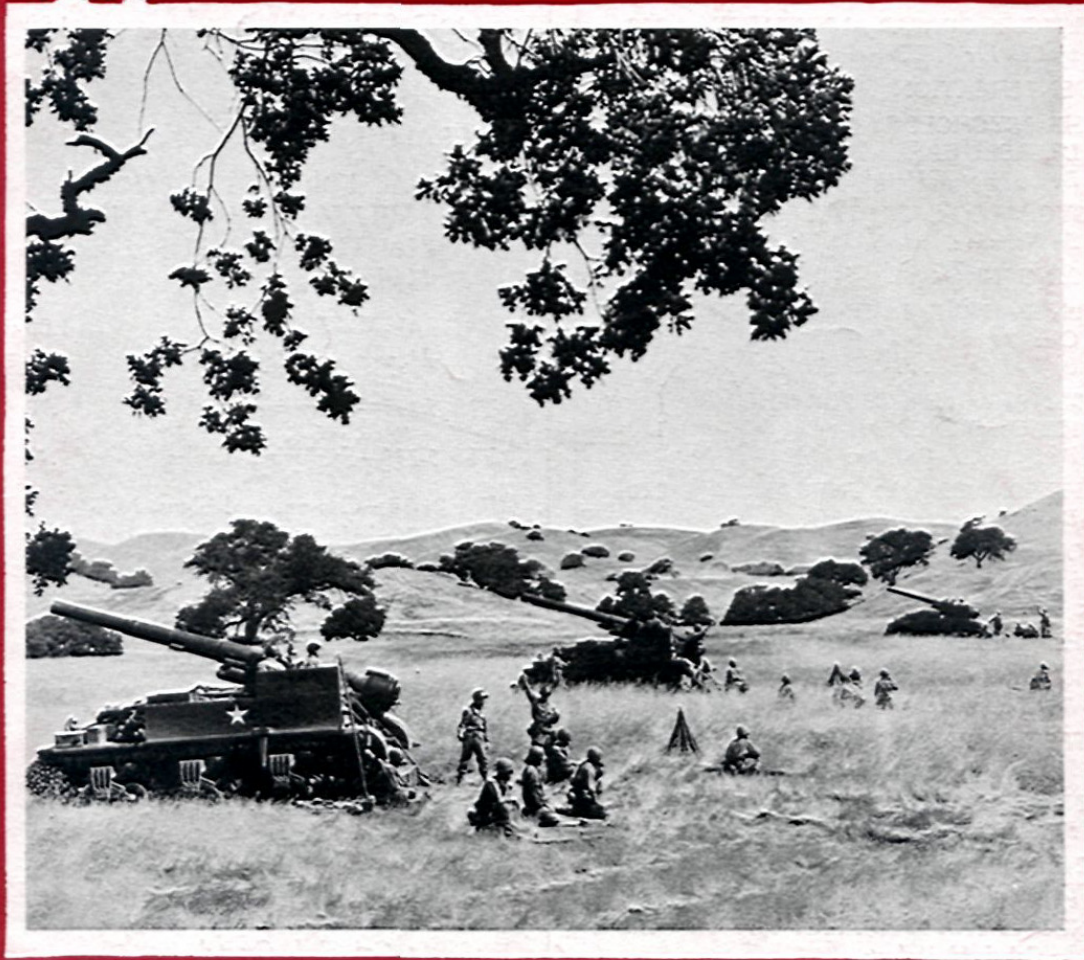


The
FIELD ARTILLERY
Journal



FEBRUARY, 1944

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PAPER SHORTAGE makes all of us pull in our belts. Your JOURNAL began last spring, when it arranged to increase column size (and otherwise cut down white space) beginning with the issue for July, 1943. In the same 80 pages we were thus able to give you the equivalent of what would have required 94½ pages of the old format.

Additional cuts are now necessary. For at least the time being we must reduce the JOURNAL to 64 pages. With the economies that are being effected, however, this is equal to about 76 of the old pages. Additional material can be presented by use of smaller type, but we are mindful of the extremely poor light conditions under which many JOURNALS must be read in many parts of the the world, and will do all we can to balance total contents against the possibility of eye-strain.

Despite reduced pages, we will continue to give you all possible material of value, with of course special reference to articles from overseas. Within a fairly short time the situation should so stabilize that full and proper publication can be resumed in normal fashion. In the meantime we are determined that whatever your JOURNAL does publish, will be presented in clear and legible form.

ONE RESULT of this paper situation is that we can no longer assure our members that late renewals can be furnished all back issues. Print orders are tailored even more closely to fit current requirements, with somewhat less attention to possible future demand.

This means that it is even more important than ever that you heed your expiration notices, and remit your renewal dues promptly. At the same time, we will certainly continue our policy of giving every possible "break" to members overseas—not only are their notices of expiration sent earlier than those addressed within the U. S., but they have first call for back issues or for any other service or facility at our disposal.

Remember, though, that each of you will be greatly helping your Association by replying to any communications just as promptly as possible.

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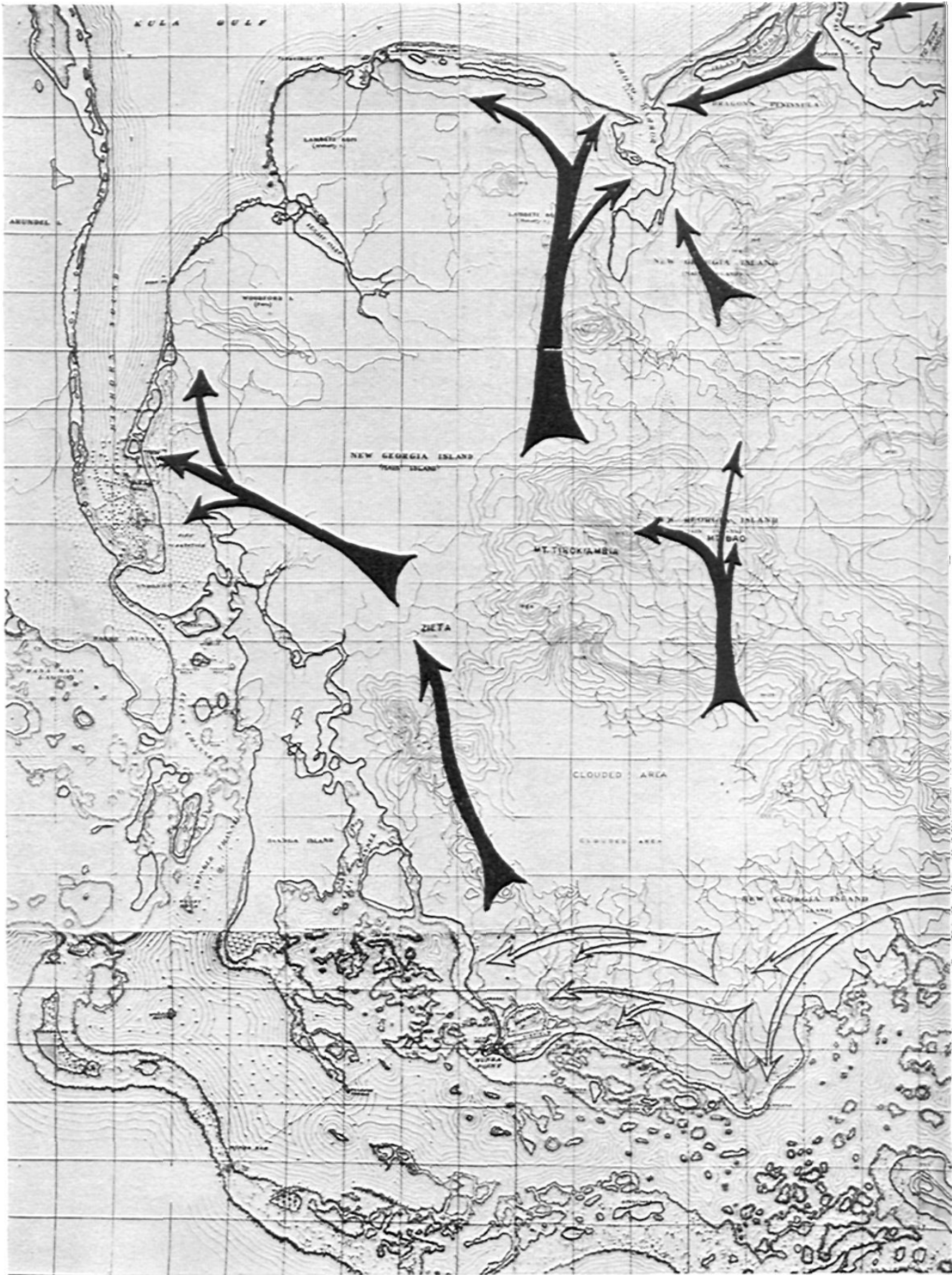
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ARTILLERY ON NEW GEORGIA

By Lt. Col. Robert C. Gildart, FA

MULTICOLOR MAP OF
MUNDA - BAIROKO
SECTION OF
NEW GEORGIA

NOTE—ARROWS WHICH ARE OUTLINED INDICATE THE ORIGINAL CAMPAIGN WHICH TOOK MUNDA AIRFIELD WHILE THE SOLID ARROWS DEPICT THE FINAL PUSH WHICH RESULTED IN THE ELIMINATION OF THE JAPANESE FROM NEW GEORGIA PROPER



AUTHOR'S NOTE

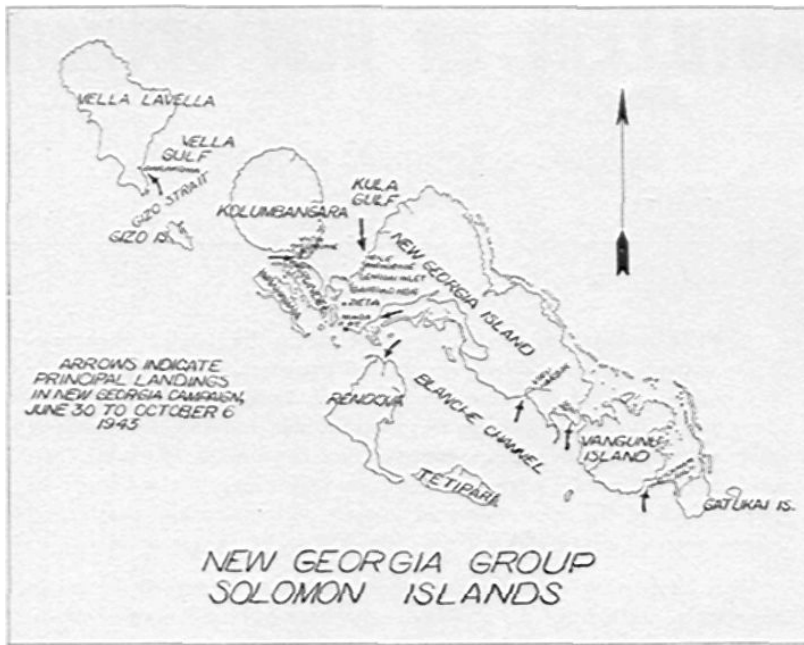
"Field artillery guns are unsuited for use in the jungle. Pack howitzers, though more suitable in design and transport, are limited by their weight, bulk, and ammunition requirements. In addition to the limitations imposed on these weapons by their own bulk and weight and that of their ammunition, the dense jungle greatly confines the burst of their projectiles. Also, the advantages of their long range will ordinarily be lost because of the impossibility of ground observation and the limited effectiveness of air optaion." (Par. 28, FM 31-20, *Jungle Warfare*.)

The implication is that field artillery as a whole is unsuited for use in the jungle. In light of the artillery's experience in New Georgia a modification of this paragraph is indicated. Field Artillery has and will continue to function in its assigned role in jungle operations as in all other theaters of war.

The combined Army, Navy, and Marine attack on the New Georgia Island Group in the British Solomon Islands began in force on June 30, 1943. By September the Japanese had for all practical purposes been cleared from the major islands of the group with the exception of Kolombangara. From the south this latter island was being shelled by our forces on New Georgia and Arundel Islands, while to the northwest it had been outflanked by American troops on Vella Lavella. By October 6th American troops had occupied Vila airdrome, the Japanese having been forced by our combined air and artillery bombardment to evacuate Kolombangara. Throughout this period the artillery played a prominent role in the subjugation and defeat of the enemy. The scheme of maneuver and progress of the attack are shown on the accompanying maps. It will not be the purpose of this article to describe the campaign, but rather to present a series of notes of interest on factors affecting the artillery's participation and the experience it gained from the operation.

MAPS

Two maps of the New Georgia area were initially available for the operation. The first was a photomap, scale approximately 1:20,000. This map was gridded with the joint Army and Navy grid system, termed the JAN grid, which according to War Department Training Circular 17, 1942, is the grid to be used in combined Army-Navy operations. The base decided upon was such as to provide a grid of approximately 600 yards. However, the grids were rarely true squares but rectangles with one side 10 to 20 yards longer than the adjacent side. Between sheets there was no overlap of either detail or grid lines, thus making accurate assembly virtually impossible. In some cases, when detail between sheets was matched, the grid system between the two sheets lacked coincidence by over 200 yards. By inspection it was evident that in many instances the map had been assembled by merely matching detail on adjacent photographs. As a result, these portions were inaccurate and inconsistent in both scale and azimuth. (This inaccuracy was definitely proven by subsequent firing using the photomap as a firing chart.) One minor feature of this map proved a hindrance during fighting around Zieta, a small native village between Munda Point and Bairoko: instructions were printed on each sheet giving information on the designation of points with the JAN grid; these instructions were contained in a white rectangle approximately 5½ by 2½ inches, superimposed (as in the Zieta case) over terrain on



which fighting occurred or on which artillery fire was desired. In general the map was not one suitable for use as a field artillery firing chart.

In contrast to the photomap there was available a multicolored map of the New Georgia area. Its scale was also approximately 1:20,000. It had a 1:20,000 grid, a 100-yard overlap between sheets, and form lines at 25-foot intervals. These lines gave a fairly accurate vertical picture of the ground and in many cases were sufficient for vertical control for artillery fire. The map had been compiled from aerial photographs. It was controlled by using slotted templates, a mechanical method of radial line restitution. It was, therefore, consistently accurate both for scale and azimuth. (See TM 5-230, par. 79.) Detail of sufficient clarity and accuracy of location was thus available both for registrations and for transfers of fire. It was, in general, an ideal map for artillery fire control.

In addition to the above-mentioned maps there were available excellent vertical and oblique aerial photos. The Photo Intelligence Unit provided the artillery daily with these verticals together with information on suitable targets and general information of the enemy. Coordination and cooperation with the Photo Unit, insofar as the artillery was concerned, was much more advanced than on Guadalcanal.

With the multicolored map and vertical photographs the artillery was in a position to deliver timely, accurate fire. Unfortunately, copies of the multicolored map were believed to have been captured by the enemy and its use at this time was deemed inadvisable. Furthermore, targets from the Photo Interpretation Unit were designated by JAN coordinates on the photomap and not by the system of coordinates on the multicolor. Insofar as this Photo Unit was concerned, the targets could have been furnished on the same vertical photos as were used for study of the target area. Restitution from them to any accurate firing chart would then have been a simple matter. Because of its reported capture, and the fact that targets were designated by JAN coordinates, the use of the multicolor

by all units was ordered discontinued and the artillery was forced to employ the photomap as a firing chart.

The photomap and its JAN grid immediately introduced problems for the field artillery. The first was that of plotting points designated by coordinates. No unit was equipped with scales or coordinate squares for use on a 600-yard grid. To overcome this deficiency each grid square was subdivided into 16 smaller ones, these latter being employed for target designation.* This system, though workable, was a new one with which all fire direction personnel had to familiarize themselves in combat. A second difficulty with the JAN grid was that its use hampered survey operations (see section on survey, below). Lastly, as previously stated, actual firing proved this photomap so inaccurate in both azimuth and range that transfers without an undue number of registrations were impossible. The map was, then, employed for little other than providing a ground picture, and all units actually used an observed fire chart.

The knowledge gained of the JAN map during the operations against the Munda Airfield was beneficial, however, in that many artillerymen became familiar with its inaccuracies. As a result the multicolor map was again brought into artillery use for supporting the ground troops' advance on Bairoko Harbor and Piru Plantation. One battalion in the vicinity of the airfield, using the latter map, obtained deflection corrections in the Piru vicinity of only one and two mils. Another battalion in Zieta had equally small corrections for transfers of fire in the Bairoko sector. Range and deflection Ks were well within those normally obtained in this sector; furthermore, they were constant within transfer limits—which was not always the case on the photomap. Survey computations were normal except for the adjustment of traverses to the true scale of the map. Critical terrain features were definite and readily identified. The map was probably more accurate than an artilleryman could normally expect to receive for combat in this theater of operations.

After the Japanese were cleared from New Georgia and its small adjacent islands, it became the artillery's task to shell Kolombangara and the Vila airdrome. Here again several maps were made available. The first was the same type JAN map as was used near Munda. The second was a black and white map compiled, printed, and delivered in four days. This latter was controlled by the slotted template method in such a way as to join it, with a 1000-yard overlap, to the multicolored map of the Munda area, their grid systems having the same origin. This black and white map also contained accurate form lines. Its one disadvantage was a psychological one. The heading at the top of each sheet read "Hasty Line Map." Some officers, not understanding the notation in the lower left hand corner, "Extension of Control by Slotted Template," placed emphasis on the word "Hasty" and interpreted it as being indicative of an inaccurate map. On the contrary, a line map is extremely accurate, the detail from aerial photographs having been compiled only after radial line restitution of hundreds of control points. Distortion due to relief and tip-and-tilt

is removed, and all terrain detail is placed in its proper map location. Need for further schooling of officers in map making from aerial photographs was thus indicated.

Unfortunately, in the shelling of Kolombangara the more accurate map was again laid aside by some units, who employed a surveyed chart set up prior to receipt of the black and white map. On the chart some terrain detail had been traced from aerial photographs, and superimposed on its 1:20,000 grid was the JAN system. Because of the inherent inaccuracies in the JAN map, the superimposed grid formed irregular and dissimilar quadrangles. This additional grid made possible the plotting of JAN coordinates (furnished by the Photo Interpretation Unit) on the firing chart. One battalion, while connected by survey to this firing chart for massed fires, employed for their own firing chart the Hasty Line Map. Survey control was established by triangulation from points readily identified on the Line Map. After registration, comparison was made between the photomap, the surveyed chart, and the Hasty Line Map as firing charts. Results were as expected. The deflection comparison between check points A and B is shown below:

	<i>Line Map</i>	<i>Surveyed Chart</i>	<i>Photomap</i>
Map Data A to B	734 μ	730 μ	770 μ
Adjusted Data			
A to B	735 μ	735 μ	735 μ
Corrections necessary	1 μ	5 μ	35 μ

Range comparisons were similar to the above, in that the Line Map proved superior. Inasmuch as maps produced by slotted template control can be supplied quickly and in large quantity, it would appear advisable to employ them for artillery fire control in this theater regardless of what map is employed by higher headquarters for coordination between the Army and Navy.

POSITION AREAS

Operations in the New Georgia campaign presented a wide variety of terrain for artillery position areas. Offshore all the larger islands are hundreds of smaller ones varying from several hundred to several thousand yards in length and from a hundred to roughly a thousand yards in width. These islands are covered with mangrove swamps, dense jungle vegetation, or coconut plantations, and occasionally all three are found. The shoreline is of three definite types: the coral beach, the sand beach, and the impenetrable (for artillery) mangrove swamps, the latter predominating. Beaches are usually well camouflaged from the air by trees overhanging the shore. The Japanese had not fortified or occupied these many small islands within artillery range of the Munda airfield, the main objective of our attack. Obviously, here was the best prospect for positions for supporting artillery since from them no displacement would be necessary until after capture of the objective. Reconnaissance of the islands revealed that on several beaches LSTs¹ could be employed for landing artillery, but that on most islands only the smaller LCTs could be used.² Positions were selected on the shore wherever possible. Prior to landing, however, gun positions had to be prepared, and for batteries whose areas were on that side of the island away from the target area (the "wrong side of the island") clearing for fields of fire was necessary. Some battalions performed engineer labor in constructing roads. In these, and also in subsequent positions, prompt occupation was hampered by lack of power equipment available to the artillery. All engineer tools were already

¹"Landing Ship, Tank," 327 ft. long.

²"Landing Craft, Tank," 112 ft. long.

overworked constructing and maintaining roads, thus little help was forthcoming from them. Despite all handicaps, however, the islands of Baraulu, Sasavele, and Dokedoke were occupied, defenses established, registration accomplished, and effective artillery fire support delivered.

Position areas on the larger islands of Rendova and New Georgia proper presented their own problems. The primary problem was always the road net. Even during the "dry" season the rainfall is heavy, and maintenance of roads during operations is therefore almost impossible. In one instance even with a bulldozer maintaining the road, it was necessary to construct a corduroy road for a 3-mile stretch south of Zieta. In the drive toward Bairoko a position area for two battalions was selected at Mt. Tirokiambia — Americanized promptly into "Turkey Mountain." A road thereto was pushed almost to completion, but wet weather soon made it impossible to negotiate even with a jeep. The road problem will be ever-present in all island warfare in this theater, for the Japs won't build roads for us. The solution, clearly indicated in this operation, is to provide for jungle warfare added equipment and men in the divisional engineer battalion.

Another problem much simpler of solution on the larger islands was that of obtaining a position with a field of fire.³ With the exception of those areas in which bombing and shelling had obliterated all vestige of either jungle growth or coconut grove, it was necessary to cut out the jungle.⁴ Selection of position here, therefore, was based not on the natural field of fire and mask, as is normally the case, but rather on the future possibilities after clearing. But what about camouflage? Fallen trees, 100 to 150 feet long, are easily discovered from the air, so you take your choice: telltale trees or no artillery support! Fortunately, we had air superiority.

There was some similarity between all positions encountered in this operation, whether on the main or the offshore islands. The first was the universal presence of the foxhole or slit trench. For men who have experienced bombing or shelling this type of individual protection has priority over all other construction, not only in the battery area but wherever the individual might be. Men unloading ships on a beach have frequently detailed a portion of their group to begin digging as soon as the landing craft touched the shore. Men who have not been under fire are inclined to neglect this important "recipe for long life." They must see others in their organization killed or wounded, they must learn by their own experience rather than profiting from that of others. The second similarity in positions was actually the dissimilarity of all from those generally selected in the U. S. A. There were, for instance, few positions with natural fields of fire, few with prepared or easily traversed routes of approach, and far too few in which it was not necessary to manhandle the pieces into position. Officers must therefore revise their conception of artillery position areas when operating in jungle warfare. There are no typical positions; only imagination in their selection and initiative in their construction will provide for the artillery's needs.

SURVEY

Rapid, blitz advances in jungle warfare are an impossibility. Thus there is ample time for accurate survey. But such survey

³None of these islands has the cleared grassy areas so prevalent at Guadalcanal.

⁴Cutting is minimized by using high angle fire.



In some places a tractor was able to haul 155-mm howitzers through the heavy mud . . .

will, in many of these Pacific campaigns, differ from the preconceived teachings of the School in one significant respect: there will be no target area survey, for there are no rear OPs from which targets can be located. Operations, then, will consist of a survey in the position areas and another to connect these areas to forward observers who are in a position to employ the data obtained.

An example of such a survey and its use is found in the case of a 105- and a 155-mm howitzer battalion supporting an infantry regiment in its advance from Munda Point to Zieta. Survey was initiated in the position areas, and the two battalions connected. The survey section from the light battalion then began its connecting area survey, which because of a lack of any open ground was made entirely by stadia traverse. The section soon overtook the advancing infantry; Japs were now immediately to their front, but through the heavy jungle neither the infantry nor the artillery could observe them. The completed traverse, however, was invaluable. As each station was reached its coordinates were computed and sent to the FDC. The station number was then sent to the forward observer, who employed it to obtain fire to his immediate front. As our lines moved forward so did the survey section, computing each station as the field work was completed. Thus, designation of targets was always possible from a known point. Employed in connection with an accurate map such survey will indicate not only the present location of the front lines but the rate of advance of the infantry. On a map or photo showing only jungle it is extremely difficult to tell accurately where friendly troops are. The artillery survey section should prove the answer for obtaining this highly important information.

Survey in the above-cited example was connected to the JAN photomap. With its inaccuracies, computed coordinates did not always give the proper location on the map. Nevertheless, the survey data was more accurate in locating front lines than attempts to locate them by inspection on the map. The JAN grid, however, created its own peculiar problem. Have you ever tried computing traverses and short base intersections with a 600-yard grid system? No one over here had.

A partial example of the necessary technique follows:

Coordinates of A	62.850	32.100
Coordinates of B	54.230	28.050
Difference	8.620	4.050

This difference, however, is not a true dx and dy distance, but the number of 600-yard intervals between points. Therefore, true dx and dy in this example would be:

$$\text{dx } (8.620 \times 600) \text{ or } 5172 \text{ yards.}$$

$$\text{dy } (4.050 \times 600) \text{ or } 2430 \text{ yards.}$$

Compare the true dx and dy with that of the map and the illustration becomes self-evident. Similarly, to obtain map coordinates at the end of a computation true dx and dy must be converted to the 600-yard grid dx and dy. If the ground scale of the map differs from that of the grid still another correction must be made in computing traverses—that is, the ground distance or its dx and dy must be converted to map distance or its dx and dy by applying the map *K* before map coordinates can be computed.

To illustrate on a 1:20,000 grid, assume that the map coordinates of starting point A are (30.255-156.230). By computation of successive legs of the traverse, the ground coordinates of point B are found to be (30.541-157.030), or ground dx equals 286 yards and ground dy equals 800 yards. These ground distances must now be corrected by the map *K* of + 42 yards per thousand: dx correction, 286×4.2 , or 12 yards; dy correction 800×4.2 , or 34 yards.

ground dx	280	ground dy	800
dx correction	—12	dy correction	—34
corrected dx	274	corrected dy	766

Map coordinates of B are therefore:

coordinates of A	30.255	—	156.230
dx	.274	dy	.766
coordinates of B	30.529	—	156.996

The same result may be obtained by applying the map *K* to the measured ground distance of each leg of the traverse and directly computing the map coordinates of each station. In our case this correction was necessary with all maps furnished. Short- or long-base computations are not affected by the map *K*, for angular measurements on the map are identical with angular measurements on the ground.

All survey described above was conducted on the mainland of New Georgia Island, although most units there employed an observed fire chart in conjunction with the ground picture furnished by the JAN map. Upon moving from New Georgia to Arundel Island for shelling Kolombangara, survey was more evident on all firing charts and a unique section came into being. It could be dubbed the "amphibious survey section." It had none of the drudgery of pushing through the jungle. Rather, it travelled by boat from island to island triangulating for its control. Thus, whether on land or sea, survey was an integral part of much of the New Georgia campaign.

OBSERVATION

Terrestrial observation was impossible except in isolated portions of the zone of action. On Rendova an OP was available for observation of some points in the Munda area. On "Turkey

Mountain" parts of the north shore of New Georgia could be seen, and on the north shore of Arundel observers could pick up Japanese installations on Kolombangara. Elsewhere, even forward observers saw few targets on which they could adjust. The service practice target, "Enemy machine guns in the vicinity of the lone tree," never made itself apparent. The result was that air observation plus sound adjustment by ear became two of the most usual methods of placing fire in the target area.

Use of aircraft was not entirely what the artillery might have desired. Initially the artillery observers were based on Guadalcanal, approximately 200 miles southeast of Munda Point. Close contact with the progress on the fighting front was non-existent. Usually only one plane was available, and its use was coordinated and controlled by the Division Artillery. Navy torpedo bombers were employed for most missions; their relatively high speed added to the difficulty of observation, though this was somewhat minimized by the advantage of being able to fly closer to the target area than could a slower plane.⁵ Observers adjusted on targets designated to them by the JAN coordinates, using the photomap for identification of the plot. Targets of opportunity were in turn reported to the FDC either by JAN coordinates or by reference to points previously registered upon. Such targets could be seen only where bombing and shelling had destroyed the vegetation, it being impossible to observe enemy activity through the concealment offered by the jungle. Bivouac areas and even the main Japanese trails, all of which proved to be single-track footpaths, were completely obscured. Our own front lines were equally well hidden, though activity of our boats along the shore was always visible.

It is believed that in all phases of the New Georgia operations the artillery "Grasshopper" would have solved many of the above problems of air observation. This plane could have been based on a quickly constructed airfield in one of the many nearby coconut groves. Despite all handicaps, however, the field artillery officers who functioned as air observers performed services which added immeasurably to the artillery support.

Forward observers had their difficulties, too. Ground adjustment soon changed to sound adjustment. Unable to see even 25 yards to the front and yet knowing that the Japs ahead were firing mortars and machine guns, these observers soon took to adjusting by ear. True, such a method is inaccurate, but it produced the desired results, for the area occupied by the Jap was placed under artillery fire and close support was provided the infantry.

The sound technique employed depended on the width of front of our own troops. On a narrow front one observer would begin to fire well forward. (Designation of target was simplified if a traverse had been pushed to the front.) After the first salvo the range would be shortened and deflection adjusted, solely by ear, until adjustment was believed

to be where it was desired. In some problems where really close support was wanted, the short limit was accidentally determined by rounds falling behind the observer. Adjustment by two or more observers was the rule when friendly troops occupied a broad front. Here, in effect, a sensing was sent to the FDC by each observer. Sensings were quickly compared and a composite one selected which insured safety for each observer. For example, for range, should one observer report 300 over and another 100 over, the latter would be the range sensing applied to the battery. Incidentally, the area from the observer to 300 yards in front of him was the most difficult in which to sense, rounds anywhere in this zone seeming to produce similar sound effects.

All sound adjustments were inherently slow. In addition, past experience dictated that with this method each battery within a battalion should be adjusted rather than massing fire on the adjustment of one. Experience with tree bursts behind observers when firing low-angle fire dictated the use of high-angle, thus further slowing the adjustment. The latter type of fire had the additional advantage, however, of giving more penetration into the jungle.

Many excellent sound adjustments were made throughout the entire campaign. In one particular instance, approximately 1,000 yards south of Zieta 3 observers adjusted 2 battalions astride the Munda—Zieta trail and fired through a zone 600 yards deep. Later occupation showed excellent effect not only along the trail but in bivouac areas. Another effect always obtained by jungle firing was the clearing out of the underbrush, thereby increasing visibility and facilitating passage of the infantry. Earlier in the campaign, when his division headquarters was surrounded, the artillery commander of a division adjusted on the Japs by sound. Some of his officers termed it "blind sniping with artillery," but the fire proved effective, for the Japs failed to press home their attack. All observers employing the sound technique should be equipped, figuratively speaking, with a "portable foxhole."



... but this howitzer bogged down so heavily that a bulldozer had to help by pushing against its muzzle

⁵One observer was shot down twice. Each time the pilot made a "belly" landing in the water; each time all personnel were rescued and resumed their mission in short order.

COMMUNICATIONS

The type of island warfare encountered in this campaign presented the communications officers with two definite problems: that of inter-island communications, and that of maintenance of lengthy overland lines.

Much had been heard tending to discredit the possibility of laying wire in the water. Nevertheless, this system was employed with excellent results. Both W-110 wire and the 2-pair cable were used extensively. Normal distances were less than a mile, so splicing of the W-110 was avoided. Particular care, however, was necessary in the preparation of the connecting plugs of the 2-pair cable, otherwise shorts would invariably result in cross-talk.

One system employed which produced the desired insulation from salt water was taping with rubber tape the plug and a length six to eight inches on either side of it. A blow torch was then applied for several seconds and a second layer of the tape immediately placed over the first. The blow torch was again applied and the insulation completed with friction tape. The line would be first checked and then laid without weights (use of weights might prove necessary where stronger water currents are encountered). Lines thus prepared and laid required little maintenance and were still providing communication after more than two months of use.

As opposed to the underwater lines, long overland lines required constant maintenance. W-130 wire laid by forward observers was usually destroyed by bulldozers building jeep trails behind the advancing infantry. Its maintenance over long routes was impossible. As a result many battalions employed a forward switching central, connected to the rear with W-110 properly elevated and to the forward areas with W-130. This board made frequent displacements as W-110 was laid forward to replace the lighter W-130.

Proper installation did not prevent the long lines to the rear from going out, however. Roads here were widened and rerouted, hence trees came down and with them came the wire. Repair crews were thus constantly on the job, two men repairing and three guarding against possible snipers. In some instances where roads became impassable, wire camps were established along the line routes. Based at these camps, the crews were assigned definite portions of the line for periodic testing and servicing. The number of personnel required in jungle wire sections far outnumbered that authorized in the T/O.

Wire maintenance being so difficult, the question naturally arises as to why radio was not employed more frequently. The answer is that we have only one radio light enough for an observer to carry and yet still powerful enough to communicate through the jungle to the FDC. This set is the SCR-511 (used in conjunction with an SCR-284 as a base set); and it is fragile and susceptible to dampness.

TRANSPORTATION AND MATERIEL

Present tables provide adequately for the normal or average needs of the field artillery in combat. Peculiarities of jungle warfare, however, make it neither normal nor average, so that transportation and materiel must be provided which will satisfy its requirements.

In and around New Georgia all artillery operated with a minimum of trucks. A light battalion was furnished 1/3 its authorized number of 2½-ton trucks, 1/2 its ¾-ton vehicles, and 2/3 of its jeeps. With these vehicles all organizational equipment could be loaded, but little space was available for personnel. The

need for additional *types* of vehicles, however, soon became evident. Even bulldozers could not maintain some roads in passable condition. The artillery therefore was forced to solve its own problem. The solution is pictorially presented by the three scenes showing the occupation of position by the KCPth FA Bn, a 155-mm howitzer battalion attached to the 25th Division Artillery. Tractors for prime movers, as well as track-laying trailers, were obtained from the Marines. Without these vehicles Zieta would never have been occupied and artillery fire never delivered on Bairoko. In future operations where terrain of this type will be encountered, each battery should be equipped with two tractors and at least one track-laying trailer. These vehicles could be assigned from a theater pool to organizations requiring them. In addition, if jeeps were equipped with a small winch the artillery would have real jungle mobility.

Materiel as well as transportation should be of a type suitable to the terrain. Our 105-mm howitzer is an ideal weapon. The 75, although an excellent weapon for landing operations, lacks sufficient punch in the heavy jungle. Perhaps the 105-mm field howitzer T-6 would partially satisfy requirements. The Schneider M-1918 155-mm howitzer, although a most effective weapon in the jungle, should be replaced because of its inability to deliver high-angle fire. Every effort should be made to furnish units in this theater with the 155-mm howitzer M-1. Artillerymen thus re-equipped with material designed to meet their combat requirements would provide even more effective support than that delivered in the past.

AMMUNITION

Ammunition, though properly designed, will not meet the tests of combat unless properly supplied. At present, complete rounds of 75-mm and 105-mm ammunition and 155-mm powder charges are shipped and stored in fiber containers. Prolonged tropical storage in open dumps has sometimes caused such deterioration of the container that removal of the 105 shells becomes difficult. Some, when finally removed, required that portions of the container be literally peeled from the shell before it could be loaded or fired. A large percentage of bent shell cases is evident in ammunition shipped in the clover leaf container, attributed to haphazard loading in cargo nets and to improper loading and handling in trucks. For straightening these bent cases some batteries provided themselves with a wooden block, the diameter of which was the same as the shell case. This block was inserted in the case and the bends thus forced out.

Packing of 155-mm powder charges in fiber containers caused less difficulty for gun crews than in the case of the 105 howitzer, though probably more serious. After deterioration of the container much of the powder became exposed to sun, rain, and (in some positions) large ants which ate through the silk powder bags. Naturally, powder in this condition was never used. Some of the difficulty with the fiber container in the case of both the 155 and the 105 ammunition is that officers and men alike fail to consider its inherent weaknesses and to handle it accordingly. Had clover leaf containers all been shipped in small crates, had *all* ammunition been elevated on large platforms with air circulation provided between layers and with brush placed on top of each pile for protection against sun and rain, deterioration might probably have been postponed. But with troops diverted for unloading ammunition from barges and with the added menace of bombing, such care will not always be possible in combat. The basic weakness of the present fiber container will then, under tropical

conditions, never entirely be removed.⁶

It is obvious that, if field artillery is to deliver accurate massed fires close to friendly troops, ammunition must be furnished to the forward areas in lot numbers of sufficient quantity to provide the same lot number for fire for effect that is employed during adjustment. This supply problem can be accomplished if ammunition is properly segregated according to lot numbers in the rear areas, and proper supervision maintained to insure the continuance of this segregation in all subsequent shipments and storage dumps.

One ammunition defect noted by the Sth FA Bn before the New Georgia campaign was quickly eliminated. Dispersion of the 105-mm howitzer, even when using the same lot number, appeared greater than that indicated by the range tables. Investigation revealed that when the projectile was loaded as a complete round, as is normal with this weapon, the rotating band failed to engage properly in the forcing cone.⁷ Subsequent tests indicated hand-ramming to be the answer, dispersion being reduced to a point where few projectiles fired from the same gun fall outside a zone 150 yards in depth. Formerly a zone of 300 yards was often covered!*

All ammunition problems mentioned so far have been primarily those of the section and battery. One problem for higher headquarters is the composition of a unit of fire for jungle warfare. During the Munda campaign the following ammunition was expended:

Caliber	HE	Smoke
105	82,894	1980
155	30,052	1000

These figures show that approximately 3% of the unit of fire should be smoke, but on Guadalcanal the figure was over 5%. Time fuze is rarely employed in this theater of operations, fuze delay being the most effective.

It would appear, therefore, that a proper unit of fire for the 105-mm battalion would be 5% to 10% smoke, not over 5% time shell, and the remainder shell HE with fuze M-48. For a 155-mm battalion the percentages should be the same, but a ratio of 7:5 in favor of the delay fuze should be maintained, with approximately 20% greater fuzes than projectiles. Such a composition, together with proper lot number distribution and a more rugged container for storage, should answer the needs of a jungle artilleryman.

⁶Cloverleaf fiber containers have just arrived in this theater crated, one clover leaf to the crate. This type of packing should solve the problem of bent shell cases. It should also provide better protection for the fiber containers. Recommendations for further improvement on the crate would be: (1) Stencil lot numbers on the crate in numerals at least 1/4" high. Men would then find separation according to lot numbers much more simple. (2) Provide a groove on either end large enough to facilitate handling the crate.

