Investigation discloses that we must break down the solution to two cases depending on the location of P with reference to the triangle formed by our three known points. In Figure 2, when P falls within the shaded area Case A applies. For all other locations of P, Case B applies unless, (1) P lies on a side of the triangle, or (2) P and all three points lie on the circumference of a circle. If P lies on a side of the triangle, we do not have to worry with three point resection; if all points lie on same circle, there is no use in worrying as there is no solution.

The solution for Case A is as follows:

1. At A turn off toward P, the angle measured at P between B and C, including A.
2. At B turn off toward P, the angle measured at P between A and C, including B.
3. The intersection of the two rays, extended if necessary, is D.
4. At A turn off toward P, the angle measured at D between B and C, excluding A.
5. At B turn off toward P, the angle measured at D between A and C, excluding B.
6. The intersection, falling on CD in the case of correct work, is P.

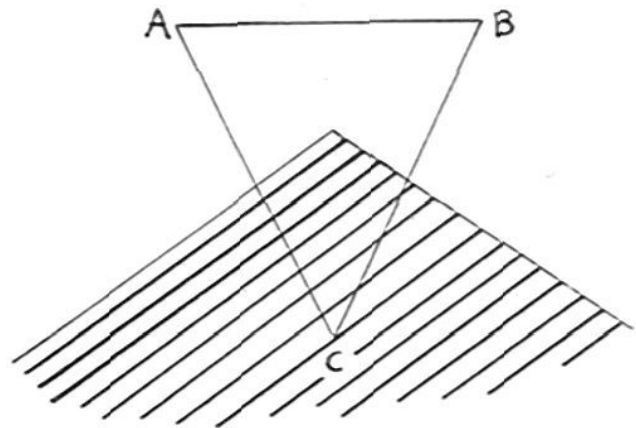


Fig. 1

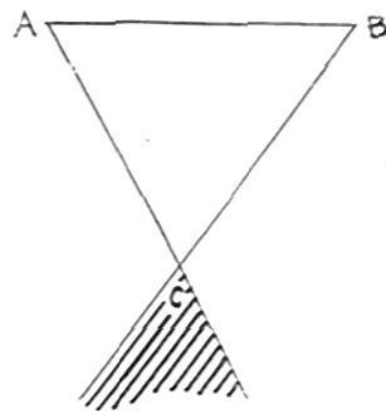
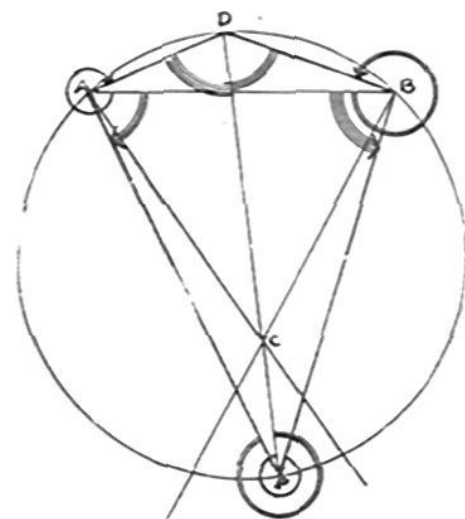
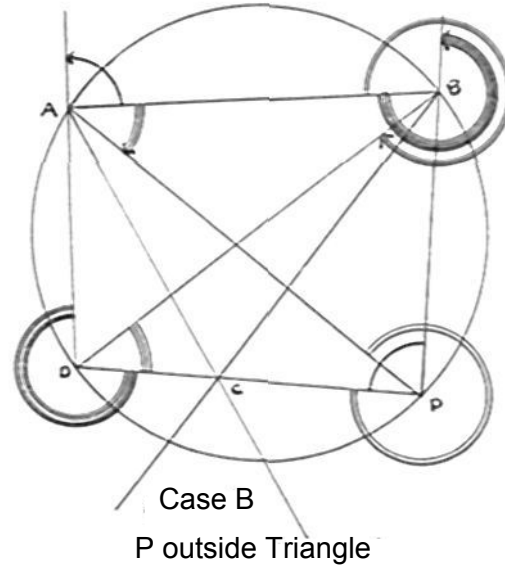
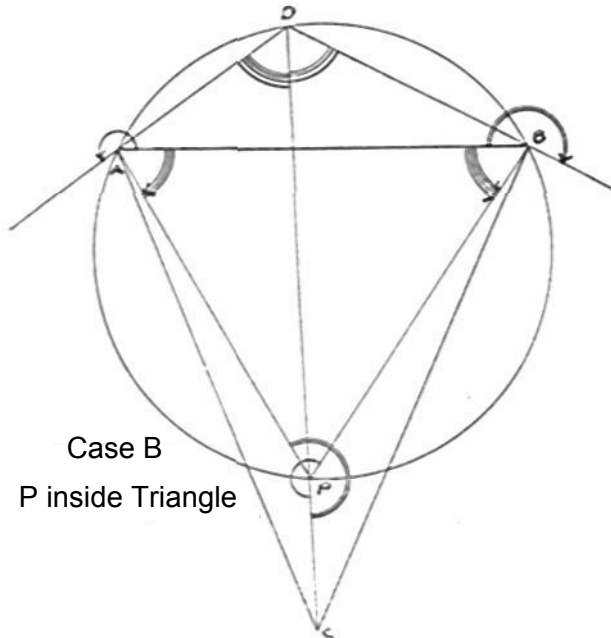


Fig. 2



Case A



The solution for Case B is as follows:

1. At A turn off away from P, the angle measured at P between B and C, including A.
2. At B turn off away from P, the angle measured at P between A and C, including B.
3. The intersection of the two rays, extended if necessary, is D.
4. At A turn off toward P, the angle measured at D between B and C, excluding A.
5. At B turn off toward P, the angle measured at D between A and C, excluding B.

6. The intersection, falling on CD in the case of correct work, is P.

It will be noted that the only difference between the two cases is in the direction in which we turn off the measured angles. This direction will be obvious in most cases, but where the measured angle is near 1600 or 4800 mils it will not be obvious as either direction will give a plausible result.

Examples of Case A and the two possible types of Case B, with P inside and outside the triangle formed by A, B, and C, are shown above. The circle has no bearing on the construction and is shown merely as proof of the construction.

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

"It fills a definite need, especially among young officers, as an excellent compendium of the basic essentials given in the existing manuals. The attention of all officers of this command has been called to the Field Artillery Guide and I have recommended it as a permanent addition to the battery libraries. Orders will be consolidated by this Headquarters and forwarded as soon as complete."—BRIGADIER GENERAL, U. S. A.

"We find your book, 'The Field Artillery Guide,' a very compact and comprehensive book of great value both in the field and in the classroom. Its clarity and conciseness make it a book worth possessing. We would like to place an order for 56 of these books."—FIRST LIEUTENANT. [Ed. note: This order for 56 copies for one battalion was filled on the day of receipt.]

Determining Distances From Vertical Aerial Photographs

By Philip Kissam*

The accurate determination of distances between various points shown on vertical aerial photographs is frequently an important element in the effective use of field artillery. Except under ideal circumstances this cannot be performed by the apparently obvious process of measuring a ground distance shown on the photograph to determine the scale.

A vertical aerial photograph varies in scale throughout. The elevation of the ground affects the scale and so does the tilt of the camera at the moment of exposure. The combined effect is a non-uniformly varying scale.

Figure 1 illustrates the effect on the scale of differences

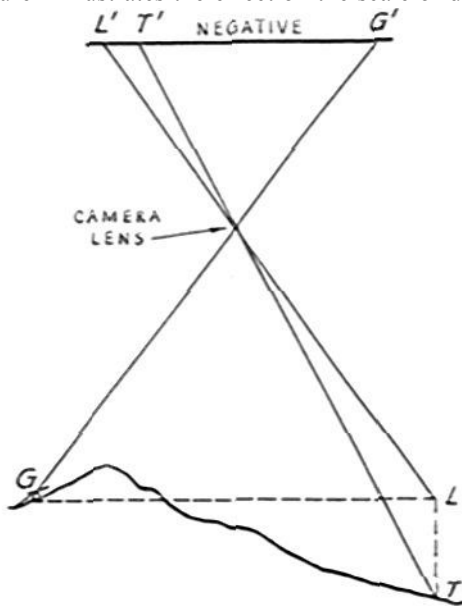


Figure 1

in elevation of ground points. The horizontal ground distance from G to T is the same as the distance from G to the imaginary point L directly above T. The images of these points are shown on the negative at G', T' and L' respectively. Obviously the same ground distances GT and GL are represented by the *different* distances G'T' and GL' on the negative.

Figure 2 illustrates the effect of an exaggerated tilt. On the negative A'B' is smaller than C'D', although they represent equal distances AB and CD on the ground. It is impossible therefore to make scale measurements directly on aerial photographs, so the following procedure is recommended when horizontal distances are required and aerial photographs must be used in lieu of maps.

Vertical aerial photographs are usually taken in a series as the airplane is flown along a certain path. Exposures are so timed that the area covered by each photograph overlaps

the area covered by the previous photograph by about 60%. Thus every ground point appears on at least two photographs and there are always some points that appear on three photographs. When such a series or "flight strip" is available, true distances can be determined anywhere on it if one distance is measured on the ground.

The method is an application of the "radial line plot." It is based on the principle that the shift of the image of any point due to difference in altitude of the airplane, or in elevation of ground points, or to the tilt of each photograph, is very nearly along a radial line through the center of the photograph. Note Figure 3. Thus all angles measured at the center of a photograph are nearly true representations of the corresponding horizontal angles on the ground. Successive reaction from the centers of photographs will therefore give the true relative positions of all points.

PROCEDURE USING TWO PHOTOGRAPHS

1. Mark the center of each photograph using the fiducial marks (F, F, etc.). Note Figure 4: C_1, C_2 .
2. Mark the conjugate centers, that is, the exact points where the center of one photograph appears on the other photograph, CC_1, CC_2 .
3. Fasten the photographs to the board so that the centers and conjugate centers are aligned. That is, C_1, CC_2, CC_1, C_2 are in a straight line.
4. On each photograph draw radial lines from the center through the ends of the known distance A_1B_1 and A_2B_2 , and through the ends of the unknown distance G_1T_1 and G_2T_2 . The intersections of corresponding lines will be the true relative position of the points. By measuring the known equivalent of the distance, A_3B_3 , the scale of the plot is determined and any unknown distance as GT can be found by scaling.

USE OF MORE THAN TWO PHOTOGRAPHS

1. Arrange two photographs as described above. Using radial lines find the plot position of two "pass points" chosen near each side of the flight strip and which appear on a third photograph.
2. Adjust the third photograph (Figure 5) so that the center and conjugate center are aligned with the same points on the adjoining photograph, and by sliding it along this line move it until the radial lines through the pass points extend through the plot positions of the pass points. Fasten it to the board in this position. It can now be used for the radial line plot in conjunction with the other photographs.

This system can be extended at will, although the accuracy is reduced as the distance from the measured distance increases.

*Chairman of the Department of Civil Engineering, Princeton University.

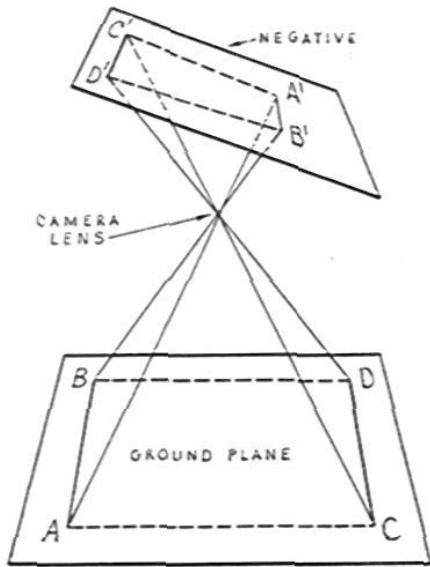


Figure 2

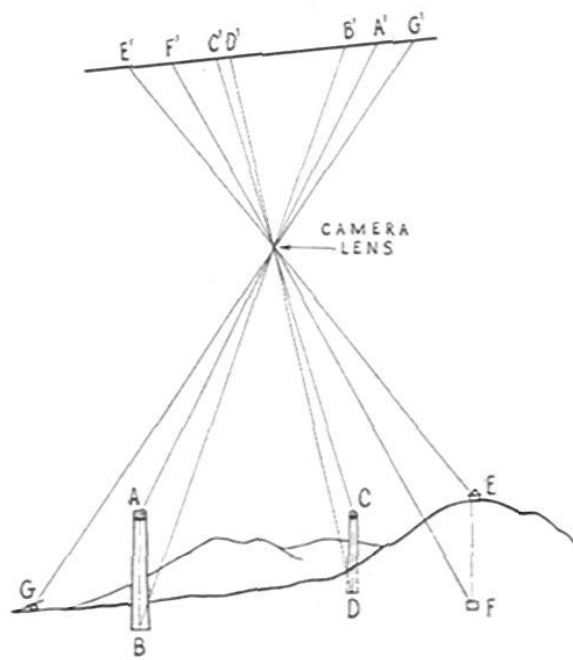


Figure 3

Points G, B, D, and F are at the same elevation. Points A, C, and E, which have the same horizontal position as corresponding points, have been shifted practically along radial lines. Thus horizontal Angle $A'OC' = \text{angle } B'OD'$ as it should, etc.

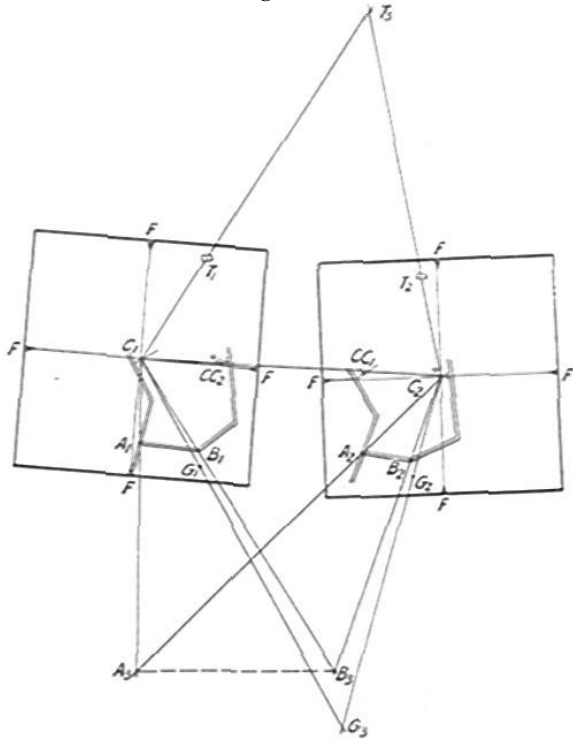


Figure 4

Assume that A_1B_1 was measured on the ground and found to be 1500 yards. The distance A_3B_3 on the plot is 7.5 inches. The scale of the plots would be $(1500 \text{ yards}) / (7.5 \text{ inches})$, or 1 inch = 200 yards. If the distance G_3T_3 on the plot measured 27.5 inches, the distance G_1T_1 would be 5500 yards. Inches need not necessarily be used. The yard scale for 1/20,000 is more satisfactory, using the 100-yard graduations as UNITS.

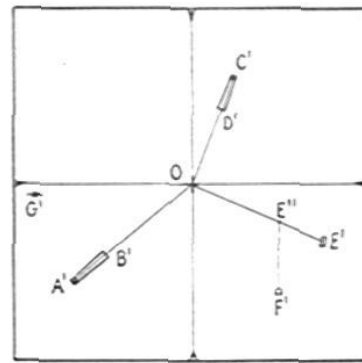


Figure 5

THE TURN OF THE YEAR

When the Germans and Italians withdrew from Bengazi on December 24, 1941, they took up defensive positions to the north and northeast of Agedabia. The British pursuit of the Axis forces had been hampered by supply difficulties: as their advance progressed, it had been necessary to reduce somewhat the troops at the front due to inability to supply them fully. The result was that when the British reached the vicinity of Agedabia the only troops they had on the front were an Armored Brigade and a Guards Brigade, the latter being organized as a support group for an armored division.

On December 28th I stopped at HQ Eighth British Army, at Timimi. General Staff Intelligence informed me that the German tank strength had been reduced to some 20 tanks. The British believed they had sufficient troops at the front to continue offensive operations.

When I arrived at Barce on the 30th, the commander of an Indian Division told me that the Axis had come out of their defensive position, attacked the Armored Brigade on the 28th and 29th, and inflicted heavy casualties. There had actually been 80 to 90 German tanks, and several Italian ones had been identified also.

I located HQ of the XIII British Corps at Antelat on December 31st. They were preparing to move back to

By Observer

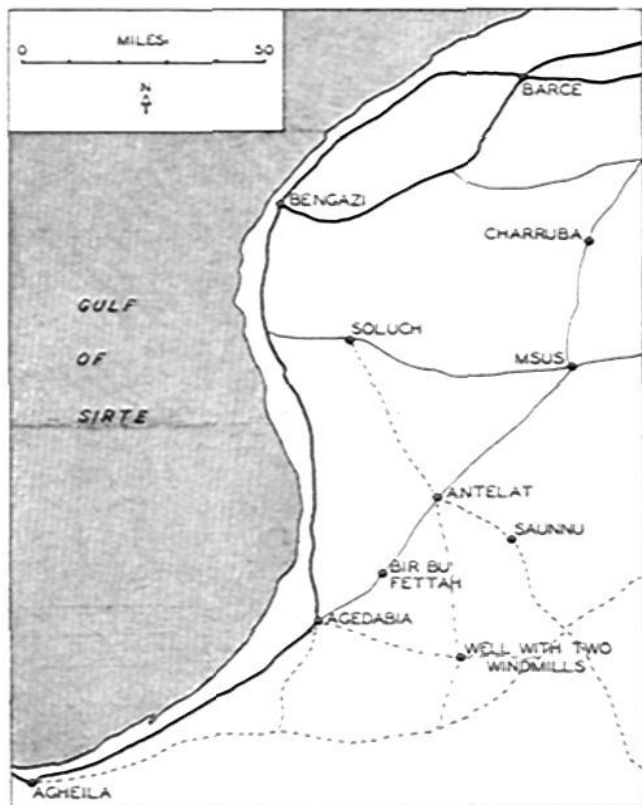
Msus the next day, as the defeat of the Armored Brigade had made the general situation rather precarious. To relieve it they recalled the depleted Support Group of an Armored Division which was then on its way back to the Delta for refitting. For several days after the attack on the Armored Brigade, the only British troops in contact were the Guards Brigade and this divisional Support Group—the Brigade to the north of Agedabia and the Support Group to the east.

I told the Chief of Staff that I was especially interested in Artillery. He referred me to the Corps Chief of Artillery, who because of the rapidly changing situation did not yet have all the detailed information he would have liked. Next day he introduced me to a British captain who was on his way to his regiment. I started out with him, and ultimately made my way to HQ of the Support Group; it took three days, however, due to the many moves that all units had been making and the consequent uncertainty in the expanse of desert as to just where neighboring units actually were. This vividly showed both the importance and the great difficulty of both orientation and keeping track of units, when operating over waste land without prominent landmarks.

The Support Group's method of operation is interesting. The Group was organized into four mobile columns, each built around what the British term a battery or what we would call a two-battery battalion. Artillery furnished the striking power of the column. Attached to each battery were 12 to 15 armored cars, a 12- or 16-gun battery of 2-pounder antitank guns, one or two companies of motorized infantry, and at least a troop of light antiaircraft guns; these provided reconnaissance and security. At daylight, these columns would move out and approach the German positions. Then they harassed and observed the German defenses, attempting to destroy with artillery fire any German columns or vehicles seen. At night they withdrew 8 to 10 miles and went into bivouac. Strictly speaking there was no front line: a vehicle could go through into the German lines at almost any point.

January 7th the Axis forces withdrew to south of Agheila. The British followed up. Immediately afterward the original Support Group was replaced by another one, new to desert warfare.

On January 21st I arrived at Antelat where HQ of the XIII Corps was again located. They informed me that Rommel had moved out of Agheila on that day and advanced in two columns about 30 miles, completely surprising the British since Axis forces had given every



indication that they intended to make a further withdrawal. The British were planning operations to begin as soon as they could remove their supply difficulties, and had sent all but a squadron of their armored cars to Msus for service and refit. Between Agheila and Agedabia there is much soft sand and marshy ground — indeed, it is about the only area in the desert where tanks have more mobility than do wheeled vehicles. The Germans took advantage of this fact to capture part of the Support Group.

Another Armored Brigade had reached Msus on January 6th. The plan was for it to train there for about six weeks, at the end of which time the British were to resume the offensive. Fuel had to be conserved for actual operations, however, so not too much training was accomplished up to the 21st. On that night this Brigade was ordered to move at daylight of the 22nd to Well With Two Windmills. It had fuel for 100 miles of operations. When south of Saunnu it was turned toward the west, and eventually bivouacked for the night at Bir Bu Fettah. Apparently the British plan was for this armored Brigade to strike the German columns in flank, but changes in direction were required because of a German advance more rapid than had been anticipated.

Meantime the Axis columns had moved north on the 22nd, one column reaching Antelat in the afternoon. It shelled the rear elements of HQ XIII Corps as they moved toward Msus, and captured considerable aviation gas. During the night of the 22nd a German column attacked the "B" Echelon of the Armored Brigade, at Saunnu.

On the 23rd, one regiment of this Armored Brigade was detached toward Saunnu to deal with the force which had attacked the "B" Echelon. The remainder of the Brigade moved north around the Axis flank, to block any further advance between Antelat and Msus. Its leading regiment became heavily engaged with a strong enemy force. The other regiment moved around the flank and became the advance guard; in a short time it too became engaged. At this time the regiment returned from Saunnu, where it had been unable to locate any enemy force; the Brigade Commander proceeded with it to a point north of Antelat, and ordered the other two regiments to disengage and follow. These were unable to disengage, however, and furthermore they found it necessary to protect elements of



Quick recovery and repair of damaged tanks during (or immediately after) a battle is of prime importance. Desert repair shops must be well dispersed to form an unprofitable target from the air.

Divisional HQ, the Support Group, and the "B" Echelon, which were moving north between them and Saunnu.

The 24th was a day of little activity. One regiment (with Brigade HQ) remained north of Antelat, another was inoperative, and the third was attached to the Support Group. Due to Axis inactivity the British hoped that the advance had halted. It was resumed, however, on the 25th.

On the morning of the 25th two regiments were engaged in isolated actions. Late in the morning contact with one of these was completely lost, but the rest of the Brigade drew together. About noon orders were issued for a withdrawal to the Mechili area; additional information caused a change early in the afternoon, the Armored Division being ordered to Charruba. This Brigade reached that place during the evening.

The Corps Commander's order for this withdrawal was based on the losses which this Division had suffered, and the knowledge that he was opposed by considerable tank strength. Army, however, on the next day ordered the Indian Division to counterattack in the direction of Soluch and the Armored Division to advance from Charruba.

One Indian Brigade started its advance but soon met strong resistance. It lost guns and equipment, and its retreat toward Bengazi was cut off. The Brigade Commander was able to save most of his personnel by dividing into battalion columns, which were small enough to elude the Germans. In one case a column went through a German unit and escaped before its identity was discovered. After the experience of this Brigade, the withdrawal order was reinstated. The Division was just able to clear the Derna defile in time to avoid being cut off at



Destruction of enemy vehicles can be well started by 'most any weapons. This little Bren gun, manned by Indians, adds its touch to a Mk. III fired initially by a British tank.

that point, but its withdrawal was made successfully.

A number of lessons were emphasized again by these operations:

a. The inability of armored forces to conduct a static defense or delaying action.

In the defense they can be used to counterattack. In a delaying action they can be used to cover the withdrawal of other forces only if they conduct demonstrations or actual attacks. The commander of the Armored Division during these operations made the following statement regarding them: "One must either go in and fight a battle or stay out entirely."

b. The necessity of keeping armored forces concentrated.

Combat must be by complete tactical units, lest individual regiments be engaged and defeated in detail.

c. The necessity for desert training.

Comparison of equipment losses reveals the importance of desert experience. The vehicle losses of experienced units was 10%, whereas in inexperienced units they reached 60%.

Navigation, supply, communications, dispersion, and the perfection of formations which permit a unit to fight in any direction on a moment's notice—all these are problems which require train-in *in the desert*. British officers feel that every unit should have at least three months of such training before it is committed to action.

d. The importance of supply.

Supply is important in any operation, but the usual difficulties encountered in desert operations give this subject added importance. Additional difficulties are due in part to:

- (1) Wear and tear on motor transport due to sand, dust, and heat.
- (2) Wear of tires due to surface conditions.
- (3) Dispersion of stores in depots over extremely wide areas.
- (4) Difficulties in defending supply columns.



For a thorough job of destruction, however, men well trained in demolition are required. Royal Engineers have done a perfect job on this Pz. Kw. III!

(5) Necessity of hauling large quantities of water over long distances.

(6) The fluid state of operations in desert and country.

In a great many cases, failures can be traced directly to supply difficulties. For example, during the pursuit of Axis forces in December, British armored forces were compelled to remain at Mechili simply because enough gasoline could not be brought over the long supply route in a short enough time; these forces thus could take no part in the pursuit.

e. The importance of proper intelligence.

Important at any time, intelligence poses special desert difficulties. It is affected by some of the features that bear upon supply: dispersion of stores and units over wide areas, the fluid state of operations; and by problems affecting orientation: lack of landmarks from air or ground, and the difficulty of transmitting references to specific points or even areas.

f. The importance of close air support.

Here again the fluid nature of desert warfare shows its influence. Unless air support is almost instantaneous, the situation may have so changed by the time it arrives that friendly troops are where the enemy was reported to be, or vice versa. Even though the same spot is still the battle scene, by outflanking maneuvers the relative positions of the forces may have become reversed.

This speed applies equally to air intelligence. Reports of pilots or other observers must be immediately available to front-line commanders, for the information to have any value.

g. The importance of a balanced force and team play.

As a result of their practical experience, the British no longer visualize tank fighting as analogous to a cavalry charge. The Support Group no longer acts as a pivot of maneuver and the Armored Brigade as the striking force. This theory had worked against the Italians, but not so well after the Germans arrived: the Nazi antitank guns have to be knocked out or at least neutralized by supporting troops.

The British now use their tanks as part of a well-balanced force including infantry, artillery, engineers, etc.

This is true regardless of how small or how large is the number of tanks employed.

h. Importance of reconnaissance.

Although the desert is of course not mountainous, neither is it flat like a plate. Visibility is often reduced by folds in the ground or by blowing dust and sand. Frequently, too, it is deceptive—mirages and heat waves give distorted images, and make it impossible to estimate the range to the apparent horizon. Proper camouflage permits excellent concealment of emplacements and ambushes. Careful reconnaissance is therefore a prime requisite during any movement.

i. Importance of a proper system of recovery and maintenance.

Due to a shortage of skilled mechanics and proper tools, maintenance by the British has been below their desired standard. Maintenance must have extremely high priority in desert warfare, due to the unusual wear and tear incident to such operations and the difficulties involved in shipping vehicles to the theater.

Any recovery system must be based on recovery during battle. Protected by tanks or smoke, recovery units can tow a majority of the disabled vehicles to the rear for repair or salvage. It is fine if the actual battleground is held: this permits easier recovery of damaged vehicles, and of the enemy's as well. This of course can not always be the case. And of course another advantage of early recovery is that mechanics thus can start their repairs sooner, and return the vehicles to service at an earlier hour.

j. Destruction of disabled enemy vehicles.

Engineers should accompany armored units to destroy completely all disabled enemy vehicles.

k. Infantry defenses should be built around antitank guns.

To build the defense of infantry units around antitank guns requires a large number of these weapons. Escaped prisoners report that in the German 90th Light Division almost every vehicle tows some sort of antitank gun.

NOTICE OF ANNUAL MEETING, U. S. FIELD ARTILLERY ASSOCIATION

In compliance with Article VII, Section 1, of the Constitution, notice is hereby given that the Executive Council has fixed 5:30 PM, Monday, December 14, 1942, as the time of the annual meeting of the Association to be held at the Army and Navy Club, 1627 Eye St., N. W., Washington, D. C.

The business to be disposed of will be the election of three members of the Executive Council (two Regular Army and one Organized Reserve), and the transaction of such other business as may properly come before the meeting. Nominations may be made by proxy, or from the floor of the meeting.

WHAT EVERY ARTILLERYMAN SHOULD KNOW



Guadalcanal bridge

ABOUT BRIDGES

By Maj. Elihu Geer, FA

This quotation leaves the field artilleryman incapable of moving his vehicles over bridges in the combat zone. In the zone of the interior, when marching on primary and secondary roads, he may assume that design and maintenance by civil authorities insure that all bridges will carry division loads unless marked otherwise and unless there is visible damage. In the combat zone that assumption is not in the least justified. Marches will be made on back roads. Makeshift structures will replace bridges which have been destroyed on main roads. Damage will occur unexpectedly, or will culminate suddenly in failure. Load limit signs will be in units and in characters which mean nothing to Americans without special training. There will not be time to check the capacity of bridges by the methods indicated in FM 5-35. With few exceptions, artillerymen do not know how to use the methods given in FM 5-35. They probably will not have a copy of that manual. In most cases the driver or convoy commander will be unable to consult engineer personnel within the time available.

It is recommended that every driver and every officer and non-com who will command a convoy of vehicles be trained in the checking of condition and load capacity. One approach is suggested herein.

Condition is the reciprocal of damage, which may result from rot, fire, borers, collisions, projectiles, demolitions, floods, traffic, or other causes. The best way to study condition is to go out and look for damage to structures.

Rot causes wood to lose strength and to crumble. It occurs most rapidly in wood which is alternately wet and

"Bridges should be carefully checked whenever there is any question of their condition (or) load capacity. . . . In case of doubt, the more detailed check methods are indicated in FM 5-35. However, when exact computations are desirable, engineer personnel should be consulted." (FM 25-10, March 12, 1942, par. 94.)

dry; it can be expected at the water line, and where wood and dirt are in contact. It may exist in any portion of any member of a wooden structure, and may not be apparent on the surface. The extent of rot is an important consideration. In civilian practice, its extent is determined by probing with a metal rod, or by extracting a core, using a special drill. A long screw driver makes a suitable probing tool.

The effect of fire on a wooden structure is common knowledge. A steel or iron structure which has been subjected to high temperature may develop excessive sag, be twisted out of line, develop high internal stresses, and lose desirable properties of the metal.

Rust results in less section being present to carry loads. It is revealed by the characteristic color, or by the heavy flakes of iron oxide which fall off or can be pried off the parent metal. Where iron has been scraped and repainted, the loss of section may be indicated by rough surface and thin edges of plates. Rust is most active in the presence of moisture and corrosive agents (such as locomotive exhaust fumes).

Wood which has been attacked by termites, or other borers, may not have sufficient remaining section to support loads. The damage, if not apparent on the surface,

will be revealed if the timber be probed or struck. It is suggested that an attempt be made to secure samples of termite damage from lumber yards, in order to learn just what the symptoms are.

Collisions, projectiles, and demolitions cause many different forms of damage. Truss members, columns, and girder flanges may be crumpled or bent out of line, and so be incapable of carrying full loads. Some members may be severed, partially or completely. Beams and supports may be displaced in such manner as to be incapable of functioning.

Floods may result in considerable damage. Dirt needed for the support of piers and abutments or for access to the bridge may be washed away. Wood spans may be floated out of position. Steel spans may be forced out of position.

Overloading a structure may cause damage without collapse. Continued overloading will cause progressive failure. Overloading may be indicated by excessive sag, or by cracks or other signs of over stressing of the materials.

Tracks and traction devices may cause considerable damage to wooden floors, by splintering and displacing the planks. This type of damage can be prevented by the addition of longitudinal planks, spiked to the first course.

The determination of load capacity by stress analysis requires specialized training and much more time than is available in a route reconnaissance. An approximation may be made of the load capacity of beams, the simplest form of bridge, by using the following formulas: (1) for wooden beams: $W = (50 b D^2)/L$ in which W is the concentrated safe load in pounds on one beam, b is the breadth of beam in inches, D is the depth of the beam in inches, and L is the span in feet (distance between supports); (2) for steel beams: $W = (1000 D^2)/L$ in which W is the concentrated safe load in pounds on one beam, D is the depth of the beam in inches, and L is the span in feet.

The successful application of these formulas requires (1) that they be memorized, (2) that the user understand the meaning of each term, and (3) that the user develop judgment in deciding what part of a wheel load must be carried by one beam. That decision will depend upon the spacing of beams, the bracing between beams, and the stiffness of the floor. In this connection it should be remembered that division loads will be carried by floor plank having thickness in inches at least as great as the stringer spacing in feet.

For structures which are more complicated than simple beam spans, the decision of safe or unsafe will have to rest upon judgment. Judgment in this matter comes from observation of bridges which are carrying loads, and from a practical study of the functioning of their parts. In order to study the main members of a bridge it will be necessary for the student to dismount from his vehicle and crawl under the bridge.

In setting up a course of study, a motor officer should make reconnaissance for examples of the various types of bridges, and the various types of damage. He should conduct field trips, possibly in connection with motor marches, for the purpose of acquainting drivers, officers, and non-coms with these types.

In addition to the field trips and classroom work already mentioned, the course should include instruction in the weights of vehicles and towed loads. Training in field expedients should include practice in separating prime mover and towed load, crossing weak bridges at reduced speed, and in detouring weak bridges.

It is believed that the success of motor marches in the zone of action will depend more upon the ability of the convoy commander to decide on the safety of bridges than upon his ability to construct a march graph or to determine a speedometer multiplier.

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

"A superior book and will solve many of the problems of Field Artillery officers. I have urged all my officers to purchase the book. Within a few days a good sized order should reach you."—BRIGADIER GENERAL, A. U. S.

[Ed. note: The order has been filled.]

"The Field Artillery Guide, in my opinion, is the best publication of its kind that I have seen for Field Artillerymen. This book should be in the possession of every Field Artillery Officer in the Army, from Second Lieutenant to Army Artillery Commander. I have placed an order, through channels, for 50 copies of this book, to be forwarded to me to my new overseas station."—BRIGADIER GENERAL, U. S. A.

EARTH'S END

In the sixteenth century Spaniards invaded the New World, spurred by a desire for gold and an urge to spread Christianity. In 1942 the New World measures the threat of another invasion, spurred by a desire for wealth and an urge to spread worship of Hitler or the Mikado. The Spanish crossed a continent, scaling the high Andes, and came to a narrow country of an average width of only eighty miles but the prodigious length of 2,700 miles, with the Indian name of Chillí. Chile, end of the earth, it remains.

FOUR CHILES

Although the people of Chile are very homogeneous and form a united nation, the land is divided sharply into dry, temperate, and wet regions, and the Andes. Perhaps it is not too far-fetched to consider the two continents of the Western Hemisphere a shape cut from folded paper, which when unfolded, shows in reverse. Dry regions in Lower California are paired with dry regions on the west coast of South America through northern Chile—then fertile land in central California and central Chile—then the rainy, forested coasts of the Pacific Northwest and Southern Chile. At the ends of both continents are fiords running to towering mountains, extending not far from the coast the whole length of the land.

DRY CHILE

Antofagasta Province and Atacama as far down as its capital are dry and always have been. A full three-day rain would likely dissolve the nitrates which make this region famous and for years supported the government. The prevailing wind in this area blows from the southeast, and warm, rain-bearing clouds striking cold Andes discharge their burden as

snow on the mountains. The desert region lies as a fairly even coastal plain, rising across the country until it reaches the Bolivian Plateau at 12-14,000 feet. No mountain ranges cross the area, but there are isolated volcanoes. Such westerlies as may approach northern Chile discharge their moisture at sea when they hit the Humboldt Current. Alarming rumors are in circulation that this current is changing its course so radically that the whole Pacific coast of South America will receive an unprecedented amount of rain.

TEMPERATE CHILE

This region is slit up the middle by a cleft between the mountainous coast and the Andes, which cuts off a large island named Chiloe and for six hundred miles has been filled with hundreds of feet of drift and alluvial deposits.

Santiago, the capital, sits in this valley. Great farms and vineyards cover the country. Westerly winds make an end-run about the Humboldt Current and keep the region well watered. To the north, east-west spurs of the Andes canalize swift rivers. Passes leading north and south across these spurs are steep. Temperate Chile holds 85% of the population, in about a quarter of the nation's total area.

WET CHILE

Wet Chile is reminiscent of Norway, with its spectacular lakes, wild forests of almost tropical luxuriance, and cold, stormy weather. In this region, wrote Charles Darwin (*Voyage of H.M.S. "Beagle"*), "Every inch of land, every tree, every thicket was a sponge saturated with water." In the scenic lake district moss even grows on the grass, as well as on trees and rocks. The force of the westerly wind, strong in all this region, is felt in full at the Straits of Magellan and southward on Tierra del Fuego. The

By Capt. Edward A. Raymond, FA



sleet and cold which are felt ten months of the year in these latitudes make a jest of the name, "Land of Fire." Rounding the Horn was always an ordeal—and still is.

THE ANDES

The cordilleras of the Andes are snow-clad all the year. The snowline diminishes in height from Antofagasta Province, nearest the equator (16,500 ft.), to Aconcagua (14,000 ft.), to Bio-Bio (6,500 ft.), and finally to Magellan Territory where it lies at 3,300 feet. The mountains are relatively new, and earthquakes average two a day in Chile. Besides lava, the Andes are formed of upheaved strata of older sedimentary rocks and shales. This is not an academic point: ask anyone who has laid hold of part of a mountain, and found it made of such poor material that it came slithering down on top of him. His answer will be particularly pungent if he has struggled in the empty, suffocating atmosphere of high altitudes with head singing, eyes blacking out, and legs flagging. Under these conditions it is hard to dodge small avalanches of shale, and to regain a footing in ice and snow. Winds beating with the force of a tornado are no help.

The central ridge of the Cordillera is so continuously lofty, and its slopes are so steep, that even men and mules can cross only at a few points, and then only during the summer months. Meaning, of course, during our winter, with the seasons reversed below the equator.

The long trip up into Bolivia, across the Bolivian Plateau, and down from Antofagasta, is one way from Buenos Aires to Santiago. A combination of rail, road, and lake travel can be used in a detour 500 miles and more south via Osorno and San Carlos de Bariloche. Probably from before the Spanish conquest, however, the Uspallata Pass has been the most direct connection. In the late '80s a wagon road was finally substituted for a mule track. In 1887 a railroad was started up the long, winding valley from Mendoza in Argentina toward the main ridge, while on the Chilean side another railway was built up the shorter valley leading to the western side of the ridge. In 1910 the Transandine Railway was opened. The highest portion of its roadbed lies on the international boundary, in a tunnel nearly two miles long and that high above the sea.

Near Uspallata Pass, though hidden from it by closer heights, are the two most stupendous mountains in the Western World: Aconcagua (23,081 feet) and Tupungato. Through Uspallata, and Los Patos Pass to the north of Aconcagua, an Argentine force under San Martin marched to deliver Chile from Spanish rule. The passages of the Alps by Hannibal and Napoleon were over ridges only half as high. San Martin, who learned warfare under Wellington in the Peninsular Wars, was austere and wise, and had almost superhuman character; he was of spiritual kin to our own Washington. His fame is somewhat eclipsed in this country by the more meteoric Bolivar, but

he should be widely known. Incidentally, the historical parallel between Bolivar and our hero Lafayette is equally striking.

Viscount Bryce, the noted English statesman and scholar, once wrote of the Andes (*South America*): "This great dividing range, checking intercourse between the peoples on its two flanks, is the dominant factor in the political and economic life, as well as in the physical geography of the southern part of the continent. It has given the neighbor peoples, Chileans and Argentines, different habits, different characters, and a different history."

COMMUNICATIONS

Railroads

Chilean rail lines would naturally be expected to run back laterally from ports to mines or agricultural centers, in typical Latin American fashion. They do. The Chilean Government, however, has also installed a longitudinal trunk line, integrating most of the country's 6,000 miles of railroad into a true system.

Certain transandine connections have been mentioned; those to La Paz, in Bolivia, from Arica and Antofagasta; and to Mendoza, in Argentine, from Valparaiso and Santiago. An additional connection to Salta, in Bolivia, from Antofagasta is under construction, and blasting is in progress in Las Raices tunnel, which will permit a through line to Bahia Blanca, south of Buenos Aires, from Valdivia in southern Chile.

Violent mountain streams rushing westward provide abundant electrical power for the railroads, and important links have been electrified. Down-grade braking energy is used to drive the motors as generators and thus feed power back into the circuits.

Ports

Until Southern Chile is reached, with its fiords and glacial inlets, there are few good harbors on the West Coast. Railroads run down to the Pacific at two dozen points in Chile, but in most cases ships lie in open roadsteads and are reached by lighters. Chile's important ports are few. Iquique, farthest north, has lost some of its former great importance with a decline in nitrate values. Antofagasta is a principal port in Bolivian trade and has a massive breakwater. Coquimbo is an excellent harbor with cranes and loading plant for iron ore. Valparaiso is the most important commercial center on the entire West Coast; its warehousing and port facilities are modern and extensive. Talcahuano is a naval station with a large drydock. Concepción and Coronel serve a soft coal district. It was off the latter port that Von Spee's Asiatic Fleet annihilated a British squadron under Sir Christopher Craddock during World War I. Puerto Montt is on a deep bay running north; the harbor is magnificent in size and beauty. Punta Arenas, or



Southern Chile has a temperate climate like the United States and Canada, and in the southern lake region and the foothills of the Andes there are stands of fine timber.

Magallanes as it is now known, is the southernmost city in the world, a port of call for those ships which still use the Straits of Magellan or round Cape Horn. Were Germany to attempt to reinforce the Japanese Navy, or if Japanese vessels were to head for the Atlantic, it is a safe bet that they would not use the Panama Canal. If the United Nations, in their turn, were ever unable to use the Canal, Magallanes would become as vital as Colón is today.

THE CHILEAN FORCES

Chile has a population of 5,000,000, and but 50,000 are Indians. So fiercely did the Araucans who once owned Chile fight the white men that they were never conquered in battle. Over a period of centuries distilleries, deliberately planted on their borders, softened up the natives. They now form a submerged element in a notably homogeneous people.

The Chileans have had a warlike history climaxed by the War of the Pacific in 1879. There is a large Germanic population in Southern Chile, as in some parts of our own country, and the training and some of the equipment of the Chilean Army are of German pattern.

Before the present war broke out in Europe, Chile had approximately 20,000 officers and men in her land forces.

All men between 19 and 45 were liable for military service, and those called were held in the active reserve for twelve years and then relegated to the second reserve.

The mountainous nature of much of the country and the limited road net have furnished arguments against extensive mechanization. About one-fifth of the Chilean Army is cavalry. There are in the neighborhood of half a million horses and mules in the nation, and much the greater proportion of each year's conscript class are expert at riding the stocky horses before joining the Army. Chileans are known as fearless riders; Americans are familiar with Chilean Army horse show teams, many of them led by Major Yarez, perhaps the world's most celebrated horseman. Animals acclimated to high altitudes are essential to cavalry and pack artillery fighting in mountains; violent exertion in thin air will do permanent injury to animals, and horses and mules are by no means immune to vertigo, or mountain sickness. Artificial protection from intense cold is no substitute for the many adjustments which the body can be trained to make over a period of months and years. What is true of horses and mules in high-altitude fighting is also true of men.