⁷Test your own howitzer. Load with the tube level, then elevate; nine times out of ten the projectile will fall freely and quickly to the rear. Repeat the test ramming the projectile prior to insertion of the shell case; the projectile is properly seated and will not fall to the rear. Uniform ramming is necessary with the 155; why not with the 105?

*Reports such as this are carefully examined. As a result of this one, a controlled test was conducted. It showed no difference between normal loading and hand-ramming.

One reason for this result may well have been that the test ammunition had not been banged about all over the world as had that of which Col. Gildart writes. 105-mm rounds were formerly packed with the projectile seated in the cartridge case. During its travels the projectile would shake down into the case, springing and enlarging the lip of the case. This would of course prevent proper seating of the projectile.

This ammunition is now packed with the projectile inverted. In addition, a stop is provided to prevent its ramming against the cartridge case during shipment. It is hoped that no further trouble of the kind mentioned will be experienced after the older shipments have been used up.—Ed.



Incessant rains turned New Georgia's roads into sheer mud traps. Prime movers couldn't force through, so tractors were called upon to help. These photos are of the medium artillery of the 25th Division during its move from near Lambeti Beach to Zieta Plantation. Here a "cat" drags an ammunition trailer loaded with "food" for the 155-how's.

SUMMARY

1. Artillerymen must be thoroughly versed in the employment of aerial photographs and in the compilation of maps therefrom. Regardless of what maps are being employed by higher echelons for tactical and strategical reasons, the artillery should select the most accurate available for artillery fire control.

2. Few natural position areas will be available for the artillery in jungle operations. Officers must therefore accustom themselves to the selection of a position which can be prepared for accomplishment of the mission.

3. Jungle survey, while difficult and consisting primarily of traverse, must never be neglected. Its use provides valuable information not only for the artillery but for the infantry as well.

4. Because of a lack of observation, targets will seldom be visible. The artillery can overcome this handicap to a certain extent by conducting "sound observation" from positions within the immediate front lines.

5. Present wire equipment is satisfactory for jungle operations, though its maintenance presents a problem. Radios, on the other hand, must still be perfected to meet the artillery's requirements.

6. Adequate transportation of the proper type must be supplied the artillery. Each battery should have available two tractors and a minimum of one track-laying trailer.

7. The 75-mm howitzer lacks sufficient punch for jungle operations. Its inability to employ high-angle fire further limits its use. Similarly, the 155-mm howitzer employed in this type warfare should be of the M-1 type, capable of employing high-angle fire.

8. Ammunition furnished the artillery should be packed to guard against bending of the shell case. The clover leaf pack alone does not give this protection. Furthermore, the fiber containers tend to deteriorate rapidly, though proper storage will minimize this deterioration.

9. Steps should be initiated to decrease the number of ammunition lot numbers now being provided.

UP FRONT DOWN UNDER

By Col. Christiancy Pickett, FA



In the good old days we felt that an OP had to be adjacent to the gun position; then the idea occurred to some bold thinker that a better place for an OP might be up where one could see the target area. Being a conservative, I resisted this: at Fort Sill one can see everything from the hill near the guns and that's where we used to do all our firing. Then the Japs challenged us to fight them in the jungle. I'm opposed to this, too, but I'm afraid we will have to become resigned to it.

Here's another condition I find hard to get used to: colonels are no longer any more in demand in combat than they are around the nearest nurses' home. I wish I were a captain again.

If I were captain of a howitzer battery I could leave things in the firing battery strictly up to my executive, and since he gets most of his orders from the battalion fire direction center that would leave me free to go where I please—which would be up to the forward OP. The forward observer has to combine initiative, tact, experience, profound judgment, knowledge of gunnery, physical agility and endurance, determination, and ability to subsist on roots, herbs, and vitamin pills for days. He is a composite of Tarzan, Einstein, Superman, Gene Tunney, Robert E. Lee and Frank Merriwell. Should I entrust this assignment to a green second lieutenant? Who but I could fulfill all these exacting requirements?

On second thought, however, I would take the green youngster along in order that he might have the priceless privilege of developing and gaining experience under my example and precept, and also (purely as a secondary consideration) in order that he might help me carry a few of the articles of equipment that would be required. Figure 1 illustrates fairly well what I mean.

That brings up the next question: what should the forward observer carry with him on his way up front through the jungle? In order to get some unbiased, experienced opinion on this subject I called upon seven lieutenants to submit lists of what they were going to take with them on a jungle exercise. Each of these gentlemen went on the same exercise with his battery. The exercise was no Sunday School picnic. It took place in terrain beside which the Dismal Swamp of Virginia and the bayous of Southern Louisiana would seem like the infield of the Yankee Stadium. Although steeply hilly, the trail was often a rivulet, sometimes a knee-deep hog wallow, always choked with fern and underbrush. The area was in a rainbelt

averaging around 300 inches a year. It took hours to get the guns into position; beyond them no vehicle could go, and the forward observer and his party took from two to three hours to reach an OP 2,900 yards beyond the guns.

After this exercise the seven forward observers turned in reports stating what equipment and articles they wished they had taken and what things they believe would better have been left behind. They were unanimous in stating the necessity of borrowing porters to lug some of the equipment, returning these men to the battery after reaching the OP. They also held out for three or four wire section men to put in most of the initial communications for them.

The original lists contained many interesting articles, and the lieutenants were obviously influenced in their preparations by various enthusiasts who have never carried anything except a riding crop but who fancied that a forward observer has an elephant hunter's safari filing along behind him. For instance, the outfit of impregnated clothing was thrown out with a hoarse cry of savage fury. The gas mask, too, took an awful beating on the trail and caused more annoyance to the wearers than any other article worn. It should be checked with the supply sergeant. For my part, I am willing to gamble that if the Japs suddenly start using gas against us, it will not be while I am up at the forward OP. If and when they do start using it, then and thereafter I will take my mask.

Rocket launchers, rockets, and flares were North African Desert gadgets, in favor with the Armored Division boys. Using them at a jungle forward OP would be almost as good as putting up a blue and red neon sign reading "Forward Observer" in Japanese. The chap who suggested a tommy gun for close defense reported that about halfway up to the OP he became the victim of an illusion that he was lugging, among other trifles, a 37-mm gun.

Reluctantly, all agree that the aiming circle should stay behind. It's a fine instrument, but not an essential if one has an M2 compass.

As a result of the reports all toilet articles were scratched except a washrag and an ounce bottle of citronella. Sadly we lay aside a 16-ounce container of medicinal spiritus frumentae (Duggan's Dew of Kirkintilloch): 'though it would have comforted the soul during the dank, chilly hours, it doesn't fit in anywhere. Likewise the air mattress is discarded.

Soldiers loathe shovels. When required to take them they choose the light entrenching tool. But when required to dig down to safe levels for shelter, they wish they had brought

more substantial and serviceable tools such as pioneer sets. So these are included in spite of their weight.

Surprisingly, the observers were willing to give up the dispatch case, though taking most of the usual contents. Some suggested a clip-board.

The recommended list, based on consensus of opinion:

(a) *Carried by Forward Observer Himself.*

FIELD EQUIPMENT

- Helmet, steel
- Belt, web, with holster, 1st aid pouch, and magazine pockets
- Canteen, cup, and cover
- 1 spoon to eat C rations (no other mess equipment)
- Field bag
- C rations (1 day)
- Knife, hunting
- Flashlight with blue hood
- Shelter half, pole, rope, pins

PERSONAL EQUIPMENT

- Raincoat
- Mosquito headnet (carry in field bag)
- Extra pr. light wool socks
- Either a field jacket or a light wool undershirt
- Washrag
- Bottle citronella or other mosquito repellent
- Calcium hypo to chlorinate water
- (Opinion is divided as to whether a blanket and mosquito bar are worth the trouble of carrying them)

TECHNICAL EQUIPMENT

- M2 Compass
- Field glasses
- Range table (book)
- Clipboard with paper, a piece of grid sheet, and the prearranged code
- Protractor with range scale on bottom
- Coordinate square
- Range-df. fan (1/40,000 with "Jeep Board")
- Map or photomap if any
- Pins, pencils, erasers

(b) *Each enlisted member of party* to carry the same field and personal equipment listed above, and in addition a fair share of technical equipment listed below.

TECHNICAL EQUIPMENT CARRIED BY MEN ASSISTED BY LOANED PORTERS

- 1 telephone with two extra batteries
- 1 axe
- 1 pickmattock, pioneer type
- 2 shovels, pioneer type
- 1 machete or cane knife
- 1 wireman's kit
- 4 test clips
- 1 SCR-610 (parts carried by porters)
- W-110 wire according to distance to OP

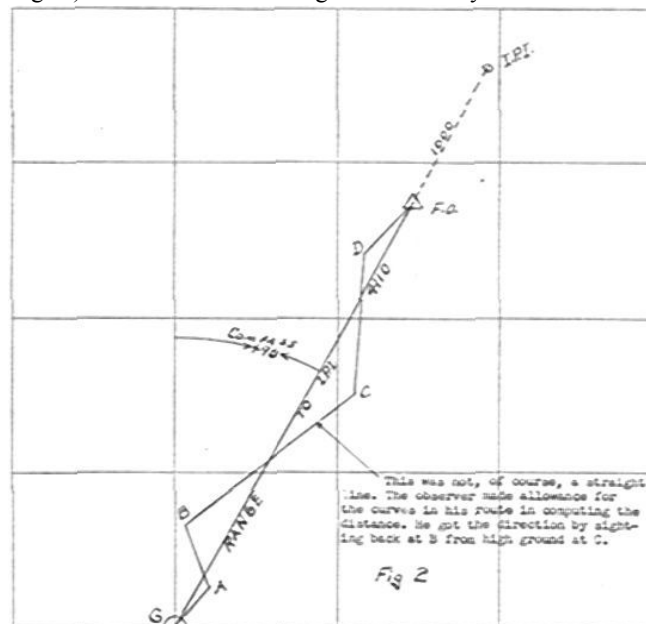
One more suggestion. After a few trips through muddy, mountain trails wearing GI shoes I tried a pair of suction-cup, rubber-soled tennis shoes and found the footing much better. I fell on my ear only two or three times per mile.

Now let us consider what we in the forward observer party will be up against when we arrive at our jungle front-line OP. If we chatter gayly all along the way in an attempt to keep up our spirits, we will arrive at the OP with a very vague idea of the direction of the guns and their distance from us. The field of view will be limited, and there will probably be no maps or map substitutes. If we compute data by guess and by God, the first bursts might land on our own infantry (or even on us. Horrors!).

Thus it behooves us to keep track of directions and distances travelled during every minute of our trip forward. We read azimuths back to points previously passed whenever we can see very far to the rear. We watch the sun, when we can see it, in order to get the general direction of curves and twists in the route. For distances we count steps, and reduce these to yards

by applying various factors according to the difficulty of the footing and the slope. (Attempts to get a rough check on the total distance by keeping track of the amount of wire laid proved that this method is very unreliable. Men's estimates of the amount of wire they had on the drums which they brought with them were grossly inaccurate.)

These data are recorded as we go along, and when we arrive a rough traverse can be plotted on a section of grid sheet (see Fig. 2). While an error as high as 15% may result from this



procedure, it will form the basis for approximate and safe initial data to an initial point of impact (I.P.I.) 1,000 yards long in range. Thereafter bursts can be brought back into the observer's view by cautious changes in reflection and range based upon speculation as to the location of each burst after hearing the whistle of the projectile in its flight and the blast of its burst. The blast alone is often puzzling and unreliable, especially in heavily wooded, hilly terrain which can bounce the sound around or dampen it out. But the whistle of the shell tells very clearly whether the projectile passed to the right or left of the observer, and just about when it passed over him. The time remaining before the whistle terminates in a bang will give some idea of how far out the burst occurred. The loudness of the explosion is not to be trusted.

Finally, registration is possible, and close supporting fires can be delivered.

Close? How close? That is a subject for interesting speculation. Exploring it should offer a drop of comfort to us when we have a deep enough trench and our figures tell us that we are not inside the zone of dispersion, for this means that we are practically certain to escape death from our own shells unless a mistake is made, and of course we know that Uncle Sam's artillery never makes mistakes—well, hardly ever!

But it is frequently necessary to fire so close to our infantry that they are well up on the zone of dispersion. When we do this we have begun to flirt with death, and like flirting with women this is bound to be fatal in the long run, but if we indulge in it only occasionally and with a knowledge of the degree of risk involved it is not a venture against hopeless

odds. As in any flirting, the venturer's chances of escape depend to a large degree upon *ducking*—this time ducking down deep enough into a slit trench dug out of firm, undisturbed earth.

If this sort of firing is undertaken without previous registration the danger is incalculable. *Registration should always be completed before pulling bursts in close.*

After a CI adjustment, using six rounds, the *probability* is 99% (practical certainty) that the actual CI is within one probable error of the location determined. In other words, after locating the center of such bursts and using corrections therefor, the burst center could be brought within five probable errors of our foxhole with a negligible chance of getting a direct hit on us. True, a few fragments from a few of the rounds may whiz down into our shelter, but we tell ourselves with a hearty laugh that they will probably be spent in velocity and will glance off our helmets. It is not too difficult to convince all concerned that they should keep well down in the trench for two or three seconds after the burst before popping up to sense it.

Assuming accurate registration, under the above conditions we would be practically safe under the sample conditions listed below:

105-MM HOWITZER		
Charge	Range	Distance in yards Burst— Observer ($Ep \times 5$)
I	3000	125
II	3500	135
III	4000	140
IV	5000	160
V	6000	175
VI	7000	145
VII	7500	125
IV High angle fire	5500	175

More favorable conditions can be procured by the selection of the charge, as for example we find that if the range is 4,000 yards we can bring the burst up to within 75 yards of us by using Charge VII. Now suppose we want to inch those bursts in still closer. Here, for once, the word "creeping" sounds good even in the ears of an old artilleryman. A bit of browsing through the range tables will tell us what the chances are of our being decorated posthumously as a result of bringing the burst center in closer than five probable errors. A few examples are shown below:

105-MM HOWITZER (assuming accurate registration)			
Charge	Range	Distance— Observer—Burst	Chances of Having a Gold Star Mother
3	4000	98 yards	Less than one in a thousand
		75 yards	From one in a thousand to three in a thousand
5	6000	14 yards	Six in a thousand
		55 yards	From three in a thousand to six in a thousand

But if we have to use high angle fire to clear the mask or to reach enemy in terrain that would otherwise be in dead space, I am not selling any life insurance. Observers in the jungle don't like to use high angle fire on anything nearer than 400 yards. The trouble with this business is clear when you look into the columns in the range table showing the effects of wind and drift on the trajectory. If it is at all gusty, any attempt to predict where the next one will land is pretty much like spitting out of the back seat of a fast moving command car.

This high angle fire is a fascinating subject. Or is that the right word? Notice that the complementary site is opposite in sign to the site and much bigger. You can get into quite an argument as to whether the complementary site given in the tables contains a correction to reverse the sign of the site. Actually it does. Observe that it suddenly changes from about +2 to about —3 for each mil of site.

We must steer clear of starting an adjustment too close to the border-line between high angle and low angle fire, for the application of a large site to our initial data or the first change in elevation might very well throw us from high angle fire into low angle with consequent effects other than we figured on, and we may possibly shoot ourselves in the pants. Suppose we consider the first burst as falling 200 yards in front of us, and short of the target. So we reduce the elevation—or go down to go up—and what happens? We are now over the boundary into low angle fire and we hear one go "blam" behind us! We were behind before and now we are first at last. In short we were long, but at length we are short. Do I make myself perfectly clear?

Observe also that the drift in high angle fire is up around 50-55^m and that often a change of only 100 yards in range will change the drift as much as 4^m. The effect of this as observed at close range must be startling.

So much for high angle fire. There is just one more consideration that the jungle forward observer will have to have, no matter what kind of fire is being delivered, if he is to adjust bursts up close on front line targets—the guns must be emplaced in a line near the normal to the planes of fire. Yes, the old fashioned battery front! With all his other troubles and only a vague idea of the angle *T*, the forward observer cannot be bothered with trying to figure out individual corrections in range for a battery of guns that is widely dispersed in a diamond or "W" formation. When he adjusts No. 1 or No. 2 on a point only 150 yards away, he has to *know* that the other bursts won't drop right on him as a result of the guns having been staggered all over the landscape. Moreover, this business of staggering and wide dispersal of pieces grew up in the wide open spaces of Libya in the days when Goering's gang ruled the air. It's a bit different now, and particularly in the jungle where the most important security consideration is night defense against infiltrating Japs. The people from "down under" are saying now that they are putting their guns in close together in a straight line and parking all the trucks in the immediate vicinity in order to reduce the area that must be protected by their perimeter defense.

A few more pearls of second hand advice for forward observers have been received from people fresh back from New Georgia: do not walk on any trail after passing the infantry regimental CP, for the Japs frequently cover them with fire from light machine guns; do not wear field glasses or any other item of equipment that identifies you as an officer, for that draws all the snipers' bullets.

Lastly, when you begin to see people around you who weren't there last night, including Gen. Sir Archibald Wavell and your father-in-law, it is time to give in and send for your relief number. After all there are three officers in the battery not counting the executive, and they must all take their turn on this harrowing job.

Maybe a colonel's job in this war isn't so bad after all.

A PACK ARTILLERY BATTALION IN THE PACIFIC

March 1942—March 1943

By Col. Henry C. Demuth, FA

The battalion of pack artillery which I took overseas in the early days of the war was one of the old pack battalions of the regular army, the SGth FA Bn. It was organized approximately as per T/O 6-155, November 1, 1940 (805 animals, about 900 officers and men), with the special motor platoon of 10 2½-ton trucks and a few light cars.

We sailed from the U. S. in March 1942 and landed the first week of April, to become part of a task force which was holding the Pacific island of New Caledonia. The first very urgent and perplexing problem was to mount the battalion. We had brought all our animal equipment with us and were close to authorized enlisted strength, but had left our animals in the United States: our orders had read, "Animals to be furnished at destination." Funds were immediately available, so the veterinarians, with a detail, made long excursions into the back country to round up and purchase animals. We established a remount depot to receive them, in the mountains about a third the distance up the island.

The roundup was never completed, as we soon found that these animals were totally inadequate for our purposes. Bred and raised for generations on grass alone, though sure-footed and of some quality, they were too small and too light and lacked bone and stamina. Although the marches to our remount station were made in moderation, some succumbed before arriving. Others never regained the weight lost. After a couple of weeks of coaxing, most of them are oats but without noticeable improvement in condition. It soon became apparent that we were wasting the time and effort of the officers and soldiers in training them: they could not work two or three days in succession under pack artillery loads without deteriorating to the point of uselessness.

Prior to and during this period of experimenting with the native horse, the battalion was practically immobile. For lack of sufficient trucks we could move only a few guns at a time and these were coast-bound in the mountainous country. We decided in case of attack to use the guns as beach guns, spike them if in danger of loss, and continue to fight as infantry.

For long weeks the battalion performed many chores. It unloaded ships, manhandled a tremendous amount of equipment, guarded stores and localities. We did about 30 minutes' standing gun drill daily, as well as an hour or two of infantry formations and tactics, rifle, bayonet, pistol, grenade, and saber practice. Reconnaissances were maintained regularly, looking forward to the day when we would be mounted and could function as proper pack artillery. In painful stages we got the battalion (less two batteries) to a valley some 20 miles up the island. Here, still immobile in its normal defense role, it was scattered over a front of 20,000 airline yards.

Our next try at achieving mobility was with Australian horses. Many of these made fine mounts, but the buyer informed me that the type of animal we needed for pack just



No time was lost in unloading our task force at Noumea. Pile-ups on the docks were whittled down as fast as possible.

did not exist in quantity. Out of several hundred shipped to us we succeeded in packing and mounting one firing battery and part of another, headquarters battery, and part of service battery. Those that we did pack were of a small draft type, 14-3 to 15-2. We broke and partially trained 300 of the Australian horses. When they proved no better than the island horse for pack, we sent an order for mules to the States.

Through all this time of part motor and part pack, the battalion was in support of an important defense sector. Only one battery was capable of operating in the mountains for a short period with the feeble animals. This was a situation with serious risk. The sector had to be defended to hold the main port of the island. The Jap still had the initiative and was making steady progress in the South Pacific. A landing anywhere on the island would have endangered the supply line to Australia. Loss of the main port would have been a major disaster. We were the only organization that could get about in the high, rugged mountains which composed two-thirds of the island. Several tasks had to be accomplished in the face of probable attack. While we waited for mules from the United States we worked on both, in spite of our unsatisfactory animals.

Our sector, probably the most important on the island, was by the very nature of the terrain extremely hard to defend. With virtually everything in the force motor-roadbound along the western shore, there was no way of crossing the island. Our first need was a trail to connect with the road which led from the east shore to the divide between the east and west shores. Heading high up in the mountains a wide valley extended to the east shore, while a narrow valley dropped from the divide to the west shore. The mouth of the river in the east valley could accommodate 10,000-ton ships. A trail, passable on foot, came down the west valley within two miles of battalion headquarters; here it became a one-way road.

I set the battalion to improving this foot-trail and we spent arduous weeks cutting, blowing, and widening it. From the foot of the trail to the head of the east valley was 10,000 yards in an airline; it was 18,000 yards by trail with ups and downs to a height of 3,600 feet. In many places it was so steep switchbacks had to be cut. We had to get to the head of the

east valley, for this east-west valley route cut the island in two. In the hands of the enemy, it would likewise have split our forces. So get there we did.

We also connected this trail with our southern battery on the west shore. Thus, with the trail over which we laid wire, a triangle was formed. The whole battalion could be concentrated toward the head of the east valley (or in any other part of the sector) over separate trails in a maximum of eight hours. Another trail along the west shore, inland from the one main road, extended for many miles through the mountains to a point up the island. Pioneered in several tough and lofty spots by the pack battalion, this trail made a total distance of 50 miles. In all the battalion improved and constructed 75 miles of mule trails. In places they were at dizzy heights and they were invariably knee-deep in mud. With the first 300 mules from the United States equitably distributed among the batteries, work on the trails proceeded more rapidly. Reconnaissance, selection of position, and survey with a view to either defensive or



New Caledonia natives built huts to house at least some of our soldiers there.

offensive action kept up with the trail building. In the end the battalion had over 50 completely surveyed battery and battalion positions.

Another task, while still handicapped by the inadequacy of our animals, was to lay a division wire axis across country to get it off the one and only main road. This road was within range of naval guns and lay for many miles in a defile known to the enemy. The wire was laid along a 20-mile trail which the battalion had previously dug and blasted with dynamite over thoroughly bad terrain. No motor vehicle was able to make it.

Of the 300 mules received from the United States, practically all were put in pack. Two hundred of these, mostly aged, came from a pack organization. The remaining 100 were fine, young mules—Fort Reno's orniest. It took about a month to break them and, sadly, not without some casualties to personnel. The battalion was now able to pack its guns, some maintenance supplies, and a little ammunition. But the desired mobility for the type of action anticipated was not yet attained. Where horses were used to fill out the table of allowance requirements, the difference in capabilities of the mules and horses *under pack* became more marked, with the horses fast losing out under the strenuous work. It was decided to

requisition the remaining pack and riding mules—the latter are replacements for pack mule casualties and our work in the mountains had not been without casualties.

Any operation in the high country called for infantry as well as artillery. Since the infantry had no means of transporting supplies in the mountains and the round trip from the truckhead to the end of the east valley trails took two days, I decided to establish along the trail caches of artillery and small arms ammunition, oats, and food. To start the caches a section of the service battery was established at a camp halfway up the trail. Supplies and ammunition were carried from the base camp to the midway camp and the section camped there cached them. The howitzer batteries worked in the same manner, each working on one of the other trails. The plan was to have supplies and ammunition within a 4,000-yard round trip of any position. With supplies so located, and utilizing all but the howitzer and detail mules, it would have been possible for us to pack initial food and ammunition for the infantry if called upon to fight here and maintain ourselves thereafter. This operation, carried out to the limit of endurance of men and animals, took weeks due to the shortage of pack animals. Fortunately, the Jap had not attacked. Our motor transportation was useful to us in hauling supplies to the foot of the trails and in taking the captains to the finance office for pay, but from the foot of the trails onward only animals could operate.

All the time we were in this sector the batteries were separated by great distances and very rough terrain. Much readjustment in organization and equipment was necessary to make them as self-sustaining as they had to be.

Our caches were not entirely completed when the Marines attacked Guadalcanal on August 7 and changed the aspect of things in the South Pacific. Thus ended the first phase of the operations of this battalion—an operation across deep mountains.

* * *

Kept busy in the Solomons, the Jap was no longer liable to attack us and we imagined our use elsewhere. We therefore commenced intensive brushing up on offensive tactics.

All information coming out of Guadalcanal pointed to the necessity for defensive armament for artillery batteries in addition to the rifles and other small arms normally carried. Consequently, it was decided to add two light machine guns (packed) to each of the five batteries. With the help of the Division Ordnance we constructed for the guns and ammunition pack hangers similar to the cavalry light machine gun hangers. We learned to use the guns.

With the probability of attack from the Jap much lessened, the battalion* was relieved from this sector and was assigned as combat team artillery. Shortly after this it received the second contingent of mules (all remounts) which brought the battalion to its Table of Allowance strength in animals. Breaking started immediately, and a month's time saw the battalion properly mobile. All horses except those prescribed as mounts were turned in. It kept an overstrength of 25 mules for machine guns, machine gun ammunition, and litters.

I preceded the battalion to Guadalcanal, but before I left the island it was decided to send the battalion to Guadalcanal in three self-contained echelons, i.e., a howitzer battery, a section of the service battery, and a part of headquarters battery,

*The author was relieved of its command 3 Sep 42, to become Artillery Officer, Americal Division. The battalion was attached to that Division.

all with animals in each echelon.

The first echelon to arrive was A Battery, which unloaded and, with a section of Service Battery, marched to the front within a few days. In support of the — Infantry, it engaged the enemy.* Attacking westward, parallel to the coast and parallel to the mountains, the left flank of the American forces was pushing over high, steep foothills and through dense jungles. It was here that the pack battery was employed. Supplies were sent forward by boat to dumps along the shore and packed the short distance across the rear of the troops to the battery. Thus the service battery section, after a march of a few thousand yards, was free for employment elsewhere. It packed for the — Infantry, relieving the soldiers of hand-carrying supplies and ammunition and materially helping it to get forward. The operation on Guadalcanal was, one might say, a special case for pack artillery, since here it had only a short supply line.

*The author was not in command of the Americal Division Artillery at this time, but he was present. The pack artillery was still attached to that division.

Battery B arrived in the second echelon. Its animals were delayed, hence its employment on the mobile front was out of the question. To have split the available animals would either have immobilized one battery, risking capture or running out of ammunition, or by repeated trips would have exhausted men and animals. It was placed in perimeter defense (defense of Henderson Field) when a Jap task force threatened. The threat failed to develop: it did not fire a shot.

When the pursuit ended at 1800 hrs, February 9, 1943, of all the artillery on the north shore only two batteries were in action. One of these was a 105-mm battery in the coastal plain. The other was A Battery in the mountains. The 3d echelon of the battalion did not arrive on Guadalcanal in time for the fighting.

With the end of organized resistance there was no present use for the battalion as pack artillery. All available animals and the necessary packers were formed into a temporary pack train. In the latter part of February it was used to pack a battalion of the — Infantry into the mountains to round up stragglers Japs.

Prescription For An All-Out War

By Lt. Col. Paul B. Bell, FA

One not in command of a Tank Destroyer Battalion resembles a married person without children—he always knows all about how to train them properly from babyhood. Well my Tank Destroyer Battalion would be taught the art of killing, to destroy, to be cunning about it, not a slugger but a trained killer who slashes, thrusts, and knives. Willing to gamble?—certainly, to accomplish the mission. No other organization in the army has such fire power. We have so much fire power that it's appalling—it's a terrible challenge, something new, a chance to use new methods, new tactics, new technique, a wonderful new game where the ground rules are secondary to accomplishing the mission.

How are we meeting this challenge? Are we developing the men and officers to master this mechanical power, and can we make it pay dividends? Can the human, mild mannered, timid, peace-loving Americans carry out orders in the face of fire and death? You can't be there with them. They will be out there alone—to overcome every emergency, to use ingenuity, initiative and face death itself to accomplish the mission.

Men must be taught to kill, taught the technique of killing and the love of killing. The weapons we have are not easy to fire. Manipulative skill must be maintained by constant practice, daily practice, not by the gunner alone but by every man—for every man must be a gunner, a driver, and radio operator. Man! what a training challenge! What interesting subjects to teach and for such a worthy cause!

The love of killing must be taught; it is a mental and physical condition. Every man must desire to destroy, destroy that which would deprive him of everything he holds dear. That is a mental condition which cannot be produced in one pep talk before the battle, but rather in a well organized educational campaign based on history, current events, and logic itself. This mental condition is absolutely

necessary, but it can be developed much faster than the physical conditioning that must go with it.

The man who can really handle our fire power must be a wonderful man physically. He must be able to stand battle conditions mentally and physically, not just for a day but until the engagement is won. Mentally, physically, and technically trained—what a man! How many of your men and officers are ready? Are you? Do you set the example? Are you in condition? There's no alibi for being short of physical condition. This is the most serious task we or our forefathers have ever had.

To sum up, let me enumerate what I think we should do:

1. Get and keep in shape physically every man and officer by at least one hour of organized conditioning, having exercises every day, with all men and officers participating in a competitive sport program to teach the love for physical contact—combat.
2. Learn and keep the manipulative skill necessary to fire the basic weapon by as much practice on the range as is possible, and by daily tracking exercises that can be graded and recorded.
3. Work on a seven-day week, do away with routine weekends, get rid of habits and precedents—our men must know no normal situations. In other words, stagger our day off and keep things rolling.
4. Drill at least one-half time at night. This is a 24-hour-a-day war, not a daylight affair.
5. Include in our training that which it takes to produce moral fiber, the will to face death—not just the willingness to give one's life for his country, but the intestinal fortitude to face and destroy overwhelming odds to save for the whole world *our life, liberty, and the pursuit of happiness.*

ROUTES INTO EUROPE

A Study in Terrain

PART IX—WEST FRANCE

By Col. Conrad H. Lanza

West France is considered as that part which is south of the Loire River. It is divided into two distinct sections by the Gironde River, which is 125 miles south of the Loire and 160 miles north of the Spanish frontier.

NORTH SECTION

On the north side of the Loire River and close to its mouth is the first class port of St. Nazaire, which was an American base in World War I. Thirty-five miles further up the river is a secondary port, Nantes, mostly on the north bank. The capture of St. Nazaire through an expeditionary force landing north of the Loire in Brittany was discussed in the December, 1943, issue of this JOURNAL. Although this valuable port might be so taken, it could not be used by an invasion force unless the enemy was cleared away from the south bank of the river. This might be accomplished by a direct landing from the sea, by crossing the Loire from the north bank, or by a combination of these two methods: the local situation at the time must decide just which method would be used.

Provided the north side of the Loire has first been secured, a

clearing of the south bank could be made by landing in the lower part of the river between Paimboeuf and Cape St. Gildas. Except for the cape itself (which is rocky) the beaches are good, and there are no natural barriers in rear of them which the enemy could use. Artillery fire from batteries on the north bank could cover landings.

If the north side of the Loire is not held an invasion force would be restricted to landing south of Cape St. Gildas in order to escape having the landings taken under artillery fire from both front and rear—which would happen for landings north of the cape.

South of this cape is the Bay of Bourgneuf. Omitting the cape, which is not suitable for landing, there is a succession of beaches for nearly 10 miles to the village of Bourgneuf, whose small port is suitable for motor boats and barges. Two miles from the cape (at Prefailles) is a stony beach which motor vehicles could cross without aid. The other beaches are sandy, and in general are resort centers. On this entire stretch of coast there is liable to be a high surf, increasing toward the west end,

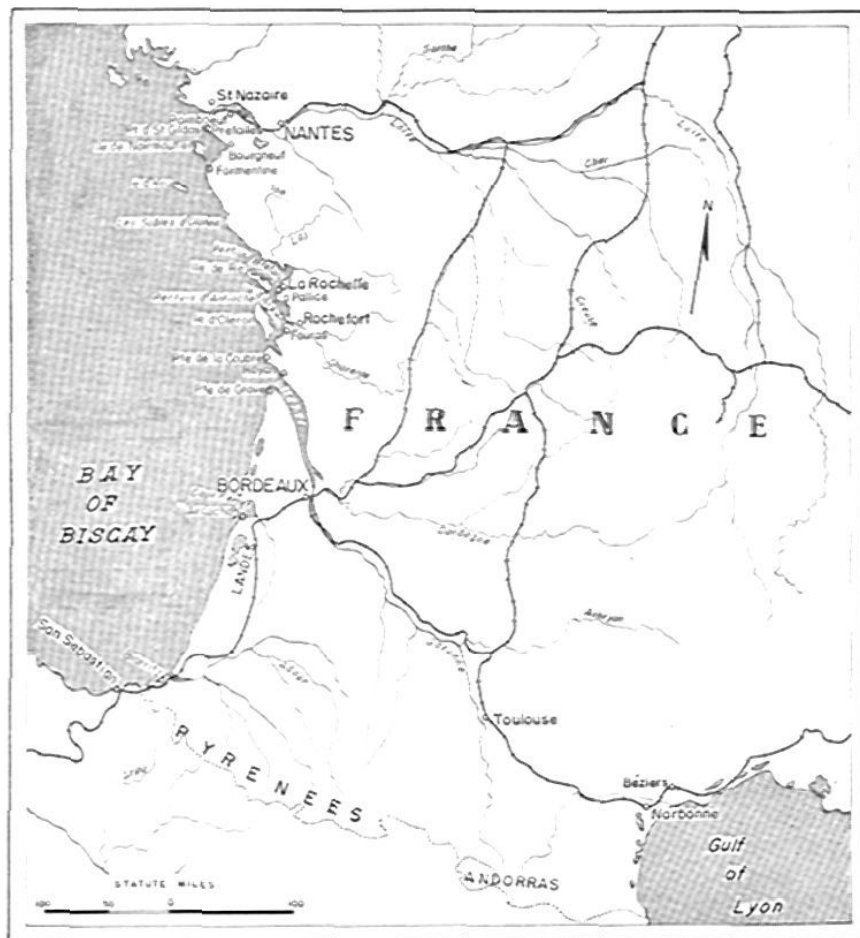
which will in certain weather interfere with landings.

South from Bourgneuf the coast is bordered by marshes, but the surf is much reduced due to shelter afforded by the island of Noirmoutier which covers somewhat more than the south half of the bay. The marshes can be crossed by infantry, but not by vehicles until ways have been prepared.

Seizure of Noirmoutier Island would facilitate a landing within the Bay of Bourgneuf. This island is 12 miles long, with an average width of $4\frac{1}{2}$ miles. Its north end is rocky but the remainder is low and flat, with a considerable area below high tide level and protected by dikes. The inner side has two small ports and alternating beaches and marshes. On account of the surf this is the preferable side to land on, but the outer side can be used for landings at times.

The south end of Noirmoutier is only half a mile from the village of Formentine on the mainland. A ford connects Barbatre on the island, across the sea three miles to Beauvoir-sur-Mer on the mainland. This is a paved road, covered with water and impassable at high tide but usually uncovered and available at low tide.

There is no definite information regarding enemy fortifications on Noirmoutier. He is reported to have fortified



Yeu Island, 18 miles south of Noirmoutier. That island is about 6 miles long and 2 across. Its inner side has good beaches, the outer side is rocky. This island is too small for a base for an expeditionary force, but could be used as an air base to cover landings. Noirmoutier is large enough to enable assembly of a considerable force.

South from Formentine, over a distance of some 35 miles and in rear of Yeu Island, are a succession of beaches—all small but mostly good—as far as Les Sables d'Olonne. At this place is a magnificent semicircular beach about 1½ miles around, with a smooth sand slope. As it faces to the south it is protected from the strong surf common on the west French coast. All of this stretch of coast is available for a landing which would have as its mission the clearing and seizure of the territory south of the Loire River.

South of Les Sables d'Olonne are extensive salt marshes which would hinder operations toward the southeast. These marshes are cut up into innumerable compartments by dikes and canals. They are slightly below the elevation of high tide, when sea water is allowed to enter; it is then cut off and the water allowed to evaporate, leaving salt which is gathered later. These marshes would protect the right flank of an invasion landing at Les Sables d'Olonne and to the north thereof.

South from the salt marsh area is Pertuis Breton (Breton Sound). Through this is the channel to the important ports of La Rochelle and La Pallice. La Rochelle is the older port, now reserved for smaller vessels (including submarines). La Pallice is modern—completely built during this century, it can handle the largest ships; it is 3 miles from La Rochelle and practically part of it. These two places would make excellent bases. On both sides of La Rochelle are very good beaches, entirely suitable for landings.

The enemy has strongly defended this area, which is important to him as a base for light naval forces and as an air base. His defenses lie mainly on two islands, the Ile de Ré and Ile d'Oléron. The Ile de Ré projects from the coast 15 miles into the sea and averages about 4 miles in width. Its north side forms the south boundary of Pertuis Breton, while its south side is the north boundary of another sound—Pertuis d'Antioche. The outer quarter is joined to the rest of the island by an isthmus only 200 feet wide; the enemy's main defenses are east of this isthmus. The island is generally low with extensive marshes and vineyards. Best beaches are near the center on the north side.

Pertuis d'Antioche south of Ile de Ré leads to La Rochelle and La Pallice at its north end and to Rochefort at the south. At the latter place is a navy yard for submarines and small vessels. The sound is bounded on the south by the Ile d'Oléron, 19 miles long and about 4 miles wide and of the same general description as the Ile de Ré. Opposite its south end the mainland is three miles away; passage through this strait is covered by batteries both on the island and on the mainland.

To further protect the sea approaches the enemy has fortified the Isle d'Aix, in Antioch Sound, and has erected batteries near Fouras on the mainland. Part of the latter are on the small island of Enet, which can be reached from the coast by a ford at low tide.

This general area (La Pallice—La Rochelle—Rochefort) is an enemy naval and air base for operations covering the Bay of Biscay and beyond. It is reported as strongly defended. The usual obstacles have been erected on and near the shore. This area also protects an approach to Bordeaux from the north, and

threatens any landings south of the Loire River. For these various reasons the enemy is likely to offer strong resistance against any invasion in this vicinity. The strength of the local garrison is not known; it may be small. His air forces would presumably discover an invasion a considerable distance out at sea. As there are excellent roads and railroads leading into the interior of France, troops can be rapidly brought in, so a large permanent local force would not seem to be required.