Words of Col. C. D. Griffiths, FA, aptly describe the advantage Chilean "alturistas" would have over lowlanders. "(For a mountain division) a lowlander is not wholly satisfactory, even if of good physique; he is at as much a disadvantage in the mountains as the landsman is on the ocean. His muscles are not accustomed to ascending and descending steep slopes. He is unsure of his footing in dangerous places, and may be afflicted by vertigo. High altitude induces in him a weakness caused by lack of oxygen, and often produces a debilitating malady, the symptoms of which are similar to those of dysentery." (*Mountain Warfare*, FIELD ARTILLERY JOURNAL, September-October 1940.)

There are many lessons in field artillery work which could be learned in Chile and applied to our own Army. Chilean artillery travels light, with no more than a fraction of the equipment that we use. Every item is simple. Unobserved fires are not contemplated in the mountains, as ammunition supply is too difficult and very high winds and other extreme meteorological conditions make map firing too uncertain. Furthermore, opportunities for observation can almost always be found if they are sought hard enough.

The Chilean Army uses sledges extensively above the snowline. These have an advantage over the toboggans used by our mountain troops in that they can be controlled easily on crust and over ice. In regions where the snow never melts they are ideal equipment.

Chilean seacoast artillery, for fire on naval targets, is manned by sailors who are kept from getting fortress fever by tours of duty at sea. Antiaircraft artillery is an integral part of the air defense, and is manned by the independent air force, the so-called Air Army.

LOSSES to CARELESS MAINTENANCE

By Maj. Gen. Levin H.
Campbell, Jr.*



Proper field maintenance keeps 'em firing. Desert warfare poses such special problems as lack of water and excessive grit.

One of the most dramatic lectures on maintenance was the spontaneous result of a pique. A National Guard outfit was just ending its summer maneuvers. It was the last day and everybody wanted to get away, but the commanding officer was scheduled to deliver a talk on maintenance. The old man liked it no better than the men and at the last moment dumped the assignment into the lap of his armorer. The C.O. jumped his car for parts unknown. Now the armorer had other plans for his time and bitterly resented this bit of highhandedness. Still, orders were orders, and being a good soldier he knew his duty, but sometimes even a good soldier will tamper with his conscience and once in a while he may get away with it. This one made history.

Appearing before the assembled soldiers in the mess hall, and without any introduction or preparation, he came to the point immediately by holding aloft an automatic rifle and demanded to know what it was. As there was no answer he told them that it was a Browning, caliber .30, M1918 automatic rifle. "Why is it issued to you?" he then asked, and as the silence continued the armorer then stated that the rifle was issued to them in order to protect themselves. "How do you protect yourselves? Well, you can protect yourselves only if you keep the rifle in usable, operating condition and this condition can be attained only by careful maintenance and servicing. If you do not take care of the weapon, it won't shoot and if it don't shoot, you can't protect yourselves and the enemy will beat you to death with rocks." The armorer made his getaway amid the ensuing uproar but had sunk home a great truth that his hearers always remembered.

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The present war is composed of several separate and distinct campaigns so widely separated geographically as to have earned the title of "Global War." One feature, however, distinguishes this war from all previous wars. It is the machines, the mechanized fighting equipment employed by all the participating armies and by all the various arms. It is a war of horsepower, and horsepower like horses requires care and attention if it is to perform properly.

Preventive maintenance is the most important of all types of maintenance. It pays the largest dividends. Nothing quite dramatizes preventive maintenance as the well worn poem "For want of a nail a shoe was lost," down to the loss of a cause. A piece of artillery or a tank is almost as sensitive and responsive to human care as is horseflesh. Our own field artillery was always taught to place the horse before the man. When on the march, the horse's feet were checked at every halt for stones and thorns; saddle girths were loosened and the horse was petted and stroked to show a friendly appreciation of service.

Now most of our artillery is motorized; guns are drawn by trucks or tractors, according to their size, and brought to the front shooting on self-propelled vehicles or in tanks. Engines are now the motive power, not horses, but the same careful maintenance must be observed. In wartime carelessness in servicing weapons and fighting equipment may, and frequently does, result in death—has lost battles. Under such conditions carelessness then becomes akin to vandalism, sabotage. Take for instance the tank. Constant surveillance only will keep it operating. Recently a driver failed to remove stones jammed in a track. Eventually a wedge dropped out, and the track dropped off when operating at high speed. When the driver applied his brakes the tank

slurred so violently as to overturn and crush to death the commander in his turret.

Odd climatic conditions in foreign countries create new problems that must be met if failure and death are to be avoided. This lethal consequence was met recently by a tank crew in North Africa who failed to take into consideration the inordinate night dews. Leaving a gasoline filling can uncovered overnight, they failed to note that a considerable amount of water had been condensed in it. Result: the tank failed in action, the crew failed to return—surely a fearful price for a bit of thoughtlessness. Another crew of happy fighters forgot to cover their grease cans against wildly blowing sand from the Sahara Desert. Bearing failure from sand infiltration left them stranded in action and at the mercy of their enemies. Forgetting the simple routine of starting his engine to check against hydrostatic lock cost another tank driver and his pals their lives in the desert.

Clumsy servicing also can result in wanton destruction. Examples: broken valves due to loosening stuck valves by tapping them with a hammer; broken track end connections due to improper adjustment of tracks; unsatisfactory governor operation due to sawing and filing of governor control rod.

Books on maintenance are issued by the Ordnance Department of the U. S. Army to officers and soldiers who are responsible for and who actually fight the weapons of war. These give explicit directions for servicing the equipment and must be studied and followed relentlessly. Space limitations prevent my going into this subject with any degree of thoroughness. I will, however, list a few of the most frequently occurring deficiencies in servicing. In tanks, self-propelled vehicles, half-track personnel carriers, trucks, etc., the engine is the principal cause of attention and worry. Except for the tanks where airplane rotary, diesel, and other large size units are used, the power plants are similar to those most American boys are already familiar with through driving pleasure cars and trucks. Lubrication, ignition, cooling, and battery are the points that need the greatest attention. From then on the list multiplies and must be made a subject of close study and application by the officers and soldiers in charge of the equipment.

The Ordnance Department's manuals are explicit and comprehensive. Take for instance the handbook on Lubrication. It contains approximately 300 pages and is so written and illustrated that it can be understood easily by a boy, and yet it covers the subject thoroughly. Furthermore, anyone reading this book will gain a comprehensive knowledge of the principle of automotive engines and their operation in case he is not already familiar with them. For each piece of equipment the Ordnance Department issues a manual describing the item and its operation, and another manual on its servicing and maintenance. Officers should see that their men are provided with the proper manuals

and that they get adequate instruction and experience, not only in the operation of their equipment but also in its maintenance—and whenever they run out of manuals, send post-haste for a new supply!

In ancient Rome charioteers prepared for battle simply by rubbing some animal fat on the axles of their charriots. Lubrication of a field piece today has become a complicated and vital process. Many parts require lubrication. Several different kinds of lubricants are necessary. Frequent inspection must be made to see if all moving parts are properly oiled or greased. These include all bearings, whether circular (such as on axles) or sliding (such as in recoil mechanisms). They include the firing pin, breechblock, mount, elevating and traversing mechanisms, pedestal, etc., in the gun, and bogie wheels, brakes, etc., in the tank.

The gun itself does not foul so much with copper from the rotating band, nor wear in the bore so quickly, when it is properly cleaned, lubricated, and cooled between rounds. Each projectile should be cleaned before being placed in the gun, as dirt here may well put the gun out of action, temporarily at least. When possible, and rate of fire permits, a cannoneer should examine the bore before each loading, as particles of cartridge case wadding or unburned powder might remain to damage the piece. Never ignore seemingly harmless enemy shell bursts, but examine your gun carefully for damage. Parts seared or burned, loosened or broken, may put you and your gun out of action and at the mercy of the enemy. There have been instances of rain water entering the elevated barrel of a gun and so rusting the breech mechanism as to render the piece *hors de combat* at a crucial moment.

Recoil mechanisms must be watched for leakage of oil, as there is no indicator to show the amount of oil retained. In action the piece should be continually watched to see if the gun recoils the proper amount and returns to battery smoothly and without shock. Death overtook a gunner and tank crew in the North African fighting recently because he forgot to check the oil in the recoil cylinder of the tank gun. As luck would have it the oil was low and the first round fired in battle blew the gun clear off its mount in the turret. With its firepower gone the crew was an easy prey for the enemy.

Because of the variations of climate in which Ordnance materiel of today is expected to operate, special instructions are issued for three regions, namely, arctic, temperate, and tropic. By arctic is meant the climate usually experienced in Alaska, Newfoundland, Labrador, Iceland, etc. Temperate includes the United States, Hawaii, etc., while tropic ordinarily embraces Panama, the Philippines, Cuba, etc.

In this mechanized war perfect performance wins battles—careless maintenance loses them. This is the era of total war—if we are going to win it—and we must win it—we have to get preventive maintenance minded—fast!



PERIMETERS in PARAGRAPHS



(Based on the latest information available at time of writing, but subject, of course, to future historical change.)

By Colonel Conrad H. Lanza

RUSSIA

Since the middle of September the Axis offensive has been limited to reducing Stalingrad and to securing the passes across the Caucasus mountains in the west and central sections. The latter mission appears to be the more important.

Along the Black Sea coast, German and Rumanian troops have advanced slightly from Novorossisk. Here the Caucasus mountains come right down to the sea. There is a road along the coast, in part carved out of rock, which apparently requires only minimum forces to hold. This rocky shore continues on beyond Tuapse as far as Sukhum before the mountains turn inland. Germans are advancing southward from Maikop on Tuapse across a pass which has both a road and a railroad, but at date of writing they are not within artillery range of Tuapse.

East of the Maikop-Tuapse pass, outside of a few trails there are only a limited number of passes in the next 300 miles eastward, and in the next 300 miles after that there are none which are practicable for vehicles. In the first 300 miles Axis troops are attacking all of the passes which, starting from the Maikop-Tuapse line, are:

- | | |
|---------------------------------------|---|
| 1. Pshekh (5,435 feet altitude) | These two passes unite on the south side. They lead from Maikop to near Sochi. |
| Shetley (6,060 feet) | |
| 2. Pseashki (6,880 feet) | From Armavir to Adler. |
| 3. Sanchar (7,990 feet) | Poor. |
| 4. Marukh (11,500 feet) | Military road leading to Sukhum on the Black Sea. |
| 5. Nacharski (10,208 feet) | West of Mt. Elborus (18,470 feet); also leads to Sukhum. |
| 6. Nakra (about 10,200 feet) | East of Mt. Elborus; fair road toward Poti. |
| 7. Tscherek (10,085 feet) | From Nalchik to Kutaisi. |
| 8. Mamison (9,270 feet) | Ossetian military road; west of Mt. Kazbek a gigantic ice pyramid, 16,470 feet high. Road runs from Elkhotovo to Kutaisi. |
| 9. Kazbek, or Krestovaya (7,695 feet) | Just east of Mt. Kazbek. This is the main pass, or Gregorian military road, from Ordzhonikidze to Tiflis. |

The Axis holds two out of three approaches to the Kazbek pass on the north side and all the north exits to the other passes enumerated above. Along all of them German and Rumanian troops are pushing south. Since the first of October Italian troops have also been identified in this area.

Two-thirds to three-quarters of the breadth of the Caucasus Mountains are north of the crest. Consequently the north slopes are two to three times more gentle than those on the south side, where the mountains are frequently precipitous. Due to less rainfall on the north there are fewer woods and these are less dense; also, the snow line is higher, its permanent level being about 11,000 feet. The south side has dense forests and a snow line at around 9,000 feet. If the Axis secures the crest it will tactically be more difficult to advance up the south slope to recapture it than it is for the Axis to advance now from the north side.

The Axis has made a small advance from Mozdok to Malgobek, which is within the important Grozny oil field. However, it is also one of the north exits from the Kazbek pass, and this is probably the main reason why the Germans wanted it. The rest of the Grozny oil field has been attacked by air, and it appears that Russia no longer has the use of it. With the Maikop field, previously captured, about 25% of the Russian production has been lost. What is left, coming mostly from the Baku field, is ample for military purposes provided it can be delivered to where it is needed. The pipe lines from Baku go to Batumi on the Black Sea, but there is no outlet from there to the rest of Russia. Oil can still be shipped in tankers across the Caspian Sea, but its most important affluent, the Volga River, has been cut by the enemy. There is some doubt as to whether enough oil can be supplied during the coming winter to north and central Russia.

The Axis attack on Stalingrad had by the middle of October captured the south half of the 15-mile-long straggling city on the west bank of the Volga. It had also taken part of the north half. The Russians held a substantial part of the north section, and were desperately defending it, block by block and house by house. They were receiving replacements and supplies from across the Volga, partly by a bridge, of which more later, and partly by motor boats. All crossings are under cover of darkness. The Axis has been handicapped (and the Russians favored) by the fact that the Russian batteries are east of the Volga, where they cannot be attacked by ground troops without the Axis undertaking

a major river crossing. These batteries have an enfilade fire on Axis troops. This situation is similar to that which existed at Verdun in 1916 and in the Meuse-Argonne campaign in 1918. In both these cases any advance parallel to the Meuse river was extremely difficult if made on only one side of the river, for the enemy could then enfilade the attacking lines by his batteries on the opposite side. We found it necessary in 1918 to advance on both sides of the Meuse in order to be able to advance on either side. The Axis is up against the same problem.

A novel tactical feature of the defense of Stalingrad was the construction and operation of a below-water-level pontoon bridge about a mile long. Surface bridges could not be maintained under the enemy's artillery fire and air bombing. So a new bridge was laid on some 50 drums held under water by anchors of condemned tractors; the deck of the bridge was about two feet below the level of the water and consequently not visible to the enemy OPs. Constructed at night and used only at night, troops wading across it, the enemy did not immediately discover it. Presumably it was ultimately located by air photographs. Thereafter it was shelled and bombed and has been occasionally interrupted, but repairs were made and it has functioned steadily.

North of Stalingrad, extending from the Don to the Volga, the Germans erected a barrier line about 50 miles long. It is partly held by a Panzer Corps, the armored vehicles on the defensive being dug in. Properly camouflaged and with air and artillery support, such a line, which can be occupied within a short time, can be defended by a minimum number of men. A rough calculation indicates that the front of the main line of

resistance will not require more than 200 men per mile, exclusive of artillery and rear services. The Russians attacked this line for a number of days and claimed minor gains; they then gave up the attempt and resorted only to local actions, apparently to capture the dug-in tanks individually.

The Russian attack on Rzhev has captured that part of the city which is north of the Volga River. In view of the difficulty of solving the river crossing problem by direct attack, the Russians decided to extend the front of their offensive by taking advantage of a salient they held extending along the line Toropets-Soblago-Selizharovo. They thereupon commenced on the first of October to assemble troops on this line by rail and by marching, with a view of attacking southward. Of course the enemy discovered the concentration and easily divined the Russian plan. The German air force has been interfering with the Russians by an intensive program of air attacks against railroad trains, stations, and camps. In addition to the places mentioned, they have practically daily attacked dumps located around the Russian bases at Bologoe, Ostashkov, and Peno. The object, of course, is to break up the intended offensive before it starts. It will be interesting to know whether an air offensive of this nature can succeed in preventing a major ground operation. A German counterattack has also started moving southeast from Lake Ilmen.

The Russian effort to relieve Leningrad by breaking the German salient east of that city just south of Lake Ladoga and lying between the Neva and Volkhov Rivers has failed. There was some bitter fighting, but the German lines held and Leningrad is still besieged.

A SECOND FRONT

Agitation for a Second Front continues to appear in the press and is the subject of petitions to the governments of both the United States and the British Empire. The expression—Second Front—has become associated with the idea of a new front in either west Europe or south Europe. Now it happens that there is a good deal of evidence about the practicability and the difficulties of such a front. Many people in their desire to get along with the war, to see the fight against the Axis pushed, and above all to help the Russians in time, forget about the facts.

The reasons for an early attempt at opening a Second Front have been summed up very clearly by Mr. Wendell Willkie in his dispatch from Moscow of 26 September. He said:

"Five million Russians have been killed, wounded and missing. At least sixty million Russians, or nearly one-third the population, are now slaves in Russian territory controlled by Hitler. The great fertile farm lands of southwest Russia are largely in Nazi hands. Food in Russia this winter will be scarce—

perhaps worse than scarce. Many Russian coal fields have been conquered. Fuel will be little known this winter in millions of Russian homes. Clothing except for the army and essential war workers is nearly gone. Many vital medical supplies just don't exist. . . . I am now convinced we can best help by establishing a real Second Front in Europe at the earliest possible moment our military leaders will approve. And perhaps some of them will need some public prodding. Next summer might be too late. . . . We can help by sending food here this winter. If we don't, millions may go hungry. A hungry man, though he has the heart of a lion, cannot go on fighting."

Now as to the facts.

There was a perfectly good front in west Europe in 1939. In France and in the Low Countries nearly two million fighting soldiers, with excellent equipment and complete services, held a first class beachhead, part of it very strongly fortified. It was absolutely destroyed within six weeks. If this part of Europe is to be invaded again, the expedition will have to start from scratch. After the experience of 1940, the difficulties to be overcome can be imagined.

An effort to establish another Second Front was made in Norway in April, 1940. It was believed at the time that the Germans had committed the greatest strategic error of the past century in invading Norway, as they thereby laid themselves open to a Second Front, which was exactly what the Allies (then as now) had wanted to do. Yet this Second Front also went down in six weeks. So we know something about invading Norway, as well as France and the Low Countries.

A serious attempt was made in south Europe in the spring of 1941 to open a Second Front in the Balkans. Greece was at war with Italy, and was believed to be on the point of overwhelming the Italians in Albania. A British Expeditionary Force had arrived and established a complete beachhead around Salonica. Yugoslavia agreed to join in opposing the Axis. Again it seemed that in the face of this combination the Axis was facing defeat. This effort, gallantly carried out, went down in only four weeks. We now have had valuable experience about a Second Front in the Balkans.

A more ambitious scheme to establish a Second Front in south Europe dates from the entry of Italy into the war in June, 1940. This was to clean out the Italians in Africa, and then build up in Egypt, Libya, and Tripoli a large force. If this were done, perhaps the French in north Africa would associate themselves with the democratic cause, and the whole of north Africa would be available for establishing bases and assembling troops. It would then be possible to ferry expeditions across the Mediterranean and establish a Second Front somewhere between Gibraltar and Istanbul, according to the situation at the time. The geography of this area favors the United Nations, as north Africa has an almost straight coast line so that troops could be transported laterally rather quickly. South Europe on the other hand is so very irregular that it would be difficult for the Axis to move troops rapidly from one sector to another. The original idea was to start this Second Front in 1942.

This scheme came near to accomplishment. The preliminary work of cleaning out the Italians almost succeeded, for by the spring of 1941 General Wavell had captured Libya and appeared certain of soon taking Tripoli. He seemed to be so sure of doing it that British GHQ withdrew some of his troops to start a Second Front for the Balkans. The Axis then staged a comeback and in turn



This 70-mm. infantry howitzer was captured by U. S. Marines during fighting on Guadalcanal.

chased the British back into Egypt. The Axis is now in Egypt, uncomfortably close to the Nile valley. So we know something about the difficulties of starting a Second Front in south Europe.

Four serious solutions to the Second Front problem have so far been submitted to the test of war, and all of them have been *disapproved* by the results. It remains to devise another solution which will have a better chance of success. Who among all the critics of the government thinks he can do this?

While we are on the subject of the Second Front, other efforts (not in Europe as yet) may be considered.

In the early summer of 1941, after a short campaign, a British army seized Syria; this army is there now. If Turkey should join the United Nations, this army is ready to immediately join the Turkish armies and open a Second Front at the Turkish end of the Balkans.

Later in the summer of 1941 another British army, to which Americans have since been added, occupied Iran and Iraq. This army could advance into Caucasia and thence on into Europe from the east end. These are new possibilities for a Second Front, neither yet tried.

What other possibilities are there? The British armies in Egypt are being constantly strengthened with a view of some time chasing the Axis out of north Africa, and if this is done the prospects of a Second Front in south Europe will certainly be greatly increased.

For a Second Front in west Europe, very extensive preparations are under way. These were summed up

by Prime Minister Winston Churchill in the House of Commons on 8 September, last, when he stated:

"The enemy can see by his daily reconnaissance of our ports many signs of movement that we are unable to conceal from his photography. He is also aware of the steady and rapid influx into this island of American divisions and other troops. What he does not know is how, when, with what forces, and in what fashion he will be smitten."

And on the day before, our own President Roosevelt announced

"There are at least a dozen different points at which attacks can be launched. You, of course, do not expect me to give details of future

plans, but you can rest assured that preparations are being made here and in Britain toward this purpose. The power of Germany must be broken on the battlefields of Europe.

Perhaps it would be better for those who are publicly urging an immediate attempt to open a Second Front to consider that this has already been tried four times. In the light of the experience gained it is not an easy problem. The correct solution for the next effort should be left to trained commanders. Let us hope that whatever this may be, it will be successful.

THE PACIFIC AREA

The Solomon Islands cover the northeast approach to the Coral Sea, and also to Australia. Since 7 August last, our Marines have held on Guadalcanal Island (one of the Solomons) a base consisting of a seven-mile strip of coast near the middle of the north shore. This island is roughly 90 miles long and 30 miles wide, most of it mountains and jungle. The highest mountain is some 8,000 feet high and is opposite our positions, separating them from the south shore. The mountains taper off to the east and west, and at the ends are about 2,000 feet high not far from the sea.