South of the Ile d'Oléron is Manumusson Sound. There are very fine beaches facing this sound, but unless the Ile d'Oléron is first taken the enemy's artillery thereon would have these landings under fire from their rear.

Just beyond this area is Pte. de la Coubre at the north entrance to the Gironde River, which leads to the first class port of Bordeaux. Inside the cape, along the north bank of the Gironde is a series of beaches as far as Royan (13 miles away) and then beyond for another 5 miles. All of these beaches are good sand beaches, and those near Royan are noted resorts. For the first 8 miles within the cape these beaches have a notably heavy surf which will frequently prevent landings thereon. Thereafter the surf declines but still remains a factor.

In the entire north sector, the most promising section for an invasion is that south of the Loire River and north of (but including) Les Sables d'Olonne. South of this point are the marshes, then an extensive fortified area, then a coast with very rough seas.

Landings in the Bay of Bourgneuf and at Les Sables d'Olonne will support each other. The left flank would be covered by the Loire regardless of who holds the north bank, and the right flank for a few miles inland by the salt marshes. The first natural objective would be the Yon valley, which is nearly parallel to the coast and about 23 miles inland. This valley is halfway to the next objective—the Heights of Gatine. These are low hills nowhere as high as 1,000 feet above sea level, but still the highest ground in west France. Parallel to the coast, they extend from the vicinity of the Loire River to in rear of La Rochelle and Rochefort; then they curve like a fishhook with the point on the west side.

If the area in rear of the heights is secured by invasion from the sea from the Loire to a line with Les Sables d'Olonne, a choice of following operations will be offered. Main effort can then be directed toward the north or northeast to open the important St. Nazaire port and district. Or it may be directed southward with a view to capturing the La Rochelle—Rochefort area with its good ports, as preliminary to later opening Bordeaux. Or an advance straight onward into the interior of France might be undertaken.

SOUTH SECTION

This extends from Pte. de Grave at the south entrance to the Gironde River southward to Spain. The main objective in this area close to the coast is the first class port of Bordeaux, on the Garonne River 15 miles above its junction with the Dordogne. The united rivers, now known as the Gironde, then flow 48 miles further to the ocean. Bordeaux contained an American base during World War I.

To attack Bordeaux from the north would, as already pointed out, require a long operation first involving the reduction of the La Rochelle—Rochefort area. To attack it from the south side would require a shorter line of operations.

The entrance of the Gironde River is fortified by coast artillery,

to prevent entrance by ships. Presumably it is also mined. South of the fortified area the coast is perfectly straight, with no bays except one at Arcachon, 68 miles south. Thereafter it continues to be straight as far as the Adour River, 75 miles further. For the entire distance the beaches are practically continuous and excellent except for one feature: they are noted for having exceedingly rough surf, which gradually decreases toward the south. Landings on this coast are practicable only when the weather is favorable.

Between the ocean, the Gironde and Garonne Rivers, and the Adour River is a triangular space with its apex at Pte. de Grave and a 40-mile base on the Adour River. This is the Landes, a rather famous region.

The border facing the ocean is a succession of dunes which attain heights up to 200 and 250 feet. Back of these the country is flat at an elevation of about 150 feet. The topsoil is sand containing silicates of iron, which supports only limited vegetation. It is also impermeable so that rain water does not sink in but stays on the surface. The sand dunes along the coast block the flow of water into the sea so that a large part of the Landes is marsh; this is particularly so just back of the dunes. A great deal of work has been done by the French government in constructing drainage ditches to eliminate the swamps, but large wet areas still remain. The government has planted a considerable part of this territory with a special variety of pine and with acacia. Large tracts are covered only with ferns or stunted trees. Summers are comparatively dry, and winters wet. During the summer the marshes decrease in size and the Landes are generally arid; in winter the reverse is true. Due to this condition the natives use stilts to travel around. Average rate of march on stilts is 6 miles per hour, but for short distances this can be doubled—or about the rate of a galloping horse.

As far south as the bay of Arcachon there are a good road and a railroad parallel to the coast and about 5 miles inland, in rear of the dunes and border marshes. Arcachon Bay is 35 miles west-southwest from Bordeaux and has magnificent beaches. This is the closest point to Bordeaux for an invasion. The bay is in the form of an isosceles triangle, with apex pointing north and the sea entrance at the southwest angle. It is 50 miles around the bay, whose entrance is shielded by Cape Ferret in rear of which is a large anchorage available for large ships. Using this, landings can be made within the bay.

South of Arcachon the coast is similar to that north of the bay, with the Landes gradually decreasing in width as they approach the Adour River. South of this river is a 17-mile stretch which ends at Spanish frontier; this coast is rocky, with rough but passable territory in rear of it; it contains several excellent beaches which have a world-wide reputation. The best known of these is Biarritz, which has two beaches each about a mile long and separated from each other by a small promontory only $\frac{1}{4}$ mile wide. Excellent roads lead inland. By road it is 22 miles from here to Spain, and along this section there are splendid beaches at Guéthary and at St. Jean-de-Luz.

A landing on this sector would have its right flank protected by the Spanish frontier and the Pyrenees Mountains (provided that Spain remains neutral). The objective for an invasion in this area might be either an advance northeast seeking the capture of Bordeaux or eastward toward Toulouse.

An advance inland south of the Adour River would meet a succession of river lines averaging 8 miles apart, each pair separated by a corresponding ridge line. This difficult mountain territory affords opportunities for protracted defense. Positions can not well be turned from the south, as this side is bordered by the Pyrenees Mountains, high and very rough. The north flank can be turned by moving north of the Adour through the Landes. Direct assault, involving penetration of enemy positions, would probably give the quickest and most satisfactory results.

A landing in southwest France, if coupled with another invasion advancing toward it from the west shores of the Gulf of Lyon would have the best chance of success. In this case the two expeditions would converge in the Toulouse area, eventually to form a solid line across France south of the Garonne River and thence east to the vicinity of Béziers. If such a line is ever formed and advances northward, a supplementary invasion on the west French coast south of the Loire would be of material assistance.

SUMMARY

An invasion of southwest France is a possible route of invasion to clear the enemy out of France.

An invasion of west France between the Loire and the Gironde Rivers is possible as an independent operation. It would have a better chance of success if it were an auxiliary either to a major operation north of the Loire or south of the Gironde. It should be scheduled for a date following the time when the enemy is fully engaged against the major expeditions, so as to threaten the enemy's main force from the flank and rear.

SPEEDING NAVIGATION TRAINING

Military navigation students are now being trained by a new technique which teaches them more quickly than ever before to steer by the stars. The new technique eliminates the need for training students to interpret depth in flat charts and diagrams by presenting life-like pictures of models of the heavens and the earth in three dimensions. Recently perfected by Prof. John T. Rule, Chairman of the Section of Graphics at the Massachusetts Institute of Technology, the speedup technique is made possible by Polaroid three-dimensional pictures known as vectographs.

Prepared as slides for projection by standard projectors on a classroom screen, the vectographs are so strikingly realistic that an instructor walking into the beam of a projected vectograph of the earth appears actually to be walking in the center of the earth. Students feel they are looking at precise wire models of the heavens with relative positions of the stars and the earth immediately apparent.

Before this new three-dimensional technique was introduced, instructors customarily attempted to teach students to read depth into chalk drawings on a flat blackboard. Many students, however, were unable to master this essential part of the training, and were unable to become navigators for this reason. With the new three-dimensional technique in use, the depth element actually is present in the three-dimensional picture.

NIGHT FIGHTING

By Capt. Sydney S. Combs, FA

The subject of night fighting has not been stressed very much in artillery because of the feeling that a flash at night is quickly spotted and plotted. This is true to some degree, but one of the startling facts about war nowadays is that not only is preparation for daytime warfare worked out and completed at night as always, but much of our successful fighting is actually being done at night as well—ask anyone back from the Tunisian front when was the best time to attack an entrenched German on high commanding terrain. It will be the purpose of this paper to investigate the role night fighting, particularly as applied to artillery, played in the Tunisian campaign; to ascertain what preparation for warfare was best done at night; and to evaluate the experience thus gained for the sake of future operations.

As preparatory measures precede action, let us first examine those performed during the Tunisian night by both allied and German forces. In the first phase, movement became the primary function of our forces until they met the enemy. All-night moves were the order of the day and sleeping in large wooded areas during daytime prevented our presence from becoming known to the enemy. An example of such a nighttime job came during the late afternoon of January 30. Orders were issued for a heavy reconnaissance in force toward Maknassy, a distance of some 60 miles from the bivouac in Bouchebka. The movement was to be made at night, with complete blackout during some 40 miles to the jump-off line east of Gafsa.

All the problems which faced us in future night marches presented themselves that night: the march order, the march tables, proper liaison between units, routes, and speed. The primary difficulty was the lagging of one part of a serial, so that another serial would tend to start up before the other had completely passed. This was corrected by having officers of authority interspersed through the column, and locating commanding officers at points where such difficulties might have arisen. Nothing can cause more consternation than to arrive at the jump-off with half of your force somewhere behind you.

During the night of February 3-4 came a ticklish operation when we had to break contact with the enemy at Se— and withdraw to G—. On April 18th, Division Artillery (consisting of 2 field artillery battalions) moved to L— from Si— during darkness, leaving at 2005 hours and closing into bivouac at 0730 April 19th.

One important point brought out during these moves was the necessity of having the assistant driver stay awake to help keep the driver from snoozing. Many of our mishaps were attributed to the fact that drowsy drivers would not notice turns in the road. Furthermore, to make successful night marches, close check had to be kept on compass direction and odometer readings, and speed had to be constant and slow to prevent excessive speed at the rear of the column. Lastly, an abundance



One picture may be worth a thousand words—and a few PROPERLY INSTRUCTED guides are a great improvement over a conglomeration of signposts.

of properly placed guides with very complete instructions as to route and compositions of serials averted the bitter difficulty of getting lost.

At first there will be a tendency to overlook a most important job which can be managed at night, "resupply of gasoline." Had gas trucks gone ahead, the speed of refueling and going back for more would have been doubled. The same change with ammunition and rations would have saved a great deal of time had dumps been established during the night, up near the jump-off line. This was not deemed necessary for a reconnaissance in force, but for an attack should always be considered as you may be cut off from your source of supply. Paratroops laying mines, or a blown bridge behind you, may mean one day without replenishing your ammunition supply. The problem may even descend as far down as the battery or individual section, so keep your stores up on the front—and this means pushing all night. You are probably familiar with the stories of how Rommel even went behind the British lines and buried gasoline before his attacks in Libya. Battle experience has shown that a moving situation does not continue without some rest for more than a day or so, and its success is dependent on the amount of interest and push in the men commanding and their ability to prepare adequately for the rush periods by looking ahead to their needs. Such a one was Lt. Col. Ben Crosby, commander of a tank company during the hectic time at K—.

Of primary importance to the artilleryman is communication. I can assure you that the Germans have never set us back while our communication was intact because they had nothing as effective as our artillery. When the talking contact is lost a doubt comes into everyone's mind, and darkness makes that doubt grow larger; consequently it behooves a commander to keep his communication in, especially during darkness. In the African theater, during night time it was

extremely difficult to maintain contact by radio, let alone have good readability. This condition would be aggravated by the movement of men and material at night when there would be quite a likelihood of wire communication's going out altogether. This factor led us to employ the best radio operators at night, and to make certain that an officer would be awake and on duty at all times to check the channels every hour. Unless an officer is constantly checking all circuits (including infantry wire nets) at least once an hour, a break may not be discovered for some time and an enemy attack may be all over with before one of our guns is fired. The friendship built up between the night duty officers of different units makes coordination spontaneous, and actions become automatically efficient in no time at all. Despite all precautions to maintain communication at night, the use of flares calling for protective barrages should be carefully worked out by the night duty officers so that infantrymen may still ask for help without depending on the phone or radio.

Frequency change is usually sent down by division to go into effect at midnight but alert officers made arrangements to change at eleven o'clock on some nights and at one and two A.M. on others. The Germans would attack if they felt that all radios were following a set rule and that they had caught you with your pants down. By the way, night-time is a good time to ask for air-photos, extra ammunition, and rations, because most of the wires are clear all the way back to Corps.

The German, too, was busy during the night hours. He slept during the day because if he moved we would plaster him with our artillery, but at night he worked very hard digging his slit trench deeper, changing his artillery positions, improving his camouflage, having hot meals, going out on active patrols, and laying mines, and he would spend all night digging in his Mark IV tank so that all you could see was the turret even though his sector of ground was flat. I am not suggesting that you dig in every vehicle so it cannot be seen, but if three years of experience have taught the Hun to work hard at night and prepare very elaborate underground defenses, the point must be worth mentioning.

Thus, at night was laid the groundwork for daylight fighting. Night fighting itself proved a much more profitable labor. A few reasons will explain why that was so.

The psychological effect and the economy in the number of men and material used to produce that effect were important reasons for night action. On the night of February 16, 1943, the Germans made a night tank attack against our forces at S—. The psychological effect produced by about four tanks was equivalent to one which would have taken almost 30 tanks to produce if the attack had been made in broad daylight. Yellow tracers which swept the sky like fingers of the aurora borealis, and the clanking steel tracks, caused many a grown man to wish he were home. The tanks would stop, two machine gunners would run about twenty yards on each flank, and pure tracers would arc into the sky, lighting up the whole area. The tank commander in the turret was seen to scan the area with his field glasses, and his men would run back to the tank and wait for our antitank guns to open up on the source of fire so they could knock them out with their cannon. Our shells, if directed at the source of fire, would pass by to the flanks. Experience had taught Capt. George Helms and Lt. Kenneth Mason of "C" Battery, PHth FA Bn, how to deal with the Germans: they held fire until outposts actually bumped into the side of the German

tanks which looked like great dragons spitting fire, and returned with the news. By looking over the tubes, because the sight blocked out the light, our gunners put 105-mm shells into the looming shadows from ranges of 80 yards down to about 30. Three of the four tanks were hit, and the one at 30 yards was completely blown up. Fire had been held in spite of a nervous fellow to our rear who shot one of the .50-caliber ammunition boxes from the SP 105 with a 37-mm gun! The Jerries' night attack failed, but had it been made in power against green troops the story would have been different, for there wasn't a man there who doesn't remember the terrors of that night.

When we were filling an offensive role the enemy would withdraw to high ground where surveillance was perfect, so good that we would be under observation for any weapon in his possession. The German does not build his defense around the water-cooled machine gun shooting cross-bands of interlocking fire, as he did in the last war and as we often do now. The undulating high ground to which the enemy would retire made impossible such fixed cross-fire of machine guns. The area just in front of his position would usually be defiladed from close artillery protective barrages. The German had air-cooled guns with a high cyclic rate which is very effective when aimed directly at approaching infantry. His defense of high ground was to give each of five or six men two bipod machine guns, a bucket full of grenades, and a tommy gun, and plant them on a rocky hill a quarter mile high. You run up with a company of infantry to capture one of these spots, kill four men, take 40% casualties, and then stand a counterattack by a fresh German battalion which has been dug in on the reverse slope to avoid artillery fire. You don't end up with the hill.

As an example, consider the German defenses on Dj. Nemia, the citadel and key to the Maknassy—Meyouna pass. We made attacks again and again from March 23 to April 9 and suffered heavy casualties, but the only time the peak was reached was during the night when Maj. Gen. Ward of the 1st AD and his aide, Capt. Hatfield, went where few could follow.

Night tactics were developed, and they proved more efficient than daytime attacks. Beginning with Wop Hill, Maknassy, El Guettar, Hill 609, Hill 350, and all operations south of Mateur led to the conclusion that only at night could the infantry fight and gain success without undue casualties. The artillery support for these operations was largely preparation fire. Lasting for about a half-hour, it would be followed by our infantry attack on the objective when the fire lifted. The advancing barrage came later and proved very valuable after the infantry began to push up against the barrage so as to be in on the enemy before they recuperated from the artillery neutralization. This is how it would work. At 1145 hours April 22nd, the 1st Armored Division Artillery learned of an attack on Hill 350 which was to come off at 0330 the next morning. Division Artillery established contact with the MBth Field Artillery and gave them help in their preparation fire from 0300 to 0330 hours on the morning of April 23rd. The attack was a success, and by 0730 hours the near slope of 350 was ours.

Night harassing fires were probably more effective than any other type used against the Germans. Special roving guns, firing all night, were favored by many, but the German prisoners told of the havoc caused by division one-round volley concentrations. Each battalion would be assigned a vital area—such as a front line strong point or a vital avenue of approach—and, at a predetermined instant, every gun in the division would go off. The concussion effect was terrific, and

since it was carried out as many as three times during a night the threat of evening enemy attacks was reduced to almost nothing. Each night the time of these volleys would be changed, and also the concentrations, so that the Germans never knew when or where the wrath was going to hit them. Batteries would also be assigned separate concentrations and at one time so many juicy targets presented themselves during the day that each gun in each battalion was laid on a different spot when the volley went out that night. The danger of a German attack without an immediate protection barrage, and the fatigue caused to the gun crews by having to get up three times during the night, were considered, but the effect created on the enemy well paid for the trouble.

Harassing and interdiction fires were fired by the battalions during the night of April 29th-30th near B—. All were battery volleys going out simultaneously on critical areas in the rear of the enemy lines. Times were 2200, 0200, 0400—someone mentioned a soft drink but I don't believe the Germans were very much refreshed. At 0345 hours on April 30th the observer of the SAth reported an enemy infantry attack and requested the 27th and PHth to fire their prepared concentrations. Contact was established with their respective observers and soon the situation was well in hand. A few harassing concentrations were also fired, and within 45 minutes all had quieted down.

One or two more examples of night fighting must suffice here. In the invasion of Africa, the assault waves hit the beaches in darkness and a great deal of the fighting occurred at night. "C" Battery, under Capt. William Harrison, was instrumental in capturing La Senia airport by firing at the flashes of a battery of French 75s just before daybreak lighted the sky. Two hundred prisoners were taken.

German tanks proved effective at night when they joined at the rear of a British column of light tanks returning to bivouac south of Thala, but again artillery was victorious. Pulling right up in line at the entrance to the tank park, they opened fire on the Tommies when they were refueling. Many casualties resulted, but the most fortunate stroke of luck prevented further havoc. A battery of 25-pounder British field pieces was in position just across the road and they took the Germans under very heavy fire. Even though complete darkness enshrouded the scene, all six German panzers were knocked out.

In attempting to evaluate the experience in night fighting gained in the Tunisian campaign, one must examine both sides of the picture. Granted are the difficulties of night fighting as explained in FM 100-5, Chap. 12, Par. 856-875. Nighttime is the most difficult in which to fight. There is a tendency for one and all to get completely lost and to lose all control so that the men in one sector might start shooting at their buddies whom they cannot identify across the way. Many more slips are made in the night, when there is a natural desire for everyone to want to be asleep. During the day few errors are made and, as a rule, there is a greater majority of officers awake to attend to matters which have gotten out of line. But the difficulties of night fighting can be surmounted with competent leadership.

Furthermore, the results of successful night fighting fully justify the potential risks involved in such actions. I am sure the same night tactics as were employed in Tunisia will be duplicated with increasing frequency in bringing the Italian campaign to an earlier and more successful close, with fewer battle casualties to boot. It is the only way that an enemy can be driven from extremely high ground and there is the same problem of dislodging Germans from mountainous and hilly terrain in Italy as there was in Tunisia.

Night work is an old game for the artillery, and many an hour has been spent at Fort Sill surveying and adjusting fire after dark. The teachings of the Field Artillery School were followed in Tunisia and proved themselves to be completely efficient under night as well as day conditions. Certain observations are worthy of note in considering the future use of artillery night firing.

By virtue of the fact that artillery had to be tied to the ground before dark, such fire power served not only as a defense and close support for tanks as well as infantry, but also acted as a beacon to mark enemy resistance and silhouette targets. It also aided the tanks' navigating at night. Tests have proven the tank also very effective in shooting out machine guns by picking up their muzzle flash at night. Due to the lack of time available for practicing this type of fighting, it was not used extensively. With the new sights and the new tactics being employed, I can assure you that even direct artillery fire will be used for such operations, especially the armored SP mount which can also stop panzer counterattacks at nighttime.

Adjustment of one gun from each battery was usually deemed necessary for close-in support or defense barrages, so that small errors in survey cannot creep into our own slit trenches. Since it is almost impossible to carry on close-in adjustment at night, it behooves the artilleryman to accompany the reconnaissance element of the advancing forces so that all his fires are prepared before nightfall. A display of power should not be made, but an advance gun can tie in all future fires and assure the most efficient support and defense for our elements during darkness. In all the armored action east of Mateur leading to the surrender of the Germans, the commanders and forward observers of the artillery stayed with the reconnaissance and their guns were kept where they could fire. The result was that when the tanks or infantry came up to knock out strong centers of resistance, artillery fire was already falling and no delay was incurred in their immediate attack with perfect artillery coordination.

Lastly I must record that the armored division artillery at one time was reinforced by two battalions of attached armored artillery, one battalion of towed 105s, and a battery of 155 guns. I assure you that a volley of 106 guns all 105 and above will give more concussion and more effect than the harassing of roving guns at night. Ask the German prisoners what defeated the Axis in Tunisia. Coordinated mass fire is the answer, and nighttime is the only time a German will leave his slit trench—so use your own judgment.

The difference in taking 5 or 10 extra minutes to make sure your vehicle will keep rolling, or letting it go for the maintenance section to repair for 5 or 10 hours, may not only cost your life but may mean the annihilation of a whole regiment or division. Any driver who willfully or carelessly neglects his vehicle is as guilty of sabotage as though he had actually tried to destroy the vehicle.—LT. TRAVIS CRAMB, *Motor Officer of the 30th Cavalry*.

CommO in the Medium Battalion

By Capt. O. B. Knight, FA

During the early months of Tunisia there were some fairly long periods of defensive positions, as contrasted to the fast-moving situations of the latter phases of that campaign and Sicily. Naturally in the defensive set-up a great deal more wire was used, complete installations being put in with very often extra lines to adjacent units, laid cross-country whenever possible. This was, I believe, truer of the medium battalions than of the lights, as we were often employed in support of several units over a relatively wide front. When the division fought as a unit I was frequently called on to lay wire to one or two of the light battalions. I did this myself rather than leave it to the liaison parties, as I believe it to be more practical and better for all concerned. On the other hand, during the advance on Mateur and in Sicily occupation and displacement of position were sometimes so fast as to prohibit anything like complete wire lines so that radio, especially the 600-series, became all important.

ORGANIZATION OF THE HEADQUARTERS BATTERY

In this theater of operations the old TO and TBA were still in effect. The following shows when these tables were not followed, but changed to meet different situations and problems as they presented themselves.

1. A good NCO (preferably a Cpl) put in charge of the orderlies for the staff can save a BC a great many headaches. The "striker" has a very definite and important job which, when done correctly, is a great aid to the officer who has to catch his sleep when he can. The T/O calls for four men for these jobs, which number was found to be sufficient if one additional man was allotted to set up, wait on, and run the Officers' Mess. I picked a good corporal as my driver; in addition he was put in charge of the orderlies and did what little typing and paper-work there was to do for the battery. This system worked out well and to the satisfaction of all concerned.

2. I do not believe the organization of HQ Btry should include an AT Plat, as in the field it is seldom with the battery (usually being broken up into three sections and assigned to the howitzers batteries) and is a constant headache in the distribution of rations and in administration.

3. Ordinarily two .50-cal. MG sections (of at least 6 men and a corporal each) along with the Message Center (increased to 4 or 5 instead of the usual 3) gave sufficient local security. The two MG sections were placed by the Sgt Maj and given their instructions by him each night. They should be inspected several times during darkness by one of the battery officers. They are habitually dug in with AA mounts, but during darkness the gun could be changed to the ground mount for local security. These sections should of course be armed with plenty of hand grenades as well as the rifle.

4. The Operations Section should be liberally supplied with sand bags to save a great deal of digging when the FDC is set up. It was SOP to dig the CP in, and to help lighten the load of the Operations Section in this job it is advisable to have at least 3 telephone operators travel as part of this section. The German is a master in the art of "digging-in," and any lessons that can be learned from him through observation will pay dividends in

Capt. Knight has had six months of combat experience in Tunis and Sicily. During this period he was CommO of a medium artillery battalion. He points out that his experiences will probably be of little help to those in, say, the South Pacific area. They will be invaluable however, to those artillerymen who will take part in the reduction of *Festung Europa*.—Ed.

the long run and probably save many lives.

5. The mess in HQ Btry is easily the most difficult in the battalion to run to the satisfaction of officers and men, and a good mess sergeant can be one of the BC's most valuable NCOs. In position and bivouac I found that the best solution was to split the mess and have one kitchen for the officers and CP personnel, and the larger part for the remainder of the battery in the motor park. This also tended to cut down on "chow-lines" and bunching up of the men when feeding-out. These two messes must be constantly supervised by both Mess O and BC. The main drawback to this system is the proper distribution of rations, as they must be broken down within the battery. Mess O and Mess Sgt must constantly use their ingenuity and originality in the preparation of food in the field. It was common practice to buy whenever possible beef which had to be butchered, prepared, and eaten over a period of not longer than two days, as there were no facilities for keeping it. Supplementing the mess with fresh vegetables and fruit makes for a much better table.

6. The question of a CP truck, to be used in place of the regular CP tent or dugout for FDC to work in, is a debatable one. While a movable CP is faster and easier to get into operation, it cannot be dug in and camouflaged as effectively as the tent or dugout. I believe the new CP tent dug in and sand-bagged is the best solution to the problem, unless it is absolutely necessary to dig and construct a strong dugout. Several officers and men suggested, and the ideas have since worked out, that we rig a ¾-ton W/C as a CP truck to be taken ahead as a forward FDC with a skeleton crew and set up temporarily until the entire CP could be installed; as this plan worked out to great advantage in a light battalion it should be just as good for a medium one.

COMMUNICATIONS

Wire

1. About 60% of my lines were laid by a "jeep" with an RL-31. This was for the most part cross-country work, and the little ¼-ton car proved that it could "take it" and go almost any place a man can walk. If the back seat is removed and the rear partition cut out, allowing the reel to be mounted with its back legs on the rear bumper and front legs secured to the floor of the "jeep," it gives room for one or two extra DR-5s and a 3-man crew. The back seat can be used to replace the seat next to the driver, thus allowing 3 to ride in the front seat more comfortably. This may seem crowded, but it worked out very satisfactorily and the ¼-ton car proved to be an excellent reconnaissance vehicle and far best for "troubleshooting."

2. Although HQ Btry is allowed only one RL-26, I managed through luck to obtain a second one. This proved to be very advantageous, especially in fast-moving situations when it was necessary to leave one GMC back to pick up wire while the battery moved forward. The second 2½-ton (with RL-26 mounted) would either move forward with the battery or be

taken ahead with the CommO on reconnaissance if circumstances permitted; it not only served to lay wire, but also acted as a cargo truck for necessary wire, crews, switchboards, and any extra equipment. The second RL-26 was also very useful when it was necessary to send a crew back to the rear area to pick up "dead lines" in order to keep up our supply. This is done quite frequently and was often our only means of supply. By the gun batteries' doing the same thing whenever possible (although not to so great an extent), I managed to keep the battalion supplied with plenty of W-110 wire and called on Division Signal Supply only when absolutely necessary, which was infrequently. Although not a supply officer, the CommO should continually check, provide for, and give to the howitzer batteries if necessary, plenty of wire, both W-110 and W-130.

3. It should go without saying that the switchboard is always dug in within 100 yards of the CP to facilitate the complexing of gun battery lines and sometimes the wire laid down from Div Arty. Sand bags naturally come in very handy in this installation.

4. I recommend strongly that every CommO get to know well the Division Signal Officer, never hesitate to go to him with his problems, and above all cooperate with him in every way possible. I very often asked my DSO for his interpretation of various circulars and training memoradums that came down from higher HQ than Division, and never failed to get a clear idea of what was required by them. This alone may save the CommO many a "gig" from some inspecting officer from corps or even above. Although I am against any form of "boot-licking," a favor rendered to the DSO will usually pay two-fold in the long run—and it is only a form of cooperation on the part of all concerned in a common cause.

5. In Tunisia I was very fortunate to have in the wire section a man who spoke French. In working with various units (both artillery and infantry) of the French Army, he was very useful as a switchboard and telephone operator. A man with that qualification would be wasted in another section, so it can easily be seen that it is up to the CommO to learn for what each man is best suited and where he will be most useful to the unit. On the other hand a man should not be held back from a rating simply because he can do one particular job well.

Radio

1. TBA in the Medium Arty Bn calls for two SCR-284s, but with two liaison sections functioning at the same time a third set is most helpful. Each liaison section should have, besides a 610, a 284 and a dynamotor mounted on its "jeep," as very often the LnO will find himself out of range with his 610. The third 284 set is mounted on a $\frac{3}{4}$ -ton W/C and usually kept within 50 or 75 yards of the CP and a 28 line run to it. It has been suggested that a $\frac{3}{4}$ -ton panel truck be used for this purpose as it can be blacked out much easier, keeps equipment out of the weather much better, and is more suitable to work in. With a 608 mounted in the Bn Ex Comd car, which stays parked in the vicinity of the CP, the liaison parties have three separate means of communication back to their battalion: wire and two different type radios. THE MORE ALTERNATE MEANS OF COMMUNICATION THAT CAN BE IMPROVISED IN ANY SITUATION, THE BETTER. The SCR-193 I also mounted in the W/C with the 284. This radio, which is normally in the counterbattery net, must be kept convenient to the FDC tent.

2. Whenever possible it is advisable to have an extra SCR-610 with each howitzer battery: in case any one of the battery radios is knocked out, a quick replacement can be made. The

remote control unit with the 600-series radio has proved itself in many trials and should be employed whenever possible—it may save a radio from being shot up at a CP during counterbattery fire, or on an OP.

3. Very often an FO is at such a distance from the Bn CP as to require some sort of relay from the observer's 610 set back to the FDC sets. Two methods of solving this problem are to (a) take the FDC sets and operators out a suitable distance and then run one or two lines direct from FDC to the sets, or (much quicker and easier) (b) take the CommO's 608 out and relay back to FDC through NCS and remote control or to the FDC 610 sets direct. In this connection, as in the case of the switchboard, the FDC sets should always be dug deep in the same foxhole as the operator, whether at the CP or out from the CP as relays.

4. One very useful item was a prearranged message code to be used within the battalion. This is composed of words and phrases that are used most often in transmission of radio messages. They may be coded into 2-letter groups which can be changed as frequently as necessary. It should be composed and distributed by the CommO, with frequent revisions after collaboration with the FOs and other personnel who use it most. If for any reason the PMC is compromised it is a simple matter to change the code letter groups quickly by any one of many methods. For this reason it may be carried forward by FOs and reconnaissance elements. It can easily be used with the Marco Code in designating points that would give friendly information away, but under no circumstances should it be employed to designate enemy installations as it could be deciphered by the enemy and thereby give away the PMC and particularly the Marco Code. Definite instructions should be put out by the CommO to personnel using any PMC as misuse of these items very often gives them away to an alert enemy.

5. Under no circumstances should such articles as SOIs and extra crystals for the SCR-600 series radios be carried any further forward than the Bn CP. I know of a case in the early part of the Tunisian campaign where a reconnaissance party was ambushed and the above two items along with a 608 fell into the hands of the enemy. For that reason it was necessary to re-write a division SOI and change the allotment of crystal frequencies in a battalion of artillery and eventually in the entire Div Arty. I carried my extra crystals with the battalion radio section, and all radios were brought there for repair and retuning. An issue of 3 SOIs were distributed: one to the battalion radio section, one to FDC, and one to the MC. All pertinent information for the day's operation, such as Marco Code, should be sent out by agent each day.

6. Each CommO should have a definite plan for destruction—so thorough as to be non-repairable—of all signal equipment in the event of imminent capture. This plan should be well understood by all officers and men who handle such signal equipment as radios, switchboard, and the like.

* * *

Throughout these notes I have frequently made suggestions for the problems that confront the CommO but in some cases I have not told the "how" or the mechanics of the process. These ideas must come from the officers and men in HQ Btry when the occasion presents itself; a little ingenuity and originality on the part of the personnel will save many a situation. I received a great many of the ideas incorporated in these notes from the officers and NCOs of the staff and HQ Btry, and owe much to them for their cooperation and suggestions.

SOME BATTLE LESSONS

By Maj. Edward A. Raymond, FA

The combat experience of one light artillery battalion in North Africa was so incredibly crowded as to illustrate nearly every artillery lesson the Nazis have taught us. Everything mentioned herein happened to the battalion, and the incidents, topically arranged, are taken almost at random.

On 19 November, 1942, this battalion appears to have fired the first round of the war at German ground forces; certainly it was among the first to land in Algeria, and was the first Allied unit of any sort in action in eastern Tunisia. It was in action six months to a day without a break, taking part in eighteen different engagements. Excerpts of early accounts regarding the first day's action include:

TIME, Dec. 28, 1942: "On November 19th, British paratroops, armored cars and artillery lunged to a point near Medjez El Bab, there supported French soldiers in repulsing four successive waves of German troops and dive bombers."

FIELD ARTILLERY JOURNAL, February, 1943: "On the 19th the south column encountered strong opposition as it neared Medjez-el-Bab. The French right column intervened to aid the British. British parachutists were hastily rushed up. The enemy, supported by dive bombers, made four separate attacks; the French are reported to have lost heavily."

BAPTISM OF FIRE

On 15 November, 1942, Force Headquarters issued the following order to the unit at Algiers:

"Lt. Col. K——: Your battalion is detached from CT X. You will march to Constantine via Setif tomorrow to be attached to, or support, an armored force (British or American unknown). The battalion will carry 175 rounds per gun and six days' rations. All extra gas cans will be carried full. Mount .50-cal. machine guns on trucks. Your trucks now on duty with CT Y and Z CAC are being returned as soon as possible. RBN, Lt. Col., FA."

A detached battery was ordered to join the column en route. Nearly a day was spent dumping excess equipment and issuing maps and supplies. On 16 November 1942 the battalion moved out and joined a British column at 1200 hours; bivouac near Setif was reached at 2400 hours; distance for day, 190 miles. It rained.

On 17 November the march began before daylight. The battalion left British control at Constantine. At 1700 hours the advance section entered Guelma, where it had been decided to bivouac for the night. The entrance of the liaison officer into the town caused considerable consternation among the population, who (having had no advance notice of the arrival of American troops) took them to be Germans. At 2000 hours the battalion reached Guelma, over twisting mountain roads in driving rain; distance for the day, 154 miles. On 18 November the march began before daylight. Heavy snow was encountered between Duvivier and Souk Ahras, where the battalion commander met the British colonel commanding KNIFE Force. Orders were received to reach Le Kef that night and advance to Medjez-el-Bab before daylight if possible.

The battalion was given the mission of holding the bridge at Medjez against enemy advance as long as possible: this bridge was considered very important to the operations of the British First Army. The battalion commander was told that the bridge was then held by French troops, and that a British armored car unit was already on the way and would be there before the



In the early days of Tunisia, half-tracked 105s were used. .50-cal. MG was mounted on a pedestal instead of the ring mount of the M-7. Each carriage had its reel of wire in the right rear corner, and of course personal belongings were lashed all over the outside.

battalion could possibly arrive. At 1600 hours the battalion commander's party, marching an hour ahead of the main column, was met at the Tunisian border by a French liaison officer and conducted to the French commander at Le Kef. The Battalion Commander telephoned KNIFE Force Commander over a civil line and received the information (in the clear) that a battalion of British infantry would arrive at Medjez before daylight, and that a Lt. Col. H—— would be in temporary command of American and British troops in that vicinity.

At 1800 hours LnO-2, with a French liaison officer, arrived at Medjez and got in touch with the French commander. The French expressed surprise at seeing American artillery, and said they did not know it was coming. They warned LnO-2 to keep all U. S. vehicles under cover, as they were still negotiating with the enemy. LnO-2 transmitted the message. At 2300 hours the French commander arrived at his CP in Medjez from a conference with German officers on the east side of the Medjerda River and met the battalion commander and S-3. He had received an ultimatum to evacuate Tunisia or suffer the consequences. This he had rejected. He disclosed that French strength in the sector was approximately 200 infantrymen, with ammunition for one day's operations on a very limited scale. Vehicles not necessary for combat were bivouacked at Teboursouk.

On 19 November the combat elements of the battalion reached bivouac at Testour at 0130 hours. At 0300 hours the Germans demanded evacuation of Medjez. The French were of the opinion that they could continue negotiations for another day and gain time for the arrival of reinforcements. At 0400 hours the battalion executive marched the combat elements toward Medjez. They were in position and ready to fire at 0700 hours. At 0900 hours Btry B was sighted by two Me-109s and strafed. German officers made representations to the French that they should have fired on American units after French neutrality had been violated. The French replied that their decision was to fight the Germans.

At 0915 hours enemy small arms fire was received from across the river. The RO of Btry B reported by radio the location of an enemy light tank assembly area. At 0920 Btry B opened fire and immobilized two tanks. The war was on!

All during the day the battalion took the heaviest imaginable pounding from the air, but fired actively—not only at targets of opportunity but also on missions requested by the French,

including the attack of a building known to house enemy headquarters; that target was destroyed. At 1130 hours the AT officer reported that due to enemy machine gun and artillery fire he was forced to withdraw his trucks from the town, leaving the guns in position and manned. An enemy gun position was neutralized. At 1400 hours approximately 30 British paratroopers arrived in the battalion area and took up positions in reserve about 600 yards to the rear of the CP. At 1700 hours the battalion commander sent the executive to report to the commander of the French at Teboursouk and advise him that the position at Medjez-el-Bab would soon be untenable, due to the fact that the remaining French troops were practically out of ammunition. Civil telephone lines were now out of commission, so the S-4 was sent all the way back to Souk Abras to find KNIFE Force commander and ask the whereabouts of the British infantry battalion that was expected the morning of 19 November. During the day a number of British armored cars were noted about 1,000 yards north of the battalion CP; these, however, took no part in the action.

On 20 November, at 0130 hours, the British parachute battalion commander, who turned out to be Lt. Col. H—, sector commander, called a conference at Oued Zarga. The battalion was ordered to withdraw to positions along the high ground west of Oued Zarga. Btry B masked the withdrawal by continuous harassing fire. New positions were selected and occupied in darkness. The movement was completed by 0430 hours. The enemy evacuated Medjez during the time our own withdrawal was taking place, but soon reentered the town.