When the Americans arrived the Japanese garrison made no serious resistance, but withdrew into the jungle and have been there since. The nearest enemy airfields are in the north Solomons, at least 150 miles away, and their nearest real base appears to be at Rabaul, some 600 miles distant. The entire Coral Sea area (including the Solomons, the Japanese base at Rabaul, and adjacent islands and waters) has been under constant daily air observation by our planes, based partly on Guadalcanal and partly on Australia and New Guinea. The Japanese bases were regularly and frequently bombed by us, with occasional enemy ships found by our aviators. On Guadalcanal there were constant patrol activities and a few minor engagements. On 18 September American replacements, reinforcements, and supplies arrived at Guadalcanal and were debarked without enemy interference. Until the end of the month nothing unusual was noted in the Coral Sea area.

On 25 September enemy planes bombed Guadalcanal, and again on succeeding days. Our own air forces, supplemented by AA batteries, attacked the Jap planes and downed 42 of them by the 28th. Notwithstanding, enemy air activity continued. On 30 September enemy surface vessels were noted—4 destroyers were seen engaged in landing Japanese troops on the north end of Guadalcanal. Our air force attacked this expedition but did not prevent the enemy from landing. Another enemy expedition arrived on 3/4 October and landed more troops on Guadalcanal. This time a cruiser was present and our airmen report having hit it, although without having been able to prevent the enemy from accomplishing his mission.

On 5 October, reconnaissance located a considerable number of enemy transports and naval ships in the vicinity

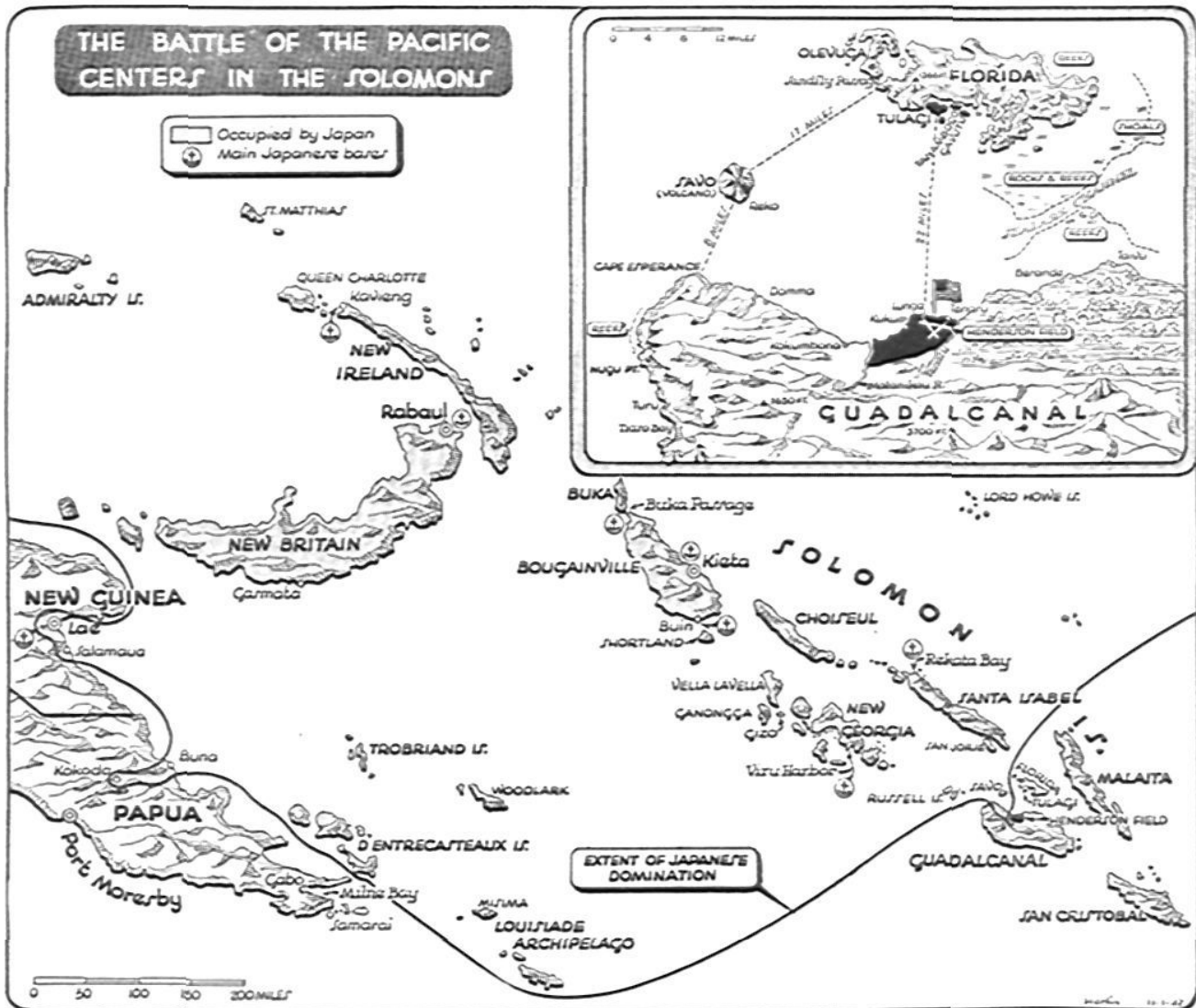
of Shortland Island, about 350 miles north of Guadalcanal. Thereupon a Navy aircraft carrier's planes flew off to attack. Without loss to themselves, they came back reporting hits on a transport, a cruiser, and on several smaller ships.

It was now evident that the enemy had concentrated considerable forces around the north and northeast part of the Coral Sea, and was apparently intending to attack Guadalcanal. More American reinforcements were therefore ordered to that island, and a task force of Navy cruisers and destroyers was detailed to intercept any more enemy attempts to land on Guadalcanal. Before this force could get into action, additional Japanese troops landed again on Guadalcanal during the night 5/6, but this time our air force sank a Japanese destroyer. On the 9th, the air force attacked 2 enemy cruisers with 4 destroyers off New Georgia Island, about 175 miles north of Guadalcanal; these were presumably part of the force previously noted near Shortland Island, and indicated the enemy was moving south.

Our Navy task force detailed to intercept enemy landing on Guadalcanal caught the Japanese apparently bent on just this mission, on the night 11/12 October, just west of Savo Island. This is a small island about a dozen miles north of Guadalcanal. A hot engagement lasted for 30 minutes. The result was that we lost one destroyer, with minor damage to some other ships, and the enemy lost a cruiser, 4 destroyers, and a transport, and did not land. During the succeeding day our air force attacked enemy ships south of New Georgia Island.

On 13 October, the reinforcements ordered (which included Army troops) arrived at Guadalcanal, and notwithstanding that the transports were attacked by enemy planes, all of the personnel and the supplies were successfully landed. Our transports sailed off after dark; apparently the naval task force which had been near Savo Island went with them, for they were not thereafter reported in this vicinity. After these ships had left, an enemy surface force of considerable strength arrived that same night off Guadalcanal and, not finding any ships to attack, shelled our shore positions.

During 14 October both sides engaged in extensive air reconnaissance and presumably assured themselves as



to what hostile surface vessels were around the Coral Sea area. Apparently the enemy found no American naval forces close by. He thereupon brought down a considerable number of transports during the night 14/15, and early on the morning of the 15th a large hostile expeditionary force debarked on the north shore of Guadalcanal within 15 miles of our positions. This force contained artillery (which the Japanese had not before had on Guadalcanal) and probably contained tanks. The landing was covered by a powerful naval force which included a battleship which shelled our shore installation that day and the following night. Navy torpedo planes attacked these ships during the night, and believe they scored on an enemy cruiser.

Reconnaissance on the 16th disclosed that, in addition to the enemy forces near Guadalcanal, still another concentration of enemy ships was in the vicinity of Shortland Island. On the following two days Japanese planes raided Guadalcanal repeatedly; they suffered serious losses, but whether they caused much damage is not yet known.

Some other changes have occurred in the Pacific.

In New Guinea the Japanese, who had been threatening Port Moresby by a ground advance from Buna, have retired to the north side of the difficult Owen Stanley Mountains. It has been surmised that one reason for this was supply difficulties. Australian troops renewed contact with the enemy about 19 October.

West of New Guinea the Japanese completed occupation of the Eilanden Islands, according to their own statements, on 30 September. These islands cover the north side of the Arafura Sea. This movement may be protective to prevent a future United Nations attack north from Port Darwin, or it may be offensive with a view to attacking Port Darwin later.

Reports from India are that the Japanese have made considerable progress in the reconstruction of densely populated Java, and that they have raised an undetermined number of native troops. According to the British these are being equipped with captured British ordnance

stores, estimated as sufficient for 250,000 men. Other native troops are reported as being raised and equipped in Thailand and possibly (but not certainly) in Indo-China.

A Japanese report states that their occupation of Borneo was only completed in October. It appears that an unidentified body of American, British, and Dutch troops held out on this great island ever since last January, and have only just been reduced.

Manchukuo troops have been reported as present in the Philippine Islands.

Our Navy reports that Japanese activity has apparently ceased in the Aleutian Islands of Attu and Agattu, which have probably been evacuated by the enemy. Greater

ground activity has, however, been noted on Kiska Island, with quite a considerable maritime traffic to that island. On the other hand, enemy air activity in the Aleutians has noticeably decreased.

These various moves indicate that Japan is consolidating the occupied territories of the Pacific and, if given time to complete this, may greatly increase the difficulties of recapturing them. That the Japanese have offensive intentions in the southwest Pacific is shown by the attack (or counterattack) on Guadalcanal and what seems to be a major gathering of enemy forces in the north Solomons as October draws to a close. Whether this is an offensive which will be pushed or is a feint to distract attention from elsewhere is not yet known.

PERSONNEL SECTIONS

By Lt. M. C. Maras, FA

In some cases the transition from civil office employment to military clerical duties is very rapid and successful. However, in the majority of cases only the very basic similarities such as ability to type, spell, and employ correct grammatical structure are actually interchangeable. The remainder must be a process of education in the needs of the Army clerical services. The heart of any office unit in the Army must, then, proceed from the viewpoint of educating its personnel.

The initial step in the education of clerks must be a study of the character and abilities of each man. A clerk does not survive unless he is sincerely interested in his work. The daily routine labors of preparing tedious reports and correspondence tends gradually to build up a form of indifference toward duties. To locate a man with a definite interest in his work is, therefore, the prime requisite in picking men for a personnel section. The remaining necessities, for the most part, can be developed.

Where men are found to lack interest in their work, a program of talks by the unit Personnel Officer or Sergeant Major to the entire unit and to individuals may create interest. The importance of creating a *definite interest and desire* in each man cannot be overstressed. It is a first essential of a successful army clerk. No progress will be made without it.

Promotion within the Section is one significant factor in creating interest. Obviously the chain of promotion is from battery clerk to one of the three sergeant positions (Morning Report, Service Record, and Payroll), then to Personnel Sergeant Major. Your men will get a great deal of satisfaction and encouragement when you outline to them their possibilities for advancement. It gives concreteness to their ambitions and definitely stimulates interest.

The process of education should stress accuracy of work. Here is one good way to attain accuracy in the

Section. (1) Return all work that does not meet high standards. (2) Point out the errors and the *reason* that a correction is needed. Mere mechanical correction does not train the clerk to think. (3) Give commendation for a particularly accurate and neat piece of work when occasion demands it. An occasional comment on an excellent piece of work gives the clerk a great deal of satisfaction and a feeling that he is learning his job. (4) Develop the practice of having all work checked by the Sergeant Major, or by other clerks working in teams. (5) Train clerks to read and remember as much as is possible of all bulletins, circulars, letters, regulations, and miscellaneous directives that come in. Cite such regulations in all correspondence which will necessitate reference to them. (6) Whenever a search into the records has been made in any specific case, circulate a complete copy of the correspondence among the clerks for their information and guidance in similar cases.

The unit Personnel Officer and Personnel Sergeant Major must deal with the problems of each individual clerk with thoroughness and precision. Some officers simply throw difficult problems of paper work at a clerk, leaving the details to him. In the final analysis, a clerk is without authority, and to leave him to put into writing what you specifically desire is imposing an unfair burden on him. Officers must give attention to the details of preparation by rendering specific assistance in completing reports. Here the responsibility of the Personnel Officer and Personnel Sergeant Major cannot be escaped.

Considerable difficulty is encountered in connection with duties of clerks to their respective batteries. Army Regulations state that personnel clerks will not be detailed to duties outside the Personnel Section. Organization commanders, however, often find that the services of personnel clerks are especially desirable in many instances, particularly in executing assignments for which other men are not trained or are not available. Advise

your clerks that they are not totally independent of such tasks. But by reaching an understanding with the organization commanders, you can protect your clerks against too much extra-curricular clerical work, a large part of which can be performed by supply sergeants, mess sergeants, first sergeants, or other personnel within the organization.

Sometimes there is a feeling among soldiers on line duty that all clerks are "gold-bricks." To counteract this feeling have all clerks attend activities within their organizations, such as road marches, lectures, and drills. Obviously, attendance at such functions must be somewhat limited, depending upon the volume of work in the office, but such functions do tend to break the monotony of routine duties in the office. The fact that the unit Personnel Section is a concrete unit should, however, always be maintained. The Section should strive to become a compact, cohesive team and all members of it should constantly bear this in mind, otherwise a feeling may develop among the clerks that they are not an integral part of either their organizations or the enlisted staff.

Wherever possible set up ideal working conditions. Accurate clerical work is extremely difficult under conditions of bad weather, cold rooms, poor lighting, lack of essential furniture and office equipment, inadequate supplies, and too frequent interruptions. Notwithstanding this, the clerks must be made to feel that at all times they will be expected to perform their duties.

Specialization within the Section is highly desirable. It builds experts in each particular branch of the unit Personnel Section's duties. But be careful in applying this specialization. For instance, a Service Record Sergeant

when confronted with a lengthy task like checking of inoculations should not have to check all service records; detail other clerks to assist him within the section. A Morning Report Sergeant required to produce a list of AWOL's for the past six months should call upon each unit clerk to furnish information by respective unit; however, he should participate and aid the clerks in their work and finally prepare the consolidated list in cooperation with them.

Often Personnel Sections are called upon to produce comprehensive reports. Assignments of this sort cannot be carried out successfully unless some time is spent in planning the method of attacking the problem. Haphazard methods wind up in error and confusion. Definite procedure on the method to be used must be outlined to all concerned.

Each unit Personnel Section should have a bulletin board within the Section, and current information should be posted thereon. The bulletin board can also be used to post current news items, appropriate cartoons and drawings, and bits of humor.

There is no place in the Personnel Section for "bull sessions" during duty hours. Neither is there time to read newspapers and magazines, or indulge in loud talking, whistling, singing, or other distractions. If at times the work appears to be caught up, give the clerks permission to take care of personal equipment.

Though much of its work appears to be an endless series of dry, routine, thankless effort, the Personnel Section has its important job to do. By law, a soldier in the Army is entitled to have filed a full and accurate record of his career in the Army. The execution of this law in letter and spirit falls squarely upon the Personnel Section.

There are in the world only three countries that possess pre-eminent strategic positions: the British Islands, the Japanese islands, and India. The Indian Empire is in the strategic center of the third most important portion of the globe. Its influence has had its effect upon the European mind from the earliest times; and in the future the power of its strategic position as a determinate factor in world politics will increase with each international readjustment.

LEA, *The Day of the Saxon*

OFFICERS TESTS - 2

Prepared by the Fort Bragg Provisional Field Artillery Brigade

COMMUNICATIONS OFFICERS

PART B—Value 65%

Section I

Answer all questions in this section.

Wt. No.

- 10 8. Define or identify any 5 of the following:
- a. Axis of signal communication. (Par. 72, FM 6-20)
 - b. Unit Journal. (Par. 15, FM 6-130)
 - c. Message center. (Par. 13, FM 24-5)
 - d. Monocord switchboard. (Par. 161, FM 24-5)
 - e. Line route map. (Par. 175, FM 24-5)
 - f. Decryptograph. (Par. 44, FM 24-5)

- 15 9. Your unit commander wants you to prepare a series of one-hour lectures on the following subjects, to give to all officers of your unit. Prepare a brief set of notes to cover any *one* of these subjects properly, showing *all* of the information you are going to cover in your lecture. When, where and how your talk is to be conducted is *not* desired, *what* you are going to say is desired. List only the facts, in any order.

The Tactical Functions of the Communications Officer.

Codes and Ciphers.

Capabilities and Limitations of Field Artillery Radio Sets.

Section II

Answer any 5 of the 6 questions in this section. If all 6 questions are answered, only the first 5 will be graded.

- 5 11. Write out the phonetic alphabet. (Par. 181, FM 24-5)

- 5 12. Describe *in detail* the duties of the following message center personnel in connection with an incoming message received by radio: (Par. 35, FM 24-5)

- a. Radio operator.
- b. Code clerk.

- 5 13. a. Who supervises, and what units keep a unit journal?

- b. When should entries be made in a unit journal?

- c. What should be entered in a unit journal?

- 5 14. a. What are the purposes of codes and ciphers? List the codes and ciphers used by the Field Artillery. (Par. 81, FM 6-20)

- b. Who may authorize the sending of a message in clear text when danger of enemy interception exists, and how is this authorization recorded? (Par. 81, FM 6-20)

- 5 15. Define and distinguish between phantom circuit and simplex circuit. Draw an example of each. (Par. 164, FM 24-5)

- 5 16. a. What is the purpose of panels? Par. 144, FM 24-5)

- b. What are the deciding factors in the location of panel stations? (Par. 145, FM 24-5)

Answer *all* questions, do not guess. Grading is as follows: minus one point if question is not answered, minus two points if it is answered incorrectly. Answer each question by circling "T" if question is true, or circling "F" if it is false.

- T F (1) The approximate number, types and locations of our radio stations can be determined by hostile position finder stations. (Par. 92, FM 24-5)

- T F (2) The duty of NCS may be assigned to any station in the net which can best fulfill the duties. (Par. 113, FM 24-5)

As a yardstick of its officers' combat efficiency, the Fort Bragg Provisional Field Artillery Brigade (now the 22d FA Brig) recently gave a comprehensive series of tests. Each battery-grade officer (except S-1's, Personnel Adjutants, and officers of the Medical Department) underwent three examinations: one on his principal duty, another in either Gunnery or Sound and Flash Ranging, and the third on Motor Transportation or Animal Management, depending on his assignment. The only references used during the tests were: for the gunnery examination, Abbreviated Firing Tables; for S-4's, FM 101-10. "Approved solutions" were not announced, as in many cases there could be several suitable answers. To help its readers check up on themselves, the *Journal* is publishing the bulk of these tests.

- T F (3) In a directed net, no station can communicate with any other station without permission of the NCS. (Par. 114, FM 24-5)
- T F (4) Normally, all messages sent by radio are encoded. (Par. 115, FM 24-5)
- T F (5) In actual tactical operations *all* messages not classified as "Secret" will be considered "Confidential." (Par 15, FM 24-5)
- T F (6) The message center is prepared to furnish authorized stenographic work. (Par. 14, FM 24-5)
- T F (7) Messages sent by radio in the clear may be authorized by any officer, who must write "send in clear" on the message over his signature. (Par. 43, FM 24-5)
- T F (8) In general, it may be said that code is a more rapid and more simple method of signal communication than is cipher. (Par. 46, FM 24-5)
- T F (9) Cryptograph messages should be short and concise. (Par. 45, FM 24-5)
- T F (10) The following codes and ciphers have the number of letter groups set opposite their names:
- | | |
|------------------------------|---|
| Cipher device | 5 |
| Division Field Code | 4 |
| Fire-Control Code | 3 |
| Air-ground Liaison Code | 2 |
- T F (11) Lineman should place the wire in the road ahead of anyone picking it up. (Par. 195, FM 24-5)
- T F (12) A repeating coil is a 2:1 ratio transformer used to superimpose additional circuits on field wire lines. (Par. 161, FM 24-5)
- T F (13) Panels are displayed continuously at the organization CP. (Par. 145, FM 24-5)
- T F (14) The message center is not responsible for the following types of messages: (Par. 16, FM 24-5)
- a. Messages transmitted directly by the writer.
 - b. Messages handled by military or civil postal service.
 - c. Relay messages.
- T F (16) Urgent and priority messages should be usually sent by telephone. (Par. 20, FM 24-5)
5. 8. Your regimental (battalion) commander instructs you to make a reconnaissance and select a suitable location for the CP. List the fundamental factors you would consider in picking the CP location. (Pars. 160-168, FM 100-5)
- 2.5 9. An instructor at the Command and General Staff School made the following remark to one of his classes: "The insignia of the General Staff Corps is a star * * * As staff officers, never forget that you wear those stars on your *lapels* and *not* on your shoulders." What did he mean by that remark, and how does the remark apply to you as a staff officer? Discuss briefly.
- 2.5 10. What is a Standing Operating Procedure? Explain why *every* unit should have one. (Par. 159, FM 100-5, and Par. 56, FM 101-5)
5. 11. There follows hereinafter a list of field duties. Which staff section (1, 2, 3, or 4) is *normally* responsible for each one of them? (Pars. 116-119, FM 6-20)
- a. Recording locations of enemy artillery.
 - b. Distribution of maps.
 - c. Movement of troops.
 - d. Morale, welfare, and decorations.
 - e. Operation of the postal service.
 - f. Salvage operations.
 - g. Exchange (between higher, lower, etc., units) of information concerning the enemy.
 - h. Construction work.
 - i. Recommend OP locations.
 - j. Coordination of fires.
5. 12. Define, *or* explain, *or* identify any 5 of the following:
- a. Unit Report. (Par. 16, FM 6-130)
 - b. Fragmentary Orders. (Par. 65, c, FM 101-5)
 - c. "Ridge lining." (Par. 9, Appendix II, FM 101-5)
 - d. Circulation Map. Par. 5, Appendix III, FM 101-5)
 - e. Unit of Fire.
 - f. Normal Barrage. (Par. 128, FM 6-20)

Section II—Value 10%

Prepare a set of notes in outline form, *in sufficient detail to show the essential facts of the material to be presented*, for a short talk on any 1 of the following subjects. Organization of material, completeness and nicety of sentence structure, etc., *are not important—accurate factual matter and personal ideas are expected.*

Wt. No.