Note the lack of sleep and distances covered and the pounding from the air! A battalion needs men in hard physical condition. Note the chaos of the situation; a battalion needs a tough-minded commander, such as this one had.

AIR SECURITY

On the first day at Medjez-el-Bab, on the reconnaissance flight which disclosed to the Germans the presence of U. S. troops in Tunisia, one of two Me-109s attacked Btry B at 0900 hours. This battery, with other units of the battalion, returned its fire. The plane seemed to be hit, and was reported by the French to have crashed some miles away. No casualties were suffered by the Americans. An hour and three-quarters later the battalion area was attacked by 22 enemy planes which bombed and strafed for 35 minutes; no casualties were suffered. Two hours later the battalion area was attacked by a group of 14 enemy planes; it was bombed and strafed, but again there were no casualties. Two of these aircraft attacked the battalion CP and dropped a 500-kilo bomb 150 yards from it. The CP gunner stayed at his .50-cal. machine gun and apparently hit one of the planes. The French later reported that it had crashed. Exactly two hours after the 14-plane attack the battalion area was attacked by a group of 15 enemy planes. The area was bombed and strafed, but the battalion suffered no casualties to personnel; Btry C reported one truck gutted.

The sound and fury of low-altitude attacks need not cause panic. Start .50-caliber fire at 1,500 feet and continue firing until first bomb is half way to the ground.

AMPHIBIOUS OPERATIONS

The artillery battalion of a combat team was to land at "Milk White" beach at Algiers. The battalion commander with a small headquarters group, Btry B party, and one ¼-ton vehicle left its transport at 0800 hrs. At H+45 the beach was reached, but the division commander requisitioned the peep immediately. The

beach was not well organized and difficulty was experienced by the battalion commander in reporting to next higher headquarters.

At H+60 the battalion executive left with his serial for "Milk White" beach. Over this officer's protest the craft commander proceeded to "Milk Green" beach instead, and grounded 60 yards offshore. Wading in, the battalion executive put his men under cover and proceeded to find his assembly area on "Milk White" beach. A delay of about 20 hours in assembling personnel and equipment could have been avoided had the group been landed at the proper beach. Throughout the operations the artillery was hampered by the late arrival of guns and lack of communications and vehicles.

Simplicity, clear orders, and close supervision are particularly essential in a joint amphibious operation.

INFANTRY COMBAT BY ARTILLERY

At 1130 hours Batteries A and C reported that they were taking enemy tanks and infantry under fire. From LnO-2 at supported infantry headquarters it was learned that enemy infantry was 1,000 yards from Btry C. Instructions were issued to use direct fire. Btry A reported using direct fire at enemy infantry, and requested friendly infantry support. S-2 left the CP for the infantry headquarters to request infantry support for Btry A's position. Btry C relayed an infantry message that 18 enemy tanks were endangering the present position of friendly infantry. S-2 returned to the CP with word that one platoon of infantry was being sent to support Btry A. Btry C requested additional fire on enemy tanks on flank; the battalion commander requested fire of the medium artillery on these tanks.

An artillery battalion in an adjacent sector reported the approach of 20 tanks on the other flank. Btry A reported that it was surrounded on three sides by enemy machine guns, and requested immediate help. The battalion rear echelon reported enemy artillery fire about 500 yards from its position. Artillery in an adjacent sector reported being overrun. Btry A reported 2 guns put out of action by enemy mortar fire, adding that infantry coming to their support had not yet arrived. Btry A was first ordered to withdraw as soon as practicable after dark, and then ordered to attempt to withdraw from its position or, if that was impossible, to destroy all equipment that could not be taken out. Request for bombing and tank support was sent by RO, Btry C. Btry C reported infantry groups taking Btry A in flank, later adding that 6 tanks were supporting this move. What happened next to Btry A is well described in the following citation:

"This battery in position covering a bridge was firing on 20 German Pz Kw IV tanks and a force of 300 motorized infantry. Early in the afternoon with approximately 200 enemy infantry flanking the battery position Lt. Carr, in the absence of the battery commander, ordered his cannoneers, drivers, and wire section to take up positions around the battery and drive off the enemy, leaving the First Sergeant and Chiefs of Section to serve the pieces. By use of .50-caliber machine guns and rifles the battery personnel successfully forced the enemy infantry to withdraw and the battery continued heavy and destructive fire on the enemy tanks. In accordance with orders from the battalion commander the battery withdrew that night under cover of darkness. The exceptional courage and coolness of Lt. Carr and the battery personnel is a credit to the Armed Forces of the United States."

Excerpts from the battery executive's report of the same action give further details:

"Small-caliber enemy mortars were ranged on the position. After the first few volleys the battery personnel learned to time the enemy

mortar fire. The battery would fire two hurried rounds and all personnel would jump into slit trenches. A barrage of mortar fire would immediately cover the area. Fire was continued in this manner for the remainder of the day. Several enemy tanks approached and were taken under direct fire, which they returned. After about 30 minutes the tanks quit firing and it was apparent that several of them had been neutralized. The battery was running short of ammunition and a man ran 800 yards to the farm nearby and brought the ammunition truck up to the battery position under heavy fire.

"An hour later approximately 200 enemy infantry were observed approaching from the southwest. The order was given to leave the guns and to deploy as infantry to protect the battery position. The men were placed in position along a hedge to the right, in an orchard in front, and in a ravine to the left. The drivers and wire section took up defensive positions around the farm where the trucks were parked. From these positions the infantry attack was repelled with .30-cal. rifle fire and .50-cal. machine gun fire. When the infantry attack had been

repelled the personnel returned to the guns and continued firing. During the attack the First Sergeant fired several rounds from one gun, loading and firing the piece himself. A section chief did the same, later being joined by the Battery Agent.

"By radio the approach of friendly armored cars was announced. After an anxious wait the friendly armored vehicles failed to appear.

"*March Order* was given at dusk and the battery prepared to leave the position. About this time a supporting platoon of infantry arrived, but were told that as the battery was ready to pull out they were of no assistance, and left the position with the battery. Shortly after the withdrawal had begun one of the section trucks and its gun were struck by artillery shells and were abandoned. In attempting to pass the abandoned truck, 2 other guns and 3 vehicles were bogged down in heavy mud; it was found impossible to winch them out, as the battery was under direct machine gun fire from the advancing enemy infantry."

Only two men were lost in the day's action. This well-led fighting battery used secondary weapons with conspicuous success.

Problems of Personnel Administration in Combat

By Lt. Henry B. Smith, FA

Compared with the tactical missions with which a field artillery battalion is faced, the problems of personnel administration under conditions of combat are frequently minimized until we are prone to merely brush them aside as being no problems at all; that is, by all except the personnel officer, who knows full well just how real and important are the problems confronting him. Until one has actually striven to maintain a smoothly functioning administration procedure in combat, one cannot possibly know the innumerable problems, both major and minor, which can arise. More than three years' experience in personnel administration, as both an enlisted man and an officer in camps in the United States and in more recent months in combat give this writer courage to enumerate and to attempt to solve some of these problems.

First, and definitely one of the most important things to discuss, is the location of the personnel section with regard to the battalion. Only one place has proved successful, and that is within the battalion trains. When this position is used, however, a small vehicle (preferably a ¼-ton peep or ¾-ton personnel carrier) must be assigned to the section in addition to the 6×6 GMC, for use in contacting the next higher headquarters. By working in this position the section is always within two hours of the action at the front. No other position used to date has even kept the action to within days.

Once, when the personnel sections were pooled in an administration center, we went 15 days without receiving any reports whatsoever from the battalion. This not only ties up your strength reports to higher headquarters, but causes weeks of additional work, some from memory which has to be changed later in again getting your reports in correctly.

But at one time replacements were received within four days. The requisition would have been filled even sooner had replacements been available for the occupational specialties requested. This speed in obtaining replacements can also be attributed to the policies used by II Corps at the time; under this plan, the battery agent for Service Battery is used as a routine messenger to and from the battalion firing positions.

Second, an advantage also available in this position is the pay system. The personnel officer can also act as the class "A" agent. After obtaining the money, envelopes are made from mimeograph paper and second-hand franked penalty envelopes, and the money for each man in the battalion is placed in one of these pay envelopes. By using a roster of the sections within each battery, the battalion can be paid within two days while fighting.

Third, battle casualty reports must be absolutely correct or serious results can happen. If the personnel officer will make the report from a penciled note from the battery commander and then check with the battalion medical section, the report can be on its way completely filled out within two days at the longest.

When occupying a position in the battalion trains mail can be carried forward on the day received. This is definitely a big factor in the morale of any outfit. This also expedites dispatching the outgoing mail.

PERSONNEL AND EQUIPMENT IN THE PERSONNEL SECTION

The normal allotment in the personnel section is almost perfect. Personnel administration reduces somewhat in the first few months of combat, but soon starts an early uprise with men being transferred in and out. The usual 6×6, 2½-ton, long wheel base GMC is sufficient to carry both the personnel and equipment. Each battery clerk accompanies his own battery, remaining with the rear element and carrying only his typewriter and blank forms. He needs only a small number of forms, as he can always obtain a supply from the personnel section.

The warrant officer is assigned as assistant personnel officer in addition to his regular duties as assistant adjutant. With this dual assignment you have a replacement which, if needed, is a vital one. Personnel work changes so constantly that it is felt a replacement should always be available. Then, too, assigning a new officer to this section would necessitate his learning the work. Occasionally the personnel officer is called forward to be used as a replacement, thus leaving the warrant officer in charge of the personnel section. By sharing the work with the warrant officer, the personnel officer can use his time to a better advantage. This also gives the personnel officer a technical adviser on all administrative questions.

We use the personnel sergeant major to check all outgoing and incoming correspondence. In him you have a complete record. By his notebook he is able to furnish you instantly with information concerning your strength, requisitions submitted, special orders, etc.; in fact, a brief for your files. His equipment consists of one headquarters chest; in this he carries army regulations, War Department circulars, bulletins, controls file (this is most important, as the theater headquarters initiates its own system), in addition to other War Department publications which are seldom received overseas.

The pay roll sergeant and service records sergeant have been combined into one assignment, due to the large number of letters required to be written concerning allotments, partial payments, and recommendations for awards. This sergeant has with him all service records, carried in the company chests, record, fiber; in each of these chests is also carried a two-month supply of necessary forms. Service record entries are made by the battery clerks and checked by the service records sergeant, to yield as nearly perfect service records as can be maintained. Also, since service records and pay rolls are so closely allied, the sergeant is able to check each pay roll as prepared by the battery clerk. Pertinent 201 information is also filed with each service record.

Our second sergeant, who is normally assigned to service records or pay rolls, is used as correspondence sergeant. He is the one who normally checks the recommendations for awards, types all letters, cuts stencils for special orders. He is also in charge of preparing requisitions. This sounds as if he is typing all of the time but actually, by careful planning, his duties amount to about the same as the other sergeants'. A sergeant in this assignment relieves the battalion adjutant and the personnel officer of preparing correct military letters or orders, which is most important. His equipment consists of the best typewriter available, one folding table, and his supply box (which is also used as a chair).

The third sergeant handles morning reports. Since the change to the new morning reports has taken place, his work has been slightly decreased. The battery clerks type their morning reports from an extract prepared by the first sergeants, and these are checked by the sergeant who prepares the many strength reports. He also checks the personnel rosters after they are corrected by the battery clerks. His equipment consists of a typewriter, a folding table, and a small box in which he maintains his locator file. This is of utmost importance in locating men, transferred personnel, etc., and the file is also accessible to the entire section. The sergeant carries a two-month supply of blank strength reports, morning reports, etc.

With 40 or more officers in a battalion with their minds and time occupied with everything except themselves, someone has to think of records, pay, reports, and allotments. Hence the officers' records clerk is very important. The constant shuffling, losing, and gaining of officers also adds to the importance of this job. In this clerk's spare time he is used to assist any of the three sergeants for whom he is considered to be the logical replacement should one of them be lost. His equipment should consist of one small waterproof case in which to carry the officers' 201 files and a two-month supply of blank forms.

In a separate battalion the mail clerk should have at least a T/3 rating. It is his job to take care of outgoing mail—which averages approximately 400 letters a day. Censorship regulations also amount to additional work. The PTA system has reduced his work by practically eliminating money orders. He is allowed a

\$50 working fund in order to keep on hand a supply of EFM stamps, air mail stamps, and envelopes; this amount adequately takes care of the needs of the men. His equipment consists of one lock box, a folding table, and a small box which also serves as a stool. The truck driver is used as assistant mail orderly.

Due to combat conditions, the file clerk is in charge of the battalion files in addition to personnel files. Files will normally require about three-fourths of his time. He also runs the mimeograph machine, averaging 2,000 copies monthly. Equipment necessary for him to operate are: one 2-drawer file cabinet (2×3×4), sturdily constructed, with one drawer for battalion headquarters files and one for personnel files; one mimeograph machine with strong box; one 2-hole perforator; and one "in" basket. What time can be spared from his files is spent in assisting the section.

Now for the battery clerk. He accompanies the battery on movements, and is in the rear echelon; this places him within walking distance of the personnel section. He does all basic work (pay rolls, entries in service records, morning reports, allotments, and insurance). By being in the rear echelon he can communicate with his battery commander and first sergeant daily, thus never getting behind in his work. His equipment consists of one small box for forms and the battery's typewriter.

ON LEAVING THE UNITED STATES

Do away with all files possible.

Do not leave without a six-month supply of forms. This battalion was overseas nine months before it was able to draw a supply of pay roll forms.

Steal, beg, borrow, or buy enough typewriters so that the personnel section will always have four machines, preferably two portables and two standards, one of the standards to have a long carriage. These should be securely boxed against all hazards of hard travel. The box should be so constructed that only the typewriter will fit into it. Not even a pencil should be transported along with the typewriter in this box. The section frequently moves on short notice.

Procure a mimeograph machine—it saves a world of typing.

37-mm ammunition boxes are very handy for most things, except a box to hold a 3-month supply of stationery, forms, and other miscellaneous articles. This box is never unloaded from the truck while in combat.

Get 4 folding tables and 2 folding chairs. "In" and "out" file baskets retain their importance over here.

You need one large camouflage net (40×50) and a large tarpaulin, the latter to be used to set up office alongside of the truck in inclement weather.

The personnel section's 6×6 truck should be made so that a maximum amount of work can be done in it during inclement weather, and completely blacked-out.

If possible, obtain one large wall tent to be used when the situation permits. (Rest areas bring a large amount of work for this section.)

2 one-burner stoves are most useful, as the section frequently has to prepare its own meals during combat.

IN COMBAT

Due to the short distance between the personnel section and the front lines (sometimes not more than 4 miles) one has to be careful. A very appropriate position must be chosen,

taking into consideration the amount of traffic, the number of personnel, and the size of the installatoin. The personnel section should occupy the choice position in the rear echelon.

When operating with the rear echelon, especially in a separate battalion, the personnel section is often as much as 40 miles from the next higher headquarters (organic battalions would be about 10 to 15 miles from their next higher headquarters), but practice has taught that it is easier to get complete and accurate reports from the battalion which is nearby and forward the reports to a higher headquarters a considerable distance away than to sit back and wait for the reports to come to the personnel section. All reports can be carried

to higher headquarters by the mail clerk on his daily trips.

This procedure is not without disadvantages, of course, a few of which are:

The personnel officer has to travel quite a bit, especially as he is doubly responsible for all pay matters as class "A" agent and in the certification of pay rolls.

It is sometimes difficult to type with "Jerries" overhead or our own 155 batteries blasting away near by.

All records are dangerously close to the front.

Continuity of work is sometimes made difficult by frequent changes of positions. Complete consolation is found, however, in the fact that this means the Boche are on the run.

Remount (Pack Mule) Training Schedule (21-Day Working Quarantine Period)

By Capt. J. M. Boylan, FA

These comments and schedule have been used in training men and animals during the 21-day working quarantine period for remount mules. Their results have been excellent.

Thirteen remount mules were selected at the Reno Quartermaster Remount Depot and shipped approximately 100 miles in a stock car. The animals' average height was 15-1½ hands, average weight 1200 lbs., and average age 5 years. They were bought by the Remount Purchasing Officers in January, 1943, and received by the using arm in July, 1943.

Weather conditions during the test were not too good, the average temperature being 103° F. As it did not rain at all during this period corral ground soon became extremely hot and dusty. The training corral itself was a shady spot in an area subjected to a great deal of noise and confusion from train whistles, children, and vehicles of various types. The animals arrived there in good health.

A training schedule had been prepared, and the personnel to train the animals were picked ahead of time. It had been arranged to have a likeable mare in the corral with the remounts at all times. Mules show a definite fondness or affection for a certain type of mare. The one picked should be one known to be acceptable to mules; she becomes the bell mare.

Selection of personnel to work with the remounts is extremely important. The men picked should be chosen for their knowledge of animals and lack of fear of animals. They should have a more or less phlegmatic disposition. These trainers should be placed on battalion or battery special duty, with no other duty which will interfere with their work with the remount mules. They should receive a lecture regarding the training program to be followed; be familiar with the type of training to be given; be told that remount animals have probably been hurt in the past, either by their original owners or at sometime during their stay in the remount depot; and be instructed that animals associate these hurts with man and that every time an animal has been hurt by man his fear of man increases. Possible examples of these pain-inflicting processes are being branded, caught by the ears to clip, side lined to trim the feet, stuck with needles for vaccinations and inoculations, loaded on freight cars, snubbed to a post while being saddled, etc. Tell the men that if the remount appears wild

or vicious it is probably because he has been hurt at sometime in the past and associates this hurt with man, and this appearance is probably an act of self-defense. One of the strongest instincts the animal has is fear, and if it is allowed to be the *dominant* instinct he can never be trained to do the work demanded of him in pack artillery. When the handlers make the animal lose its fear of man and gain its confidence that most of the battle of training is won.

Animals should not be placed in a large corral, but should be restrained from too much exercise and worked very lightly for the first few days of the schedule, as these days are the recovery days following shipment. Remember that the animals are in Condition #3:

Condition #1—hard muscled, accustomed to hard work, and well fed.

#2—overworked and underfed.

#3—overfed, soft, fat, and underworked.

Stress the point that no one is to abuse any animal. No blinds are to be used and no whips allowed in the corral. Above all, allow no cowboy or rodeo tactics. The use of a snub animal is authorized when handled properly.

First Day
Hour—
Schedule—

1st—Check the Preston Brands of all animals against the mule record cards. Check all equipment that is to be used with the remounts and place it in quarantine for the 21-day period. Instruct all handlers to tie animals to secure posts, not to flimsy articles such as boards of a fence.

2nd—Select all personnel to work with the remounts. Assign a certain man to a particular animal. Be sure to assign the more nervous animals that seem to be "spooks" to the best trainers available.

3d—Inspect all animals for signs of shipping diseases. Instruct the handlers to report all cases that show a nasal discharge, a watery discharge from the eyes, signs of ringworms, or any other indication of disease. Place all suspected animals on the sick book to be disposed of as directed by the veterinary officer.

4th—In this "get acquainted" hour let the person in charge of training find out what he has to work with regarding men and animals. Handlers get acquainted with their animals, talk to them, hand feed them, and pet them. Hand feeding will teach the animal not to fear his handler and will associate the handler with food. Hand feeding as a reward is one of the best methods of gaining the confidence of the animal. Hand feeding may replace the morning grain ration either entirely or in part. During this hour impress the handlers that they must be quiet and firm.

5th—Demonstrate with a quiet animal the method of halter breaking with the aid of haunch rope.

6th—Demonstrate halter breaking by use of the hackmore or a halter with a neck rope. Use this until the animal responds to the rein aids before attempting to use bits. A stubborn animal that will not lead should be snubbed to the saddle horn of the bell mare and pulled along. Have the handler walk in front of the animal with the halter shank attached to the halter, and simulate leading it. A few days of this treatment will usually convince the mule that his handler is leading him. Use a neck rope around the neck with a half-hitch around the nose, to control a stubborn mule. This means of restraint is also useful on animals that break away from their handlers.

7th—During this grooming and gentling period play around with the animal, brush lightly with the brush, hand rub, and do a small amount of work with the curry comb. Clean out their front feet and simulate shoeing by tapping on the feet lightly with a stick or small stone.

8th—Discuss the day's work and correct any faults. Stress again quietness and firmness in the handling of the animals, and that the aims of the handler are to eliminate fear of man from the animal and to gain its confidence.

Second Day

1st—Give light exercise by walking animals around corral. Have a man ride the bell mare; all other men (with ropes) form an inside fence similar to a race track. Have one man drive the animals from the rear. Stress quietness.

2nd—Tie up all animals for health inspection by veterinarian.

3d—Begin breaking and leading. Use a haunch rope, if necessary.

4th—Introduce animals to such strange things as ropes, saddle equipment, papers, raincoats, blankets, etc. Drag a rope all over the animal, around the feet, between the legs, across the head and neck, over the back. Let the rope fall over the haunches to the ground in the rear. *This must be done quietly.*

5th—Have all animals mounted bareback. Use the full hour. If the animals object, use more time. Make no attempt to move the animals.

6th and 7th—Review 3d, 4th and 5th hours.

8th—This grooming period is same as first day; include cleaning out the hind feet and simulating shoeing.

NOTE: Discuss the day's work. Apply corrections. Go over the next day's schedule. [This applies to each day hereafter, through the 19th day.]

Third Day

1st—Exercise the same as 2nd day.

2nd—Same as 2nd day.

3d—Review the 3d, 4th and 5th hours of 2nd day.

4th—Introduce mules to the blanket and surcingle. Cinch lightly and walk the animals around.

5th—Introduce the stock saddle on the animals, light front cincha and no rear cincha. Lead the animal about with stirrup straps hanging down.

6th—Tighten up the front cincha and practice mounting and dismounting. Use a snub animal if necessary.

7th—Review 3d, 4th and 5th hours of 2nd day. Include tying a rain coat loosely to the saddle; alternate tying to pommel and cantle.



When Tunisia's bad weather bogged down Britain's motor transport, mules took over.



Pack mules perform special services in Italian hills; fitted with special harness, they evacuate casualties from forward areas on stretchers and saddle chairs.

8th—During grooming period, increase the hand rubbing to include the pasterns, front and rear. Simulate shoeing all around.

Fourth Day

1st—Exercise same as 2nd day.

2nd—Same as 2nd day.

3d—Review 3d, 4th and 5th hours of 2nd day.

4th—Saddle up, and practice mounting and dismounting near and off sides.

5th—Practice starting and stopping at a walk only.

6th—Review 3d, 4th and 5th hours of 2nd day.

7th—Mount and turn right and left. Mount and dismount.

8th—Groom.

Fifth Day

1st—Exercise at walk and trot alternately.

2nd—Same as 2nd day.

3d and 4th—Review previous work and training in which individual animals appear to be deficient.

5th—Mount; drag rope from saddle horn, practice placing ropes all over animal.

6th—Practice starting, stopping, turning right and left.

7th—Review all previous work and training.

8th—Groom.

Sixth Day

1st—Exercise same as 5th day.

2nd—Same as 2nd day.

3d, 4th and 5th—Review all previous work.

6th—Place small load on end of rope and have animal pull it around. Do this dismounted at first, and later mounted. Use a load not to exceed 25 lbs. Make the animal pull straight away.

7th—Mount; practice starting, stopping, turning right and left at the walk only. Practice picking up an object from ground from near and off sides while mounted.

8th—Groom.

Seventh Day

1st—Groom, and have health inspection. Remainder of the day, rest.

If proper care has been used during this first week no animals will have bucked or run away. The animals should be in good health and on the way toward Condition #1. Talk to all handlers on being gentle and firm, with rewards or punishment. All animals should be quiet and easily caught. Be sure to commend handlers who did outstanding work this week. Some of the animals received will have had some training prior to purchase; these will usually show more response to this schedule than green, unhandled animals, but they should not be allowed to advance ahead of the slower animals. Keep all animals on the same schedule. It is far better to go too slow than too fast.

Eighth Day

1st—Walk 30 minutes. Alternately walk and trot for 30 minutes.

2nd—Same as 2nd day.

3d and 4th—Review all last week's training.

5th—Mount; ride all remounts on 3-mile march. Take bell mare at head of column. *Walk only.*

6th—Teach all animals to stand with the aid of split reins and lair rope.

7th—Mount and ride animals double. *Walk only.*

8th—Groom.

Ninth Day

1st—Exercise same as 8th day.

2nd—Same as 2nd day.

3rd and 4th—Review last week's training.

5th—Take 3-mile cross-country ride; walk and trot as individuals.

6th—Same as 6th hour on 8th day.

7th—Lead all animals from off sides.

8th—Groom.

Tenth Day

1st—Exercise same as 8th day.

2nd—Same as 2nd day.

3d and 4th—Take 5-mile mounted march with bell mare at head of column.

5th and 6th—Same as 5th and 6th hours of 8th day.

7th—Same as 6th hour of 8th day. Add training to stand with the aid of loops up from ground.

8th—Groom.

Eleventh Day

1st—Same as 2nd hour of 2nd day.

2nd and 3d—Take 5-mile march cross-country as individual riders.

4th—Review 6th hour of 8th day. Simulate saddling with pack saddle by having 2 men place riding saddles on animals from rear.

5th—Have animal pull weight of 100 lbs. for 30 minutes with rope from saddle horn. Practice 30 minutes carrying can with something that rattles and makes lots of noise, while mounted on mule.

6th—Practice carrying load on saddle while you ride double, 30 minutes. Lead from off side, 30 minutes.

7th—Introduce animal to pack saddle. Saddle up and adjust cinchas and breeching. Lead animals around the corral.

8th—Groom.

Twelfth Day

1st—Same as 2nd hour of 2nd day.

2nd and 3d—Saddle with pack saddle and make 3-mile march (saddle only) with bell mare at head of column.

4th and 5th—Review all 1st week's training.

6th and 7th—Review all this week's work.

8th—Groom.

Thirteenth Day

1st—Same as 2nd hour of 2nd day.

2nd and 3d—Saddle with pack saddle only. Have a 5-mile march with bell mare at head of column. Lead from near and off sides while dismounted.

4th—Review 6th hour of 8th day.

5th—Review 7th hour of 10th day.

6th—Review 5th hour of 11th day.

7th—Introduce animals to strange things and lead them over such obstacles as improvised bridges, ditches, etc. Do not let the animal jump. Hold his head down.

8th—Groom.

Fourteenth Day

1st—Same as 2nd hour of 2nd day. Rest the balance of day.

The animals should be in good health and on the way toward better condition. Remember to keep them coming along slowly. Keep increasing the amount of work. The goal is Condition #1, and ability to march 20 miles a day under full pay loads of 250 lbs. plus pack saddle. Daily marches under full pay load must be maintained to keep in #1 condition. If you let the animals go back to #3 condition through lack of work and then attempt to march 20 or 30 miles under full pay load in hot weather, you will kill them just as surely as if you get a gun and shoot them.

Fifteenth Day

1st—Same as 2nd hour of 2nd day.

2nd—Select animals for top and side loads, and saddle animals. Pay particular attention to selection of animals for top loads: consider conformation (such as straight backs, low croup, etc.) and do not forget the "city girl walk" for gait. Another good thing to remember when choosing top load animals is to pick them with plenty of bone and, if you have the choice, select them from the more mature or older animals. The selection for side load animals should be much the same

as far as conformation is concerned. There may be lots of high croups and "country girl walkers" and various backs that are suitable for or can be worked under side loads.

Never, if you can prevent it, work pack animals in the wagon. Use saddle animals for this. A pack animal with the "city girl walk" will become a "country girl walker" if worked in the wagon.

3d and 4th—Saddle all pack animals and go on a 3-mile march. Riding mules rest this period.

5th, 6th and 7th—Saddle riding animals and go on a 3-mile individual march. Walk and trot alternately. Practice having animals stand with aid of lair ropes, loops up from ground; mount near and off sides; pull 100-lb. weight from horn of saddle. Ride double. Have packmasters and cargadors start fitting pack saddles to pack animals during this period.

8th—Groom.

Seventeenth Day

1st—Same as 2nd hour of 2nd day.

2nd, 3d and 4th—Saddle pack animals with 50-lb. single load. Make 5-mile march over obstacles and mildly difficult terrain. Riding mules rest.

5th, 6th and 7th—Saddle riding animals and make 5-mile march on 16th day. Have packmasters and cargadors continue fitting saddles to pack animals.

8th—Groom.

Eighteenth Day

1st—Same as 2nd hour of 2nd day.

2nd, 3d and 4th—Saddle pack animals with 75-lb. single load, make 5-mile march same as 17th day.

5th, 6th and 7th—Saddle riding animals, make 7-mile march over obstacles and difficult terrain. Have packmasters and cargadors continue fitting saddles to pack animals.

8th—Groom.

Nineteenth Day

1st—Same as 2nd hour of 2nd day.

2nd, 3d and 4th—Saddle pack animals with 100-lb. single load, make 5-mile march same as 17th day.

5th, 6th and 7th—Same as 18th day except 8-mile march.

8th—Groom.

Twentieth Day

1st—Same as 2nd hour of 2nd day.

2nd, 3d and 4th—Same as 19th day except make 8-mile march.

5th, 6th and 7th—Same as 18th day except make 10-mile march.

8th—Groom.

Twenty-first Day

1st—Same as 2nd hour of 2nd day.

2nd—Release from quarantine, if no further quarantine is ordered by battalion veterinary officer. All animals are turned to duty. Single out all the good handlers and commend them accordingly.

During the training that you have finished you should have made your animals acquainted with many of the strange things that may be encountered in open country, mountainous terrain, or jungles. The animals should be subjected to as many strange sights as possible (tractors, newspapers, helmets, cans, etc.), strange noises (vehicles' exhausts, cannon firing, locomotive whistles), strange odors (iodine, ether, smoke, etc.). These strange things should be presented, however, in such a way that the animal does not associate them with harm or pain to himself.

Obstacles to cross should include loading ramps, steps cut in banks, small ditches, corduroy roads made to cross swamps or bogs, and narrow bridges (such as grease racks for cars and trucks). Narrow bridges may be simulated by constructing a walk, 24" wide and not over 1' high, over a pool of water. Later narrow the bridge and make it higher. Trees may be cut and placed over a small stream, with the top side of the tree squared; this makes a practical field-expedient bridge.

Select narrow trails and have lots of climbing. Go down some slides. Have the animals walk up and down banks. Swim the animals, if possible. Load them in trucks but always remember to keep the animals coming along slowly. Have the top load animals carrying full pay loads before burdening them with the howitzer loads. Have lots of loads that rattle tied to all loads during the training; this may be done by carrying a #10 can with stones in it.

Be sure to fit your gun loads to the saddles and frames before loading them on the animals.

Always keep the animals in Condition #1.

ABOUT STIMULATING GUN SQUADS

By Col. Henry Burr Parker, FA

The gun squads had gone to pot!

Maybe too much time, thought, and emphasis were put into ITP, into Physical, Day Mental, and then Night Mental Conditioning; into Gas Training and into various special proficiency tests. Small Arms Firing, including .30- and .50-caliber Machine Gun, Carbine (familiarization, transition, and record), and Pistol, completion of Close Combat and In Cities courses, Aircraft Identification, inspection or demonstration for units of this or that, and throwing hand grenades—all these took time. Maybe the four months' intensive desert work (with field maneuvers simulating actual combat) which preceded and followed this, coupled with the long expected but late arrival of a new type primary weapon—maybe these very essential incidental items were partly or even wholly to blame. But somehow, somewhere, the all-important principal item in a field artillery schedule—training cannoneers on the primary weapon to put artillery fire where needed when needed—had been sidetracked by someone into a secondary priority, and permitted to rest there.

This was the extremely embarrassing position in which a Field Artillery Group recently found itself in the midst of its AGF FA Battalion Firing Tests. A falsely inflated ego was rudely ruptured suddenly, definitely, and effectively. Gun squads generally proved themselves slow. Errors in both deflection and elevation occurred with startling frequency—this in units slated for early overseas movement. That these units passed the tests evoked no feeling of pride in accomplishment. It did awaken every officer to his immediate problem: rapid development of gun squads, and replacement gun squads, which could set the mechanisms promptly, accurately, and dependably.

To remedy this situation without delay, of course more intensive training (with extra hours along these lines) was immediately instituted, in addition to normal clean-up. The idea of Training Bulletins in the form below was born. These helped re-arouse a general competitive spirit within battalions and between battalions by emphasizing their deficiencies, promptly decreased the errors in settings, and improved speed without forfeiting all-important accuracy.

HEADQUARTERS —TH FIELD ARTILLERY GROUP
CAMP _____

25 October, 1943

Training Bulletin
Number X

GRAPHIC DAILY RATING OF FIRING BATTERIES—TH FA GROUP
CANNONEER TEST

1. Herewith are the comparative percentage scores of all firing batteries of this Group which took the daily test on 25 October, 1943, represented diagrammatically.

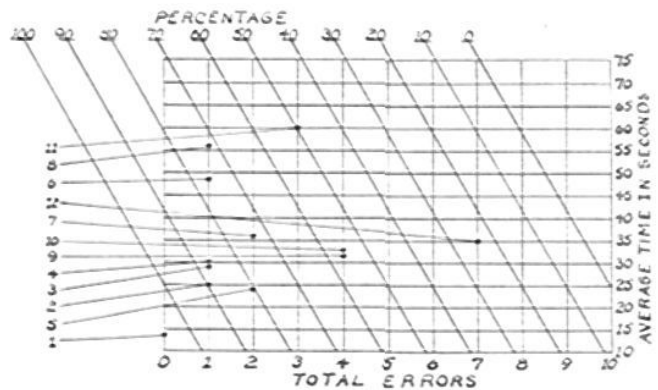
2. Each battery tested is plotted on its results, with Average Time and Total Errors as coordinates, based upon the total of twelve simple test Fire Commands furnished daily by Group. These commands include Initial Data and eleven other fire commands of Shift and/or Deflection Difference, and Elevation or Quadrant.

ERRORS—When an error is discovered during check, the day's series of commands is begun again at the beginning regardless of where in the series the error occurs. This is repeated every time an error occurs, until the entire series is completed throughout without error.

TIME—Average time is computed in seconds, based upon each of the twelve commands from the announcement of Elevation or Quadrant until the last Chief of Section indicates "Ready" by holding up his hand.

PER CENT—Net percentage is read between the slanting lines for the plotted point. (In general, the nearer the lower left hand corner the plot is, the higher the rating.)

3. DIAGRAM:



4. DAILY RELATIVE STANDING:

Number	Unit	Time	Errors	Percentage
1.	C—3302	14"	0	100
2.	C—3303	25"	1	90
3.	A—3303	29"	1	87
4.	C—3300	30"	1	86
5.	B—3302	24"	2	81
6.	C—3301	48"	1	75
7.	A—3300	36"	2	73
8.	B—3301	56"	1	69
9.	B—3303	32"	4	55
10.	B—3300	33"	4	53
11.	A—3301	60"	3	45
12.	A—3302	35"	7	28

For the Group Commander:

X
Lt Col, FA
Executive

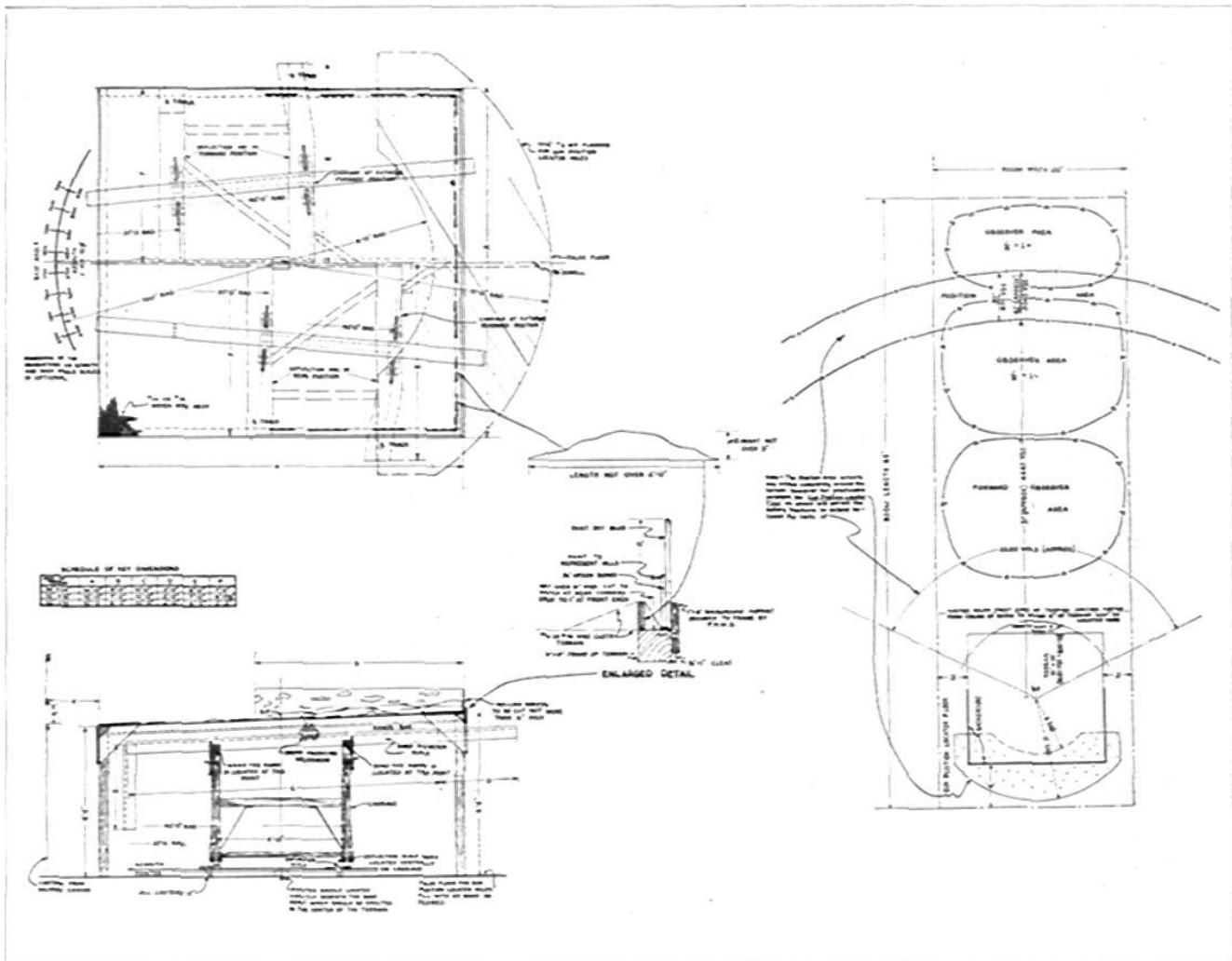
OFFICIAL:
Y
Major, FA
S-3

I call on each man and woman serving with the Army of the United States to unite in a campaign of Preventive Maintenance ... to abolish the menace of mechanical failures ... this is your responsibility ... —SECRETARY OF WAR STIMSON.