10. 13. a. Technique of Planning and Coordinating Artillery Fires with and for Supported Units. (Assume a simple tactical situation, and tell what you think might well

S-2, S-3, S-4

PART B—Value 30%

Use of reference data is not permitted.

Section I—Value 20%

Answer all questions in this section.

Wt. No.

- happen, in chronological order.)
- b. Signal Communications of Your Battalion(s).
 - c. Regimental (Separate Battalion) Administration in the Field.
 - d. The Tactical Use of (*)-mm. Artillery in the Attack of an Organized Position.
 - e. The Characteristics of the (*) howitzer (gun), to include:
 - (1) Ammunition
 - Types
 - Weight (complete round and packed round)
 - (2) Burst effect (yards)
 - Range
 - Lateral
 - (3) Extreme range (yards)
 - (4) Traverse permitted by carriage (mils)
 - (5) Rates of fire (short bursts, and prolonged)
 - (6) Time to emplace
 - (7) Weight of heaviest vehicle (with T/BA load)
 - (8) Ammunition Transport
 - Rounds per vehicle or animal
 - (9) Marches
 - Average rate
 - Average day's march

(*) Insert caliber of the weapon with which your organization is armed.

S-2's

PART C—Value 35%

Substantially the same as Battery RO's Examination.

S-3's

PART C—Value 35%

Wt. No.

1. GENERAL SITUATION—*a.* Map: Inclosure No. 1, Special Map A (Special Map No. 4, Army Extension Courses).

b. Blue (south) and Red (north) are at war.

c. The Blue I Corps is advancing to the north.

2. SPECIAL SITUATION (BLUE)—*a.* The 1st Division (triangular), part of the I Corps, has been ordered to reach the line Wentz (80-35)—Kingsdale (60-36) by daylight 19 September.

b. During the night 17-18 September, the division commander learned that a Red force, estimated as four infantry battalions reinforced by a light artillery battalion and a weak cavalry squadron, was occupying a defensive position near Mt. Pleasant (70-26) (See Special Map A).

c. At 1100, 18 September, the 1st Division attacked and after meeting stubborn resistance drove the Red force

toward the north. At 1400, 18 September, the situation is as shown on Special Map A.

d. Major General "1st Division" ordered the 3d Infantry (division reserve) to an assembly position northwest of Bachman Mills (76-29). At 1345, 18 September, the 3d Infantry was moving into this assembly area, and had notified the division commander it would attack at 1500. The remainder of the 1st Division resumes the attack at the same hour, on division order.

e. *The 3d Field Artillery Battalion* — at 1230, 18 September, the 3d Field Artillery Battalion was ordered to displace forward to positions in vicinity C. Rose (74-30) and support the attack of the 3d Infantry. Following his reconnaissance, Lieutenant Colonel "3d Field Artillery Battalion" conferred with Colonel "3d Infantry" and was informed that the 3d Infantry would attack with the 1st and 2d Battalions in assault, the 3d Battalion in reserve. The 2d Battalion on the right will make the main effort, using as a line of departure the line now held by the 1st Squadron 1st Cavalry. At 1400, on the hill 200 yards south of RJ 670-E (74-30), Lieutenant Colonel, "3d Field Artillery Battalion" issued a complete oral order to members of his staff and the battery commanders. Notes of this order were kept by the battalion S-3*.

Btry. B: Position: along unimproved road near stream crossing at (74.8-30.3).

OP: Vicinity of bn. on this hill.

Zone of Fire: Zone of action 3d Inf.

Zones of observation:

Btry A: Left third of zone.

Btry B: Center third.

Btry C: Right third.

Left boundary 3d Inf: Munson (72-29)—RJ 568-G (70-30)—RJ 790-F (69-32)—Little (68-33) to 3d Inf.

Btry C:

Position: Vicinity of stream crossing 100 yards southeast of C. Rose (74-30).

OP: Hill 862-b (74-31).

Zone of Fire: Zone of action 3d Inf.

Bn CP: Vicinity 3d Inf near house at (75.5-29.3).

Bn OP: On hill 200 yards south of RJ 670-E (74-30).

Bn to support 3d Inf.

Firing Chart: Special Map No. 4 A.E.C.

Bn order being issued is Field Order No. 15.

Base point: Dead tree on hill 806-a (72-31).

Any doubtful points will be cleared up and watches will be synchronized before officers leave this point.

*The notes made by S-3 are not in the form or sequence prescribed for field orders nor do they repeat information given on Special Map A or in the special situation which formed the bases for the "Information" paragraph of the battalion commander's order.

Bn S & A Btry to bivouac in woods near RJ 690-H (74-28).

Minimum range line to be enemy front line.

Bn circuits to be laid to btry switchboards near gun positions.

Bn aid station to be in woods along stream at (74.8-29.5).

Bn reference point: Dead tree on hill 806-a (72-31).

Bn fire missions later.

Btry B register.

Btrys to be released upon completion of oral order; bn is near RJ 670-F (74-28).

Btry A:

Position: In orchard near house at (74.5-29.7).

OP: Hill 805-b (73-29).

Zone of fire: Zone of action, 3d Inf.

Requirement: Prepare the written order of the battalion commander in the form and sequence prescribed for field orders.

S-4's

PART C—Value 35%

Notes: a. This part of the examination consists of an ammunition supply problem for a *Truck-drawn 105-mm. Howitzer Battalion*. All S-4's are at the *same disadvantage*, there being no 105-mm. Howitzer organization in the Brigade at the present time. The principles involved are identical with those for the ammunition supply of your own organization. Reference will necessarily be made to *similar although different tables* in the reference manuals.

b. Be sure that your work is understandable. Refer to reference tables by paragraph and manual number, and be free with explanatory remarks. Otherwise, a numerical error or other slip on your part may render your work incomprehensible to the grading officer.

* * * * *

Wt. No.

35 14. You are S-4 of a truck-drawn 105-mm. howitzer FA battalion, which is organically part of the 7th Inf. Div., which is part of the II Army Corps. It is the afternoon of 2 June, 1942. The Corps attacks tomorrow morning. Your battalion is in concealed bivouac, *as shown on the attached sketch*. The sketch also contains pertinent extracts affecting Class V supply, from the 7th Div. attack order.

The status of ammunition supply in your battalion at present is:

Ammunition Train—T/BA loads intact.

Battery A—240 rounds

Battery B—196 rounds

Battery C—211 rounds

You coordinate with Battalion S-3 and learn that the attack tomorrow morning will be preceded by a 20-minute preparation by all batteries, and that the division objective will probably be reached in three hours.

By battalion SOP, prime movers and executive officer's trucks are *not* available for ammunition resupply. Your experience indicates that it takes 20 minutes (Par. 101c, FM 101-10) to load or unload one ammunition truck with trailer.

Requirements:

1. How much ammunition will you have to haul tonight?
2. What is your detailed plan, with estimated time schedule, for the supply of this ammunition?
3. How many rounds of ammunition are available to you at the Supply Point?
4. How is 105-mm. ammunition packed, and how much does each bundle weigh?
5. What dealings, at what times, will you have with what Ordnance personnel?

Pertinent extracts, affecting CI V supply, from 7th Div attack order:

"Main Supply Road—Route 6.

1st FA Bn occupy position shown, via Main Supply Road, leaving bivouac at 2100, 2 June.

CI V Supply Point: GLADWIN, opens 2100, 2 June 1942, Credits: 3 u/f, all cl.

No troop or unit train movements prior to 2100, 2 June 1942.

All night movements without lights.

No north-south movement through CR 207 between the hours 2300 through 0200, 2-3 June, 1942."

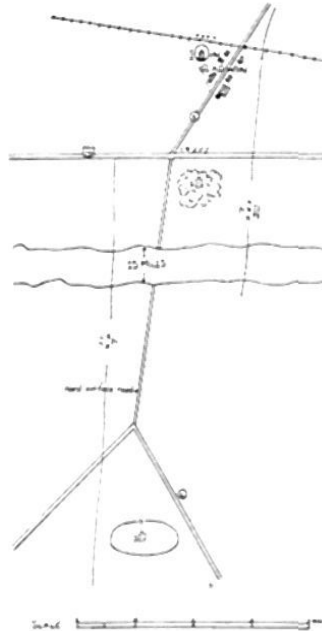




Figure 1—Smooth the tarp and spread on plenty of brush.



Figure 2—Get tarp mostly afloat, and roll howitzer on while men hold back on edges of tarp.



Figure 3—Put more brush around the howitzer.



Figure 4—Fold edges of tarp up on the howitzer.



Figure 5—Tie the ropes, folding corners of tarp like a package.



Figure 6—G.I. paddles take the howitzer to the other side.

AQUA-BLITZING, CONTINUED

By Lt. John B. Sweger, FA



From weapons carrier to racing shell! But a better coxswain might even up the stroke?

Naturally enough, there were plenty of skeptics who didn't believe that it would be as easy to float field pieces as was claimed by the 13th Battalion, Fourth Regiment, Field Artillery Replacement Training Center, Fort Bragg. There were quite a few officers who were questioning the claims that floating artillery weapons would be simplicity itself.

In the January, 1942, issue of *THE FIELD ARTILLERY JOURNAL*, the author had an article entitled *Aqua-Blitzing* which outlined the technique used by the 13th Bn to float trucks. Since winter winds and a stiff training schedule made it impossible for the 13th to develop a technique to float light field artillery pieces, we merely stated that the problem was worrying us only slightly and that we could float them easily enough.

While complaints were rolling in that we were doing more talking than acting, the training schedule was accelerated. Thus we had no opportunity to support our claims. Recently, however, the Signal Corps sent Lt. Ben Wetzler, an ex-Hollywood cameraman, to make a training film on floating of trucks and guns. So it was either put up or not get our profiles in the newsreels.

Fortunately, field expedients were coming up on the training schedule. We therefore found it convenient to shoot the film, continue the experiments, and do our training all at one time. For the first part of the training film we were making, jeeps, weapons carriers, and ton-and-a-half cargo vehicles were floated. Principles which were earlier outlined in the *JOURNAL* were employed.

Briefly, the procedure used to float vehicles consists of laying on the water a tarpaulin with men stationed about three feet apart along the edges, driving the vehicle onto the tarp in two-wheel drive until the front wheels are afloat, wrapping the canvas around the vehicle and tying it, and then boosting the "craft" outward until the back wheels are afloat.

Up to that point we were on familiar ground, because we had conducted a number of experiments with trucks; but then the problem of floating the field pieces reared its ugly head once again. With orders from the Battalion Commander to proceed with the project but to be careful not to dunk any of the pieces, we set out.

A 37-mm. antitank gun was the first to be tried. It was on this weapon that we developed the technique which was used to convey 105-mm. howitzers across the lakes of the Fort Bragg reservation.

Floating of artillery weapons proved to be very similar to floating trucks. The first step was to place men every three feet around the edges of the canvas, which had tie ropes on it; these men walked out into the water until about three feet of the tarpaulin remained on the ground. Another crew then rolled the piece down to the water's edge and onto the canvas, the muzzle going first.

This much of the process went smoothly enough because we had used the same technique on the trucks. From then on, however, it was unexplored territory. All that was needed was a little mental perspiration and a few duckings to bring out the correct procedure.

We first tried the 37-mm. gun in traveling position. But after being shown that there wasn't enough surface for water displacement, we learned our first lesson—that the trails should be spread. Two other pointers were obtained as a result of spreading the trails. First, there must be something to dull the points of the spades, especially if there are to be any passengers. This lesson was learned the hard way—by having to repair the canvas. The solution was easy, however: simply place blocks or padding under the points of the spades.

The second discovery was that after the trails are spread, there is nothing between them to give stability to the canvas to displace sufficient water. The tarpaulin bulged and let the weapon sink too deeply into the water. Our original plan was to lash poles or boards across the trails, but this idea was rejected for several reasons: equipment for lashing might not be present in the battery's equipment; it seemed to take too much time to prepare the piece for launching; lastly and mainly, we didn't believe that it gave enough support to the part of the weapon in front of the two wheels, although this probably could have been counteracted by securing two poles or timbers perpendicular to the axle and having cross members in front of the wheels.

While we were scanning the terrain for suitable natural materials to aid in giving a substantial surface, Lt. Col. Tom McGregor hit on the idea which was finally



Even cargo trucks succumb to the Aquablitz. From his nonchalance, the bow lookout appears to be a seasoned mariner.

adopted and which worked wonderfully. "Why not put brush inside the tarp to provide the necessary surface needed for water displacement?" the colonel asked Lt. K. R. Jones. Well, why not?

So our detail was sent in search of armfuls of brush. The tarp was spread on the water in the usual fashion and the brush piled on. A 37-mm. gun was then rolled on until the wheels were nearly afloat and the 'paulin tied securely. When shoved out into deeper water, it floated like a cake of Ivory soap. Several persons were put aboard with long handled shovels as paddles, and the experiment was termed successful.

There were several lessons we learned which must be followed if the best performance is to be obtained. There must be plenty of brush under the tube, beneath the axle, and between the spread trails. Also better results are secured if the corners made by folding the tarpaulin around trails are folded like the corners of a package instead of merely drawing up the tie ropes and fastening them. This is contrary to the truck floating technique, in which the corners are brought toward the diagonals and tied to prevent seepage. But the trails don't sink deep enough in the water to cause leakage.

A 105-mm. howitzer was next on the list and the same technique was successfully used on it. Because of its larger overall dimensions, the howitzer had approximately the same draft as the 37-mm. gun, despite its considerably greater weight.

Incidentally, while we were filming the floating of the howitzer the weapon was gotten into the water readily enough, but it was three hours later before we could haul it out—the sun went behind a cloud and we had to wait for more sunlight to prevent a contrast in lighting. Only a few quarts of water leaked in.

The equipment used in all these experiments consists of only two pieces of tarpaulin. One piece when doubled is about three feet wide and approximately 16 feet long: this is used as a "diaper" to prevent tearing of the main canvas by spring shackles and U-bolts. The other tarp is a multipatched canvas, 18 feet wide and 24 feet long.

As a sidelight to the training film, we sky-lined a jeep (¼-ton reconnaissance car) for the camera. There's nothing new in "stringing up a jeep," in fact, it has been old stuff since the colonel from the Engineers, identity unknown, was photographed as he and his dog were spilled into the drink when their jeep tipped sideways. We used a different hookup, however, so that it was impossible for the jeep to tilt.

For the benefit of those who haven't had a chance to observe sky-lining, here it is in a nutshell. Equipment is a large truck (preferably a Diamond-T) with a good winch and cable, two snatch blocks, two tow chains, and a coil of rope. It is also handy to have a tractor chain, steel pins from Holmes anchor stakes, a sledge hammer, and pioneer equipment.

The first step is to find a suitable terrain. Requisites for a good location are a fairly high bluff on one side and a good anchor on the other, although it is preferable to have high banks on both sides. Any live tree which has good roots and is over a foot in diameter is sufficient to anchor the free end of the winch cable. The higher the banks the better in most cases, because the safety factor of the cable lessens as the cable is tightened. Even if the cable is drawn as tight as possible, there will be a sag due to the weight of the jeep; therefore, about ten feet of drop must be allowed for at the middle point of the outstretched cable.

After picking the location, the next step is to dig holes for the wheels of the winch truck, which has a tendency to slip when the jeep gets started across. It is necessary to dig in only the front wheels, unless the slant of the bank puts the truck's front end so far down that the winch cable rides against the bumper when tightened. It is also advisable either to anchor the truck to a tree or to couple another truck in tandem with the winch truck to form a suitable base. Wheels of both trucks should be chocked with logs, which can be held in place by anchor pins.

Two or three men then have to get across to the other bank. They take the end of a rope with them so they can haul the winch cable across. The cable is then unwound, tied to the rope, and pulled across. A tow chain or a tractor chain is also taken to the other side via the rope. The chain is wrapped around the tree and the cable is hooked to it. Then the cable is tightened and the jeep driven under it.

In hooking up the rear end of the jeep, the two ends of a tow chain are dropped through the rear bumpers. These ends are then taken around the frame twice and brought up through the bumpers. It is necessary to be careful of the stoplight wiring when wrapping the chain around the frame members. A snatch block is threaded on the cable. The loop formed by the middle of the

chain is placed over the hook of the snatch block, as well as the loops on the ends of the chain. The small hooks of the tow chain are then fastened into the chain as an additional safety precaution. Prior to attaching the chain to the rear of the vehicle, the back seat should be folded up to prevent it from being bent.

The front end is hooked up in the same manner. This sort of triangular hookup gives plenty of stability to the jeep and prevents it from tipping over, as happened in the case of the Engineer colonel who had a straight bumper-to-snatch block tieup.

After getting the jeep rigged up, the winch line is tightened and everything is ready to go. A rope should be tied to the rear of the jeep and snubbed to a tree so the vehicle can be returned to the near bank if something goes wrong. After tying a line to the front of the jeep, it's time to ease the vehicle off the bank. During this operation, the driver of the winch truck applies his brakes to keep from slipping. Three or four persons can then mount and ride

to the far bank. The jeep will go merrily along the cable, until it reaches the maximum sag of the cable. Here's where the rope on the front bumper means the difference between a successful journey or a trip which ends midway.

It might be well to mention several safety precautions of winch operation for inexperienced officers. First, the reverse gear on the winch is to be used only when lowering away a load or when slacking the cable to loosen it from the tow hooks. The self-energizing brake which automatically goes on when the winch is reversed will be burned out if the entire length of the cable is played out in reverse gear. When running out the cable while there's no load on it the jaw clutch should be disengaged.

When unwinding the cable, one man should stand by to put pressure on the drum to keep the cable from backlashing. And when winding the cable on the drum, it should be guided on by one man standing in front of the truck while another person keeps the coils close together.

If the cable isn't wound on smoothly, part of it will be flattened out when a load is put on the cable, thus making some strands longer than the others. Thus, if the cable is used again, all the load will be put on the short strands, thereby lowering the tensile strength of the cable.

Also, lest a broken cable whiz near your head, you should inspect the cable and the jaws of the clutch before



The amphibious jeep can tow a "37" as well afloat as ashore.

using the winch. Further, one and only one person should be in charge and give instructions. Everyone should stand clear when a load is being pulled.

Sky-lining can be used successfully many times when floating a truck or gun would be impossible. A deep chasm, heavy bog, or numerous other incidents of nature might make sky-lining more practical than floating. All in all, however, it's easier to ride through the water than the air. Advantages of floating a vehicle or artillery piece over sky-lining it are that it takes less experience, knowledge, time, and that there's not as much danger of injury to materiel or personnel.

After the experiments were completed and the last foot of film exposed, Lt. Col. McGregor, who commands the 13th Battalion, said that pretty soon we are going to quit playing around with the little stuff and float something that has some weight—say a 155-mm. howitzer or a GPF. Could be ——??

The destruction of an empire precedes the war that wrecks it. Such a war is not the cause; it is only the culmination of national ruin, the conflagration and wild clamor that mark its end.

Disastrous wars are the failures of peace.

One must look to the peace that preceded an international struggle to determine its issue, and never to the war itself. This error in failing to differentiate between real and apparent causes leads nations to trust themselves to the luck of war. Yet cause and effect are not dice, nor natural laws a game of chance.

LEA, *The Day of the Saxon*.

ARTILLERY

A Chapter from the Forthcoming "War in the West"

By Daniel Vilfroy

In all wars of history the combatant afoot, stopped by an enemy entrenched or uncovered, has resorted to a special means to help him remove the obstacles and resume his advance. To attain this end, the gun was invented and perfected; modern armies add to this the air bomb and the mechanized and armored gun.

Let us not pretend to enter into the details of this scientific arm which might well have been rendered more complex by its specialists in order to inspire a fearful respect. Artillery's role is to foster the progression of the "Queen of Battles." Reduced to its essential features, the problem presents itself in the following manner.

An infantry unit attacks, supported by guns in place. Suddenly it finds itself pinned to the ground by automatic weapons which have not been neutralized. One of two causes immediately explains the breakdown of the attack; either the artillery preparation has been insufficient or after a certain time the support of direct firing and the line of infantrymen or the points most important to be silenced have not kept together.

The infantry is not always capable of settling the difficulty by its own means (i.e., by using mortars or by maneuvering to outflank the enemy). Likewise the artillery is not always able to bring its fire upon the dangerous points in due time or in an efficient manner. At once, the attack is stopped for an indefinite period until the impeding points can be clearly designated to the artilleryman or until an artillery preparation of the entire zone by means of a shower of ammunition can reopen the road. During such a delay the enemy reshapes his system of fire, reinforces his defenses, and perhaps even resorts to a counterattack.

Thus until November 1918 the most brilliant counterattacks failed or crawled painfully in front of a few miserable machine guns. Such was the experience of any infantryman, of any artilleryman, of 1914-1918. No one was at fault, because at that time the weapons, which any modern army utilizes if it is to succeed and justify the confidence put into it by citizens and soldiers alike, were nonexistent or ill-adapted.

What happened was very simple: nine times out of ten the infantryman alone could see the arm or arms which checked him. And he saw indistinctly, because he was lying down. Locating the opposition clearly was still another problem. Then the information, once obtained, had to be transmitted first out of the zone of crawling and

then within a reasonable period of time by a liaison agent to the company or the battalion commander. But a horsedrawn artillery was unable to intervene in due time, for it could not approach the objective sufficiently close to prove really efficient. Consequently, unless some artillery of immediate support accompanied it, the infantry simply could not renew its advance. It was said that though he could see, the infantryman had no means of reducing the weapon, whereas the artilleryman, having the means, could not see.

Such is the obsolete formula. And still in 1940, this conformist system was applied throughout the French army. Indeed, there have been some praiseworthy exceptions which, in the artillery as in the other arms, have stood with honor in comparison with their opponent. In every field France had turned out excellent prototypes, but it is as though she refused to accept the consequences of her ideas.

The French artillery could not observe because the characteristics of its materiel—ballistical and tactical—allowed it neither to take up positions near the infantryman or to maneuver close to this infantry.

Hence the problem was converted into a problem of communication: how can the "infantryman who sees" transmit the data of his observations to the "artilleryman who does not see"? The only handy means of communication, the telephone, is excluded *a priori* in any attack launched at a good pace. As soon as the infantry moves an appreciable distance it gets widely separated from the artillery. The support is long in coming, and we then arrive at unreasonable delays of intervention which are completely unacceptable in modern warfare.

But this is not all. An artillery firing from too far is incapable of obtaining serious results; its force of penetration diminishes considerably and it cannot modify the direction of its fires, which depend upon the moves of a mobile objective. If the objectives are spread and scattered in a deep zone, the task surpasses the possibilities of the most numerous batteries. You merely sprinkle the terrain and you squander the ammunition.

Hence artillery should get nearer to infantry,* and it is also indispensable that a great part of the preparation be realized at the same time as the progression of the infantry.

*An alternative makes best use of the artillery's characteristics: numerous forward observers who cover the entire zone of advance, with effective radio communication via new types of sets.—Ed.

On one side the French had kept the dear old gun of 1914 without any important improvement, the 75 which, with three caissons of ammunition, crawled miserably on the infernal roads of the countryside with its 26 or 28 horses and just as many men, an enormous target of flesh atrociously helpless. On the other side, the Germans codified in their regulations the new processes of their infantry batteries and of their minenwerfers and strove to improve them constantly. A regulation of German artillery says "Some mechanized cannons must always be ready. They must be pushed ahead with the first echelon of infantry. If these pieces are suitably conceived (treads), they will move more quickly in cut up terrain than horse-drawn pieces." Therefore, after having passed the Lower Seine on the 10th of June, the Germans were already able to support their infiltrations by artillery.

Generally speaking, good work has been performed during this war only by the artillery firing directly. When it was mechanized it had time to get away before being captured. When it was drawn by horses it was chopped up on the spot; what remained fell into the hands of the Germans. The French artilleryman of the old vintage fell on his deadly mower whenever he used it à la moderne, namely firing pointblank.

One of the most thorny problems in modern warfare is the support that artillery must give to the tanks in the attack. Let us not believe indeed that the tank is effective in all circumstances. It is not always able to penetrate into a position; anyhow it cannot do anything in the piercing of a fortified line or a strong natural barrier. At Sedan it did not play any role; furthermore, the German tanks were unable to dent the K.W. Line as long as the artillery was not in position.

A good combination of tanks and infantry is very difficult to realize and, in fact, the Germans have not kept it according to the form which was recommended in France. Both arms are completely different by their mode of action and their speed; above all, they do not have the same enemies. It is without doubt one of the weak points of the modern armies, and the fact that it provokes so many endless controversies shows that there is much to be done in this field.

The official doctrine in France was that the arrival of the attacking infantrymen provokes the all-out opening up of the arms of the defense and should thus allow the tanks to discover and to destroy them. In this set-up the artillery does not neutralize the enemy and prepare the attack; it only "supports" it. This support relied on the belief that the French tank, well protected with its 30-mm. of armor, had acquired a sufficient invulnerability against the infantry gun and even in certain conditions the artillery gun. The tank tended to become an "assault tank" — which was precisely its official appellation. The hostilities have proved the

falseness of this conception, which unfortunately was the only positive one in the French army.

Neutralization, which was thus given up by the French, was more than ever in honor of the German army of 1940. It had been conceived in 1917 by the German artillery. It is not a complete destruction of the enemy, which is impossible; it is a temporary annihilation of the personnel, its effect is prolonged for a short time and obtained by firing many shells during a brief time and on a given area. Neutralizations lose all their effect if they are limited in



Among the varied types of French artillery was this 194-mm. gun on self-propelled mount (track-laying).

surface and weak in intensity. But against an entrenched enemy, against antitank guns protected by armor, all the old style artillery fires of neutralization are insufficient.

This is why the French doctrine had systematically given up the previous destruction of the antitank guns, since the execution of a general preparation of artillery would have been necessary. It was content with a protection *a posteriori*—i.e., in the course of attacking—which is begging the question. When you send ahead tanks to neutralize obstacles in order to be able to penetrate into the enemy disposition, you commit a sophism: you avail yourself of the solution of a problem which has not been considered—the previous neutralization of the enemy's barrage.

France had no appropriate artillery or aviation. Any generalization based on her case is vitiated by that. Nothing is more certain than the German tanks have played their tremendous role only because of the lack of French antitank guns and also because of the previous and suitable neutralization of the defense by the German assault aviation or the German artillery: this is precisely the mission of these two arms. Each time the German tanks had to deal with an enemy not neutralized, dug in, even relatively weak—such as in small ringed strongholds—they have been repelled.

Nowadays the battlefield has not the same aspect as in 1918. To the swarming of automatic weapons is added the multiplication of antitank guns. There is no

longer a continuous line, but there are numerous small groups and axes of efforts. Your opponent is no longer a huge brute, a strong and slow boxer; he is a supple fighter who jabs, feints, and unexpectedly strikes. You must always be on your toes and counterattack him so as to break up his attacks. But when the objectives divide themselves and multiply, become smaller and more resistant or more mobile, the old processes are no longer possible. The French artillery appeared in this war just as



Caisson for the 194-mm. was also a self-propelled, track-laying vehicle.

inadequate as would have been in 1914 the artillery of Gustav Adolphus; it sent irradiating fires, but at extreme range, blind, and more theoretical than efficient.

The cause of all these errors in France has been the fatal centralization, one which was absolute, tyrannic, unchangeable, and prevented the use of a part of the artillery to the decentralized and mobile action which ought to be the constant rule when infantry does not occupy stable positions.

Generally speaking, be it a question of supple maneuvering or attack in force, it is in the zone of infantry that the decisive and definitive act of any battle unrolls itself. If the infantry does not pass, nothing is done. In a war of movement, in the offensive as in the defensive, it has been impossible to solve the difficulties of liaison between infantry and artillery. They had to be discarded during the war of 1940: this is why the 75-mm. guns were used pointblank against German tanks, with very powerful results; however, it may be said that this gun, if its muzzle velocity had been raised, would possibly have increased its precision, and certainly its piercing power.

It is irritating to think that it is not always because the high military circles had not thought of the proper solutions that France entered this war poorly armed. One of the most discouraging stories is that of the gun for direct support of infantry, which was inspired from the minenwerfer. The technicians had agreed upon the qualities to demand from this weapon, but the main point of discussion was not concerned with choosing and trying it out. It was a question of deciding if the gun to be built

was to be commanded by artillerymen or infantrymen. They did much hairsplitting about it, and from controversy to controversy nothing was undertaken at all. Unbelievable perhaps, but true nevertheless!

Since decentralization apparently meant a certain subordination of artillery to infantry, the French artillerymen have deliberately refused to envisage it for 20 years. Everything happened as if they had said to the infantrymen, "All for you, all right! But nothing by you!

We alone!" They have thus skipped the modern formulas which, far from diminishing their prestige, would have assured for them, together with their increasing importance and technique, the real and useful accomplishment of their indispensable mission.

One could hardly quote a better example of the spirit of clique and coterie which, at the expense of the public welfare and of the salvation of the country, raised the administrations and the institutions one against the other. Only well informed people were to know that it was the same with the military as with the civilians. The masses, more and more estranged from their leaders, gave all their confidence to the military command, about

which they knew nothing because it did nothing.

The French artillerymen had been led into a deadlock; as long as the general formula of the arm compelled it to be remote and paralyzed, it could not answer its mission. In order to volatilize isolated points on the battlefield, artillery could do nothing but fire on wide areas. It did not guarantee the result, exhausted its ammunition instead of delivering thunderous, economical, and unflinching intervention. This kind of artillery, in all cases where it supports the infantryman, pursues the ridiculous pretense to attack points or frontal positions which are minute and thin with a weapon whose greatest dispersion is in depth.

The more the power of the old vintage artillery increased, the heavier and the harder to move it became. Its ammunition followed with difficulty, the rhythm of fire slowed up. Finally it lost in output what it gained in range. It got out of breath just as a middle-aged person who has grown corpulent. Then it was unable to follow and support the movements of the combatants. Besides, it would not have been sufficient that the guns be moved more quickly, since they had to be accompanied by enormous masses of ammunition; but these masses were indispensable, because the artillery squandered them. More and more vulnerable and able to fire farther and farther, this artillery was lured to take up positions comfortably defiladed. But in firing from far back the probable error was increased, hence the fire lost in precision. At the same time, difficulties of adjusting the fire were increased.

The conditions of the existence of modern artillery are completely opposite. It must correct the unwieldiness

of power by the most integral mobility; it must fire quickly and be precise so as to obtain from a given weight of missiles the highest output; then it will collect immediately conclusive results, without resorting to these groupings of batteries which complicate its moves, its firing, and its maneuvering possibilities. It must take advantage of all its precision in firing from the most advanced positions and, for that purpose, must be rendered as invulnerable as possible. But not only should such an artillery possess these qualities; it also must be able to appear in the inferno of the modern battlefield. One of the most terrifying spectacles on the Somme was the piling up of the gun crews, killed on their intact guns. This is why the modern gun of direct intervention should also be hoisted on treads and slightly armored.

Let us imagine the ideal modern artillery:

Firing quickly, with a terrific violence, protected by a shield against bullets and fragments, it then can be brought nearer to the limit where it does not risk falling within close range of the armor piercing weapons and of the guns of the enemy. The artillery can be pushed behind advanced ridges or screens, utilizing in this manner all the range of the flat trajectory of guns, as well as all the precision of the curved trajectory of howitzers. There it can execute thunderlike interventions well prepared by previous reconnaissance, then disappear before the enemy can detect and counterfire it.

This characteristic of ability to change positions quickly becomes the best safeguard of the artillery on a terrain covered by inquisitive trajectories, or against the tornadoes of the opposing artillery. It is a dynamic artillery, opposed to the static artillery which is, in our times, dead wood for the offensive.

This artillery is armored. Since the gun has not, like the tank, to be exposed in front of infantry, but in the most unfavorable cases fires some hundreds of yards back of the first positions, complete and staunch armor is useless; it would only make the gun heavier. The gun needs low and streamlined form; its hide is enveloping; it offers, in front and on the sides, a carapace similar to that of the tank, but it leaves in the rear and close to the ground a spacious niche where the crews and the firing apparatus find their place behind steel wings. Here is a simple protection pierced only by a shell shattering at pointblank range.

This artillery is mounted on treads and can hence be swung into immediate use. The commander of the battery has a cross-country armored car which is his OP and from which he directs the firing at sight. The telephone is replaced by radio. Changes of position are immediate. Part of the German artillery has adopted this formula.

Such an artillery, by its particular condition of use, is also called assault artillery. This expression when applied to artillery is correct; it is wrong when it designates the tanks, since the air force and artillery can alone open up a wedge. Infantry, defined by its capacity of dispersion and by its fluidity, is deprived of these very qualities. This

power of artillery, which is vulnerable, must then intervene in all security, in taking advantage of the modern protection—mobility. Armor protects the servants, but it is mobility which protects the gun.

This armored assault artillery delivers violent but very short fires. Changes of position are frequent, precisely because its technique permits them; they are made at the last moment and with extraordinary rapidity; they allow surprise and make the timely intervention of the opposing artillery very difficult. It is possible to get out of position immediately, once the lightning fire has been delivered.



Shells for the 194-mm. were loaded from a tray on a swinging bracket fixed to the mount.

Thus the guns move around sniping and even laying down barrages, when they are not dislodged.

The protection of this assault artillery is assured by infantry itself. In this zone close to the front, maneuvering and mobile firing are necessary. These new tactics, this skillful and resourceful mode of firing, are reminiscent of battles waged by tanks and of the particular technique of naval artillery. Of course it is not possible, as on the sea where the rolling of the ship is uniform, to fire while in movement. But at least there is intermittent firing, firing by leaps and bounds. The artillery piece moves rapidly between two shots or bursts of a few shots fired at full speed. In order to attain the maximum efficiency, the crews must be thoroughly familiar with handling their guns and have a highly developed sense of initiative and daring. But this is the true spirit of modern warfare, which has reestablished movement and the triumph of strategy.

It would have been indeed a role worthy of the French artillery to become the pirate of the modern battlefield! Instead, it became a stiff and rigid arm. When it moved, it had to take encumbered roads with its batteries, its trucks, and its horses. It was constantly sprinkled with air bombs and shells against which the personnel could be protected only by lying flat on the ground.

Mechanized artillery integrates the motor into the gun itself; it suppresses hitching devices and also this terrible

setback of which the arm has suffered since its origins, getting into position and going out of position. It is a self-propelled gun.

This is not all; modern artillery must give preeminence to the mortar over the gun.

Since the mortar and the howitzer have a curved trajectory, the precision of their missiles, which fall almost vertically, is greater than that of the shells of guns which hit the objective at a razing angle. Dispersion is sometimes considerable; it is a rectangle whose length is in the line of fire. But the missiles of the mortars disperse in a square, closely framing the objective. As modern artillery gets nearer to the positions of the infantry, it does not need the long range of the gun to engage nearby targets.

The missile of the mortar is also superior to that of the gun. It often contains a greater quantity of high explosive, and its fragments have an irradiating, razing, murderous, mowing effect. It provides a much more demoralizing impression than the gun. It is "death falling from the sky."

The mortar is offensive because it permits dealing with works and sheltered personnel. Since the modern battlefield has more and more resisting objectives, it is necessary to use mortars in direct support and in sufficient quantity.

Hence it is suitable to have in a modern army both an artillery of previous and permanent preparation (which is a heavier long-range artillery, capable of dealing with big works and general zones of attack) and also this newcomer imposed by the aspect of the modern battlefield (the artillery of close support and of immediate intervention). The latter acts in observed fire and in the atmosphere of the front. Tactically and technically, these two types are perfectly possible.

The artillery might leave to the infantry some guns specifically controlled by the latter, and which constitute a safety device against unforeseen resistances, but of course these guns are not enough. They would badly burden the battalions if they were multiplied. The volume, the power, the technique required by the general offensive support belong to a close and mobile artillery. It can act either in group or from defiladed positions. Its centralization, its movements, its decentralization—these are only problems of communications, which in this case are most simple to solve.

How then can a combined action of artillery and infantry be realized, in which the attack will start well and where the support of the fires "adheres" to the advance of the infantrymen?

First, the long-range artillery takes charge of all the preparation and the progressive support of the attack so as to preserve to the infantry its own fire power as long as possible. The infantry has only to take charge of the fires just in front of it, which are easy to execute. In this manner there is no possible misunderstanding between the arms in the adjustment of their fires. Armored and mechanized artillery follows the attacking infantry, utilizing the terrain to the utmost and preceded by its armored OPs. It shoots with extra-rapid methods, hidden as much as possible. As soon as anything checks the advance, it pushes ahead; it does not pass the infantryman, but gets near him to see and intervene directly. A few cannoneers, men whose skill makes up for the small number, men of action, "flying warriors." It really is an irresistible power which advances. It is the possibility, on the front of a battalion attacking on 500 meters, with two batteries of this sort, to treat an average of 2 to 3 objectives per piece, and in a conclusive manner.

Here is the veritable solution to the battle against the tanks. Indeed, the most dangerous enemy of the tank is not the tank; it is the mobile and precise gun. With this system the armored artillery outplays all the attacks of the enemy; first by its armor, for which count only the direct hits; then and mainly by its mobility. Gone are the ruses used to emplace the guns of the attack! No more are the showers of fire and steel on the guns of the defense!

To turn out such artillery outclasses once and for all the whole enemy artillery, guarantees victory!

Such is the system of artillery which would have particularly suited the French genius. Instead, it is the one toward which the German artillery tends, although it is far from having attained a perfect degree of efficiency. During the campaign of 1940, the latter acted with an absolute security except in a few sectors. In 1942, in Russia and in Libya, the Germans have used a 75-mm. assault gun, self-propelled and fitted with two radio receivers and one transmitter. Unfortunately, during the years that preceded the war the only progress made in France was in increasing ranges and designing a carriage with split trails for wider fields of fire; the time-consuming task of digging the pits slowed up some more again the emplacements, and increased the mortal danger from the triple menace of the tank, the shells, and the bombs. French batteries were unable to unhitch or to turn about toward an unforeseen attack. The whole structure of artillery had been nailed to the ground, whereas everything indicated that it should have been rendered elastic and mobile.

The wisdom of the human race only finds expression in the ignorance of the individual.

LEA, *The Day of the Saxon*

QUICKIE TRAINING IN MILITARY DRILL

By Capt. Charles W. Clark, Jr., AC

Suppose that you, second lieutenant, have dumped into your lap the job of drilling a class of new officers commissioned directly from civilian life. Suppose further that you are allotted ten one-hour drill periods in which to teach them close-order drill. What are you going to do?

Civilians are from time to time being commissioned direct from civilian life for special military duties. Most of these newly-commissioned officers have valuable contributions to make to our war effort and, in view of our shortage of trained officers, it would be absurd to turn down their services on academic grounds. Hence we not only accept them but are glad to get them.

Most of these men, however, are strict specialists and may never handle troops, although handling and moving a body of men is something which is a minimum requirement of *any* officer. Hence it is vitally necessary that these men be taught at least the rudiments of close-order drill.

How are you going to do it? It has been only a few weeks since you graduated from Officers' Candidate School yourself, and, to say the least, it is embarrassing to have captains and majors in your class. You *must* do it somehow, and here's how it's being done at one post.

The group assembles—to learn soldiering in ten easy lessons. Into the hands of each you thrust a mimeographed outline of the course, with proper text assignments. You also distribute the texts, taking memorandum receipts for them. The roll is called; all are present except one—he gets a please-reply-by-endorsement letter. The rest think that this is going to be fun; no need for them to take this stuff seriously. They shuffle and fiddle while they are supposed to be at attention.

Now is the time to exercise your vocal powers. Although you don't need to remind them of it in so many words, you rank any man in the class as long as they are in the class and you are the instructor. So start them out right by getting them to stand still. Also prescribe a proper uniform for future drills.

You'd better take along a 40-inch stick and an outline (on the smallest possible sheet of paper) of your drill program for the day. But *leave that Drill Manual behind!* To pull it out would brand you as a dub.

The drill ground having been reached, divide them into two platoons. Explain how commands are given, the significance of preparatory commands and commands of execution. Touch briefly on the proper voice for giving commands.

Next come definitions: column, line, depth, distance, double time, quick time, file, flank, head, interval, rank, and so on. Don't go into the subject too deeply, just enough so they won't talk about the *distance* from the man on the

left, or a *line* marching down the road. Now split them up into platoons.

Next come positions—attention, parade rest, at ease, rest, eyes right (left), right (left) dress. You'll need that forty-inch stick when they dress. Even experienced soldiers have a notion that the proper distance between ranks should enable the man behind to raise his arm and tap the back of the man ahead. The stick of proper length will help correct this fallacy.

Go through the facings, emphasize proper saluting. Take up marching to a flank and marching to the rear.

Each day outline your program on a small sheet of paper and carry the sheet with you. This is important; it's not a good idea to trust your memory; you might leave out something. For example, without a written reminder you might forget a movement so infrequently used, yet so important, as *Left Step* or *Change Step*. Here is our sample outline for the first day:

1. Organize into platoons.
2. General—All may some day have to command troops. This course will give an idea.
3. Commands—Preparatory; execution; proper voice, position, and attitude for giving commands. To revoke a command.
4. Definitions—Column, line, rank, file, flank, distance, interval, depth, front, double time, quick time.
5. Positions—Attention, parade rest, at ease, rest. Eyes right (left). Right (left) dress (also at close interval).
6. Facings—Right (left), about, half right (left).
7. Saluting.
8. Marching—Forward, by the right (left) flank, to the rear, mark time, side step, back step, change step, marching at ease, marching at route step. Halting.

This will give an idea of the sort of outline contemplated. Actually you can make it simpler than this—each item being a mere word, to serve as a reminder. Type it on a piece of paper not larger than the palm of your hand, and a similar outline for each day's class.

Practice commands by the students are very important. See that all get in their share of this—five minutes each at a time. After each officer has given commands for about a minute, halt operations long enough to criticize his method of delivery. Place emphasis on employment of a deep, clear voice; on giving the preparatory command slowly and clearly with a constantly rising inflection; on making the command of execution very sharp and short.

Company drill with two abbreviated platoons will require

some stretching of the imagination, but you can do it. It will require a very imaginative mind to run through a battalion parade using a 25-man platoon for each company, but you can do that if you borrow some experienced soldiers for guidon bearers and company officers. After all, you can hope to teach the new officers only the general idea of a parade. After this lesson have them witness a real parade, during which

you give appropriate explanations of what is happening at each point.