New Indoor Smoke-Puff Terrain Board

By Lt. Col. Ralph R. Bush, FA



General Layout and Assembly

Above drawing (No. 1 of 7) is part of available set of accurate scale plans, complete in all detail. Half tones (not shown here) are incorporated to give builders better understanding of finished product.



A bright new star is winning applause in the training aid world—a modern terrain board. Already a leading actor in training programs of many units, this new terrain board draws bouquets wherever it makes a debut among artillerymen. A modernized version of the old Jasper-Ward board, with new emphasis on speed, accuracy, and realism, it works like a charm.

With the new terrain board it is possible to instruct larger groups of students in the latest artillery technique. Actual experience proves it valuable for instructing officer candidates, or officers of limited experience, in the conduct of various types of observed fire. Battalion classrooms find it useful in fire-direction and forward observer workouts. It develops confidence in students, clears up misunderstandings. This terrain board is actually a new precision instrument that bridges the big gap between blackboard and field. Best of all, from prepared plans the average battalion can build one at a cost of about \$75 for materials.

Its miniature terrain is constructed of fine wire mesh stretched over a wooden frame. Hills, valleys, rough ground, and cuts are produced by crumpling the mesh before mounting it on the frame, or by using heavier-gauge wire frames to support the irregularities in the mesh. Ground texture and colors are simulated by colored sawdust sprinkled on the freshly varnished mesh. Roads, trees, buildings, and other features are glued to the surface.

The scale of the terrain and its features is 1 inch equals 10 yards. The terrain is approximately 16 c's deep from front to rear, and 350 mils wide, and allows about 175 mils traverse right or left of base deflection. The terrain represents the outer 30% of the maximum range of the board, thus providing a sizable area (the inner 70% of the maximum

range from which to observe. Such a large observation area allows observation from many angles and varying distances.

Since the entire construction is to scale, useful training in target area survey becomes possible. Standard optical equipment (rather than makeshift instruments) can be used for

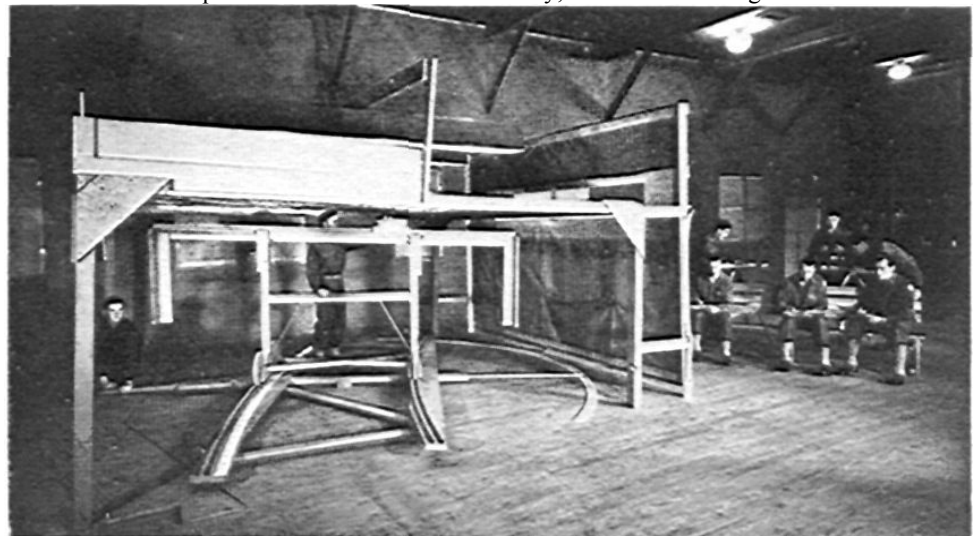


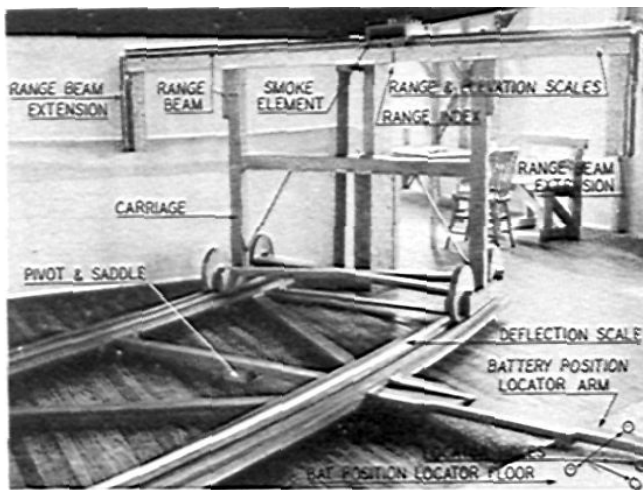
Fire Direction

Fire direction team and forward observer working classroom problem on terrain board. Realism adds interest, and work can be checked for accuracy.

observation and survey, and standard firing tables for various

Back Stage of Terrain Board Smoke puff operator (standing) sets range and deflection. Battery locator operator (kneeling) shifts locator arm as data for respective batteries is sent down by fire direction.





Mechanics of a Terrain Board

Simplicity of construction and operation readily shown above. Pivot and saddle, on floor, located directly under base point. Rotation of deflection track changes base line, forward and rearward motion changes range. These operations automatic when locator arm is moved to desired position.

charges and weapons may be used in conducting fire. The built-in azimuth scale allows measurement of the adjusted azimuth to any target from any battery position. All these features give realism and practical value.

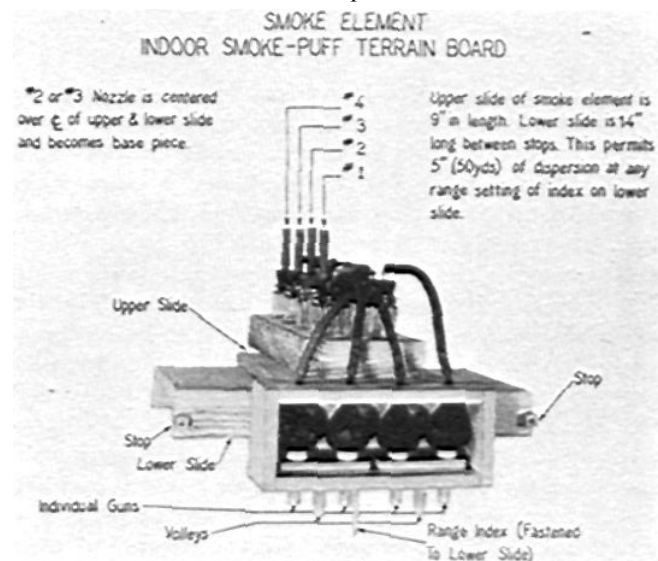
Shell bursts are realistically materialized on the miniature terrain by chemically-generated white smoke puffs. The bursts are produced by passing the fumes of ammonium hydroxide over hydrochloric acid, and are puffed up through the wire mesh terrain the instant they are wanted. The standard smoke-producing element of "four guns" operates on a fixed 100-yard sheaf. Other smoke-emitting units may be added to permit a 200-yard sheaf when called for. Fire can be by single piece, by volley, or by salvo from right or left, by platoon or battery. Built-in range dispersion causes targets of little depth to be subjected to both overs and shorts at the same range setting. Ranges can be set off accurately to the nearest 10 yards and elevations and deflections to the nearest mil, without interpolation.

Battery positions of unlimited number are possible within a circular band 600 yards in depth and extending completely around the target area at an average range of about 4800 yards from the base point, which is located in the center of the target

area. For practical purposes, battery position areas normally used permit an angle T up to 1300 mils. From any battery position changing the deflection will shift the fire along an arc exactly as in actual firing. This is possible because the deflection carriage track under the terrain is curved, and the carriage wheels are of such diameters that the direction of fire is radial from the simulated battery position.

Shifting the device so as to simulate fire from different positions is rapidly accomplished by the simple operation of moving a locator arm attached to the deflection arc. The ease and rapidity of this operation expedites the firing of fire-direction problems. Massed fire of three batteries can be simulated by firing the batteries successively so rapidly that the first burst has barely drifted away before the third battery is firing.

Several of these terrain boards are being used extensively not only for regular officer observed-fire classes, but also in the battalion classrooms for giving enlisted men the opportunity to conduct fire and especially to give fire direction teams a daily workout. Many recently activated units have successfully constructed the new boards from plans which are available.



Smoke Element of a Terrain Board

This shows how the "guns" behind terrain board shoot. Smoke element slides along range beam on lower slide and is set by means of range index. Upper slide allows range dispersion at same elevation setting.

FILM STRIPS

Among recently-released film strips of interest to artillerymen are:

- 2-25—Fire Adjustment of the Antitank Gun
- 2-26—Employment of Small Automatic Weapons
- 2-27—How to Tie the Sweeten Diamond and Phillips Cargo Hitches
- 2-30—Fitting and Adjusting the Phillips Pack Saddle
- 4-38—Orientation, Part VI — Stellar Observation in the Northern Hemisphere
- 6-29—Radio Set SCR-284-A, Part I—Description and Installation
- 6-30—Radio Set SCR-284-A, Part II—Operation
- 6-31—The 105-mm Howitzer M2, Part I—Description and Characteristics
- 6-33—The Transit, Part I—Description, Set Up, and Leveling
- 6-34—The Transit, Part II—Verniers
- 6-37—The 75-mm Howitzer M1 and M8, Part IV—Disassembly and Loading on Pack Animals for Transport
- 6-39—The 105-mm Howitzer M2, Part III—Authorized Disassemblies (First Echelon)
- 6-40—Sighting and Laying Equipment Tests and Adjustments—75-mm Howitzer M1 and M8
- 6-41—Same—105-mm Howitzer M2
- 6-44J The 75-mm Howitzer M1 and M8, Part III—Care, Cleaning, and Lubrication
- 6-46—The 75-mm Howitzers M1 and M8, Part I—Description and Characteristics
- 7-111—U. S. Carbine Caliber .30 M1, Part II—Marksmanship, Known Distance Targets
- 7-117—Air Ground Visual Communication, Part I—Marking of Vehicles as a Means of Identification
- 7-122—Individual Protection—Hasty Field Fortifications, Part II—Weapon Emplacements
- 17-27—First Aid, Removal of Casualties from Tanks
- 17-28—105-mm Howitzer M2 Mounted on Self-Propelled Mounts, Part I—Mechanical Training
- 17-29—Arm and Hand Signals, Flag Signals, Light Signals
- 18-4—The 3-Inch Gun Motor Carriage, M10—Lubrication
- 18-6—Same, Part V—Care and Cleaning of the Piece
- 18-8—Same, Part I—Controls and Operating Instructions (Revision of 18-3)

"GRASSHOPPER" SURVEY

By Col. J. C. McCole, FA

Position and target area survey are bugaboos in flat, tree-covered country. One brigade experimented with its organic planes and obtained such promising results that careful tests have been run. Result: further proof of the universal usefulness of the "grasshopper"; horizontal data are quite accurate; although vertical control still leaves something to be desired, it is possible that use of better instruments will improve these results—even now they should be definitely helpful in rugged mountains.

Standard FA "grasshoppers" with standard radios were used in these tests, which were over many types of terrain. Both the transit and the aiming circle were used to measure angles. Stations occupied were located accurately by ground survey.

TARGET AREA SURVEY

In testing target area survey, prominent terrain features in the target area were located from two stations selected in rear of the position area; these features were of course not visible from either station, nor need the stations be visible from each other. Instruments were set up at each station and referred to a Y-azimuth or a known reference point (the latter method being the more accurate, of course).

The pilot lined in Station 1 and the target to be located, and on this line flew a course from 1,000 to 3,000 yds. in rear of the position area (see Fig. 1). Each time the plane was exactly on its proper course the pilot said "Mark" (or gave a wing signal), and the instrument operator at the station read the angle

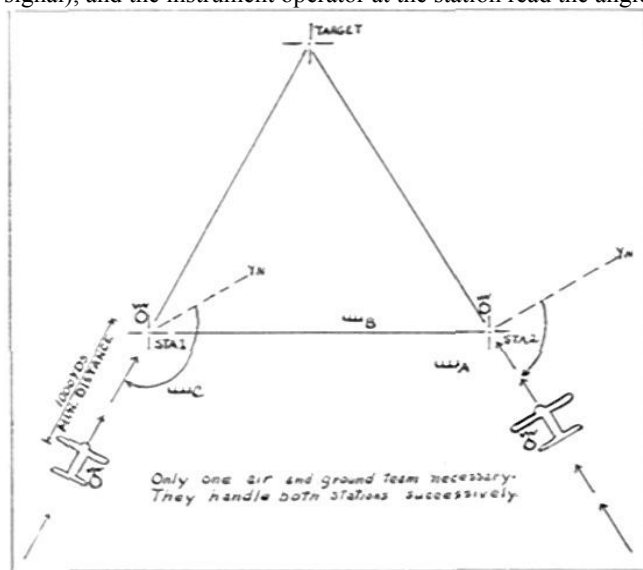


Figure 1

from his reference point to the plane. This was repeated for Station 2, and the target located by long base intersection.

Results were astonishing. Using wing signals, 7 tests were run with 2 flights per station. Angles of intersection varied from 350 μ to 1300 μ , bases were from 1,900 to 2,900 yds. long, and ranges were from 2,000 to 6,500 yds. Deflection errors (from 0 to 30 yds.) averaged only 10.7 yds., and range errors (from 0 to 260 yds.) averaged but 83.6 yds.

Use of radio signals cut the range errors materially. With this method 5 tests were conducted, each with 3 or 4 flights per station. Angles of intersection varied from 300 μ to 1050 μ , bases were from 1,200 to 3,500 yds. long, and ranges were from 2,500 to 5,100 yds. Deflection errors (0 to 25 yds.) averaged 14 yds., and range errors (15 to 50 yds.) averaged only 32 yds.

POSITION AREA SURVEY

In these tests two instruments were used, one at each station and far enough apart to permit use of short base methods. The plane flew a course on line with one station and the point to be located (see Fig. 2); when exactly over the point, the pilot said "Mark," and each instrument operator read an angle from a

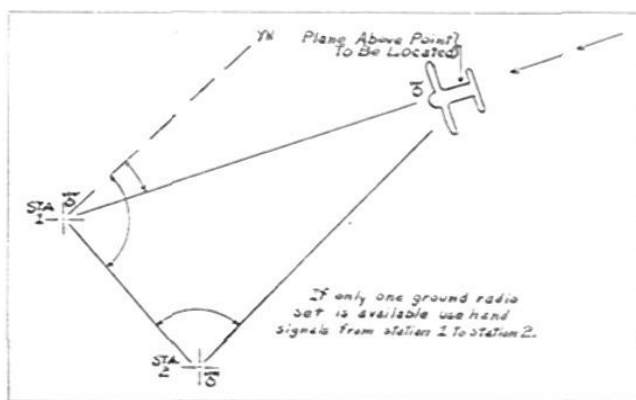


Figure 2

reference point to the plane. This point (in or near the position area) was then located by short base methods.

Again results were excellent; 9 tests were run, all with radio communication and each with 2 or 3 flights. Angles of intersection varied from 150 μ to 430 μ , bases were from 200 to 700 yds. long, and ranges ran from 900 to 2,800 yds. Deflection errors were 0 to 50 yds., but only one was over 5 yds.; their average was 7.3 yds., and with the single large error disregarded this is reduced to only 2 yds. Range errors (3 to 60 yds.) averaged but 21.2 yds.

VERTICAL CONTROL

For this phase the pilot landed at a point the altitude of which (with relation to that of the position area) was known, and set his altimeter to zero. At a known altitude (read from the altimeter) the plane was immediately flown over a known point (the station previously used to determine the range to the target). An observer in the plane (call him VCO, if you like) measured the angle of site from the horizon (zero) to the target, using a home-made instrument (see Fig. 3); a sextant or similar instrument should give more accurate results. By the mil relation, the target's altitude was then computed.

Nineteen tests of this type were conducted. Ranges varied from 1,000 to 16,500 yds., but the error of the single test at this extreme range was very little above the general average. In yards, the altitude error (0 to 125) averaged 23.5. Translated into mils this yields an average of 4.3 for a variation from 0 to 19.

SUMMARY

An air survey consumes much less time than does conventional ground survey. By locating the observing station near the position area you eliminate a long connection traverse and keep the plane well behind our own front lines. As it is essential that the pilot identify the ground station, this should be marked by a white panel or some other easily identifiable object.

Air observer and ground survey party must work very closely together. Throughout these tests the same air-ground teams were used, and their accuracy increased constantly. This method of course calls for a good pilot with a good appreciation of terrain—as does any artillery "grasshopper" mission.

Each course should be flown twice. If the readings on the two vary materially, a third flight should be made. Accuracy is increased remarkably if the plane can fly slowly into a fairly good wind. As wing signals tend to throw the plane off its course, radio is far superior. Most accurate readings were obtained when the plane was from 1,000 to 3,000 yds. in rear of the station.

Use of a common reference point by both stations is preferable to a Y-azimuth, due to the inaccuracies of the needles of different instruments. The aiming circle was found to be more satisfactory than the transit as with it up to 7 readings could be made along each course, materially increasing the accuracy, while the transit could get only one reading.

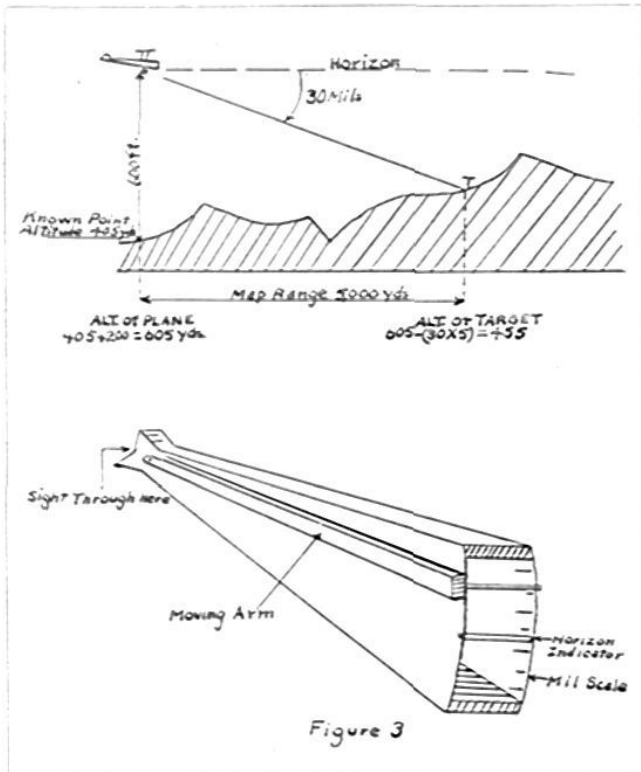


Figure 3

MORE ON "BUGS AND BONERS"

By Capt. William D. Kilduff, FA

If any JOURNAL reader thinks Col. Christiancy Pickett's recent *Bugs and Boners* (p. 432 of this JOURNAL for June, 1943) was a bit of whimsy, here is a sad footnote to his article which should convince the last remaining disbeliever. Col. Pickett listed 200-odd errors which can (and do) occur in a field artillery battalion. Gentlemen, he barely scratched the surface! Listen to this tale of woe if you would have proof. Any similarity between the following events and those which occurred during a "pay" run-off of AGF Firing Test No. 1 early last spring, is entirely intentional.

To start with the weather was clear and the track fast that memorable day—so fast, in fact, that the 105 prime-mover drivers lit out for their position area like pilots in the main event in Indianapolis. As a result only two howitzers roared in on the BC, himself acting as Scout Corporal 2 at the position. No. 4 had capsized en route and was, as the battery mechanic dolorously put it, "a mighty beat-up job" lying in a ditch some miles to the rear. No. 1, not to be outdone, had soared across a gully like a ski-jumper during the mad dash forward, and blown two tires on its descent.

The BC and exec, avoiding a direct encounter with an umpire at that moment, doggedly turned to the business of laying the two remaining howitzers. Both were reasonably competent artillerymen, and both checked the aiming circle and the laying. Satisfied, they reported the battery ready to fire—only to have the umpire cheerfully inform them that *he* had checked the laying of the battery (No. 1 had arrived, so now there were three) and found it 17 mils out. No one yet knows how that happened.

All three guns followed the registration and when it was over the Exec checked for parallel sheaf and found No. 3 30 mils in error. Onward and upward!

During the first bracket problem No. 2 uncorked a 100-mil elevation error and fired the same round with the wrong charge (high gun for the day!). Meantime, No. 1 idly, unaccountably switched from fuze quick to delay during the fire mission, and No. 2 completed the sweep by breaking a lanyard. The end appeared to be in sight.

But no! On the battalion concentration, adjusted through the battery by its own forward observer, the ball was kicked around some more. For the first time in the memory of the battery's oldest member, the recorder went to pieces and lost track of all deflections. So the Exec fished out an old PX receipt (there's a use for everything) and jotted down the fire commands himself. When the first two rounds from No. 2 were lost by the observer, he checked and found the gunner 102 mils out (don't ask where the extra two came from). That was straightened out with a minimum of nasty conversation, and the adjustment completed.

And then came the cruelest blow. Failing to measure the adjusted deflection (and how many of you rascals have done the same?) the Exec read the data from his own ersatz recording sheet and phoned it to FDC. A bad business and something he'd never done before. Well, the battalion dropped its concentration just one valley to the left of the target—100 mils in error. You'd never believe me if I told how fast the Division Artillery Commander got to the battery position. Oh, yes, about the time of his arrival someone lost a gun book in a bucket of boiling sal soda and the BC dropped his field glasses on a rock.

One of the section chiefs blamed the entire affair on the gremlin who lives in the lower right hand groove. Perhaps he was right.

Next day the same battery and the same personnel went out on Test 2. When it was over, the umpire approached the Exec. "Lieutenant," he said, "That's as fine a firing battery as I've ever seen." Oh hell, figure it out for yourself.

THE SAFETY OFFICER

By Lt. Samuel C. Myer, FA

The safety officer has the meanest job in the firing battery, barring none. Nevertheless, except for FM 6-40 (which is non-committal) and a short section in *How to Produce an Efficient Firing Battery* there are few references to the problems of the job.

The safety officer is charged with seeing that:

- (1) No piece is fired outside its lateral safety limits.
- (2) No piece is fired above the maximum or below the minimum quadrant elevation prescribed.

On the safety card which is furnished him will be information as to the firing point to be used; type of materiel and ammunition to be fired; maximum and minimum charge allowed, if any; reference points; left and right limits; maximum and minimum ranges; and special instructions, which would include the lateral bounds of any special range limits. For a sample card see the illustrative problem, below.

A safety diagram should be made from the safety card. On it can be all the elements required during the day, such as the Y-azimuth, base deflection shifts, and deflections for all limits. In addition, it will usually include the deflections at which the aiming posts were set out originally (these are indicated by an x in Fig. 1).

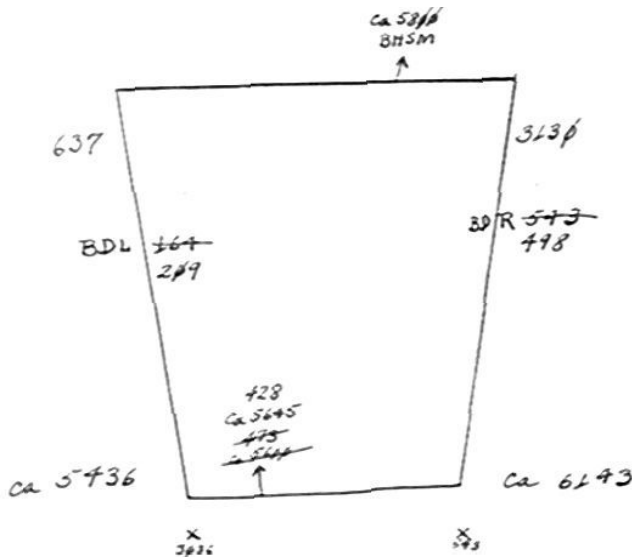


Figure 1

The Y-azimuth is convenient not only in case commands are sent down by compass, but also as a rapid method of calculating or checking base deflection shifts to the lateral limits when a new base deflection is recorded. Such a system will permit the least error.

Base deflection shifts are all-important. By carrying them in your head and calculating the shifts each time a command is received, a rapid check is made from which one can judge the degree of care required in checking safety limits. For instance, if the permissible base deflection shifts are BDL 100 and BDR 300, a command of BDR 10 requires a minimum of time to check. On the other hand a command or total net shift of BDL 95 will probably justify the safety officer's delaying fire to check deflection, and running the line of metal to check the sheaf. Of course BDL 105 is outside safety limits without even looking at the pieces, and time will be saved by stopping fire immediately.

High angle fire requires special care. Drift effects are both large and quite variable. They must always be taken into account in considering deflection limits.

Deflection is the reading of the panoramic sight at a given point. The deflection of the lateral limits is of considerable importance when it is desired to check deflection. One may know perfectly well that BDL 164 is deflection 3036, and that it is the deflection for the safety stakes. When one checks deflection, however, if the aiming posts are at 0 or 3200 the left limit is 164 (LARS: 0+164), not 3036. In like manner, the right stake might be put out at 543, but when one comes to check deflection it is 2657 (LARS: 3200—543). This is confusing on the firing line when in a hurry. And when aiming posts are at deflection 473 (instead of 0 as above) the left limit is 637 (473+164) while the right is 3130 (3200+473—543)—which is a little more complicated. Personally, I like to have such matters protected from the Whammies so I just jot them down on my safety diagram. Some safety officers carry these deflections in their heads together with the deflections on each gun, but this requires considerable practice and about the time your system is perfected the colonel decides to make you a BC so you can forget it all.

When a new base deflection is recorded, providing the aiming posts are not moved, the *deflection* to the lateral limits remains the same as before. In the example above, 3130 and 637 remains the deflection bracket no matter how often the officer conducting fire records a new base deflection. The *base deflection shift* to the limits, however, changes each time. Here the Y-azimuth to the lateral limits really comes in handy. Calculate the compass of the new base deflection and take the difference to the limits, and there are the new allowable base deflection shifts. Cross out the old ones and substitute the new, and you are ready to go. To check your work, figure out the total amount shifted from the old base deflection and apply it to the old base deflection shifts. The second system allows for a good many mistakes, particularly in direction, but the answers should be identical.

While on the subject, a convenient way of recording base deflection on your diagram is to put a small arrow at the approximate location of the original setting and above it put the deflection to the aiming posts and the compass of the line of fire. When these change, cross them out and write the new figures over them. Another arrow at the top of your diagram may be used to indicate reference points.

When a battery is relaid there are two possibilities. Either the aiming posts will not be changed (in which case the operation remains that of recording a new base deflection), or they will be moved either to align them or to set them out again (in which event there will be new deflection settings for the lateral limits). If the piece has been moved much, new safety stakes must be put out. Incidentally, should you want to check these, be sure that the piece is laid on the base deflection at which the stakes were originally set out, or that you have corrected for the change.

Minimum and maximum elevations are figured from the ranges given on the safety card. Take the maximum charge which will be fired and (unless other charges will not be used) calculate the maximum and minimum elevation for all charges

up to the maximum. This saves embarrassment on the firing line when the officer conducting fire suddenly shifts from one charge to another.

Don't forget high angle fire. There may be a maximum elevation which cannot be exceeded, and also one which cannot be diminished. When you figure the former, take it to the next lower mil; but when you figure the latter, take it to the next *higher* mil. This is a point easy to forget. As an example, with charge IV and a maximum range of 5,500 yards, the maximum elevation is 486/1061: no shooting over 486 mils or under 1061. Minimum elevation is somewhat the same except that it is very rare to have a double minimum elevation.

Time fire, if it is used, means that the safety officer must figure a minimum time for each charge corresponding to the minimum elevation for the minimum range (not the executive's minimum elevation, in case it is greater). No maximum time need be calculated as the shells will burst on impact.

Some safety officers like to put a dash if a given range or time is not possible with a given charge. In all events, don't put a 0 there as this might confuse another officer when he relieves you and starts using your diagram.

Safety officers can kill themselves with needless refinements such as site, weather corrections once determined, or the corrector for the day when using the M14 fuze setter. Under average conditions the safety limits will take care of such matters for you, but there may be exceptions in unusual situations. A rigid rule is best, however. Let the officer conducting fire definitely take the responsibility if he wants to shoot outside safety limits.

This description of safety diagrams has been long and complicated. Actually, they take about ten minutes to make up and are of inestimable aid.

Safety stakes are usually put out at certain deflection settings. Be sure when this is done that the piece stays at the same elevation and the bubbles are cross-leveled, otherwise there will be an error. Often time will be saved by measuring the compass to a distant point with an aiming circle and announcing this as a reference point with the deflections for the safety stakes. When the battery has been laid parallel, measure the compass and announce the deflections. (Don't trust the executive. Always check the laying of the battery independently.) After firing, if the piece was not properly dug in there may be a small displacement of the sight. This probably will not be sufficient to worry about, but should be considered on border-line decisions. Once out, safety stakes may be used to determine safety limits, but it is safer to use them for warning only and to check deflection when lateral limits are close.

Chiefs of section will often make a note of maximum and minimum deflection and elevation limits with chalk, either on the gun shield or on the trail where the gunner can refer to it easily. This is an excellent idea, providing the safety officer does not rely on it.

When it comes to checking the pieces, the only sure method is to run the line of metal. Pick a distant point in the approximate direction of base deflection, and a shift may be readily estimated by looking over the tube. In some cases a panoramic sketch showing the base deflection shifts to prominent terrain objects may be useful. One may also check the sheaf to see that it is parallel by sighting over each gun. If all point to about the same place it is relatively certain that they are parallel. If there is enough time one can get off at a distance and check the battery, but if the pieces are

staggered this is usually impractical. Watch for trouble with five and nine if the battery is still using *fi-yuv* and *ni-yen*; these are easily confused, particularly when the pieces are well separated. WHENEVER YOU HAVE ANY DOUBT WHATSOEVER, YELL "CEASE FIRING," and then check the pieces in question.

An error in elevation is much harder to catch than one in deflection. The safety officer can stand on the flank of the battery and compare elevations or he can watch the tube in relation to either the ground or the trails (this latter system is sometimes used to check deflection as well). He can also run the line of metal and check elevation by reference to a distant point. The October, 1941, issue of the JOURNAL has some additional suggestions in an article on the new safety regulations (N.B.: Safety regulations have been changed since this article appeared). All systems are open to one objection or another. Probably the best one is to check the guns in relation to the ground.

Usually an executive will know how much he must check deflection and elevation. To do so more often is hard on all concerned, but when close to the limits, after large shifts, or when the commands invite errors, the safety officer is justified in checking the guns. In some batteries the gunner calls out the reading on his sight instead of "Ready," which saves checking deflection almost completely.

When calculating the maximum permissible shifts, figure them for No. 1 gun unless your sheaf is wider than 100 yards, in which case each gun should shoot within safety limits. For example, if the command was ON NUMBER ONE, OPEN THREE, and the shift placed No. 1 within 5^m of the left limit, Nos. 3 and 4 would be called out and a report of *Unsafe to fire* sent up to the officer conducting fire. On the right, the shift is never greater than the right limit for No. 1 gun. Any opening on 2, 3, or 4 must be considered.

When inexperienced officers are shooting, watch the guns closely to see that they are following the commands as they come down. Should the executive repeat a command without prefacing it by THE COMMAND WAS, make sure that no mistakes are made at the guns.

Always use the actual azimuth to a reference point, even though an approximate azimuth is given on the safety card—this can be in error by as much as 20 or 30 mils. When a reference point is given, if possible use the gun sight to set out safety stakes. Don't use the approximate azimuth to calculate the base deflection shifts to the lateral limits when given their Y-azimuth, as this can introduce a considerable error.

In the case of elevation, the main thing to remember is that the minimum and maximum elevations are *quadrant* elevations. Site must be considered at all times. For instance, if for a given charge, the minimum elevation is 250 mils and the maximum 420, with site of plus 10^m the elevation limits are 240 and 410.

Speaking of site, watch for trouble if the executive says SITE instead of SI. The guns will probably go right whatever amount is given.

The safety officer is charged with seeing that:

(3) No piece is fired below the minimum quadrant elevations determined by the executive.

This provision is perfectly clear. The minimum elevations should be computed for *each charge* as prescribed in FM 6-40 (par. 34 and Appendix I, par 10c), independently of the executive. The minimum elevation computed by this method becomes the minimum elevation for that charge on the safety diagram should it exceed the elevation for the minimum range.

(4) The announced powder charge is used in the firing of the separate-loading or semifixed ammunition.

Two methods are used to determine that the correct powder charge is used. The best is for the cannoneer preparing the powder charges to hold up the excess bags until the executive or safety officer indicates that he has noticed them. To supplement this system, excess charges may be placed directly in front of the projectile when more than one round is prepared in advance. These are held up as the round is loaded and then discarded. Fight off the temptation for this to become a routine action.

(5) No piece is fired unless the range is clear.

Occasionally the guns are in such a position that the control point flag (or lantern) cannot be seen. In this case the safety officer should have the officer conducting fire assume the responsibility. Get the time he assumes it and his name.

(6) No personnel are in those portions of the danger area visible from the position, except as authorized by AR 750-10.

To all intents and purposes, this means no personnel directly in front of the guns or within safety limits.

(7) Personnel at the firing position comply with safety regulations.

This provision covers a multitude of sins. No smoking near the guns or the ammunition. No horseplay at the guns. Make sure that at least two men check the bore before the piece is loaded (No. 2 is usually one of these). With split trails, be sure the cannoneers stay out of the path of recoil. In general, the safety officer shares with the executive the responsibility for the proper functioning of the firing battery and should see to it that nothing unusual takes place.

The job of safety officer as it has been outlined is a mean and tedious job; but its first requirement is that the officer be alert at all times. If you relax, you invite disaster. Even worse is trying to do too much, for then the brain is cluttered with needless details and actions become stereotyped, automatic nonentities. If you are a BC, do not expect a safety officer to act as assistant executive even though he is responsible for only one gun. With a well trained section such an arrangement will be satisfactory almost every time, but at some crucial moment you will find that the range officer has lost a safety officer and your assistant executive will have allowed an error to pass unnoticed. An officer is detailed, in conformance with army regulations, to assume the responsibility for safe firing at the gun position. He should not be made a chief of section. If he performs his many duties satisfactorily, he has done well.

BATTERY OFFICER
SAFETY CARD

The algebraic sum of the elevation and site will not be less than the elevation corresponding to the minimum range specified nor greater than the elevation corresponding to the maximum range specified. Time fuse will not be set for time less than that corresponding to the minimum range specified.

(Special) Def. 1 Nov 43
 Safety limits for 100 200 300 400 500
 Firing order 1 2 3 4 5
 Area GM JK
 Reference point 3289 Y axis 6100
 Left limit 2000 left of 3289
 Right limit 500 right of 3289
 Minimum range as measured but not less than 2000 yards. Max range 5000
 Special instructions From 2000 left 3289 to 5000 left max on 5000 yds
1000 right 3289 to 5000 right max on 5000 yds
1000 left 3289 to 5000 left max on 5000 yds
 Card typed by CS Checked by CS

(Signed)
 Col. F. B. ...
 Range Officer.

This safety card is complicated for purposes of illustration. Current practice is to limit range bounds to one maximum and minimum wherever possible.

ILLUSTRATIVE PROBLEM

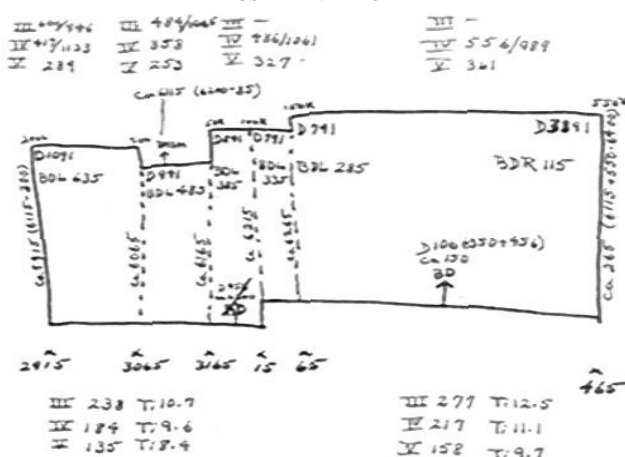


Figure 2

If possible, make up a safety diagram from the card the night before. The Executive reports the battery laid on a compass of 6200. (The safety officer has verified this with the aiming circle.)

Minimum elevations reported by Chiefs of Section: 32, 45, 39, and 40.

Piece-mask range 500 yards.

Figure minimum elevations for range (2600 and 3000) and for safety (45 plus elevation for P-M range plus two forks plus 5 yards at P-M range). Use whichever is larger for each charge.

What are the deflection settings for the safety stakes, and how many are needed per gun? (See Fig. 2.)

Command F (NUMBER ONE) AP BHSM, REFER AND REPORT DEFLECTION. No. 1 reports deflection 3115. What is the true Y-azimuth to BHSM? What are the Y-azimuths of the limits?

The safety officer is told that charges 3, 4, and 5 will be used. (N.B. Executive's Minimum Elevations (98 ch 3, 91 ch 4, 85 ch 5) do not exceed minimum elevations for ranges, but they must be calculated for safety.)

Base deflection is recorded at Y-az. 150.

The following commands are received:

- BA, Sh HE, Ch 3, FD, Ca 150 Si 320, BR, EI 290 (Safe to fire)
- R 130, 290 (Unsafe to fire, 15° outside right limit)
- L 15, 290 (Safe to fire)
- 270 (Safe to fire)
- 250 (Unsafe to fire, minimum quadrant elevation 277)
- 257 (Safe to fire)
- Ti 12.1, 265 (Unsafe to fire, minimum time 12.5)
- Cease firing, end of problem.
- BA, Sh HE, Ch 5, Ti 16.4 Ca 6100, FO 5, Si 290, BR, EI 282 [Unsafe to fire, maximum elevation 153 (some SO's carry a maximum time to give them warning that the elevation will be outside limits).]
- Ti 15.4, 263 (Safe to fire)
- L 150, 163 (Safe to fire)
- Ti 16.8, L 30, 289 (Unsafe to fire; time and deflection outside safety limits)
- R 10, 289 (Safe to fire)
- Cease firing, end of problem.