The officers already will have had an indoor class in Interior Guard Duty. Your lesson on this subject will cover posting a relief, challenging, saluting by a sentry, informal guard mount. One of your students may be Officer of the Day next week, and he should know what to do when the guard is changed.

DRILL SCHEDULE FOR NEWLY COMMISSIONED OFFICERS

Period	Type of Drill	Text Assignment
1st	1. General, Definitions and Commands 2. Organization of Squad, Platoon and Company 3. School of the Soldier, Dismounted and without Arms	All from FM 22-5 (except as noted otherwise), Chapters 1 and 2
2d	1. Drill of the Squad	Chapter 4, Section I (leaving out par. 127)
3d	1. Drill of the Platoon	Chapter 4, Section II (leaving out pars. 143 and 145)
4th	Review of Preceding Lessons; Practice Commands by Students	Review of Above
5th	Review of Preceding Lessons; Practice Commands by Students	Review of Above
6th	Drill of the Company	Chapter 4, Section III
7th	Drill of the Company	Chapter 4, Section III
8th	Review of Preceding Lessons; Practice Commands by Students	Review of Above
9th	Ceremonies—General	Chapters 8 and 9
10th	Interior Guard Duty and Procedure.	FM 26-5, Chapter I, Sections II and IV; Appendix I, pars. 1, 3, 4; Appendices III and IV

ARMY SUPPLY METHODS

By Maj. Gen. A. Karyakin, in *Red Star*

All Army transport, both truck and animal-drawn, is assembled within two or three miles of the railhead in the Army base. It delivers supplies to division distributing points at distances up to 40 or more miles. These greater hauls are made in one stage by trucks, and in two by animal transport. Where roads are bad, wet-weather reliance is placed on the animals.

At railhead, distributing points, and motor park for the reserves, are dispatchers' posts of two or three men. To them come all requisitions, whether directly from the unit needing supplies or from Army Headquarters. Whenever a dispatcher receives a requisition he calls for the necessary transport and gives the train commander an order slip which contains route, load, time loading schedule, time en route and for unloading, proper place to report near the front after unloading, cargo to bring back on the return trip, and time of arrival at the railhead. Transportation is used for various purposes on the return trip—to bring back wounded and return empty ammunition boxes and miscellaneous cargo.

In one typical case (see sketch), daily metric tonnage requirements were:

	Left Group	Right Group
Ammunition	100	50
Rations	250	100
Gasoline	150	100



The right group used 100 trucks and 800 four-wheeled animal-drawn carts to haul its daily 250 tons; half the carts were based at the railhead, the others about midway between railhead and distributing point. For the left group's 500 daily tons, 30 trucks and 200 carts sufficed. Another 30 trucks and 200 carts were kept in reserve near the Army railhead, for emergency use.

TACTICS OF AMBUSH

By Col. Pavel Rizin

EDITOR'S NOTE: *An artilleryman's protection of himself, his piece, and his position involves weapons and minor tactics once thought to belong only to the infantry or cavalry. The ambush is a case in point. Col. Rizin speaks with the "voice of experience," and has some practical suggestions.*

The commander of a Soviet infantry battalion acting on the defensive feared an enemy penetration on his flank. The terrain of the flank was thickly covered with bushes. There was an open meadowland in front, crossed by a shallow depression which ran from the enemy lines in the direction of the bushes, ending about 80 yards from them. Small groups of the enemy could use the depression to reach the bushes and then filter through behind the battalion lines.

To prevent any possibility of this, the commander decided to lay an ambush in the zone held by the right flank. A section of tommy-gunners under Senior Sergeant Bukvin was detailed for the ambush. The tommy-gunners crawled into the bushes under cover and took up suitable positions. The sergeant placed his men so that the enemy would be caught in enfilading fire, and ordered them not to fire without a signal from him.

The commander's fear was justified. As soon as the sun began to sink enemy tommy-gunners gathered in the depression one by one, until there were 40 of them. They moved carefully up the depression in the direction of the bushes. Soviet tommy-gunners, not betraying their position, followed the movement of the enemy group. The enemy left the depression and made a dash for the bushes. When they were within 50 yards the sergeant gave the signal, and a hail of lead burst on the Germans from three directions. About a dozen were killed instantly. The remainder threw themselves on the ground, but the level land offered no protection from bullets. The tommy-gunners continued to mow them down, disposing of the entire group in less than five minutes. The ambush had removed the danger of enemy penetration behind the battalion lines.

AMBUSCADES USED BY TANKS AND CAVALRY

During the present war ambushes are being used extensively, not only by infantry but also by other arms of the service, particularly tanks and cavalry. The infantry make use of ambushes everywhere—on the line of march, on reconnaissance, on convoy duty, and during both offensive and defensive actions. The most frequent point of ambush is the road along which the enemy is expected to move. Quite often small groups of infantry make their way behind the enemy lines to his communications and there

lay an ambush from which great losses can be caused to approaching enemy columns and transport.

A carefully prepared ambush makes it possible to inflict heavy losses on a numerically superior enemy. Success depends upon the suddenness and speed of the action. Sudden fire from a well-camouflaged group of troops or separate machine guns, followed by a bayonet charge, invariably proves successful.

The slightest neglect or too hurried preparation, on the other hand, may lead to the failure of the ambush. Not long ago an ambush of two infantry platoons under Lieutenant Strelnikov was stationed on a road along which an enemy infantry column was expected to arrive. The lieutenant placed his men in position. About a platoon of enemy infantry appeared on the road, the vanguard of a column two companies strong. When they arrived at the ambushed point, Lieutenant Strelnikov gave the order to fire. The vanguard was almost annihilated, but the column advancing behind them, hearing the firing, immediately extended in open order and prepared to give battle. The ambushers could only retreat.

This ambush failed because the lieutenant gave the order to fire prematurely. He should have let the vanguard pass, awaited the approach of the main body, and poured his fire suddenly into that column. It would have been better to split the ambush itself into several groups in different places, instead of keeping them all together, so that they could fire on the enemy from several directions simultaneously and at the same time confuse him with regard to the size of the ambush.

STRENGTH OF AMBUSH UNITS

Experience has shown that on roads and forest paths it is more advantageous to place an ambush on both sides of the road. The enemy is caught in enfilade fire and usually completely annihilated. As far as the strength of the unit used for ambush goes, this must be determined separately for each concrete case. Sometimes a company is required, sometimes a platoon, while it may even happen that a single section of tommy-gunners or riflemen is sufficient. It is important that the unit detailed for ambush should be mobile and able to make good use of cover.

Actual practice has shown that in organizing an ambush every detail of the plan of action must be carefully thought out—disposition of troops, fire strength, and actual moment of attack. Particular attention must be paid to the question of communication between groups placed on different sides of the road. And most important of all, it must be remembered that even a well-organized ambush can fail if the troops do not display both endurance and discipline. Poor camouflage, a slight movement, or a premature shot can give away the ambush and so lose the advantage of the element of surprise.

TANKS



By Lt. Col. P. Vegerchuk in
Red Star

IN A FOREST BATTLE

EDITOR'S NOTE: *Size and composition of small attacking units, distances between them, and the contents of foreign combat orders are seldom available. Their inclusion here makes this article of special interest to all units.*

Experience has proved that it is possible to use tanks in forest regions: the following is an example of such an operation.

On one sector of the front a Soviet Armored Guard unit was given the task of removing a threat to the communications of the advancing Soviet units. The tanks were confronted with a night march of 45 miles over a road through woods and swampy localities marred by ruts, shell holes, half ruined bridges, and (most dangerous of all) boulders and water from thawing snow.

From four to six hours were available for march preparations. A group consisting of a traffic platoon, an engineer platoon, and an antiaircraft unit was sent out for reconnaissance of the proposed route. Tank personnel carefully studied the route and all drivers were given special instructions. All machines were carefully checked and necessary last-minute repairs made.

As a result of careful preparations the unit arrived at the assembly point two hours before the allotted time without losing a wheeled or combat vehicle despite the darkness and poor roads. Although German scout planes combed the vicinity, apparently they found no signs of the movement. This is explained mainly by the fact that each man knew the conditions of march and observed well the traffic rules of the column.

Upon arrival at the assembly point, tank and infantry units immediately began to prepare for the attack. The intended battle ground consisted of forests and marshes. Trees were from 6 to 10 inches in diameter and numbered 125 to 150 per acre, fields were covered with 2 to 3 feet of melting snow. There were few roads or paths in the forest, and the Germans were entrenched and had mined and placed antitank guns on all approaches.

The location of the German defensive system was uncovered by reconnaissance and by raids carried out at all hours of the day and night. It was found that the enemy defense consisted of separate centers of resistance among which the Germans had not yet had time to organize a dependable system of fire. It appeared that the dugouts contained only mortars with which to stop attacking troops. Communications between garrisons were maintained by messengers on foot, as only a few had telephones.

The infantry CO gave his orders in effect as follows: The first echelon was directed to move forward quickly, penetrating deep into the defense area to disorganize the defensive system. The second tank echelon, one-half to one-third as strong as the first and carrying infantry and automatic riflemen, was directed to follow 500 meters behind the first and overcome the resistance of any remaining defense points. The combat order included the limits of the artillery, locations of command posts, firing positions, and azimuths of movement. Communications between echelons were directed to be maintained by flares, messenger, and radio, and communications between infantry and tanks by visual means.

In view of the conditions of the area the troops were divided into groups, each consisting of a rifle company, a mortar platoon, and two or three tanks. Each group

was directed to move strictly according to its own azimuth; movement on roads and paths was strictly forbidden since they were mined and defended by anti-tank weapons. The number of groups depended on the width of the front, the distance between them on the enemy defense strength: the number of fortified points per kilometer of front.

The attack began at 6:00 AM, when the first echelon of tanks and infantry moved forward supported by intense artillery fire. Infantry followed 20 to 50 meters behind and delivered fire from rifles, automatic rifles, and machine guns. They soon cut into the enemy defenses and broke his resistance: by wedging quickly into the enemy defense the first echelon made it impossible for the Germans to open artillery and mortar fire for fear of hitting their own troops. The Germans merely attempted to direct fire close to their defense formations. The second echelon, 500 meters behind the first, came through unscathed. The Germans were not able to bring accurate fire on this echelon either, because the first echelon of tanks and infantry had disrupted communications and interfered with artillery observation.

As tanks and infantry went deeper into the defensive territory the fighting grew fiercer. Hand-to-hand encounters occurred. The Germans offered strongest resistance in those areas where the garrisons had dugouts. When the Soviet infantry was not able to cope with the

dugouts, tanks came to their support; structures often collapsed under their weight.

In one case the tanks could not approach a dugout because of the thick trees that surrounded it, so five or six men were selected to crawl forward. One man threw hand grenades at the exit; another crawled to the smoke hole and dropped a series of grenades into the dugout; the others waited, ready to take care of possible counterattacks.

Excellent cooperation was displayed between tanks and infantry. Sometimes a tank, in crushing a dugout, would get trapped in the pit. Part of the infantry took over the defense while the rest helped get the tank out of the pit.

The Germans organized counterattack groups of 60 to 70 men, two or three antitank guns, and one or two light mortar batteries. They usually carried their attack along paths and roads rather than through the forest thickets. The Soviets answered these attacks by sending two or three tanks with twenty or thirty automatic riflemen in flank or rear counterattacks.

Groups of four or five tanks with infantry and automatic riflemen on them were used to pursue the retreating Germans. These pursuit groups, traveling by azimuth, seized path and road crossings to hinder the German retreat. They penetrated two or three kilometers into the enemy formation. The attack was a success.

HOW A TACTICAL ERROR WAS CORRECTED

By Col. N. Semyonov in *Red Star*

NOTE: All accounts of the war which have been appearing in the Soviet press recently contain self-criticism. That of the failure of commanders to make a thorough reconnaissance has appeared more than any other.

A German center of resistance was encountered in the southern sector of the Western Front. It occupied a small village on an elevation which afforded excellent observation; on both sides were small trees. About five miles from this village was an important railway junction in Soviet hands but under constant threat from the Germans. The German strength was less than a regiment of infantry plus a regiment of artillery and about 30 mortars and 5 tanks.

The Soviet commander of the unit making the first attempt to reduce the position failed to make a careful reconnaissance and so did not realize the depth of the snow over the route his tanks were to take. After the first attempt the tanks became stuck and the infantry came under artillery fire and had to withdraw. The second time the tanks reached the edge of the village but the Germans' stubborn street fighting caused the attack to fail.

The new Soviet commander who was assigned made a careful reconnaissance, located the enemy weapons, and

ascertained the German scheme of fire. He found that on the German left flank the firepower was weak and almost lacking in antitank weapons, so he decided to clear the tank approaches of snow and attach to the tanks sleighs carrying accompanying weapons. Artillery was to lay a barrage directly to the front to deceive the Germans as to the direction of attack.

Snow cleaning began at dark; some time later the artillery opened fire, action was rapid, the tanks reached the village, and accompanying weapons were pulled from the sleighs and put into action. The Germans required time to meet the attack, giving the tanks and accompanying weapons opportunity to deliver effective fire against the dugouts. The Soviets had 15 tanks, 14 mortars, and machine guns; the latter were used to drive the Germans from houses. The artillery which accompanied the tanks was used against machine gun nests and for counterbattery.

German reinforcements were sent from a neighboring village but a few light Soviet tanks which had been placed under cover in the village as soon as the German left flank had been penetrated, plus the small reserve which had also been moved up, were thrown against these reinforcements. The main Soviet infantry force was then able to approach the village and reduce it.



Before The Battle

By Boris Gorbatoff, in *Pravda*

Translated from the Russian by Lt. Paul S. Hall, FA

Comrade, five hours remain until dawn. In five hours, I shall go into battle. It is not alone for that grey hill in the distance that I do battle with the German. Nay, the struggle is for bigger things: it is to be determined who shall be master of my fate, I or the German. Until now I, you, each person has been his own master. For ourselves, we selected work according to vocation, profession according to liking, beloved according to the heart. Free people on a free land, we boldly looked into the Tomorrow.

But now the German is here. He will become master of your fate. He will crush your Today and steal your Tomorrow. He will rule over your life, your home, your family. He may deprive you of your natal home—and you will trudge away, bending your back in the rain, in the foul weather. He may spare your life—he needs working cattle—but he will make you a slave with a bowed, broken back.

But perhaps you endure everything? Perhaps you do not die like a dog? With dulled senses, you will become servile and lead a blind, famished, wretched existence!

I do not want such a life. Nay, better to die than such a life. Nay, better a bayonet in the heart than a yoke around the neck. Nay, better to die a hero than to live a slave.

I look through the night with the eyes of a man to whom the proximity of battle and death gives great perception. After many nights, days, months I see our triumph. Through streams of blood, through sufferings and distresses, through mire and horror we shall arrive at it. The enemy has suddenly attacked us. A terrible battle takes place. Now, there is no compromise. No choice. To choke to death, to exterminate, once and for all to finish off the Hitler beast. . . . And when the last fascist falls into the grave, and when the last volley of the howitzers grows silent—then, like a bad dream, the Brown Nightmare will be dispersed. And calm shall come, the majestic, enduring calm of victory. And we shall hear, Comrade, not only how the happy forest rustles its branches; we shall hear the whole world, all humanity, breathe gladly with relief. And then—the reestablished factories will smoke . . . life will begin to teem. A remarkable life, Comrade. A life on the free earth in brotherhood with all peoples. For such a life, even to die is not too much.

It is dawning, Comrade. Timid, grey shadows flit across the earth. Never before has life shown me such beauty as in this hour before dawn.

Yes, I very much want to live. To see victory. I love life intensely—and so I go now to battle. I go to battle for life. For a real, and not a slave, life. For the happiness of my children. For the good of my fatherland. For my own welfare.

Comrade, our orders have now been read! At dawn—to battle. Seven hours remain.

At some future time, I shall remember this night, the eve of October 30, 1941. How the moon glided over the steppe of the Don. How the stars trembled, as if chilled. How my neighbor tossed in his sleep. And how peace reigned over the hills, the trenches, the firing positions. Peace before the battle. And I lay in the trench, screening the lantern with the flap of my great-coat, writing a letter to you and thinking. . . . And like me, millions of warriors from the North Arctic Ocean to the Black Sea lay this night on the wet earth, covered with putrefied leaves, waiting for dawn and the battle and thinking of life and death and of their destiny.

Comrade, I desire much to live. To live, to breathe, to walk on this earth, to see the sky overhead. But I do not want to live, nor would I accept, just any sort of life.

Yesterday, a man crawled into our trench "from the other side," escaped from the Germans. He saw us, his own people, and began to cry. He shook all our hands; he wished to embrace us all. But his face trembled, and his lips quivered. And I looked at . . . at the *back* of this man. Only at the back. More frightful than any story was this back. For only a month and a half had this man been in German hands—but his back was bowed. As if his spine was broken. As if for the whole month and a half he went bowing, twisting, distorting his whole back in anticipation of a blow. This was the back of an enslaved man. It was then that I saw, with striking clarity, that this was what the German brought me: life with a bowed, broken back.

Diary of War Events

OCTOBER, 1942

- 1st Germans advance slightly in northwest Stalingrad, are repulsed in Caucasus.
British straighten El Alamein line, seizing Axis strong points in center.
United Nations troops advance in Owen Stanley mountains, New Guinea.
- 2d U. S. subs sink 5 Jap ships, including plane tender, in Far East; Army bombers sink two in Aleutians.
Australians advance in New Guinea along Port Moresby-Buna trail.
- 3d Russians rally, advance slightly in Stalingrad.
U. S. troops occupy Andreanoff group in Aleutians, near Kiska.
Japs again land reinforcements on Guadalcanal, despite crippling of cruiser.
- 4th Russians, after losing village north of Stalingrad, counterattack in entire northwest sector.
- 5th Japs land reinforcements on Guadalcanal.
Army bombers operating from Andreanoff base bomb Kiska.
Germans attacking again north of Stalingrad.
- 6th Australian New Guinea forces reach crest of Owen Stanley Mountains without serious opposition.
- 7th Japs have withdrawn from Attu and Agattu in Aleutians; Kiska heavily bombed.
Russians lose village in Mozdok area of Caucasus, press German left flank at Stalingrad.
- 8th Carrier-based planes damage 5 Jap warships in northern Solomons.
Germans take 2 Stalingrad streets at cost of 2,000 killed.
- 9th German advance on steppes 100 miles below Stalingrad menaces Russians' left flank and port of Astrakhan, 200 miles to east.
Greatest daylight raid on continent includes 100 U. S. 4-motor bombers in attack on Lille.
60 tons of bombs dropped on Jap base at Rabaul, New Guinea.
- 10th Navy sinks Jap destroyer, damages cruiser in repulse of new landing attempt on Guadalcanal.
Russians foil German attempt to reach Volga through suburbs north of Stalingrad.
U. S., British bombers in Egypt destroy or damage 34 planes in attack on Axis bases in desert.
- 11th German troop and tank assaults in Stalingrad die down.
- 12th Loss of 3 U. S. cruisers in Solomons waters on Aug. 9 disclosed. Ships were sunk in night sea battle at start of Solomons campaign, along with Australian cruiser *Canberra*.
Malta shoots down 37 Axis planes in raid protecting convoy supplying Rommel.
- 13th Russian recapture Stalingrad positions lost in new German drive.
Japs lost 1 cruiser, 4 destroyers in Solomons night battle; Marines repulse Jap air attack on Guadalcanal airfield.
- 14th Jap ships bombard Guadalcanal airfield, land troops on island's north coast.
U. S. subs in Far East sink Jap heavy cruiser, 4 other ships.
Russians hold in Stalingrad and Caucasus.
- 15th U. S. Army troops reinforce Guadalcanal garrison despite heavy Jap air attacks on shore positions.
Germans advance in northwest Stalingrad.
- 16th Japs shell Guadalcanal airfield with newly landed artillery.
Germans approach Volga north of Stalingrad in hard fighting.
- 17th Germans advance slightly on Black Sea front, continue push on Stalingrad.
- 18th U. S. fighter planes destroy all 14 bombers and 2 of 8 fighters of Jap force attacking Guadalcanal airfield.
Axis air attacks on Malta cease after loss of 116 planes in week.
- 19th U. S. warships bombard Jap installations on northwestern Guadalcanal as Japs do same to U. S.-held airfield in south; 8 Jap bombers, 11 fighters shot down.
- 20th U. S., Jap planes swap air blows on Guadalcanal. Stalingrad beats off new German tank assaults.
- 21st Recent loss of 2 U. S. destroyers in Solomons reported by Navy; Jap cruiser and destroyer damaged.
Russians reoccupy buildings in Stalingrad factory area.
- 22d U. S. troops repulse Jap reconnaissance in force on Guadalcanal western flank.
Russians capture 2 lines of German trenches north of Stalingrad, fighting in snow.
- 23d Renewed Jap attacks on our Guadalcanal lines repulsed; Japs lose 12 planes against 2 of ours.
British bombers raid Genoa and Turin heavily.
- 24th Frontal attack on Axis Egyptian line opens new offensive; air activity incessant.
Genoa, Turin and Milan bombed.
Germans make slight gain in Stalingrad factory area.
- 25th British break through gaps in Axis Egyptian line; armored forces not yet engaged.
Jap tank attack on Guadalcanal repulsed; 21 of 36 Jap planes shot down.
- 26th Loss of aircraft carrier *Wasp* off Solomons Sept. 15 announced. Another U. S. carrier severely damaged.
Japs bomb eastern India air bases.
U. S. planes bomb Hong Kong for 2d time.
British continue slow push against Axis line in Egypt.
- 27th Jap breakthrough of Guadalcanal lines closed up; 2 Jap destroyers sunk from air, 2 aircraft carriers damaged.
British infantry advances slowly in Egypt.
Stalingrad battle seesaws.
- 28th Jap losses in Guadalcanal fighting heavy compared to ours; lull in fighting there.
German counterattack in Egypt desert beaten back.
- 29th 3 Jap assaults on Guadalcanal repulsed; U. S. air activity over whole Solomons area increases.
Egypt front limited to air fighting.
Germans advance slightly in Stalingrad, Caucasus, Black Sea fighting.
- 30th Jap naval forces withdrawing from southern Solomons; bombers raid Jap base in northern Solomons.
Russians in central Caucasus forced to retreat again.
British infantry in Egypt advances, repulses counterattacks.
- 31st Loss of U. S. carrier damaged 5 days ago in Solomons announced.
Russians holding in central Caucasus on route to Georgian military road over Caucasus Mountains.
50 German planes bomb Canterbury, England.