SUGGESTIONS FOR THE SAFETY OFFICER

1. The Safety Officer should locate the safety limits for direction by prominent points on the terrain, or by stakes properly placed, as soon as he arrives at the gun position.
2. Before permitting any firing he should make certain that the red flag is flying at the control point. If this flag is not visible he should report the fact to the instructor in charge.
3. He should assure himself that he has a compass or aiming circle which functions properly and that he knows its declination constant.
4. When all of the guns of the battery are visible from some point approximately fifty yards in their rear, the Safety Officer should, in most cases, be able to determine the general direction of each gun without taking the time to go to the trail and look over the line of metal, provided that the guns are all pointing well within the safety limits. THE RESPONSIBILITY FOR THE DETERMINATION OF POSITIVE GUN SIGHTS REMAINS WITH THE SAFETY OFFICER AND IS NOT TO BE DELEGATED UNDER ANY CIRCUMSTANCES TO THIS OFFICER AS IS NECESSARY IN EACH PARTICULAR CASE.
5. The Safety Officer will notify the executive of the battery when it is safe to fire by calling "safe to fire", as soon as he has assured himself that such is the case.
6. THE PRACTICE OF ASSUMING SAFETY FOR DIRECTION BY THE DEFLECTION READING ONLY IS DANGEROUS.
7. In case a command is received at the battery requiring fire outside of the prescribed safety limits, suspend fire and notify the instructor. DO NOT FIRE UNLESS THE SAFETY CARD SPECIFICALLY AUTHORIZED THE INSTRUCTOR TO MODIFY THE PRESCRIBED LIMITS.

Reverse side of safety card



PERIMETERS in PARAGRAPHS



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

By Col. Conrad H. Lanza

THE WAR IN ITALY (November 21 to December 20, 1943)

At the beginning of the period the 15th Army Group under General Sir Harold R. L. G. Alexander was holding a line across the Italian peninsula as follows:

Garigliano River (with enemy bridgehead on the south side at Rocca d'Evandro)—Calabritto (exc)—Mignano (exc)—Venafrò—Pozzilli—Filignano—boundary between Fifth Army and Eighth Army—Montaquila—Rocchetta—Castel San Vincenzo—Rionero—Castiglione—Atessa—Paglieta—Perano—Sangro River, with some enemy on the south side.

The German Tenth Army was holding a strong position with a mission of delaying an Allied advance northward.

Troops in line were:

Opposite our Fifth Army—5 divisions: 44th, 94th and 305th Infantry, 15th and 29th Armored Grenadier Divisions; opposite Eighth Army—4 divisions: 65th Infantry, 19th (or 90th) Armored Grenadier, 1st Parachute, 26th Panzer Divisions; in army reserve—2 divisions: 3rd Panzer, Hermann Goering Motorized Divisions; not located—2 divisions: 5th Mountain and 1 other; total—13 divisions.

Losses since last report—16th Panzer Division (changed station to Russia with 5th Mountain Division).

The Allied Fifth Army had the following troops, which is only a partial list:

British—one infantry and one armored division, plus 1 other.

American—3rd, 34th, 36th, 45th Infantry Divisions; one armored division and one airborne division.

Britain's Eighth Army included:

1st Canadian Division, New Zealand Division, Indian Division, an Italian Division, plus other divisions not identified.

In all, the Allies had about 18 divisions available. Their mission was to advance and, as a preliminary objective, to seize Rome.

The period has been characterized by a number of small actions, fought with great intensity but without any general engagement. The weather has been generally unfavorable, with much rain, and snow in the mountains.

On 24 November the British right commenced an operation to force a crossing of the Sangro River near its mouth, and to seize and hold the ridge line to the north separating the Sangro valley from that of the Moro River. The initial operation commenced on a very rainy day, with deep mud everywhere. The front of the attack was about 5½ miles. Strong artillery and air support were given, and the troops advanced about 2 miles to beyond the Sangro. The battle was renewed on the 26th and 28th. On the 29th the artillery preparation and air support were increased, and the ridge which was the objective was captured in part. The net advance was about 6 miles in as many days. The enemy had strong defenses in this area. For the first time the Allies encountered wire, and this proved a serious obstacle; the enemy has now had time to bring in usual fortification accessories, and has strengthened his entire front with this materiel. The British advance cost serious casualties

but the number has not been made public. At the conclusion of this battle on 30 November the Allied estimate, included in the daily official communique, was that the Germans were "in full retreat." Reinforcements from north Italy were stated as being brought up. Subsequent events indicate that this estimate was premature. The Germans were not in retreat, and there has been no verification as to the reinforcements.

As this battle ended the Fifth Army was just starting another whose objective was the capture of the Mount Camino, south and southwest from Mignano and east of the Garigliano River (which in this section is sometimes known as the Liri). This mountain mass consists of about 15 peaks about 10 miles long and half that in depth. The upper parts, about 2,000 to 2,500 feet high, are mostly barren rock. They contain caves which had been developed by the enemy into defense posts. These mountains had been previously captured by the Allies about 10 November, but then lost due to the enemy's artillery fire; troops could not dig into the rock, and suffered such heavy casualties that they had been withdrawn. The enemy had thereupon reoccupied and refortified the position. Ever since the Allies lost this terrain their artillery had day and night shelled the enemy who had taken the ground from them. At the end of November it was believed that the enemy had been sufficiently neutralized as to warrant a new Allied attack. This was ordered for 2 December.

On 1 December planes from all Allied air bases in Italy kept up a non-stop bombing and strafing of the objective. At 2200 hours the British made a night attack toward Calabritto, which place they occupied next day. This was a preliminary move to secure a good line of departure for the main attack. During the 2nd the air force



Situation about the start of this period.

continued to bomb the mountains heavily. The weather was perfect, and results appeared to be satisfactory.

At 1730 hours the artillery preparation started and continued all night until dawn next morning. The artillery plan was for 5 minutes to mass fire successively on indicated targets, at the rate of 1,000 shells a minute on a front and depth of 300 yards. This was designated as a terror concentration. A detailed report on the results has not been obtained.

Early on 3 December the infantry advanced, Americans on the right and British on the left. Rain poured down. Opposition was found to be light. The Americans occupied two peaks (Mounts Difensa and Maggiore), and the British Monastery Hill, so called because there was a monastery just below its summit. In the afternoon the British were forced off the summit by the enemy's artillery, and they withdrew to the monastery. As this was set on fire by enemy shells it had to be evacuated. The enemy then reoccupied the upper part of the hill.

Fighting on these hills was made difficult by the rain which converted the ground into mud. In places this reached over the tops of the men's boots. It was slippery, and on steep slopes guy ropes were needed. It made supply very hard. Meals and ammunition had to be forwarded by men carrying packs. As there was little cover this had to be done at night, when it was hard to find the way. Except for rain there was no water in the hills, so drinking water had to be carried forward. One man could carry 5 gallons of water, one box of infantry ammunition, or about 40 pounds of food in containers. Wounded could be removed only at night. Men who fell had to remain where they were until darkness; then they could not be found easily. On account of the slippery slopes it required three or four men to carry off one wounded man.

Under these conditions the advance was slow. The initial objectives having been in part taken on the 3rd, further advances were made on the 4th, 5th, and 6th. Some Germans who were in caves were bypassed unintentionally, and then came out at appropriate times to snipe. On the 6th a German counterattack recaptured one peak. Counterattacks on the 7th made only slight gains. The enemy then abandoned further defense of the mountain mass, and it was finally occupied by the Allies on 9 December. This was the most important achievement of the Fifth Army during the period reported on.

During the night of 2-3 December a German air raid was made on

Bari harbor. The Germans claimed to have sunk 4 ships and to have damaged 9 others. Damage appears, however, to have been greater. Among the ships in the harbor were 2 ammunition ships, both of which were hit and exploded, scattering fire and destruction throughout the harbor. This made a great conflagration. In all, about 17 ships were badly damaged or destroyed, while the casualties exceeded 1,000. About half of these were Italian labor details.

On 6 December the first Italian troops entered line near Mignano. They made their first attack on the 8th, the objective being a height. A frontal attack was accompanied by a flank attack. Italian and Allied artillery fired a preparation. There was mist, so the artillery had no observation. After the Italian infantry jumped off they lost contact with their artillery and failed to receive support as needed. Why forward observers did not secure fire as required has not been explained. In spite of these conditions, the Italians nearly reached their objective. They then received severe machine gun and mortar fire, which immobilized them. Perhaps if their own artillery had come to their help they might have succeeded. But they received no help, and the German artillery brought an avalanche of shells down on them. It was a bad repulse.

A few days later French troops entered line in the same sector. These are African Berbers from Morocco and Algeria, with French officers. They have not as yet been in a serious engagement, but in minor fighting have given a good account of themselves. The history of these troops is such that they can be marked as first class.

Following the seizure of the ridge north of the Sangro the British Eighth Army made a second effort to advance beyond to the line Orsogna—Ortona. On 6 December on a 16 mile front, the New Zealand, Indian, and Canadian Divisions (in order from west to east) each attacked. The two left divisions were stopped by the enemy's artillery; the right division advanced to just short of Ortona.

The British brought up their armored division and renewed the attack on the 9th. This battle has continued from that date to include 20 December. Orsogna was captured, but was lost next day to a German counterattack. Ortona was entered, and was also later lost to the enemy. Between these two points which are joined by a road, the British are in general over the road. But the two ends remain in enemy possession. Notwithstanding the rough ground both sides are using a limited amount of armor. All accounts agree that enemy resistance is obstinate.

After capturing the mountain mass around Mount Camino, the Fifth Army occupied the enemy bridgehead south of the Garigliano at Rocca d'Evandro. On 16 December another limited attack was made against the mountains northeast of Mignano. It was a bright sunny day. The artillery preparation started at 1000 hours and continued until noon. For the first time in this sector, tanks then advanced toward the village of San Pietro Infine. Italian troops advanced on the right of the Americans. The enemy strongly defended San Pietro Infine throughout all that day and the 17th. After dark a German counterattack was delivered, under cover of which the German garrison at San Pietro Infine was withdrawn. Allied patrols found the town abandoned that evening, but it was not officially occupied until the 18th. This was a very hard fight. It resulted in the capture of Mignano, which had been previously abandoned by the enemy as untenable.

At the end of the period the line was:

Garigliano River—Mt. Camino mountain mass—San Pietro Infine—Venafro—Pozzilli—Filignano—Lagone—Cerasuolo—Alfedena—San Angelo del Pesco—Casoli—Orsogna (exc.)—Ortona (exc.).

Advances during the period were:

On the left, along the Garigliano, nothing; in the center, among the mountains, 6 miles; on the right, along the Adriatic coast, 12 miles.



Toward the end of this period, two columns of the Fifth Army were driving upon Cassino. The first (3) had moved beyond Mignano to capture Mount Lungo and envelop San Pietro Infine on three sides. The other (2) took Lagone. The Eighth Army (1) battled for the approaches to Ortona and Orsogna in a drive toward Chieti and Pescara. From Pescara a lateral road to Rome runs through Avezzano.

THE WAR IN RUSSIA (November 21 to December 20, 1943)

General activity during this period has continued high. The Russians have been on the offensive in the north and south, and the Germans in the center. Compared with advances made in earlier months of the year there has been a great reduction, average gains seldom exceeding 30 miles a month and usually less. This is because the German retreat has ended. They have been fighting savagely to prevent further Russian advances, and in some places have sought to drive the Russians back.

The active front from the vicinity of Nevel to the Black Sea is a thousand miles long. On account of its length and the campaigns which are being fought separately in this area, the front will be considered in sectors:

North	Novosokolniki to Gomel (exc)
Central	Gomel (inc) to Cherkasi (exc)
South	Cherkasi (inc) to the Black Sea
Detached Areas	those not included above

PLANS

Russian

Russia's policy has been to continue general offensives. It was believed that a decisive success was promised only by simultaneous attacks in several sectors, all on a broad front. It was hoped that in this way the enemy's reserves would be tied up to an extent that would lead to their exhaustion. If a break through the German lines were then achieved, and no reserves remained, the end of the war would be in sight. Some of the Russian offensives were feints; others were tentative, to be followed up only if initial operations were encouraging; others were intended to go deep into the enemy's lines. GHQ was responsible for selecting the sectors and dates of offensives.

Preparations have been made for continuing the war on an offensive basis throughout this winter of 1943-1944. It is to be on a larger scale than ever before. In view of the successes obtained in the two preceding winters, the Russians believe that winter favors them, and that it is to their advantage to continue to utilize that season as much as possible. Winter is believed to be particularly convenient for outflanking and encircling the enemy. Complete winter equipment has been issued, and the transportation has been painted white.

German

Germany's mission has been to exhaust the Russians through attrition, by inducing them to attack where losses would proportionately exceed those of Germany and her allies. Loss of territory, while far from being negligible, was a secondary consideration.

New German forces (including complete divisions raised in accordance with the reorganization ordered last February) have arrived at the front. According to a Berlin report still additional divisions are being raised in the Baltic States.

STRENGTHS OF OPPOSING FORCES

According to Russian reports the Axis has about 250 divisions in Russia. Of these 12 are from Finland and a few, probably not over 10, are from Hungary and Romania. Croatia and Slavonia are represented in the Air Force. The Spanish Blue Division which had been in the Leningrad area, has been withdrawn and is not to be replaced.

There is no report as to the number of divisions being raised in the Baltic States. Their population is sufficient to maintain at least 20 divisions. The number of divisions in the German General Reserve is unknown—unconfirmed reports give it as anywhere between nothing and 40 divisions.

The Russian force has not been made public. Considering the number of divisions which Russia from time to time announces in General Orders as worthy of citation, and considering the fronts these forces had, it would seem that the Russians have at least 320 divisions in line. There is no information as to how many may be in reserve.

NORTH SECTOR

At the beginning of the period the line was:

Velikie Luki (Russian)—Nevel (R)—Litvinova (Russian)—Surazh (R)—Liozno (R)—Krasnoe (R)—Gorki (?)—Chausy (German)—Propoisk (G)—Sozh River.

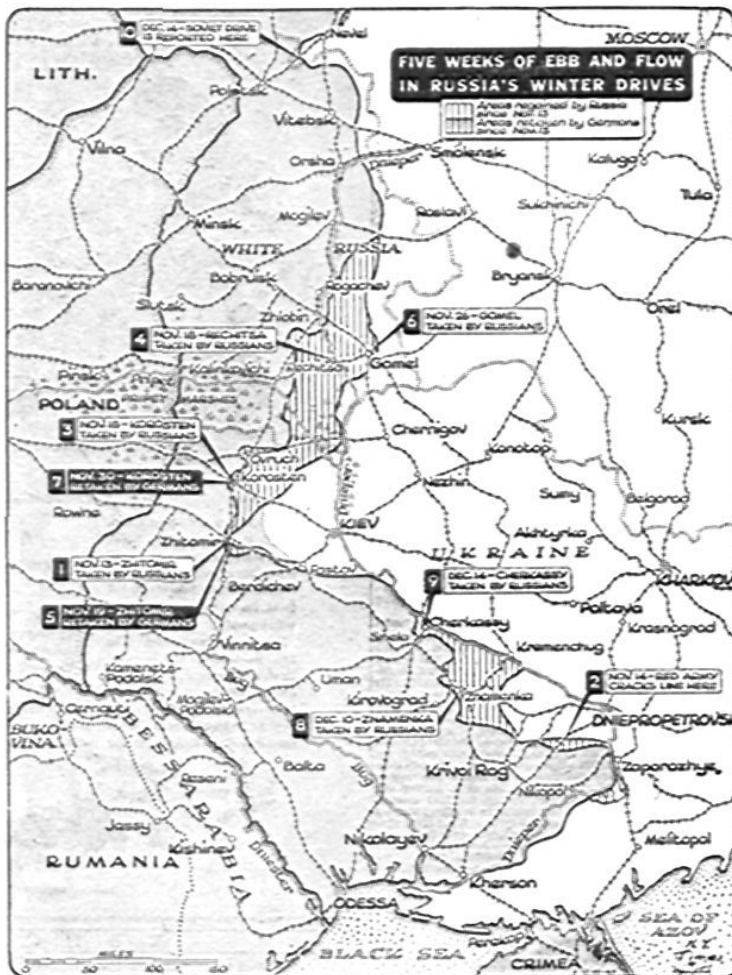
Nevel Campaign

On 21 November the Russians attacked northward from Nevel toward Novosokolniki, and also westward from just east from Vitebsk. This area is forest covered, interspersed with swamps, marshes, and lakes. These were not yet frozen over solidly and thus were obstacles to military movements. The terrain was a series of defiles between the various water and swamp regions. Both Russian attacks made slight gains.

On 22 and 23 November the Germans counterattacked southward from Novosokolniki and, in spite of the arrival of Russian armor, pushed the Russians back. On 24 November the Germans on renewing their attack were met by a new strong Russian armored force. A severe tank battle in a forest followed. After a hard fight neither side was able to advance.

The Germans sent for air support. On the 25th, dive bombers heavily attacked the Russians. On the ground grenadier troops (infantry in armored trucks) attacked with the aid of their artillery. The Germans made a gain, and continued for a short distance on the following day.

But not gaining much in this direction, the Germans shifted their offensive. On the 27th they opened a new attack southeast of Nevel, which on that and the succeeding day had minor success. A new shift was made on the 29th, when an offensive was launched southeast from Nevel. This was continued to include 1 December, and as before made slight gains. The German effort whittled away the



Nevel salient at a very slow rate, as the Russians presented a strong resistance; the terrain favors the defense, on account of the numerous water surfaces and thick forests.

On 3 December the Russians counterattacked on the west side of Nevel, but they too failed to gain. German attacks were renewed on 8 and 10 December, this time on the south side of Nevel; nothing important was gained. The Germans, however, secured identifications and information relating to a major Russian offensive in preparation.

This Russian operation started on 13 December, on the south side of Nevel, where the Germans had just attacked. A newly formed Baltic Army Group, under General Bagramyan, attacked on a front of 50 miles. Only six infantry and two armored divisions were used. As a Russian infantry division seldom attacks on a front exceeding two miles, it seems that this offensive was limited to certain passages between water areas. A very strong artillery preparation preceded it. Then the tanks—new machines of a heavy model—went forward. They secured several penetrations but, being intercepted by German forces in waiting, could exploit their advance only locally. This attack was continued on the 14th and 15th and resulted in a maximum gain of 22 miles along the railroad from Nevel to Vitebsk.

No serious fighting occurred on the 16th, while the Russians shifted forces to attack in a new direction. Having interior lines of communication, the rearrangement of the front was quickly effected. On the 17th a new Russian attack was launched on the northwest, west, and southwest sides of Nevel. The west and southwest attacks appear to have been stopped, and only the northwest attack was continued next day. It did not make any substantial gain.

Again the location of the attack was shifted. On 19 December a new attack was made from east of Vitebsk, directly toward that German stronghold. A terrific artillery preparation was fired, after which tank forces dashed forward. In spite of hard fighting only small dents were made in the German lines. At dark the battle continued uninterruptedly by using fresh troops who in turn were relieved at dawn. In this way the battle went on continuously day and night. As this account closes this particular attack was still going on, without having secured any special gain.

Also on the 19th an attack was launched against Vitebsk from the north side, and continued in coordination with the east attack day and night. In this area the Russian tanks penetrated the German lines. Their routes of advance were limited by the terrain, and they were intercepted and overwhelmed. Infantry which closely followed the tanks were able to make a substantial advance.

The results of this long battle have been that the Russians have substantially widened the Nevel salient on the south side.

Propoisk Campaign

On 22 November the Russians launched a major attack, the center of which was at the junction of the Sozh and Pronya rivers, with its axis due west through Propoisk. The front was 38 miles. It caught the Germans by surprise, and on the first day tanks broke through and reached the enemy's rear areas.

German GHQ realized the seriousness of the situation. There were no sufficient reserves at hand. They were immediately ordered in. Due to bad condition of roads, troops could cover but limited distances per day, and time was needed to bring them into position. Orders were therefore issued to abandon the Sozh River line, without risking having the troops there lost before greatly superior numbers. They were to reassemble in rear of the Dnepr River, along which defenses had already been prepared. Front line troops fell back that same night.

Fighting only delaying actions and utilizing demolitions and mines to prevent Russian armor and vehicles from using the few roads in the country, the withdrawal was completed within 36 hours. The Russians reached the Dnepr's east bank at Selets on the 25th. They were not prepared to attack the new German line until artillery and ammunition could be brought forward. In the meantime, the gain to date was exploited by expanding the attack front toward the south. Without much difficulty the area between the Sozh and Dnepr rivers was cleared.

The German reserves arrived only at the end of the month. They

made their first counterattack on 4 December, but it was not pushed. Neither did the Russians renew their attack.

Krasnoe Campaign

On 30 November the Russians launched a strong offensive on a front of 40 miles astride the Smolensk—Orsha highway, using 22 infantry and 3 tank divisions. It was continued far into the night, but not all night, and was renewed the next day in like manner. Notwithstanding the large forces used, as in previous efforts in this sector no appreciable gains were made.

On the night 1-2 December some of the Russian attack divisions were relieved from line and replaced by fresh divisions. The front was extended 10 miles to a total of 50 miles and the divisions in line were increased to 31. Early on the 2nd, during a heavy snow storm the attack was renewed. Due to the weather there was no air support and the artillery had no observation. On the north side of the Smolensk—Orsha highway Russian armor broke through. This was intercepted by German armor, and was reported as completely destroyed. The Russian attack was thereupon discontinued.

On 8 December a German local attack was made to rectify the line and to secure identifications. The information secured disclosed that the Russians had 34 infantry divisions and 6 tank brigades (equivalent to 3 divisions) in the sector, covering a front of slightly over 50 miles. This gives a division to each 1½ miles of front, normal for Russian offensives.

At the end of the period the line for the North Sector was:

Velikie Luki (Russian)—Nevel (R)—Litvinova (R)—Gorodok (German)—Koslovitchi (G)—Surazh (R)—Liozno (R)—Krasnoe (R)—Gorki (?)—Dovsk (R)—Rogachev (G)—Zhlobin (G).

The maximum gain was by the Russians in the Propoisk offensive—35 miles.

CENTER SECTOR

On 21 November the line was:

Gomel (G)—Rechitsa (R)—Khoyniki (G)—Dernovitchi (G)—Ovruch (R)—Korosten (R)—Turchinka (R)—Chernyakhov (R)—Korostyshev (?)—Fastov (R)—Stugna River—Dnepr River to Cherkasi, with Russian bridgehead south from Peryaslav.

Gomel Campaign

Gomel is a city of 145,000 people. It lay in a salient, with its line of communications extending to Zhlobin. The Russians were engaged in an attempt to reduce Gomel, with main efforts on the northeast and southwest sides. General Konstantin K. Rokossovsky was in command, and had 24 divisions available.

When the Propoisk offensive started on 22 November a strong attack was also delivered on the southwest side of Gomel. The Germans held this to small gains, but the forced and immediate, withdrawal of their line along the Sozh River uncovered the north flank of Gomel and it was realized that under the new circumstances this city could not be held. The troops were ordered back to the Dnepr River line. Withdrawal commenced promptly, but Gomel was not evacuated until the night of 24-25 November. Russian attacks in the meantime were contained. Russian guerrillas organized a number of road blocks in rear of the Germans. Roads were boggy, and Rokossovsky's troops attacked rear guards continuously. This made a difficult situation. Present reports indicate that the Germans solved this problem and withdrew their troops without special loss other than of depots at Gomel.

Seeing that the enemy had escaped what had been hoped would be a "trap," the Russians shifted the weight of their offensive to the sector between the Berezina and Pripjat Rivers. This got started on 29 November, but quickly ran into strong German forces. It appears that the German reserves ordered to oppose the Russian Propoisk offensive had not been ordered to that sector. Instead they were being assembled south of the Berezina River for a counteroffensive to be delivered at a later date, around the south flank of the attacking Russians. Such an offensive would have its own south flank covered by the Pinsk Marshes. The Russian attack ran head on into so much of the German reserves as had already arrived. It failed to gain.

Realizing that the Germans were strong in the sector, the Russians shifted their offensive to a direct attack against the strongholds of Rogachev and Zhlobin. A strong artillery preparation was followed by an attack by substantial armored forces. The Germans had expected this attack, and were ready for it. Their artillery fire came down in tremendous volume and stopped all Russian attacks except one. This got through the front but was intercepted. The Russians managed to fight their way out and back to their own lines with a loss of 40 tanks. A renewal of the attack next day had still less success: German artillery fire was everywhere too strong.

On 19 December the German counteroffensive south of the Berezina started off. By the 20th it had made a slight advance.

Kiev Campaign

At the beginning of the period a German counteroffensive had developed which had recaptured Zhitomir on 19 November. The German commander in this area is Field Marshal Fritz Erich von Mannstein; the Russian, General Nikolai F. Vatutin. The local commanders of troops were Colonel General Hoth on the German side and General Konstantine Moshalenko on the Russian.

The Russian plan was to withhold their armor in rear areas until the German armor had been worn out in attacks. Instead of a solid line of defense, strong points were organized on a checker-board system. Villages and woods lent themselves to this purpose; these were prepared for defense with all-around fire. The intervals were open. If the enemy penetrated he received fire from all directions, and was forced to proceed to reducing the strong points. When his armor had been substantially reduced, and his infantry worn out, the Russian armor was to counterattack.

On 21 November the Germans attacked northeastwardly from Zhitomir. They ran into mine fields covered by fire from the strong points. Taking no chances, the Germans with caution cleared the minefields and made but a slight advance. This encouraged the Russians to believe that the Germans were already worn out. Next day they counterattacked early. A division with two regiments in line, preceded by armor, went through the German front. This force fell into a nest of trouble. It was attacked from both banks and from the front. Other Germans closed in behind them. The Russian force was lost. Thereupon the Germans attacked for another short gain. Recollecting that the German mission was to exhaust the Russians by attrition, from their point of view this could sometimes be better accomplished by repelling a hostile attack rather than by attacking themselves.

On 23 November the Germans, while demonstrating over the entire front, made only two attacks, both under a narrow front of about 2 miles. For these the artillery punched gaps in the enemy's line. Each attack was led by a Panzer Division with about 100 tanks present. In rear was an infantry division in armored trucks, with flanks protected by self-propelled artillery and anti-tank troops. The advance was directed through the intervals between the Russian strong points. Tanks would cautiously approach these. If it appeared that resistance was still to be expected from them, the advance was stopped. Forward observers then directed artillery fire on the strong points, and the airforce pounded the place. Then a new reconnaissance was made. In some cases seven attempts to advance were made before the Germans could safely pass by. In this method of attack the advance was necessarily slow, but sure. In some cases the Russians, after being shelled and pounded, brought up their armor, and with the help of their Stormovik planes withdrew the garrisons without excessive loss. The two German attacks entered the Russian defense zone, then circled toward each other. They captured or destroyed the greater part of a division, with 16 batteries and 30 tanks.

General Vatutin in view of this event made a new estimate of the situation. He decided that the enemy's plan was to turn his left. He issued orders to reinforce that flank strongly. A powerful force of artillery was sent there, together with numerous light mortars. New and extensive mine fields were to be laid. Tanks were dug into the ground, with flash defilade, to cover the likely paths of approach of enemy machines. All this was accomplished during the ensuing night, which was one of feverish activity.

At dawn on the 24th the Germans attacked between Chernyakhov and Brusilov. The ground was wet, sloppy, and difficult for motor vehicles. Mist over the terrain prevented observation except for limited

distances. The Germans fired an artillery preparation with maximum concentration on a front of about 3 miles. Then a Panzer Division led the attack, followed by two infantry divisions in armored trucks with usual flank protection. Each division had but two regiments. The battle lasted all day and did not extend beyond a small patch of ground. No attempt was made to push in. When resistance was met from strong points the Germans halted until their artillery and air forces had forced the enemy out, or had annihilated him. The final result was a small gain of terrain for the Germans.

This ended the 4-day battle, which had been as severe as any in Russia. The Germans claimed that the suspension of their offensive was due to mud, the Russians that it was forced by excessive and enormous losses. The Germans report that the Russians lost 199 tanks and 554 guns. There is no Russian report as to German losses.

On 27 November the Russians conducted a series of attacks. These were really large size raids to find out what the enemy intended to do. They secured identification showing that Germany had in line 8 Panzer divisions, including the 16th (recently arrived from Italy)* and 1 each just arrived from Norway and Greece. The Hungarian VIII Corps was also located in this area. This is the first report of Hungarian troops in line for some time.

November 28th the Germans attacked near Brusilov with one-half Panzer Division (about 50 tanks) followed by an infantry division. The Russians report that they were driven back after losing 28 tanks; the Germans claim to have made slight gains. This attack appears to have been a feint to distract attention from a major attack on the opposite flank.

On the 29th the Germans attacked along the entire front from opposite Korosten and Chernyakhov to Brusilov. The major effort was on their left of the 75-mile battle front. The German left made good progress, and on 30 November it entered Korosten. Heavy rain set in. Temporarily the battle died down.

It was not renewed until 6 December, when it recommenced on the front of some 70 miles with the main attack in the center, opposite Chernyakhov. This pushed by slow, steady advances, which continued on into the night and the next day. The Germans entered Chernyakhov on the 7th. German artillery fire and air bombing were so strong that the Russians abandoned a number of strong points which could not have held out. The Germans are reported as losing 84 tanks during these two days.

This German offensive continued along in the standard manner to include 11 December, making slow advances. During the night 8-9 December, when the battle was three days old, fresh panzer and infantry divisions relieved the front line troops and fought during the remaining three days. By this date the advance was approaching Malin and Radomysl, having made 23 miles in 6 days. The advance was not spectacular; it was strictly limited to a methodical reduction of successive enemy lines of defense. Panzer and infantry troops were saved as much as possible, the artillery and air force being relied on for destroying the enemy and pounding his centers of resistance into submission.

Russian counterattacks on the 10th had failed. They failed again on the 12th, the German artillery being strong everywhere.

The Russians now believed that the main German effort would be directed against their right near Malin. Another night of extraordinary activity followed while reserves were moved northward. A deep defensive zone was planned surrounding Malin. The engineers were assigned large labor forces to complete the work quickly.

On 13 December the German attack was delivered, not toward Malin but against Radomysl. The Russians lost the high ground west and southwest of there. They therefore abandoned the place on the 14th as untenable.

For the week ending on 13 December the Germans claim that the Russian losses in this battle amounted to 11,000 killed, 4,000 prisoners, 254 tanks, and 927 guns. The Russians report only the destruction of German tanks, stated to have been 747.

A snow storm interrupted the fighting for one day, snow being so thick that it was impracticable to navigate tanks. On 15 December a German attack toward Malin (by the usual panzer division followed

*Italian reports show the loss of the 16th Armored Grenadiers (not Panzer Division) from the German Tenth Army occurred prior to 1 December. It was replaced by a Mountain Division reported as coming from Russia.

by an infantry division) encountered a similar Russian force, and a very hot and fast meeting engagement occurred. It lasted only two hours, but was renewed in the afternoon. It left the lines practically unchanged. A local German attack near Korosten was made on the 19th, gaining a short advance.

This battle is still continuing. During the month under discussion the maximum advance made by the Germans was 26 miles.

For the Central Sector the line on 20 December was:

Zhlobin (G)—Rechitsa (R)—Vasilevichi (R)—Khoyniki (R)—Dernovitchi (R)—Ovruch (R)—Korosten (G)—Chepovitchi (R)—Malin (R)—Radomysl (G)—Kotcherevo (R)—Brusilov (R)—Fastov (R)—Stugna River—Dnepr River to Cherkasi.

SOUTH SECTOR

On 21 November the line was:

Russian bridgehead northwest from Cherkasi on west bank of the Dnepr River—Dnepr River to Kremenchug (R)—Syokoie (R)—Sheltoic (R)—Piatikhatki (R)—Miloradovka (R)—Alexandrovka (G)—Nikolaifeld (G)—Dnepr River to Black Sea with German bridgeheads opposite Nikopol and Kherson.

On the 23rd, by a local attack preceded by a strong artillery preparation, the Russians captured Alexandrovka. During the following night the Germans encircled this force, and in a counterattack next day completely destroyed it. This attack may have been a Russian feint.

November 26th the Russians started a general offensive around their Cherkasi bridgehead and continued it on the succeeding days until, by the 29th, they had made sizeable gains. On the 30th the Germans counterattacked, using panzer troops followed by infantry. This recovered part of the lost ground and with it the garrisons of some strong points. In the afternoon the Russians came back and surrounded a German infantry regiment which had gone too far forward. This regiment set up a hedgehog defense and radioed for help. It held out until next day when German help extricated it. Due to heavy rains this battle temporarily died down.

December 3d the Russians shifted the location of the attack. From the Kremenchug area an offensive was launched on a 45-mile front, perpendicular to the Dnepr River and with its right on the river. This made considerable gains: on the first day it reached the line Koristovka—Novogorogievsk. The Russians around Cherkasi, by no means discouraged, also renewed their attack. This offensive stopped at the end of the day.

On 5 December the Russians again shifted. From the line Koristovka—Sheltoic—Piatikhatki an offensive was launched in a westward direction. A powerful artillery preparation was fired. Progress was made. Keeping on, a deep dent and gap were made in the German lines during the 6th. Armored troops then broke through and reached the vicinity of Yelisavetsgradka on the railroad northwest from Znamenka. Other troops reached a line only 2 miles from Znamenka.

At the end of the first day the German High Command estimated that the Russian force in the sector was considerably superior in strength to anything the Germans could muster. They decided to follow the same plan as at Propoisk: they ordered a withdrawal of the Dnepr River line held between Cherkasi and Kremenchug (less Cherkasi) toward the southwest. The movement commenced that night and was completed during the night of 6-7 December. On the 7th Russian combat patrols from Cherkasi met others coming from Kremenchug. Major Russian forces did not at once move into this area, fearing that there might be a stratagem.

The Russians temporarily lost Yelisavetsgradka, but retook it on 8 December during a heavy snow fall. Next day the attack was extended toward the southwest and made a 10-mile gain to Petrovo and Znamenka. As the latter had been a German railhead quite a considerable quantity of stores were captured here.

The Germans held Cherkasi until the night of 13-14 December. It was a road center, and its occupation was of value as hindering Russian service of supplies. The Russians attacked daily. Using stone houses as fortified points, posting snipers in cellars and attics, and making liberal use of mines and demolitions, the Germans fought back. The Russians entered the northwest part of the city on the 12th but were not able to occupy the remainder until two days later.

In the meantime the Russians had sought to take Chigirin. This area contains many swamps which were impracticable to cross until the

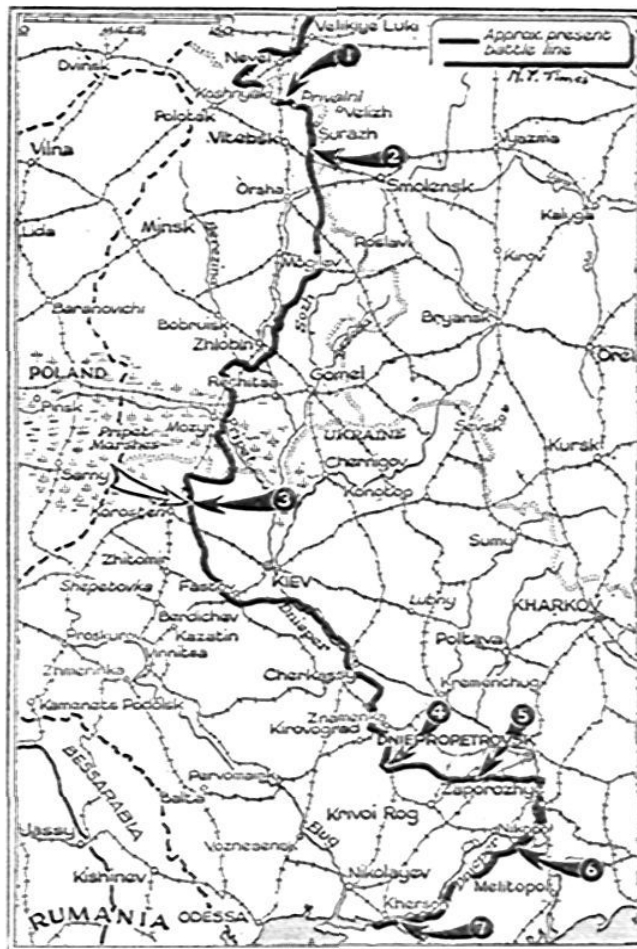
8th, when cold weather froze them over. An envelopment of Chigirin from the south and southwest was undertaken; it resulted in a stiff battle on sand hills just outside the town. That night the Germans withdrew. By the 14th, when Cherkasi fell, the Russians had advanced 20 miles from Chigirin to Guschevka.

This ended the fighting in the south sector for the period under consideration. At the end of the period the German reserves ordered to this area following the decision of 5 December, were nearly ready to initiate a counteroffensive. During the period the Russians have secured complete possession of the Dnepr River from Cherkasi to the vicinity of Neuenberg. The line, then, was:

Cherkasi (R)—Smela (G)—Medvedovka (R)—Yelisavetsgradka (R)—Znamenka (R)—Medorovo (R)—Navaya Praga (R)—Petrovo (R)—Piatikhatki (R)—Miloradovka (R)—Alexandrovka (R)—Neuenberg (?)—Dnepr River to Black Sea.

The maximum advance in the area was by the Russians, for 47 miles.

Outside of the active sector, the Russians repeatedly attacked the German bridgeheads at Nikopol and Kherson. At least 1 or 2 armored divisions and as many as 10 infantry divisions were employed in a single attack. No results appear to have been obtained at Nikopol. At Kherson, the Germans on 20 December evacuated the bridgehead, explaining that the river having frozen over it could be crossed anywhere and the retention of the bridgehead was no longer necessary. The real reason was probably to secure troops for use to defend the Russian advance in the Cherkasi—Kremenchug areas.



As this period ends, continuing their push below Nevel, the Russians advanced to Koshnyaki and Privalni (1). In this same region they were reported by Berlin to be pressing east of Vitebsk (2). German thrusts were repelled in the Korosten area (3) and southeast of Kirovograd (4). Berlin declared the Red Army was attacking southwest of Dniepropetrovsk (5) and near Nikopol (6). The enemy acknowledged having abandoned his bridgehead opposite Kherson (7).

DETACHED AREAS

At the beginning of the period the Russians had two expeditionary forces at the east end of the Crimea; one was northwest of Kerch, the other to its south. By a succession of limited attacks, Romanian troops on 7 December completed the destruction of the south force. The north force remains, but is cooped up in a small peninsula.

There has been no serious attempt to attack the Crimea by the Perekop isthmus, which is the only land approach.

On 6 December Russia reported that German and Finn barbarians had been shelling dwellings in Leningrad for months, but that in the preceding three weeks this had greatly increased and was causing the deaths of numerous civilians. It was stated that there were no military objectives in Leningrad and consequently no excuse for shelling the city.

The German and Finn lines are respectively about 10 and 30 miles from the center of Leningrad. It would take considerable ammunition for the continuous shelling reported. It does not seem probable that dwellings were the objectives. The firing may have been of an experimental nature, in testing new guns or ammunition. It may be in preparation for a German offensive to be launched during the winter season. The south side of Leningrad has numerous swamps which are impracticable during the autumn; in winter this area is frozen, and then becomes very good terrain for military movements.

COMMENTS

1. During the month both sides have at various places and times exercised the initiative. The Germans have not staged as large offensives as the Russians. They are staging offensives of a different nature.

Russian offensives are of the same type as those in use for some time: strong artillery preparations followed by massed armor and infantry attacks, seeking to break through. Except locally, no breakthroughs have succeeded this year. German offensives are characterized by a saving of armor and infantry, and substituting artillery and air forces for delivering the main blow. This method may not be entirely choice, although this is

uncertain. It may be due to the smaller force of the Germans, which makes it necessary to conserve man power. The Russians with their larger population can disregard losses better than the Germans.

2. Little mention has been made of air activity during the period of this review. This is due to the autumn and early winter clouds, rain, and snow, which have reduced activity in the air.

3. There has been a marked tendency on both sides not to persist in offensives which did not start off well—a new offensive elsewhere was substituted. This requires previous planning by headquarters staffs in order that an alternative plan, or several of them, may be ready on short notice.

4. The best defense can not prevent an occasional breakthrough of enemy armor. If such enemy armor reaches rear areas it may result in catastrophe. It is now well understood that a second line must be held to confine any hostile armor to bounds. The problem of ridding oneself of hostile armor then becomes a problem of intercepting the enemy somewhere between the 1st and 2nd lines. Both sides have reached a stage of considerable perfection in solving this kind of problem. This makes it dangerous for armor to advance far into enemy areas, and a good deal of it has been lost in this way.

5. Bad weather which prevents air observation and reduces ground observation favors the defense, for if the attack breaks into the enemy's lines the defenders can keep track of the situation better than the attackers can, due to control of local lines of communication and observation posts.

6. Reports indicate that this winter the German army is well equipped, and that the Russians will have no advantage in this regard. A winter offensive may be made by the Germans.

7. Day and night fighting by waves of attackers which relieve one another at stated intervals in order to keep the attack going continuously, are standard practice. Defenders who can not do likewise are almost sure to be worn out and defeated.

8. The quantity of German artillery per unit of front, or per division, has been increased. It is not, however, known whether it equals, is less than, or is greater than, the Russian artillery strengths. Russian forces are now being stopped primarily by artillery fire. Correspondingly larger quantities of ammunition are also being provided.

THE WAR AGAINST JAPAN (November 22 to December 20, 1943)

SOUTHEAST ASIA

There has been no material change in the situation. The new Allied Southeast Asia Command is functioning, and the American and Royal Air Forces have been united into a single command. It is carrying on an aggressive bombing campaign over occupied Burma, with one distant raid to Bangkok, in Thailand. Principal objectives have been airfields and lines of communication.

On account of their scarcity, lines of communication are important along the Burma—India frontier. Mountains and rivers run north and south, parallel to the boundary. To invade Burma it will be necessary to cut across these, and for this purpose routes are extremely limited.

The south end of the frontier is in Arakan—a native state, part of Burma, but with people of a different race and language. This country is right on the coast. It is hemmed in on the inland side by the Yoma Mountains, which rise up to altitudes of 12,000 feet and are covered with forest and jungle. The width of the coastal strip varies from 90 miles at the north to 15 miles at the south end. This strip is criss-crossed by tidal streams, and contains numerous swamps and jungle. In its wider parts are lines of hills. This land is extremely hot, evil smelling, and chuck full of mosquitoes and other pests. There is considerable jungle patrol activity in this sector.

Further north are the Chin Hills, about 10,000 feet high. The Allies hold the crest and can look down into the Burma valleys.

Still further north is the Naga Hills District. Through this goes the new Ledo road. The line is on the Chindwin River, due west from Myitkyina. Chinese troops, trained and equipped by the United States, cover this front and the road construction gangs which are pushing the road eastward. Patrol activity is on both banks of the Chindwin River.

At the extreme north is the Kachin District. Contact with the enemy is near Sumprabum. This sector is covered by native Kachin troops under British leaders.

Transportation is the great problem. When it rains the roads are mud, when it is dry they are dust. They are always difficult. Motor transportation is used on main routes. On branch roads elephants, bullocks, and porters are used. Much dependence is placed on water transportation. Mules and donkeys have been tried but do not do well in this country.

NEW GUINEA

The attack of Australian troops against the Sattelberg, a short distance from Finschhafen, succeeded. The enemy withdrew after suffering some losses and has since been retiring along the coast, fighting delaying actions. This advance appears to have made about 20 miles in a month.

In the Madang vicinity other Australian troops have had occasional brushes with the enemy, with no substantial change in positions.

Allied bombing activity against Japanese-held territory continues. Ever-increasing tonnages of bombs are being dropped. Japanese air activity has declined. Their raids have been few, and have caused only slight damage.

Allied light naval forces are active along the coast. Their main objectives are enemy barges. Between naval and air forces, a large number of these barges are reported as destroyed.

NEW BRITAIN

A most intense bombing campaign of enemy airfields and ports was conducted during the first half of December, with special attention to Rabaul (believed to be the enemy's main post) and to Gasmata and Cape Gloucester. Lesser points were not neglected.

On 15 December a major expeditionary force of American troops was debarked at dawn at Arawe, on the southwest coast. An air and artillery preparation preceded the landing. The main force was practically unopposed (only 1 man was reported killed) and the beachhead was secured and has been subsequently developed. A Commando party was sent prior to the main landing to a peninsula



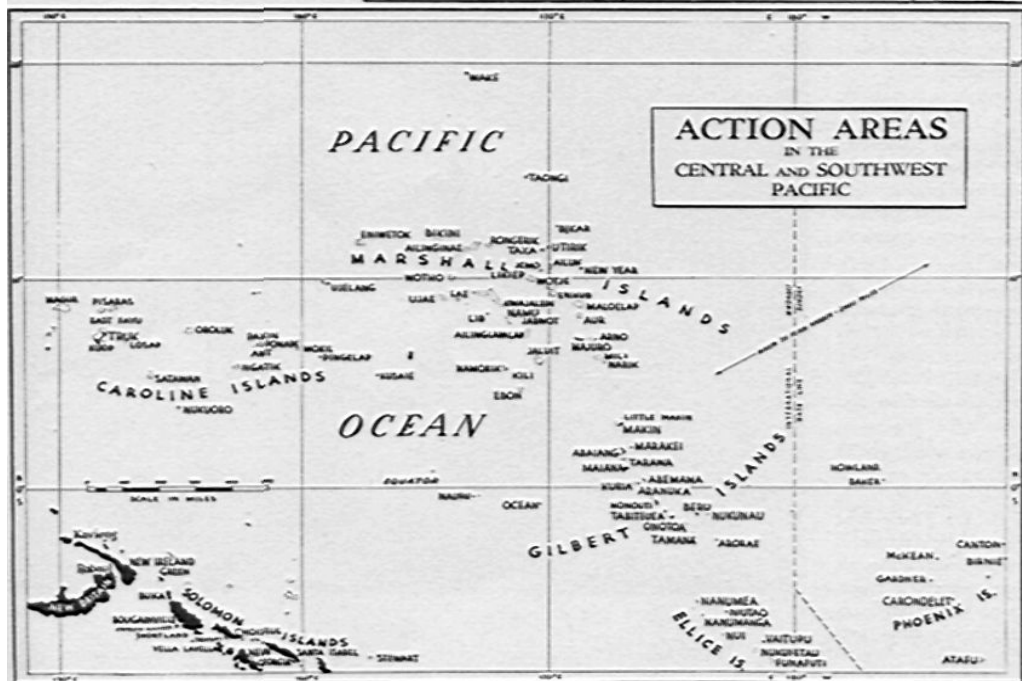
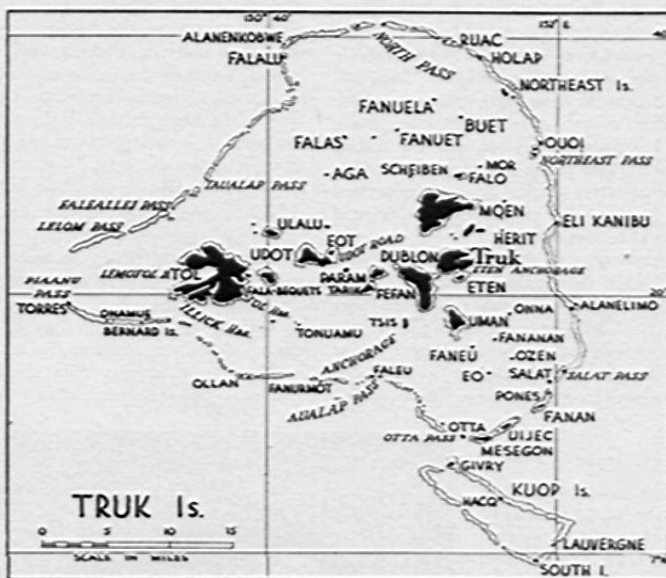
adjacent to the main beach. It happened to run head on into what appears to have been the only Japanese post in the vicinity, and was repulsed. The Japanese post was shortly after reduced by a detachment sent from the main body.

Arawe is 50 miles southeast of Cape Gloucester, 50 miles west of Gasmata, and 270 miles by land from Rabaul. In all cases the intervening country is jungle and mountains, with no roads and but few trails. It may take some time to advance from Arawe.

THE SOLOMON ISLANDS

Activity has been centered around Bougainville Island, where American Army troops and Marines had established a beachhead around Empress Augusta Bay. This has been consolidated and enlarged in all directions

After a great air and sea bombardment United States troops went ashore on New Britain, around Cape Merkus (1). Within five hours the beachhead had been consolidated and the troops were pushing toward Umlingolu. Tokyo said there had been sea engagements north of Finschhafen (2), but there was no Allied confirmation of this and it was announced we had not lost a ship or a plane. The local objective of the invasion is the stronghold of Rabaul (3) and a more distant objective is the naval base of Truk (inset). New Britain is shown at (A). To the east air attacks were made by Liberators in the Maloelap and Wotje atolls (B).





In peaceful times Tarawa's little harbor was calm and lovely.

by the combined action of ground, sea, and air forces. The Navy has shelled enemy positions near the coast, the air force has bombed enemy forward areas and—with heavy tonnages of bombs—his three bases:

Buka at the north end of the island, Buin-Faisi south end, Kieta on the east coast.

Empress Augusta Bay is not a populated district. As far as is known, no one ever lived there. In the spring (September to November) it rains daily during the daytime. The summer rains are due to start in December. Prior to this month the nights have been clear. The Japs use the darkness to infiltrate within the American lines. This is a serious danger, and Americans not on other duty are required to stay in their fox holes after dark. Anyone observed moving around outside is usually shot at. Heavy rains by day and Japs and mosquitoes by night, make life miserable.

The few roads or trails are quagmires, making it difficult to supply large forces any distance out. As a rule only two meals a day are supplied. The jungle is dense, reported much more so than that on Guadalcanal and New Georgia. Sunlight does not pierce the heavy foliage. Consequently men seldom have dry clothing. After a certain time this exhales a most disagreeable odor. It is then discarded and, if luck is good, may be replaced with new.

GILBERT ISLANDS

(Dates are the local dates, which are East Longitude Time)

On 21 November three Major Generals, all named Smith, led an amphibious expedition to the Gilbert Islands. The Commanding General was Holland McT. Smith of the Marine Corps. The commander of the 27th Division was Ralph Smith, and of the 2nd Marine Division, Julian C. Smith. The 27th Division attacked Makin Island, and the Marine Division, Tarawa. The latter was the administrative center of the Gilbert Islands during British occupation.

Makin was held by the enemy with 300 infantry, a few antiaircraft troops, and 300 Korean laborers. After being heavily shelled the 27th Division landed, and within a few hours had occupied the island. Its loss was 65 killed and 121 wounded. Except for some of the Koreans none of the enemy garrison survived.

Enemy resistance at Tarawa was more serious. It had a larger garrison. The attacking troops expected that these would be destroyed or neutralized by an air and artillery preparation prior to the landing. As it turned out, there were 3,000 Marines in the garrison plus 1,500 labor troops who took part in the defense.

Betio is a coral island of the Tarawa atoll, about 3 miles long from east to west and a mile wide in the center, its ends tapering off. In addition to a headquarters the enemy had an airfield. There was a wharf suitable for small vessels. The island is surrounded by reefs; the chart shows passages through them with at least 12 feet of water, which is more than landing craft need. No part of the island exceeds 12 feet above sea level. Coconut palms and grasses are the only vegetation.

The enemy had an 8" gun battery at the west end of the island. The beach was covered by concrete fortifications provided with machine guns and light cannon. Many of these were well camouflaged.

The Navy fired the artillery preparation just before dawn, when the air force, launched from aircraft carriers, heavily bombed the island. From the ships the island looked covered with flame and smoke. It appeared that there could be no serious opposition. The initial landing wave, put overboard in the darkness, was held on the line of departure until 0830 hours. The reason for holding it is not known—it may have been due to reports from air observers. During this time the air force further bombed the island. When the landing wave advanced, the island was quiet. A second landing wave was held with orders to advance after the first wave landed.

The first wave grounded on a reef about 500 yards offshore. Secretary Knox announced that an unexpected wind had reduced the expected depth over the reef. Just at this time the enemy opened severe machine gun fire.

Under this situation the men jumped overboard and were generally able to wade to the beach. That is, they would have been under normal conditions. But under the enemy's heavy fire and with water up to the necks they were in no position to use their own weapons. Losses were heavy, but many reached the shore. They found themselves in immediate contact with the enemy at ranges not exceeding a hundred yards. A severe fight followed, which lasted all day. Machine guns, rifles, and grenades were freely used. A flame thrower had managed to get ashore, and this was used to capture one Japanese pill box. But there were so many others that the Marines ashore could do little but hold.

When the 1st wave ran aground the 2nd wave anchored, whereupon the enemy's 8" battery opened fire on it and it went back out of range. The Navy located a way through the reef, and having indicated the same to the 2nd wave at noon ordered it to move forward and relieve the 1st wave on shore. This attempt was stopped by enemy machine gun fire at 1300 hours, and the 2nd wave withdrew. Another attempt to advance at 1500 hours was stopped by artillery fire. It was then decided to wait until dark. The men on shore got no relief that day.



Betio

4,000 Japs, 500 pillboxes, concrete and log barriers, many coastal guns.

There was a brilliant moon. The 2nd wave moved in silently, and in detachments at various times during the night. Some of the men landed at the wharf, which lay in "no man's land," with the enemy close to one side and the Marines equally close to the other. Tanks were landed. Altogether the situation was improved.

At dawn the enemy attacked the wharf and captured it. From this vantage point he was able to enfilade the Marines adjacent to the beach. Cruisers and destroyers heavily shelled the Japs and the Marines recaptured the wharf, although they were unable to stay on it. Enemy pill boxes were systematically attacked in order. Tanks were used, and were found not very effective. Bangalore torpedoes and TNT charges accompanied by flame throwers directing their jets into openings, produced better results. During the entire day a hot fight continued.

On the 23rd the main enemy opposition came from a wrecked ship off the wharf, which the enemy had converted into a machine gun nest. Dive bombers attacked it, and it became a blaze. When boats tried to get by to bring reinforcements ashore, the machine gun fire from the flaming wreck reopened. Marines were then taken out, and amidst the flames and smoke exterminated the Japs in a hard fight.

By noon the enemy had been pretty well overcome. He held only the tapering west end of the island. This he was defending with machine gun and mortar fire. His 8" gun battery at the other end of the

island had finally been destroyed. After dark the enemy, realizing that further resistance was useless, in accord with their custom, gathered all available men together and made a final charge on the Americans.

A few Japanese who had become separated from their main force remained, and acted as snipers throughout the island. It took another day to locate and eliminate these.

On 25 November a Japanese submarine passed the Navy guards and before daylight torpedoed the aircraft carrier *Liscome Bay*. This ship instantly took fire. Its ammunition then exploded in rapid series, and within a few minutes the ship had disappeared. Exclusive of losses on this ship, the battle of Tarawa cost the Americans 1,026 killed and 2,557 wounded.

JAPAN

Very little reliable news has arrived. Great efforts are being made to increase industrial production, with particular reference to increasing the size of the Air Force.

Progress has been made in removing government offices from Tokyo to scattered locations. It is now stated that few government bureaus remain in Tokyo. Something has been done to scatter the concentrated industries around Kyoto and Osaka. The idea is, of course, to continue on with the war notwithstanding the bombing of these centers, which the Japanese now consider will inevitably follow.

ITALIAN GLIMPSES

By Maj. E. E. Surdyk, FA

Maj. Surdyk is gunnery officer (S-3) of a battalion in the 34th Inf Div Arty. In the *Journal* for November, 1943, his assistant (Capt. Woodrow M. "Buck" Smith) described some of their earlier operations in *A Summary of Tunisia*. We are happy to continue recording the achievements of this outstanding combat outfit.—Ed.

We were in on D-day with the Texicans and were the first American artillery in *Festung Europa*. We landed with the second wave of the doughs in a veritable bees'-nest of all calibers, MG-42s, mortars, and 88s. Fortunately our casualties were light, so we assembled quickly and began pitching cannonballs within 40 minutes of beaching. We beat off three tank attacks, burned up seven Mark IVs, and were credited with saving the beachhead (this is "Fifth Army unofficial"—we never made the claim). Gen. Ryder is going to cite the battalion.

Later that day one of my FDC crew saw some vehicular movement on a road far (2,000 m.) to our right flank. I set up a 'scope right in the FDC and adjusted with one gun—only this one gun because two batteries were on AT missions and the third was so defiladed on that flank that only this gun was free. We had a good adjustment on a narrow point in the road and then started to snipe at vehicles. The following day when Jerry pulled out we went over and counted the bag. There were one staff car burned up, one Mark IV tank a total loss, and 5 motorcycles more or less unserviceable.

Morale is high in spite of the long grind. Compared to this, the Tunisian campaign was a maneuver with cannonballs, although we did learn much there.

Our "grasshoppers" here, as in Tunisia, have been indispensable. I like them especially for quick registration to shoot in corrections and check survey when a terrestrial observer has trouble getting observation, or right after a quick daylight move when survey has been impossible or we have only an hour of daylight left. In these mountains it takes at least two hours for an FO to get into position, and you don't have that much daylight. Our survey officer is hot, and can smack in a passable survey in jig time; this with the air OP registration gives us the dope for a quick unobserved shoot.

We also have instituted a system of running one gun up in daylight just behind the reconnaissance, registering it with the air OP, building a firing chart (observed) at the old position, and then tying in with the position area survey which is ready for us by the time we move in.

Our gunners still have a bit of nostalgia for the old 25-pdr which we had until Hill 609. The night after the action ceased there, Ordnance wheeled in the 105s and picked up the 25-pdrs. Next day we fired 60 rounds to orient the gunners and then moved right into action at Mateur. As an all-purpose AT and direct-support piece the 25-pdr couldn't be beat, but mechanically it is inferior to the 105. We could use a few thousand yards more range with the 105; this is the ever-present gripe of the field artilleryman, though—give us fourteen thousand and we'd want sixteen.

SERVICE PRACTICE

Battle efficiency is the aim of all our training. In the artillery, *every* bit of work is to facilitate putting projectiles at the right spot in the right way at the right time. All is wasted unless every officer and many enlisted men can *shoot*. Service practice, then, is in effect the most important part of artillery training.

A properly conducted service practice doesn't just happen. It requires careful thought and planning, and adequate arrangements. To help its units, one corps artillery officer recently published the following in the form of training notes:

SERVICE PRACTICE

1. Absolute perfection in the delivery of fire *in battle* is an objective toward which this stage of our training points. No matter if we can *obey* an order and *march* to position, we have failed if we cannot *shoot* when we get in that position. In battle, we will do things exactly as we have practiced them beforehand; the leader who refuses to believe this well established fact is unfit to guide the training of a unit which is to fight, since he is likely to permit a compromise with the goal of 100% effectiveness required and allow halfway measures to be acceptable because too much effort is required in the attainment of realism during extended periods of training.

2. Battalion commanders, under group commander guidance, must leave nothing undone that will make *each service practice* resemble battle firing; and that will secure from this practice the maximum instruction for the largest number of officers.

3. Suggestions to secure in part the ends sought are as follows:

a. Each service practice planned to follow in general set-up the pattern of one of the several AGF tests, with the percentages of the several types of firing following recommended percentages in UTPFA.

b. Gunnery officers (S-3 and Asst S-3) or suitable qualified replacements detailed to direct the firing; Bn CO to supervise.

c. Prepared list of officers to fire made out in advance (based on record of who is due to fire or who is weak in certain types of firing).

d. Prepared list of types of targets to be assigned (designed to give variety in employment of fuze, charge, sheafs, bracket, etc., and to cause each officer firing to consider his mission and make proper selection of technical details).

e. Preparations completed in advance for assistance needed by officer directing fire (time keeper, metro message, flank observers to check actual results, supplementary communications, etc.).

f. Safety officer sent to battery position in advance of battery, except when Bn Test III is basis of firing.

g. Observer to watch occupation of position by each battery (with check list to avoid overlooking such items as bore-sighting, check of instruments, preparation of ammunition pits, security measures, time from "Action" to "Battery ready to fire," etc.).

h. Check list prepared for Bn CO to cover any previous observations of weaknesses in the unit, correction of which is particularly sought; and overall matters to insure compliance with SOP and attainment of established (or desired) standards.

i. Clear, concise designation of target (with friendly front lines indicated) for each problem; elimination of long-winded, verbose systems of designation.

j. At end of problem, assembly of officers for critique. In critique cover worthwhile points, good and bad, and an announcement of *time consumed* and what the standard time for the type is, with a short analysis of where time was lost (slow gun crews, slow sensings, slow announcement of commands after sensing, poor initial data, creeping, etc.).

4. A standard Battery OP, set up tactically, under speed conditions, should involve dispersion and natural cover initially; improvement after firing starts; instruments at least 25 yds. apart (if remote control radio present as secondary means, 50 to 75 yds. removed); and slit trenches and concealment for personnel normally at the OP in battle, perfected as soon as practicable. Note: Other personnel present (such as officer directing fire, officer supervising fire, unit officers not conducting the fire at the moment, and observers) are considered non-tactical and should be grouped near the officer's station who is conducting the fire, so as to follow his sensings and commands.

5. An example of service practice following a set-up for Battery Test I, AGF, might be somewhat as follows:

a. Battery and forward observer in starting positions as prescribed for the test.

b. Safety officer at battery with preparations made in advance (he having been given the positions confidentially in advance).

c. Surplus officers assembled in advance at the future OP to be used by the forward observer.

d. Problem starts; umpire brings forward observer forward and gives him a mission, the battery following and going into action. Forward observer fires first problem, which is timed and graded.

e. Succeeding problems assigned to officers selected from the slate set up, times taken for succeeding problems being checked to see if effective fire would have been brought on the target within 20 minutes had they been the first adjustment.

HOW ACCURATE SHOULD BASE ANGLES BE?

An elaboration of TM 6-200 (par. 124) and FM 6-40 (par. 119c, 119a, and 115b).

By Lt. Arthur O'Connell, FA

For years the importance of an accurate base angle has been emphasized. One group says that by taking your connection survey notes and combining them with your AB line and your battery base lines, you can invariably form a polygon. From this polygon you can compute, by geometric methods, the base angle for one battery. Then by measuring the apex angles you can apply the offsets to the known base angle to get the two remaining. "Behold," says the polygon party, "we have held graphic methods to a minimum and we have the most accurate base angle possible. We have used the protractor to measure at the most four angles, and usually only two. By accurate settings with our protractor, you can't beat our base angles."

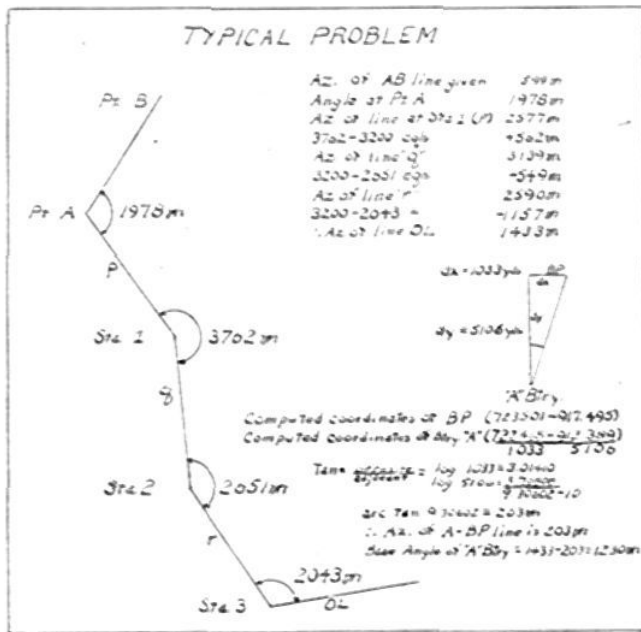
Unfortunately such is not necessarily the case. A base angle can be determined without using any device for measuring angles on paper. Working under the premise that trained surveyors would much rather compute than plot and that no one is rash enough to claim that computation is not more accurate than graphic methods, we come forth with the *correct* base angle by using merely a log book, pencil, and paper.

Let us assume a normal situation. The battalion survey officer has gone up to Pt. A and received the following information from the Division Artillery Survey Officer:

Coordinates of Pts. A and B

Azimuth of AB line

Firing chart: Grid Sheet



The survey officer puts his crew to work and shortly comes up with the computed coordinates of the batteries and of the base point. He has also run a directional traverse from the AB line to the orienting line.

Up to this point, we haven't deviated from time-honored custom of the polygon adherents, but now we do. Since we have run a directional traverse from a line of known direction to the

OL, we can determine the azimuth of the OL. Knowing the coordinates of the batteries and of the base point, to determine the azimuth of the three base lines find the difference in "X" coordinates and "Y" coordinates between the batteries and the BP, and apply our tangent formula. Knowing the direction of two lines we can determine the angle of intersection between them. A typical problem is shown herewith.

Base angles of Baker and Charlie batteries can be arrived at by following exactly the same procedure.

As you can see, that method eliminates all measurements with a protractor and thereby much human error. Doing this by the polygon method and measuring three angles with the protractor resulted in 4- and 5-^m differences. Results in both cases were:

	Computation Only	Polygon Method
Base Angle "A" Btry.	1230 ^m	1225 ^m
Base Angle "B" Btry.	1388 ^m	1384 ^m
Base Angle "C" Btry.	1632 ^m	1626 ^m

These figures show a consistent error of about 6^m. Remember, no matter how handy you are with a protractor, it's mighty difficult to measure an angle to the nearest five mils, let alone to the nearest single mil.

One final point—it can readily be seen that the photo map survey cannot use this method unless there is a military grid on the photo. The whole crux of this method is to determine the azimuth of the base lines from the coordinates of the batteries and of the base point. When we can't do it (which would be the case when we don't have a military grid) we must revert to the other method.

BEWARE OF THESE!

1. One battalion commander developed an SOP for a test. A good idea—but the test team did not know his SOP! After he received the situation for Test 2 from the umpires and time started, his order to the battery commander consisted of "Base Point SOP; everything else SOP; get going." In addition to expected traffic and communication difficulties caused by unexpected position areas, the center battery commander, determined by lot and required by test to make a precision adjustment on the base point, did a bracket adjustment. He later explained "that in the SOP he was required to make a bracket adjustment and no one told him differently."

To make matters worse, on the preceding afternoon the umpire dragged an old car body laterally about 100 yards. This just happened to be the base point selected by the battalion commander.

2. The commander of a 155-howitzer battalion failed to announce the registration charge. Later at the FDC this was called to his attention, and he announced that Charge 2 would be used. Unknowingly, the officer conducting the precision registration ordered and obtained Charge 3. The registration was performed with Charge 3 and the firing chart was plotted using Charge 2.

3. In order to save time, after being laid parallel the gunner on No. 3 piece in Test 1 elected to use the nearby pine stump as an aiming point instead of setting out his aiming stakes. The facts that the gun fired through the problem with about 40 error and that no aiming stakes were out, were never even noticed by the executive.

4. A battalion commander designated battery positions from right to left as A-B-C. S-3 plotted them in reverse order (from right to left, C-B-A), and after registration applied offsets accordingly.

Editor's Note: Just as the "big picture" of a battle is the sum of innumerable "little pictures" of the smallest units, so is artillery efficiency nothing more than the result of meticulous attention to the smallest details by every echelon. AGF tests are designed to show the true combat efficiency of all units.

A small error or a bit of thoughtlessness 'way down the line may render ineffective the fire of all the artillery of a division. In the hope of aiding units in training the JOURNAL intends to publish periodically examples of things to be avoided. Each of these things actually occurred. We realize that precisely the same mistakes will not often be made by different units, but a careful study of the errors of others may acquaint you with some types of things to watch for and to avoid.

BATTALION TARGETS OF OPPORTUNITY

By Maj. Lorance L. Dennis, FA

During a recent practice run of Battalion Test I our non-adjusting 105s had very little effect on the targets of opportunity which were followed by battalion concentrations. Analysis of this particular situation upon completion of the problem revealed that (1) the three firing batteries were spread quite far both laterally and in range

(see sketch) and (2) the initial data furnished to FDC by the forward observers was not close to the adjusting point.

To overcome these difficulties the following system of adjustment on a target of opportunity followed by a battalion concentration has proven satisfactory. It gives more accurate data to the two non-adjusting batteries in little time and does not involve any rapid figuring by the adjusting battery computer. It beats the 2½ minutes allowed to bring in the non-adjusting batteries. Most important, its month of use has increased the effectiveness of our concentrations from 40±% to 90±%.

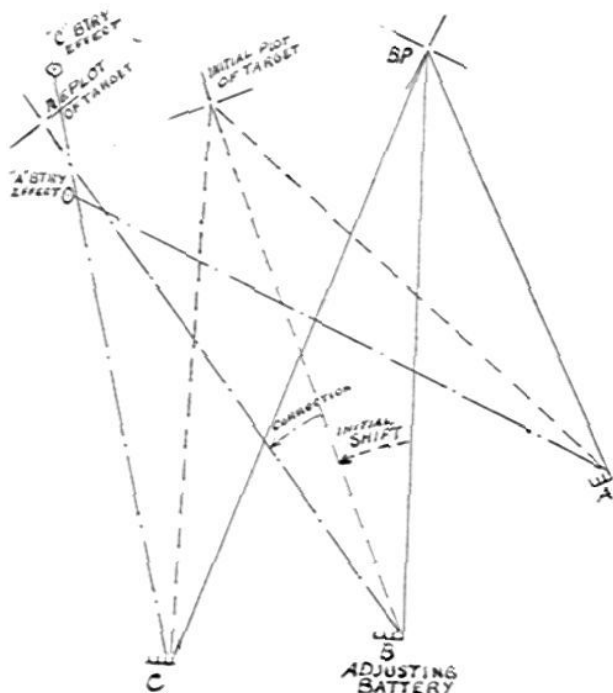
No "initial plot" is made of the target. Instead, the initial sensing of the target in relation to the base point is handled as if it were a round fired: an appropriate base deflection shift and range change are made and an actual round is fired. Site is handled and announced by the VCO, who divides the difference in altitude between base point and target by R, and applies it to the base point site (which is 300 on the observed fire chart).

Computers of the non-adjusting batteries give their batteries all elements of the firing data except a base deflection shift.

HCO follows the deflection shifts by moving the range-deflection fan right and left on the base line of the adjusting battery. He also follows the elevations (ranges) of the adjusting battery on a GFT. As soon as the forward observer announces "Fire for effect" the HCO plots the final location of the fire of the adjusting battery and measures and announces its range and shift to the non-adjusting batteries.

VCO follows the site changes and announces them as soon as the computers need them in the case of time fire.

Shifts as read by HCO are announced directly to the batteries; time and elevation settings are read direct from the GFT by the computers.



A "GRASSHOPPER'S" BIOGRAPHY

Republished by Courtesy of Stars and Stripes

A SICILIAN AIRFIELD—A small plane named *Little Lucy*, first American aircraft to alight on French soil in the North African landings and a beginning-to-end veteran of the Sicilian campaign, has been honorably discharged from combat duty. Most famous "grasshopper" in the Mediterranean theater—and with 1,500 flying hours behind her—*Little Lucy* will henceforth serve as an air taxi for military officials at a Sicilian airport.

"It's like losing your girl," said Maj. Edward S. Gordon, Rural Hall, N. C. Maj. Gordon, an artillery officer dubbed "Flash" by his intimates, named his 760 pounds of canvas, plywood, and tubing after his wife, and piloted the mosquito-like *Lucy* over enemy lines to direct artillery and tank fire.

Lucy, who is an honorary member of the Lafayette Escadrille, got off the assembly line in September, 1942. But life began for *Lucy* on the morning of November 8 when she stumbled off the deck of an aircraft carrier 60 miles from the North African shore, first cub plane ever to be launched in such a manner.

Lucy landed at Fedala airport, just north of Casablanca, in the wake of three Jerry planes which had thoroughly smashed and strafed the area. U. S. ground crews, unfamiliar with this plane, believed her to be another Jerry and let loose with ack-ack. Pilots of the famous Lafayette Escadrille stationed at Port Lyautey twice saw *Lucy* glide through untouched amid a hail of ack-ack fire. They made her an honorary member, and she still sports the Indian head insignia.

During *Little Lucy's* series of misadventures in and around North Africa, she became an international siren of parts. A partial list of her helter-skelter innards includes: landing gear from a Messerschmidt 109 and a French bomber; instrument panel from a P-38, P-39, P-40, and a French half-track; unused glass from a P-40; tubing from a French fighter; and tail assembly from a cracked-up jeep.

Throughout the Sicilian campaigns Maj. Gordon flew *Lucy* as an artillery observer, and after the fall of Palermo the two of them hauled everything from generals to M-67 fuzes.

"We flew more than 100 combat missions and the Lord knows how many extra," Maj. Gordon says.

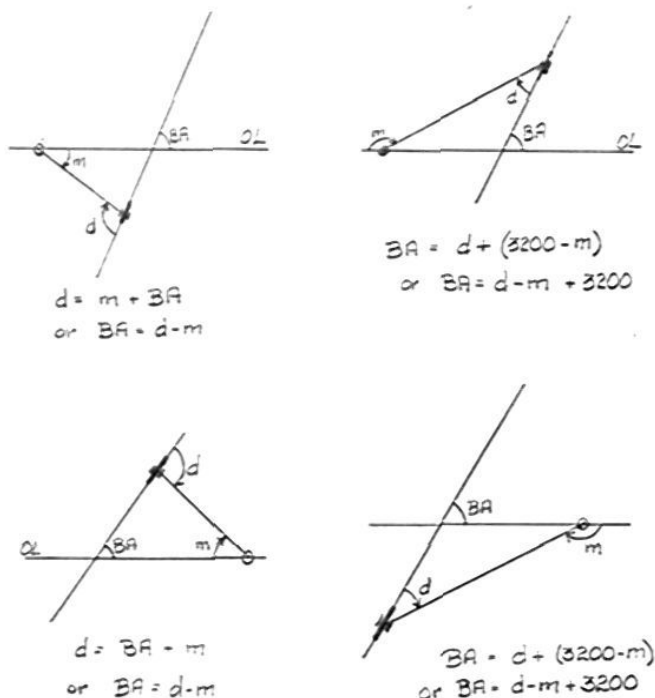
Not in the BOOK

RAPID MEASUREMENT OF ADJUSTED BASE ANGLE

In heavy artillery where the battery front is normally well over 100 yards, the executive can not measure the adjusted base angle as quickly as FDC would like. To speed up this measurement and thereby cut down the elapsed time between the command *Measure the Adjusted Base Angle* and the instant the battalion concentration is placed by transfer on a target, the following system has been used and found satisfactory.

The executive, after laying his battery, measures the clockwise angle from the OL to the sight of the registering piece, subtracting 3200 mils if the angle is greater than that. Upon completion of the registration, the gunner refers to the aiming circle on the OL and reports the deflection. The executive merely subtracts from the announced deflection the angle he measured prior to the registration. If the deflection is less than the measured angle, add 3200 mils to the deflection before subtracting the measured angle.

The measured angle will change during the registration. This change



is small, however, and the final value of the angle may be determined by the instrument operator. The executive, having determined the base angle using his original value of the measured angle, corrects it by the difference in the measured angle as reported by the instrument operator; or he can wait for the final value of the measured angle before computing the base angle. This latter procedure is preferable. Since the executive made the original measurement of the measured angle (which will not change greatly), there is little opportunity for the instrument operator to make a mistake. The executive has a further check on the operator in that he knows in which direction the gun is going to move, and hence whether the measured angle will increase or decrease.

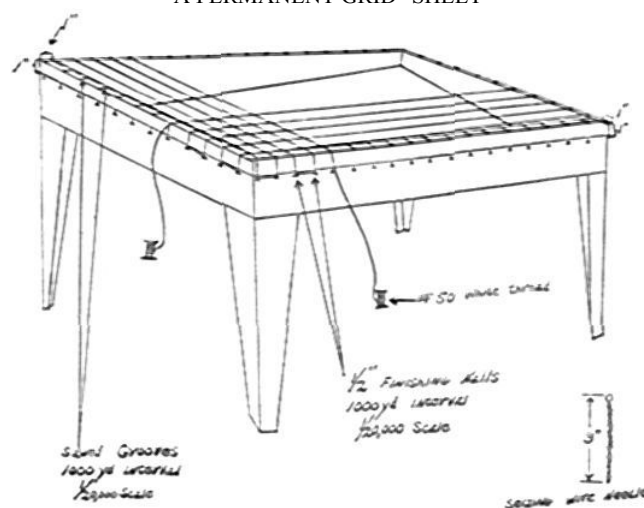
The geometry involved is shown in the accompanying sketches, which give all possible positions of the aiming circle.