BOOK REVIEWS

LAST TRAIN FROM BERLIN. By Howard K. Smith. New York, Alfred A. Knopf, 1942. \$2.75.

Howard K. Smith's penetrating analysis of Hitler's Reich is a product of objective study at close range over a number of years.

The Germany of 1936, with its astonishing new government and cheap accommodations for tourists, was a natural for the young author, then a travel-hungry "student; officially graduated, but a student in spirit still," who had just received \$100 "all in one smack" for writing a short story. At the instance of college friends the tour developed into a "sociological mission," charged with a survey of the World Problem of whether Nazi Germany was a "Good Thing or a Bad Thing."

Superficially the German Reich of 1936 looked like a Good Thing. There was almost no unemployment; to casual tourists the country appeared to be the solid thrifty land of the old tradition. But, Mr. Smith points out, Hitler's Germany is a Germany of appearances. The conspicuous fact of general employment rests precariously on a very wobbly socio-economic base. The "Hitler Myth" is a fearful, insidious thing, all the more compelling because of the incredible triumphs that at first attended the little mad man's insatiable reach toward world conquest.

With the score of victory all in his favor in the early days of the war Hitler could afford to be almost cordial and expansive. His country welcomed foreign correspondents and extended special facilities to them. But when his black magic was challenged by hardheaded Russian resistance the story changed; Berlin correspondents learned a few things about censorship.

Censorship, however vigorous, could not prevent observations. And there were many observations to be made, illuminating, significant observations of "what Russia did to Germany"; declining morale of the German people; incredible lies invented to revive confidence; opposition of various internal factions—in a word the deterioration of the home front.

Mr. Smith continued his observations of Nazi Germany under stress until as correspondent he was transferred to Berne, Switzerland. His stay of almost six years in the Reich terminated with dramatic timeliness on the day before Pearl Harbor when he crossed the border on the "Last Train from Berlin."

F. E. J.

SABOTAGE! (The Secret War Against America). By Michael Sayers and Albert E. Kahn. 266 pages; illustrated; index. Harper & Bros., 1942. \$2.50.

A few years ago European countries and people would not have believed the statements of a book like *Sabotage*. Now they know the truth. Sabotage can happen. It is a tremendous weapon of war.

Our interest in this book springs from our interest in America. Sabotage definitely can hinder and slow our war effort. But if we know what to look for and what to expect, we can be on guard against saboteurs and their influence.

This book, *Sabotage*, is the story of the "America Firsters," the "Silver Shirts," Coughlin's "Social Justice," the "Bund," and various other organizations and activities.

Sabotage traces their connection with the German and Japanese governments and explains how they operated and tells who their leaders were and are. The Congressional

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"frank" comes into the picture because it was allegedly used to distribute Nazi propaganda to hundreds of thousands of Americans with benefit of free postage.

The misloading of ships, wrecking of trains, and explosions at munitions plants fall into a systematic scheme of disrupting American production and morale.

Illustrations are photos of letters which were intercepted by our Intelligence Operators and the British Censors at Bermuda, and excerpts from Axis publications in the U. S.

Sabotage is an enlightening work.

A. V. R.

COW COUNTRY. By Edward Everett Dale. University of Oklahoma Press, 1942. 258 pp.; index. \$2.75.

"The period of range cattle industries constitutes the heroic age of the West and like every other heroic age it has an interest for later generations."

In a collection of essays, the author has presented a fascinating, readable set of facts to show the above quotation's foundation. The industry, by his definition, existed only from 1865 to the late 1880's. He tells of its development, its profitableness, and its attraction of capital from Canada, the British Isles and France, as well as from this country. He tells of the competition which led to better breeding, health measures for cattle, processing, and methods of shipping. Competition led also to the development of the very interesting livestock associations, to one of which, the Cherokee Livestock Association, he devotes an entire chapter. The picture he paints of the Texas cattle drives north to the east-west railway line is colorfully graphic.

The industry declined as rapidly as it arose because of too little grass lands, due to too many cattle and to too many agricultural settlers coming in to homestead. The government in Washington was not co-operative; it knew nothing of the problems of the ranchers, so did not give the needed wise supervision. The best grass lands belonged to the Indians, and when the ranchers used them the settlers howled to be allowed to do likewise. In 1885 President Cleveland ordered all cattlemen off the Cheyenne-Arapaho Reservation and from then on the industry did nothing but decline rapidly. Prices fell, public opinion was against the industry, and to top it off, the winter of 1886-1887 killed thousands of cattle. Spring of '87 found virtually every cattleman bankrupt.

The picture of the cow-puncher is of a quiet, shy man, loyal to his last breath to his boss and brand. He was alone a great deal of the time and it was his sense of humor that carried him through. He was very generous to his fellow punchers, he was completely trustworthy and could account for every penny that was entrusted to him, but he was lavish with his own money. He seldom got to town but he might go on a spree when he did. The author contends that he was far more chivalrous towards women than the knights of old; he likens the rodeo to

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the tournament of the Middle Ages, the cattle industry set-up to the Feudal System. The parallel is there, unquestionably.

The last two chapters show how the cow-puncher fitted into the agricultural settler group and how the cattle industry affected the country as a whole. All trails till 1865 had been east-west, but the use of the cow-country bisected their lines and by so doing integrated the entire country to a point never before reached.

The result of reading *Cow Country*? It will make you enjoy your next "horse opera" more, even if it will rob the two-gun hero of some of his glamor to realize that the original probably wasn't a bit better than a mediocre shot and that his idea of fun did not consist of looking for trouble each time he had a day off. You will chuckle at the chapter on cowboy humor, and very likely will mentally add other stories you have heard from other sources.

J. M. C.

BLUEPRINT FOR VICTORY. By Homer Brett. D. Appleton-Century Company, 1942. 215; index. \$1.75.

This is another of those many books whose central theme is *win the war*. However, *Blueprint for Victory* has some extra claim for being in that, in addition to adding its clamor to that of the other "Win the War" books, it has a few striking ideas and gives some excellent examples of past wars to support its thesis.

The author has done a lot of going about over the world and has very evidently gone further in his cartography than a quick glance at a "flat map." His study of geography has led him into that group of loud-voiced Americans who lean so definitely toward the northern—Kurile Islands—approach to Japan.

In the book there are some very harsh indictments of our prevailing system of doing things. Brett is particularly vindictive toward the Army and Navy high commands—usually with laughable statements, which may contain part truths, such as: "Our greatest military weakness at this time . . . is our pitiful belief that a man who has spent forty years signing vouchers knows more about making war than any young man of 26 could possibly know." Just how or why Brett arrived at the age of 26 is not explained, but more: ". . . I myself have seen an American regiment at bayonet practice with Garand rifles which they had never fired at a target although they had had them ten months.

"Committees of informed civilians should supervise maneuvers often and ask insistent questions."

Speaking of the navy he says, in part ". . . Thinking is the prerogative only of admirals, and men nearing sixty get to be admirals because they have spent thirty of their best years not in thinking but in complying with the regulations. . . .

"I heard an impatient young officer exclaim, 'If every officer above the grade of lieutenant commander had been retired the day after Pearl Harbor, we would have beaten Japan already.'"

There's a lot of that sort of thing but more of the businesslike "It is not possible to deny that Hitler is the main enemy. . . ." But he affirms again and again, "Japan is still weaker than Germany. She is weak in the two vital arms of aim power and shipping."

Blueprint for Victory wants to defeat Japan by destroying her planes and sinking her ships, then turn to help Russia evict Germany from her present gains.

There is much to commend in the book; but, too, there is much to condemn. Its best feature is that it presents an interesting case with still more interesting targets and sums up with the ever recurrent flat statement that it'll be a hard fight but we'll win. A. V. R.

THE NEW YORKER WAR ALBUM. Random House, 1942. \$2.00.

Over a hundred large pages of the New Yorker's sly, hilarious, penetrating, delicious cartoons make a treat indeed. Your favorite artists are all there—Peter Arno, Helen Hokinson, Alan Dunn, Mary Petty, Gluyas Williams, and a host of others. And the subjects range from civilian defense through overseas incidents. Tops for yourself, or as a gift.

ASTRONOMY, MAPS, AND WEATHER. By C. C. Wylie. Harper & Brothers, 1942. 439 pp.; illustrated (drawings and photographs); appendix; index. \$3.00.

The Professor of Astronomy of the State University of Iowa has produced a textbook (with self-explanatory title) of distinct value to those Field Artillerymen who may go to poorly- or un-mapped territory. Which of course makes it useful for most of us, although the weather phase is of somewhat less importance to us than it is to the Air Forces.

Although not formally broken down, the book divides itself into four distinct parts. The first six chapters cover the celestial sphere, the constellations (with excellent maps), telescopes, and the earth—including its motions, the seasons, and the calendar. The second part is of secondary importance to us, as its three chapters are devoted to the weather, clouds, and weather forecasting.

Of particular interest are the three chapters on maps, time, and celestial navigation. This last subject is desirable *in toto* for wilderness areas without identifiable and well-mapped landmarks, and parts of it are useful in general position-finding. One who has read attentively will find that earlier parts of the book have laid a solid foundation for applying this deeper material.

The final eight chapters open up new vistas to the inquiring mind, going into heavenly bodies ranging from the moon to the outer galaxies of stars.

Excellent explanatory drawings, photographs, and exercises make this an eminently useful book.

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speed an understanding of what's happening. Rand McNally's "pocket maps" fold into covers $4\frac{1}{4} \times 9\frac{1}{4}$ inches. Except for Australia and Europe, those listed are $21" \times 28"$ and cost 50c each; Australia is $42" \times 28"$, and sells for 75c; Europe is without covers, and is 10c.

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MEN OF CHAOS. By Herman Rauschnig. 341 pages; index. G. P. Putnam's Sons, 1942. \$3.00.

Herman Rauschnig, as president of Danzig, is far better known than Rauschnig the author. His latest book, however, deserves and requires some attention. Like those preceding it, this book deals with Germany. *Men of Chaos*, though, deals specifically with individuals whose careers have concerned or will concern the whole world.

The author knew personally, and well, all the principals in Germany's recent and current development. His acquaintance with those men of chaos gives his book a first-hand claim. Hitler, Goering, Hess, Goebbels, Thyssen, Von Papen, Ribbentrop, and many other leading German officials clutter the book.

A study of Germany cannot be complete without *Men of Chaos*.

A. V. R.

CONVERSATIONAL SPANISH. By S. Lipp and H. V. Besso. Hastings House; revised edition, 1942. 168 pp. \$1.25.

CONVERSACIÓN: Advanced Conversational Spanish. By S. Lipp and H. V. Besso. Hastings House, 1942. 292 pp. \$1.50.

Preparation of these two eminently practical books was sponsored by the Army Air Forces. Both are designed to speed direct, conversational lingual ability sufficient to permit the stranger to make his needs understood in Spanish-speaking countries. With a minimum of introduction, therefore, even the basic volume plunges into useful sentences; the summary of essential points in grammar is relegated to position 12 among 16 highly useful appendices.

In preparing the beginner's book, the authors kept in mind the maturity of the students for whom it was designed, and the development of practice in conversational Spanish. They succeeded well, as attested by the second edition's having run through three printings. Students are not swamped by too much new material per lesson: the average number of new words is only 12; cognates, 10; and idiomatic expressions, 3. The technical vocabulary naturally leans to aviation terms, but a great many of these words are equally applicable to field artillery equipment of one kind and another.

The advanced volume was prepared to serve as a more advanced text for students who have had some basic training in conversational Spanish; to familiarize the student with a minimum of technical vocabulary pertaining to our armed forces; and to help the student appreciate more keenly the republics of Latin America. Lessons are written around this pattern, and the vocabularies include nautical terms useful to those who may expect to locate near the sea. As a result of the student's basic understanding of the language, instruction proceeds

faster: 28 new words per lesson (including cognates), and 5 new idioms.

Definitely companion works, these two books are recommended for orderly study of a useful language in a direct and practical way.

THE COMING CRISIS IN MANPOWER. By Maxwell S. Stewart. Public Affairs Committee, Inc., New York, 1942. 32 pp. 10c.

This is the 68th little pamphlet published by this Committee, which has a most respectable list of members, speaking both quantitatively and qualitatively. It is a plain analysis of our manpower problem, the effects of draft regulations, and foreign solutions to somewhat similar conditions; it concludes with certain practical suggestions.

Earlier pamphlets present the results of a wide range of studies in economic and social fields. These inexpensive summaries give the highlights in readable and digestible form. There is obviously a sincere effort to help wide distribution, as substantial reductions are made to those wishing twelve or more titles.

SUBMARINE! The Story of Undersea Fighters. By Kendall Banning; illustrated by Charles Rosner. Random House, 1942. 52 pp. \$1.00.

Although in large size and thoroughly illustrated (with many drawings in full color), *Submarine!* is scarcely a gift for your youngster—dissension will be raised unless you read it *before* giving it. For Kendall Banning, author also of *The Fleet Today*, has done a splendid job of highlighting the history and development of the undersea weapon. The first crude submersibles are described and pictured, as well as modern ones. The reader is taken through the various chambers of a sub and in clear, non-technical language is given descriptions of the apparatus in each and explanations of its purpose. Historical examples throughout help round out this excellent narrative.

A REVIEW OF ARITHMETIC. Prepared by Zens L. Smith. Institute of Military Studies, University of Chicago, 1942. 37 pp. 50c.

This Institute's reprint of the Military Academy's *Some Military Applications of Elementary Mathematics* (see p. 734 of the JOURNAL, September, 1942) is being widely used in schools, colleges, and military and naval centers. It illustrates how algebra, geometry, and trigonometry apply to military activities.

The sources using that pamphlet have found that much training is being slowed up because of the trainees' inability to do simple arithmetic. They therefore requested more elementary materials to be used for refresher

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MEN AT WAR. Edited and with an introduction by Ernest Hemingway. Crown Publishers, 1942. 1072 pp. \$3.00.

Well subtitled "The Best War Stories of All Time," *Men at War* contains 82 great war stories ranging in time from the mists of antiquity to the Battle of Midway. Their authors include Caesar himself, Tolstoy, T. E. Lawrence, Victor Hugo, Winston Churchill, Kipling, William Faulkner, Ambrose Bierce, Maj. Gen. J. F. C. Fuller, and many others. Tales are grouped by general subjects: the clashing of major groups (the French crusade); courage as the first quality of the warrior (Stephen Crane's *The Red Badge of Courage*); physical exertion and suffering (the torture of Lawrence by the Turks); uncertainty (tank fights in Libya); chance (*Lisette at Eylau*); friction (Gen. Fuller's account of Gallipoli); resolution, firmness, and staunchness (Borodino, Atlanta, Soissons); and over twenty accounts of individuals, many in the first person. These divisions are arbitrary, but were made by a great writer on war, Clausewitz—and they do make sense.

Hemingway, who has been through the mill himself, has gotten together not a book that is intended to tell how to die, but to show that there are no worse things to be gone through in this war than men have been through before. This war must be won and as quickly as possible, and the part this book can play in the winning is to furnish certain information from former times.

Most of the selections are magnificent in themselves. Together in this volume they yield a powerful portrait of humanity—*Men at War*. And not least worthy is Mr. Hemingway's fine introduction.

PAN AMERICAN PROGRESS. By Philip Leonard Green. Hastings House, New York, 1942. \$2.00.

The road to intercontinental solidarity of the Americas has been a long and rocky one; perhaps some of the bumpiest stretches lie ahead. Mr. Green's little book makes it clear that the complete mutual understanding

and cooperation which must be the aim of both continents is something that must be striven for constantly. The ideal state of friendship and exchange connoted by the word Pan Americanism cannot easily be won.

Mr. Green traces the movement from its origins in South America (a blow to our self-conceit) down to the present, ending with a catalogue of the many agencies which are currently busy rectifying our past errors of act and attitude. Bolivar, the Liberator, called the first Pan American congress in 1826. There have been many since then, some more, some less successful. They have usually depended on the wisdom of our statesmen, and the strength of the Pan American spirit has suffered most when the "manifest destiny" boys shouted loudest in our eras of pseudo-imperialism.

The author points out that the great achievement of both continents has been that men of such different backgrounds have been able to live together and like it. Menaced from all sides, it is now their essential interest to double their horizons and their tolerance. Mr. Green gives a clear picture of the mistakes which have marred the Pan Americanism of the past.

L. B. C.

I ESCAPED FROM HONG KONG. By Jan Henrik Marsman. Reynal & Hitchcock, New York, 1942, 249 pp. \$2.50.

"President Roosevelt told me: 'Don't hold anything back in writing this book. The people should know everything about the way the Japanese behaved in Hong Kong.' *I have held nothing back.*" So says Mr. Marsman, and his account is direct, straightforward, plain, Just the honest, factual account you would expect from a successful businessman, which the author is, A Dutchborn citizen of the United States with mining, insurance, construction, and trading interests in the Far East, he foresaw general developments early enough to move his family from Manila to San Francisco in 1939. Thereafter he kept in touch with details via clipper. He expected to come home that way in time for Christmas—his was the clipper the Japs destroyed at her Hong Kong mooring.

From then on Mr. Marsman was quite in the middle of it—as who wasn't on that tiny isle? His eye-witness story of a complacent city suddenly swollen nearly double by refugees; of riot, panic, bravery, heroism, occasional cowardice, rapine, loot, torture, death, disintegration. But it is also of magnificent Chinese of all walks of life, of their humanity and helpfulness, of their tremendous material and spiritual achievements to keep their country not just alive, but fighting and beating down the Japs. And of Kweilin, with its factories, transport, and university.

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and soldier, for all those who want to "understand" the Jap. It's honest writing, which means good reading. Get hold of a copy.

THE ARMY MEANS BUSINESS. By Herbert Corey. 298 pp., illustrated. The Bobbs-Merrill Company, 1942. \$2.75.

Just what *business* the Army means is obvious to everyone—to *beat the Axis*.

How the Army is going about this business, Corey tells in competent fashion.

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From these he tells a little about how and where the Army buys its supplies. There is no flock of numbers and statistics—just a simple little statement of fact that is readable and understandable.

In talking of money and costs of the war, he says ". . . latest sum-up was for something like \$228,000,000,000. The total is of no consequence whatever and will not be further inquired into."

He dismisses money as lightly as that and talks at length on such essentials as ordnance and the way we get our tanks, rifles, artillery, and the like.

Following this serious talk he hails the American screwball—that jaunty figure that conquers all odds to win. He mentions Glenn Martin, Henry Ford, James A. Allison, Charles A. Lindbergh, and some Air Force officers like Arnold, George, Yount, and Doolittle. These people, he intimates, are screwballs—not because they lack judgment, but because people classed them that way when they advanced their (at that earlier time) fantastic ideas.

Corey's book is good throughout, but in his chapter on the Army Chief of Staff, General Marshall, he reaches his best. Referring to General Marshall as "Care Taker for the Army," Corey pays liberal tribute to him as an outstanding soldier and citizen.

This book studies other related subjects. Mass movement of troops and building of Army Camps come into the picture. Sick soldiers and gas warfare, horse cavalry and 6-ton trucks are discussed briefly. *The Army Means Business* covers a lot of territory, and does it intelligently with a hearty good humor that bodes good for the book and good reading for Corey's public.

A. V. R.

THE ARMY CLERK. Published by The Adjutant General's School, 1942. 120 pp., 148-page appendix of forms, index. 75c.

Every battery officer should have a copy of this grand little book. Although prepared primarily to serve the Enlisted Branches of the Army Administration School, it will surely help any Army Clerk, regardless of the echelon in which he is serving.

The Army Clerk was written for the inexperienced clerk, and it does a fine job of taking him step-by-step through the procedures with which clerks in any headquarters should be familiar. It describes office habits which should become second nature, and even makes practical suggestions on improving typing technique. Of constant, day-to-day value are the many model forms, with detailed annotations, which will prevent many a stumble.

PRINCIPLES OF WAR. By General Carl von Clausewitz. Translated, edited, and introduced by Hans W. Gatzke. 82 pp. Military Service Publishing Company, 1942. \$1.00.

Written more than a century and a quarter ago, this short but incomparable work has served as the blueprint of the German militarists who, from Frederick the Great to Adolph Schickelgruber, have set out to conquer and destroy Europe or the world. The current importance of this memorandum by Clausewitz was emphasized six years ago when, on the verge of Hitler's drive for world supremacy, it was specially printed and widely distributed among Nazi officers and soldiers. Incidentally, it was a General of Aviation—Friedrich von Cochenhausen of the German Academy for Aerial Warfare — who found this memorandum worthy of republication.

Hitler's plans deviated so little from Clausewitz's principles that every word of the original work was reprinted, although those few sentences considered outmoded were printed in italics. This format is reproduced in this edition, which contains also an appendix of notes (which admirably clarify some references in the text) as well as an introduction which presents a vivid portrait of Clausewitz, the military theorist whose essay might well have been written today.

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