EDITOR'S NOTE: This feature is devoted to ideas sent in by our readers describing methods or devices which, though not specified by official literature, have proved useful in service.

This method can be used to advantage in light artillery because the executive can be measuring the measured angle while the gunner is measuring the deflection. Although the time saved by this method is not great, it is still worth while.

CAPT. PAUL HARTMAN, FA

A PERMANENT GRID "SHEET"



WHAT! NO GRID SHEETS! T/E says 12 grid sheets per battalion, and that means a battery is lucky to get a new one per month. It is admitted that considerably more than that are needed to develop a survey section.

My solution has been to modify that old standby training aid, the sand table. The system: Cut 4 strips of molding or scrap lumber about 1" thick and 1" wide, 2 of them as long as the width of your sand table and 2 equal to its length. Using your 30" steel straightedge and beginning at corresponding ends of the strips, drive 1/2" finishing nails into one edge of each strip at 1,000-yd. intervals using a 1/20,000 scale. Nail these strips on your table sides flush with their top edges, with the line of small nails extending down. Directly in line with each nail saw a very slight depression in the top edge of the table with a coping saw or other thin blade.

Now set up your problem and terrain. That completed, take a spool of No. 50 or heavier thread (preferably white). Using each nail as a terminal, thread back and forth across the table and then lengthwise. The sawed grooves insure a perfect grid.

Results are most gratifying. The student sees what a grid is, and why and how it works. Mountains have a very slight effect on the grid even when they are above the table edges, and distortion is easily illustrated. In ten minutes the grid can be removed and rewound or put on the table. We have used a 1/10,000 system and with protractor and scales run complete surveys from one point on the table with an accuracy of 50 yards; teamwork and mechanics can be thoroughly developed. Needles made by twisting seizing wire can be threaded together to show principles of triangulation. A different color thread used for the triangles and traverses tends to emphasize them. But the best point is that you can use the same thread (grid) over and over again, and save that one T/E sheet for field problems.

LT. JASPER F. WILLIAMS, FA

At CPs, duties must be organized so that *all* personnel can get some rest. Run regular shifts of regular hours with a regular roster. Personnel on duty must be both awake *and* alert. Keep all visitors out of CPs and FDCs—work will thus be done faster, more accurately, more smoothly.

MINUTES OF THE ANNUAL MEETING OF THE UNITED STATES FIELD ARTILLERY ASSOCIATION, DECEMBER 13, 1943

In accordance with the call of the Executive Council, the thirty-fourth annual meeting of the United States Field Artillery Association was held at the Army and Navy Club in Washington, D. C., at 5:30 PM, December 13, 1943. The President, Maj. Gen. Lewis B. Hershey, presided.

A quorum was present in person for the transaction of business.

It was moved, seconded, and carried that the reading of the minutes of the last year's annual meeting be dispensed with, these having previously been printed in the JOURNAL.

The Secretary-Treasurer presented and read his annual report and financial statement, which are appended hereto and made a part of the minutes.

Colonels E. C. Hanford and Ralph C. Bishop had previously been appointed to audit the financial statement. At the direction of the chair, the Secretary read the report of the auditors, which stated that the auditing had been performed and the financial statement found to be correct and the affairs of the Association in good order. A motion was made, seconded, and carried, to approve the annual report and financial statement.

The President stated that there were six vacancies in the Executive Council caused by the expiration of terms of office of Major General C. C. Haffner, Jr., Brigadier General Wm. H. Sands, and Colonels Ralph C. Bishop, A. L. Campbell, M. W. Daniel, and Frank A. Henning. A nominating committee consisting of Col. L. H. Frasier, Lt. Col. John Lemp, and Maj. Edwin D. Stackhouse had been appointed; its chairman read its report, in which the following names were submitted to fill the vacancies:

Major General C. C. Haffner, Jr.
Brigadier General Wm. H. Sands
Colonel Ralph C. Bishop
Colonel A. L. Campbell
Colonel Stuart A. Beckley
Colonel Michael Buckley, Jr.

After opportunity had been given for further nominations, a vote was taken which resulted in the unanimous election of the choices of the nominating committee.

A rising vote of thanks was extended to the Treasurer for the successful conduct of the affairs of the Association during the past year.

The meeting adjourned.

ANNUAL REPORT OF THE SECRETARY-TREASURER FOR YEAR ENDING NOVEMBER 30, 1943

<i>Assets November 30, 1942</i>			
Government bonds, value 11/30/42	\$19,207.00		
Securities, cash value.....	7,501.12	\$26,708.12	
Balance in checking account			
11/30/42		3,190.65	
Inventory (furniture, equipment, supplies)		3,132.95	\$33,031.72
<i>Assets November 30, 1943</i>			
Government appreciation bonds, value 11/30/43.....	\$35,721.00		
Securities, cash value.....	12,248.81	\$47,969.81	
Balance in checking account 11/30/43..		3,113.58	
Inventory (furniture, equipment, supplies)		4,311.67	55,395.06
Net gain for year ending 11/30/43			\$22,363.34
Cash value of securities 11/30/42..	\$26,708.12		
Cash value of securities 11/30/43 ..	47,969.81		
Net gain in value of securities.....		\$21,261.69	
Inventory (furniture, equipment, supplies) 11/30/42	\$3,132.95		
Inventory (furniture, equipment, supplies) 11/30/43	4,311.67		
Increase in value of 1943 inventory over 1942.....		1,178.72	
			\$22,440.41
			77.07
			\$22,363.34
Excess of expenditures over receipts for fiscal year 1943.....			
			\$22,363.34

The following is a detailed statement of receipts and expenditures for fiscal year 1943, as compared with fiscal year 1942:

RECEIPTS		
	<i>1942</i>	<i>1943</i>
Membership dues	\$41,387.04	\$58,782.74
Books and Magazines	23,246.03	52,264.62
Visiting cards	429.65	220.70
Interest on securities	361.92	297.47
Miscellaneous	4,974.48	6,025.66
		<hr/>
	\$70,399.12	\$117,591.19
Balance in checking account Nov. 30, 1942		3,190.65
		<hr/>
		\$120,781.84
EXPENDITURES		
Printing and Mailing FIELD ARTILLERY JOURNAL	\$27,493.33	\$39,269.88
Authors, artists, photographers	4,684.65	5,718.70
Job printing	1,172.14	351.71
Office equipment	722.65	1,377.52
Office supplies	667.25	1,026.18
Postage	1,898.44	3,714.95
Books and magazines	17,457.54	31,673.38
Services	5,257.00	7,742.30
Insurance and Tax	154.98	156.15
Donations	40.00	154.00
Government bonds	5,476.00	21,400.00
Visiting cards	335.56	214.05
Rent	1,435.00	2,070.00
Telephone	184.39	267.61
Petty cash	393.07	—
Temporary services	118.05	25.00
Refunds	248.33	234.13
Unpaid checks returned by bank	335.05	367.79
Miscellaneous	2,312.00	1,904.91
		<hr/>
	\$70,385.43	\$117,668.26
Balance in checking account Nov. 30, 1943		3,113.58
		<hr/>
		\$120,781.84
Receipts for year ending Nov. 30, 1943		\$117,591.19
Expenditures for year ending Nov. 30, 1943		117,668.26
		<hr/>
Excess of expenditures over receipts for fiscal year 1943		\$77.07

Your Association has just completed the most successful year in its history. During it memberships increased by about one-third, to nearly double the maximum reached during the first World War. Financially we are healthier than at any previous time, and adequate reserves have been provided to carry our affairs through the period of stock-taking and contraction which will inevitably follow this war. Your Association's office has been of increasing benefit to members, especially those overseas, partly by serving as a clearing house for needed information which our facilities enable us to supply quickly.

Members overseas have been furnishing invaluable articles which greatly benefit artillerymen everywhere. Wartime shortage of paper compelled a change in the JOURNAL'S format in order to gain room for this material. Although further changes in appearance may become necessary as a result of membership increases and further paper restrictions, every effort will be made to maintain the high standards of reproduction which help keep the JOURNAL of maximum value to the field.

JOHN E. COLEMAN,
Lt. Col., FA, Secretary-Treasurer

Diary of War Events

(As Reported in the American Press: Edited by B. H. W.)

DECEMBER

- 1st The Pacific Charter drawn up in Cairo by President Roosevelt, Prime Minister Churchill, and Generalissimo Chiang Kaishek pledges to "punish the aggression of Japan" by: 1. Stripping Japan of all her Pacific Islands; 2. Returning to China all territory wrested from her, including Manchuria; 3. Granting independence to Korea, and 4. Expelling Japan from all other territory acquired "by violence and greed." Chinese regain possession of Changteh.
Navy reports our losses on Tarawa 1,026 killed, 2,557 wounded.
- 2nd U.S. Marines land behind enemy lines on Bougainville and kill 200 Japs and destroy their stores.
500 R.A.F. bombers raid Berlin with 1,500 tons of bombs. Lose 41 bombers.
- 3rd British 8th Army captures Casel Frenano in Italy.
- 4th U.S. 5th Army wrests important peaks of the Mount Camino from the Germans. Heaviest artillery barrage of the Italian campaign supports the attack.
R.A.F. bombs Leipzig.
Strong U.S. task force attacks Jwajalein, Ebeye, Roi and Wotje Islands in the Marshalls. Shoot down 72 planes and sink 6 ships, damage many more.
- 5th British 8th Army captures San Vito and advances to the Moro River.
U.S. 5th Army dominates the Liri Valley.
- 6th President Roosevelt, Premier Stalin, and Prime Minister Churchill reach complete agreement in operating against the enemy from the East, West, and South. Agree further to "work together in peace" after the war and to invite all countries into "a world family of democratic nations" pledged to eliminate tyranny, oppression, and intolerance and to "banish the scourge and terror of war for many generations."
Allied fliers bomb Cape Gloucester in the Pacific.
In an attack on Marshall Islands, U.S. subs sink 11 Jap ships.
President Inonu of Turkey ends 3-day conference with President Roosevelt and Prime Minister Churchill a Cairo.
- 7th Allied fliers bomb Cape Gloucester.
- 8th Allied fliers again bomb Cape Gloucester. U.S. troops in New Guinea advance around Wareo, and on Bougainville.
U.S. 5th Army captures Mount Camino in Italy.
Russian troops advance 12 miles in the Kremenchug sector and capture Sharakova.
- 9th Australian troops capture Wareo, a Jap base in New Guinea.
Gen. MacArthur's bombers pound Cape Gloucester for 10th straight day.
Reports of November, 1943, show fewer sinkings by U-boats since May, 1940.
- 10th U.S. 5th Army in Italy captures Rocca and advances to the Garigliano River.
- 11th U.S. bombers raid German port of Emden. Shoot down 138 planes, lose 20.
British 8th Army in Italy captures San Leonardo.
Allied planes and ships sink 5 U-boats and damage 3 in a 2-day battle in the North Atlantic.
- 13th U.S. 8th Air Force raids western Germany with Flying Fortresses while Marauders pound Schipol airfield in the Netherlands. We lose 7 bombers and 2 fighters.
Czechoslovakia and Russia sign a 25-year treaty of friendship, mutual assistance, and post-war collaboration.
- 14th Russians capture last German stronghold on the middle Dnieper River.
- 15th U.S. 15th Air Force bombs airfields near Athens, Greece.
Paratroop Marines make a 6-day forced march to advance our lines on Bougainville to the Torokina River.
- 16th Gen. MacArthur's forces land on east coast of New Britain and develop beachhead in the Arawe areas 50 miles from Cape Gloucester.
Army Liberators blast Taroa and Wotje atolls in the Marshalls, shoot down 18 Jap planes.
R.A.F. bombs Berlin.
- 17th Army Liberators raid Jap airdrome on Wotje atoll in the Marshall Islands.
- 18th U.S. 6th Army advances 3 miles deeper into New Britain.
- 19th Russia reports the reopening of the Nevel sector.
U.S. 5th Army captures San Pietro Infine in Italy after bloody and fiercest fighting.
U.S. 15th Air Force in Italy uses Liberators and Flying Fortresses to bomb Augsburg, Germany, and Innsbruck, Austria. Shoots down 37. We lose 16.
- 20th U.S. Flying Fortresses and Liberators raid Bremen and northern France. Shoot down 42 planes, lose 25 bombers and 8 fighters.
Allied airforce drops 414 tons of bombs on Cape Gloucester.
A revolution in Bolivia throws out the pro-allied government.
- 21st R.A.F. bombers raid the chemical and armament center of Frankfurt-on-the-Main in Germany with 2,250 tons of explosives. Other bombers raid western Germany, Belgium, and northern France. Lose 42 planes.
Allied forces in New Guinea capture Kesawai, 20 miles below the strong Jap base at Bogadjim.
The revolutionary government of Bolivia aligns itself with the United Nations.
- 22nd U.S. 8th Air Force bombs northwest Germany. Shoots down 38 planes, loses 25.
General Marshall returns to United States from Pacific battle front.
- 23rd U.S. and British bombers attack the Pas-de-Calais area of France.
Allied planes continue air activity in the Marshall Islands and on Cape Gloucester, New Britain.
- 24th President Roosevelt announces the appointment of General Dwight D. Eisenhower as supreme commander of the Anglo-American invasion forces.
3,000 U.S. and British planes bomb Pas-de-Calais area of France again.
Allied bombers again raid Cape Gloucester.
- 25th U.S. 5th Army fights stiff battle with Germans who had buried tanks in the cellars of buildings in the Italian city of Ortona.
- 26th British Navy sinks German 26,000-ton battleship *Scharnhorst*.
U.S. 5th Army in Italy continues to meet stiff resistance in Ortona.
Allied fliers shoot down 41 Jap planes in an attack on Rabaul. Lose 11 planes.
U.S. Marines under Maj. Gen. William H. Rupertus land on the west end of New Britain and establish beachhead on Cape Gloucester. Losses very small. Destroy 61 Jap planes.
- 27th Announcement is made that Air Chief Marshal Sir Arthur Tedder, head of the Allied Air Forces in the Mediterranean, will be Gen. Eisenhower's Deputy Commander.
Secretary Stimson takes over nation's railroads at President Roosevelt's order designed to halt the strike.
- 28th U.S. 5th Army captures Mount Sammuicro massif.
Lt. Gen. Jacob L. Devers to command U.S. troops in the Mediterranean and Lt. Gen. Ira C. Eaker to take over Allied air command of the 8th Air Force in Britain.
Marines on New Britain advance to within 1½ miles of Cape Gloucester airfield. On the other side of the island U.S. fliers shoot down 37 Jap planes. Lose only 2.
- 29th R.A.F. bombs Berlin.
- 30th Russians break 185-mile Nazi defense wall west of Kiev. More than 2,000 U.S. bombers pound southwest Germany. The 8th Air Force raids the "rocket-gun coast" of France again.
U.S. Marines capture airdrome on Cape Gloucester, New Britain.
- 31st U.S. and British planes again bomb France.



For Heroism and Service



LEGION OF MERIT

MAJ. LEO W. BAGLEY, for exceptionally meritorious conduct in the performance of outstanding service. He made a personal reconnaissance and terrain study of two islands prior to the establishment of garrisons there. On the basis of outstanding performances of the above duties he was placed on the Joint Staff which planned the Attu operation. His enthusiasm and superior work habits, together with his knowledge of Japanese combat methods and Alaskan terrain, proved invaluable in making possible precision landings on beaches which had been regarded as impassable by the enemy. Address, 4 Volk Apt., Tacoma, Wash.

CPL. GEORGE L. KING, for exceptionally meritorious conduct in the performance of outstanding service as scout corporal of a field artillery howitzer battery during the Attu operation from May 11, 1943, to June 3, 1943. As a member of an artillery forward observation section he accomplished all the duties required of him with efficiency and daring. In addition to his routine duties he performed tasks above what could be expected normally by voluntarily exposing himself to enemy fire and going forward ahead of his section by himself to prepare new observation positions and foxholes so that the artillery observation could move forward safely without interrupting the conduct of fire. Address, Roswell, New Mexico.

SGT. HAROLD W. NUSSBAUM, for exceptionally meritorious conduct in the performance of outstanding service as signal sergeant of a field artillery howitzer battery during the battle of Attu from May 11, 1943, to June 3, 1943. He displayed outstanding leadership and aggressiveness beyond that expected of his rank and experience. As a result of his leadership and extreme devotion to duty communication was maintained for his organization in spite of overwhelming obstacles which caused all other wire lines of communication within the sector to fail. Address 2070 E. 15th St., Brooklyn, N. Y.

1ST LT. LADISLAW REDAY, for exceptionally meritorious conduct in the performance of outstanding services in New Guinea from 5 Jan to 12 Aug 1943, as operations and maintenance officer of the Small Ships Division in an advanced sub-area of the Combined Operational Service Command. During this period, Lt. Reday made numerous marine reconnaissances and survey trips along the north coast of New Guinea in advance of the movement of tactical troops. With craft unsuited for the purpose and without dependable armament, Lt. Reday charted reefs, surveyed safe water routes, and found accessible beaches for landing combat troops in areas then under the control of enemy ground forces or menaced by enemy air attacks. Throughout this time, Lt. Reday worked night and day without regard for his personal health and safety, in order to keep the worn out engines of the small ships operating, and then invariably served as pilot on their most important and dangerous missions. By his expert knowledge of small ships and the waters in which they operated and by his untiring energy and leadership, he contributed greatly to the advance of troops and supplies along the north coast of New Guinea. Address, 56 Eastern Ave., Gloucester, Mass.

BRIG. GEN. STANLEY E. REINHART, for exceptionally meritorious conduct in the performance of outstanding service. As commander of the * * * Division Artillery, Gen. Reinhart planned, coordinated, and employed the combined artillery fires of the division with exceptional professional skill. While the division was engaged in

the defense of Oahu, Territory of Hawaii, Gen. Reinhart had brought the artillery to a superb state of training. The effectiveness of this training was convincingly demonstrated by the outstanding performance of his units in battle, which contributed in great measure to the rapid advance of the supported infantry and the ultimate complete defeat of the Japanese forces on the Island of Guadalcanal. Throughout this operation, Gen. Reinhart displayed splendid qualities of leadership, judgment, and outstanding courage.

LT. COL. THOMAS M. SESSIONS, for exceptionally meritorious conduct in the performance of outstanding services in New Guinea from March 15 to August 12, 1943. As executive for transportation and supply of an advanced base, he was charged with the operation of all Transportation Corps facilities and agencies, both by water and by motor, and was responsible for the close coordination of supply branches of the Australian and American forces in the combined operational service command of the area. With limited facilities, through prolonged periods of adverse weather and under intermittent enemy air attack, he accomplished the unloading, receipt, storage, and movement to combat troops of critical cargo. He skillfully directed supply and transportation missions which were conducted in conjunction with tactical operations. Lt. Col. Sessions made a substantial contribution to the logistic support of important combat operations on the north coast of New Guinea. Address, 1104 W. 10th St., Sioux Falls, South Dakota.

T/SGT. FRANK A. SHUM, for exceptionally meritorious conduct in the performance of outstanding services from July 16, 1943, to July 26, 1943. In addition to performing, in an outstanding manner, his duties as clerk for the chief of staff of a corps headquarters, he assisted other sections in clerical work and in the publication of combat orders. Working rapidly and accurately, often under conditions of extreme fatigue, he aided materially in the successful operation of the corps headquarters in the rapid advance on Palermo, Sicily. Address, P. O. Box 174, Reliance, Wyoming.

COL. LEROY J. STEWART, for exceptionally meritorious conduct in the performance of outstanding service. In the combat between a United States Landing Force and the Japanese garrison on Attu Island, Col. Stewart assumed the duties of Chief of Staff. His alertness and complete grasp of the situation enabled him to plan, co-ordinate, and put into effect the extremely difficult task of forward supply and evacuation, and to supervise energetically its execution. His recommendations to the Commanding General concerning tactical and supply matters were consistently sound and logical. So that he might have first-hand information and keep abreast of the rapidly changing situation, Col. Stewart made frequent trips to the front with disregard of his own personal safety. His devotion to duty was tireless and inspiring. At the cessation of hostilities he quickly and efficiently planned, executed, and supervised the redistribution of troops, and location of installations, and the initiation of construction of the Attu base of operations. His outstanding leadership and organizing ability contributed greatly to the destruction of the Japanese garrison on Attu and to the accomplishment of the mission of our forces. Address, RR 1, Box 69B, Carmel, Calif.

M/SGT. JOSEPH D. TYLER, for exceptionally meritorious conduct in the performance of outstanding service during the battle of Attu. While all the officers were engaged in delivering or observing artillery fire, Sgt. Tyler assumed all the administrative and rear echelon burdens of the battalion. It was largely through his efforts that the battalion was well equipped and supplied. When the battery commander and the 1st Sgt. were sick during the battle, he assumed

the additional duties of both. His broad army experience and tireless efforts in aiding the men of the command contributed greatly to the efficient performance of the field artillery battalion during the battle. Address, 197 Elmwood Ave., Bridgeport, Conn.

S/SGT. JOSEPH B. WOODS, for exceptionally meritorious conduct in the performance of outstanding service. Sgt. Woods perfected in his own time and with scrap materials a device for direct fire at moving targets which has been highly instrumental in raising the standards of marksmanship of Tank Destroyer units and increasing the efficiency of training at Camp Hood, Texas. Address, 3014 Thomes, Cheyenne, Wyoming.

POSTHUMOUS AWARD OF SILVER STAR

PVT. JAMES W. DOYLE, for gallantry in action at Milne Bay, New Guinea, on April 14, 1943. Mother: Mrs. Dan Doyle, Colburn, Idaho.

PVT. REUBEN W. DUNLAP, for gallantry in action in Tunisia. While his battery was subjected to heavy and intense dive bombing attacks, Pvt. Dunlap completely disregarded his own welfare by refusing to take cover and although under direct and extremely close bombing manned his vehicular .50-caliber machine gun. Even when an enemy plane dived directly at his vehicle, releasing two bombs from an altitude of about 100 feet, he continued his firing until killed by a bomb fragment. The gallantry, perseverance, and unusual devotion to duty displayed by Pvt. Dunlap reflect the finest traditions of the Armed Forces and are deserving of the highest praise. Wife: Mrs. LaNell Dunlap, Route 2, Pocasset, Okla.

PVT. 1ST CLASS HARRY WASSMER, for gallantry in action in North Africa. Pvt. Wassmer, despite heavy mortar, artillery, and aerial bombardment, continued firing his 155-mm howitzer until killed by enemy shell fragmentation. As a result of his firing, a company of enemy infantry was routed.

SILVER STAR

SGT. ESTIL ABEL, for gallantry in action in North Africa. Sgt. Abel received orders to place his gun section in position to defend the battalion's left flank against an expected tank attack. The attack occurred and the section came under heavy tank cannon and machine gun fire. In order to direct most effectively the returning fire of his gun section, he placed himself in a position under continuous heavy and close enemy fire. His fine cooperation, daring action and calm leadership contributed materially to the failure of the enemy attack. Address, 510 Montgomery Ave., Owensboro, Ky.

LT. COL. HERSCHEL D. BAKER, for gallantry in action in North Africa. When an enemy armored force made a surprise attack on our positions before dawn, Col. Baker, skillfully leading his unit against forward elements of the attacking force, successfully destroyed more than 30 enemy tanks and inflicted extremely heavy casualties upon supporting enemy infantry. During this entire action, the superlative leadership and courage displayed by Col. Baker under heavy enemy artillery, tank, and small-arms fire were an inspiration to officers and men of his battalion. Mother: Mrs. Maude Baker, Veterans Bureau, Washington, D. C.

1ST LT. MERTON L. CALDWELL, for gallantry in action in North Africa. When his battery had been forced to withdraw from its position because of heavy enemy fire, Lt. Caldwell repeatedly returned to this position and assisted in the evacuation of valuable equipment that otherwise might have been captured or destroyed by the enemy. Address, 11 Queensbury St., Boston, Mass.

2ND LT. ALVIN E. CHRISTENSEN, for gallantry in action in North Africa. While the battery was engaged in a tank action with the enemy and receiving heavy fire, he went from section to section encouraging and assisting them in delivering fire on the enemy. He helped carry the wounded across a road under heavy and close machine gun fire. He then established a collection station for the wounded and administered first aid. He also displayed great courage in locating and obtaining information about forward gun sections and in recovering disabled vehicles. Address, 405 9th St., St. Paul, Neb.

SGT. (then Cpl.) JAMES F. COSGROVE, for gallantry in action in North Africa. Sgt. Cosgrove, although exposed to repeated strafing by

enemy planes, fearlessly continued to administer first aid treatment to wounded soldiers. Address, 78-07 84th St., Glendale, N. Y.

2ND LT. GEORGE R. CRICK, for gallantry in action in North Africa. After a heavy enemy artillery destroyed section communications and rendered control over the battery extremely difficult, Lt. Crick, by exposing himself to the enemy fire and at the risk of his life, moved from section to section, assembled the remaining elements of the battery and moved them forward for the accomplishment of the assigned mission. His prompt, courageous action resulted in sufficient artillery fire to repulse an enemy tank attack at a critical moment. Address, Rimersburg, Penna.

MAJ. HARRY H. CRITZ, for gallantry in action in North Africa. When his battalion was flanked and under direct fire from a large force of enemy tanks and machine guns, Maj. Critz, with brilliant leadership and coolness, maintained his battalion's position until compelled to evacuate when forward batteries were overrun by enemy infantry. Because of his courage and keen judgment, Maj. Critz was able to maintain direct artillery support of our infantry, prevent the flanking of the main defensive position and, when forced to withdraw, to insure the orderly withdrawal of all personnel. Address, 1305 Blodgett St., Houston, Texas.

PVT. EDWARD F. DUNN, for gallantry in action at Milne Bay, New Guinea, on April 14, 1943. Address, 10 Perkins St., Winthrop, Mass.

PVT. HAROLD C. FISH, for gallantry in action in North Africa. When the blast concussion of an enemy shell had severely wounded two men and thrown them beneath their vehicle, Pvt. Fish voluntarily exposing himself to heavy enemy shell fire, removed the vehicle, thereby permitting medical assistance to be administered the wounded men. Address, Bradford, Vt.

PVT. 1ST CLASS CHARLES GABRIA, for gallantry in action in North Africa. When his battery had been forced to withdraw because of heavy enemy fire, Pvt. Gabria repeatedly returned to the position and assisted in the evacuation of valuable equipment that otherwise might have been captured or destroyed by the enemy. Address, 2413 Westmar St., Pittsburgh, Penna.

CPL. KNUD E. HANSEN, for gallantry in action in North Africa. Cpl. Hansen remained at his .50 caliber machine gun during an attack on his battery position by twelve German planes and shot down one Ju-88 before being wounded by shrapnel. Address, 193 Jackson Ave., Jersey City, N. J.

T/5 MELVIN L. HOUGH, for gallantry in action in Tunisia. When the intensity and accuracy of enemy artillery fire made necessary the immediate evacuation of his battery's guns, Cpl. Hough drove his prime mover into this heavy fire and remained in this hazardous position until his vehicle was rendered useless by enemy fire. Address, Harden City, Okla.

1ST LT. BILLY H. KERR, for gallantry in action in Tunisia. While acting as a forward observer, Lt. Kerr was severely injured when his vehicle discharged a land mine. Despite his condition, his first concern was the welfare of his men. Finding one injured, he administered first aid. Then, although in great pain, and in need of immediate medical attention, he completely disregarded his own personal safety by dismounting the radio from the vehicle and while under enemy fire, climbed a hill to an observation post and continued his mission. He reported the situation and help arrived about two hours later. He refused medical treatment until the wounded soldier had been treated and then collapsed from exhaustion and shock. The courage, determination, and devotion to duty displayed by 1st Lt. Kerr reflect the finest traditions of the Armed Forces and are deserving of the highest praise. Address, 514 Johnson St., Huntsville, Mo.

SGT. ROLAND LeMAIRE, for gallantry in action in North Africa. When his battery was forced to withdraw before the attack of a stronger enemy force, Sgt. LeMaire, on his own initiative, repeatedly returned to this position under heavy enemy fire and evacuated valuable equipment. His courage and bravery inspired the men of his organization. Address, Route 1, Box 57, Abbeville, La.

BOOK REVIEWS



ALL FORT SILL PUBLICATIONS HAVE BEEN WITHDRAWN FROM SALE EXCEPT: (1) EXERCISES IN GUNNERY MATHEMATICS AND (2) LOG, TRIG AND SHORT BASE TABLES—15 CENTS EACH.

HERE IS YOUR WAR. By Ernie Pyle. 304 pages; drawings. Henry Holt and Co. \$3.00.

Deftly, with unstudied skill, Ernie Pyle fills in the stark outline of North African warfare, giving it vividness and reality. After reading *Here Is Your War* it is hardly possible to think of North Africa as some remote place peopled by strange characters, where somehow in ways mysteriously beyond human understanding the armed forces of the Allied Nations have achieved certain military objectives.

The author gives his readers a candid view of the various incidental factors of war and the ways in which they contribute to the outcome. In his amiable but penetrating manner he shows the familiar human qualities of the fighting men; their reactions to strange new scenes, elemental living conditions, danger, and the whole of war.

One feels convinced that there is such a thing as a distinctly American character—generous, candid, democratic, and courageous despite many human shortcomings. Here on the pages of this book the American character is portrayed with kindly humor, sympathy, and pride. *Here Is Your War* evokes in the reader a reinforced confidence that here also are our fighting men.

F. E. J.

THE BATTLE IS THE PAY-OFF. By Ralph Ingersoll. 217 pages. Harcourt, Brace and Co. \$2.00.

Capt. Ralph Ingersoll, once the brilliant (and controversial) editor of *PM*, has written two books into one. Every chapter of *The Battle Is the Pay-Off* is a skillful blend of what-I-did-and-saw and why-and-how-it-happened. The book contains the useful, often cut and dried information found in any Army manual, with the danger and thrills of those facts being put to use in real battle. High Army officials have recommended the book to the public as a vivid, dramatic, scrupulously accurate, and detailed narrative of an army in daring action, and no reviewer can improve on that recommendation.

Whether Capt. Ingersoll mentions Army slang or the General Staff, he explains it in detail; not condescendingly, but because he feels that although the gaps in the civilian's knowledge of the Army are big and obvious, still the civilian has an intelligent curiosity about everything from C rations to major battle plans. This curiosity is evidenced by the way the folks at home ply the innocent soldier with innumerable questions which he is often too tired or too inarticulate to answer. So

Capt. Ingersoll gives us the answers, and in a straightforward language we can understand.

If you aren't already an expert military strategist, this book won't make one of you. However, you will have a vastly improved knowledge of the huge, organized, integrated, brilliantly planned mechanism that is our Army—and a realistic picture of the battlefield, as well. *The Battle Is the Pay-Off* is the type of war story we have been needing, and up until the publication of Capt. Ingersoll's book, had not found.

M. M.

THE SERBS CHOOSE WAR. By Ruth Mitchell. 265 pages; endpaper map. Doubleday, Doran and Co. \$2.75.

Ruth Mitchell says "Serbia was the only small country in Europe to come in openly on our side *before* she was herself attacked." Isolated statements like this and the title of the book might convey an idea of suicidal fanaticism. Such a nation is not basically erroneous, but in the light of historical review the little country's course of action unfolds into a stirring testimonial for freedom that lends sense and sanity to the desperate struggle against oppression.

Serbia's part in World War II stands alone as a singular, almost incredible chapter in current history. A proud people, ethnically and culturally self-contained, and deeply patriotic, the courageous Serbs fiercely resist Axis domination. Their determined struggle is a story that has come to be known with awe and admiration in accounts of the Chetniks.

The creation of the state of Yugoslavia in December, 1918, under the name of the Kingdom of the Serbs, Croats, and Slovenes, while geographically expedient was politically disastrous. With the coming of the war subtle Croatian ties with Germany spelled bloody antagonism among the Yugoslavic components. No stories that have come out of the war can match the accounts of inhuman cruelty of the Croats toward the Serbs. This is a curious story of peoples physically close together but far apart in ideals, culture, and traditions, a hideous, sickening story of savagery that even the Nazis could not fully condone.

The author relates her experiences in working with the Serbs to further their heroic struggle for freedom. Bombing, imprisonment, threats of death—all these she takes in stride, living to tell the story and to declare her lasting devotion to Serbia by establishing in memory of her brother the General Billy Mitchell Memorial Foundation for Balkan Youth.

F. E. J.

DISCOUNT OFFER AND MAILING DATA

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PARIS UNDERGROUND. By Etta Shiber. 392 pages. Charles Scribner's Sons. \$2.50.

A charming five-room apartment in central Paris, an automobile with its luggage compartment hidden behind the back seat, and a courageous and unselfish acceptance by two women of opportunity when it knocked, combined to smuggle past the Gestapo over a period of months nearly two hundred British soldiers marooned in France after Dunkirk.

The women paid for their achievement by final capture, a death sentence for English-born Kitty—the leader of the pair—and nearly two years in German prisons for the author, Mrs. Etta Shiber, the widow of an American newspaper man. That our State Department valued highly Mrs. Shiber's anti-Nazi services is evidenced by the fact that they exchanged for her the notorious "hair dresser" spy arrested by the F.B.I. on the German ocean liner Bremen in 1938.

Modest about her role and matter-of-fact in her style, the author tells her tale. If it is not so exciting as the reader may expect, he will still sit up to finish it and end with respect for the writer, who concludes, "I feel guilty myself—guilty for being here now, in a place of safety, busied with matters of no importance, while this clash of the forces of good and evil is shaking the world."

Outstanding is the vivid account of refugee-Paris "inching" its way south in the first desperate but futile attempt to escape. F. B.

THE GREAT AMERICAN CUSTOMER. By Carl Crow. 243 pages; bibliography; index; illustrated. Harper & Bros. \$3.00.

One of our history's most fascinating aspects is the growth of machines, mass production, and business, in the fresh air of free and untrammelled competition. These things affected the lives of our people, and in their turn they indicated the course many businesses took. This human story should not be one of statistical columns. It isn't here—and Carl Crow is the man to have tackled its telling.

Mr. Crow has a quick eye for the odd and interesting. In tracing the origins and growth of many types of industry he constantly comes forth with unusual tid-bits that bring many a chuckle, reminiscent or otherwise. Essentially his is a story of men, but throughout is the thread that each new invention and each improvement of a process, prepared the way for further development and new fields of enterprise.

The Great American Customer is fine Americana—and a definite answer to those who claim all private enterprise was piratical and maintain that what remains of it should be slaughtered willy-nilly. Human nature doesn't change overnight. The adventurous spirit of those who risked all to better their fortunes still is very much alive. Mr. Crow's book will bring a more rounded understanding of these men, as well as give you some mighty entertaining reading.

GEORGE W. LITTLEFIELD, TEXAN. By J. Evetts Haley. 281 pp.; index; illus. University of Oklahoma Press. \$3.00.

To westerners in general and Texans in particular George W. Littlefield is a familiar character. Born in Mississippi and reared on a Texas plantation, at 19 he rode for the Confederacy and at 21 was both breveted a Major for gallantry in action and retired as a result of wounds. Thereafter he built with his own head and hands a great fortune from cattle and from banking, helped run Texas politics, and endowed his state university. His biography is well and sympathetically written by a historian who, as a practical rancher himself, well understands Littlefield.

MALTA EPIC. By Ian Hay. 238 pp.; illus. D. Appleton-Century Co. \$3.00.

This story of Malta by a British general and journalist (Ian Hay is actually Major General John Hay Beith, for 2½ years of this war director of public relations in the War Office) tells just about everything except what really counts—why Malta held out when Pantelleria and other Axis bases didn't. It includes the geography of the Mediterranean, the causes of the war and its conduct on various fronts, a history of the island from the ancient Phoenicians on, Malta's defensive preparations, even the lives of General Dobbie and Lord Gort, the island's two wartime governors. It gives an excellent play-by-play description of Malta's evolution from a beleaguered

GUNS from the inside out

The **BASIC MANUAL OF MILITARY SMALL ARMS**

A COMPLETE GUIDE TO THE WEAPONS OF THE U. S., ITS ALLIES AND ITS AXIS FOES \$2.00

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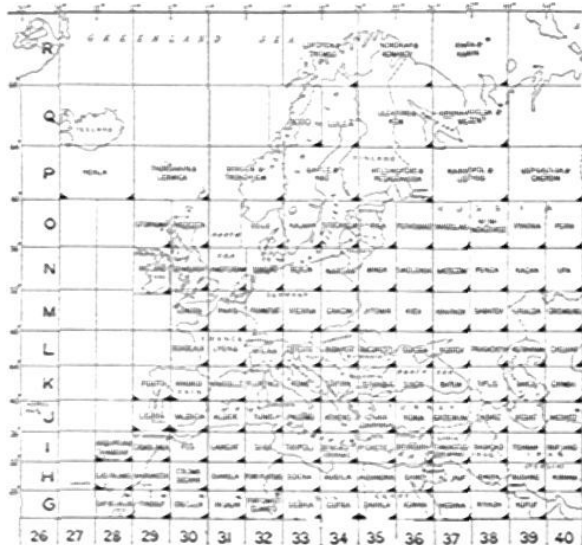
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

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fortress to an advanced base for the Allied offensive against Europe. But except for an occasional paragraph, nowhere do we sense the suffering of the common people, and the gradual formation of their resolve not only to stand up to the Axis but even to fight back. And after all, it is this that is truly the epic of Malta.

A. L. O.

AMERICAN GUERRILLA. By Capt. Douglas M. Smith & Cecil Carnes. 307 pp.; index; photographs. The Bobbs-Merrill Co. \$3.00.

During the last war Capt. Smith served in the French Foreign Legion. In October of '41 he rejoined it, this time as a second lieutenant. Convinced of the value of super-commandos, he was sent to Syria to put his ideas into effect—but not until he reached Kabrit in Egypt could he really get into his stride. There he joined a tough band of specially trained desert fighters who performed many amazing feats behind Rommel's lines.

American Guerrilla is an exposition of fine art of guerrilla warfare in addition to a rapidly moving account of personal experiences. Touching on a little known phase of modern warfare, it deserves wide attention.

TO ALL HANDS. By Lt. John Mason Brown, USNR. 236 pages; illustrated. Whittlesey House. \$2.75.

This is one of the best written and most interesting books it has been my pleasure to read for some time. The author was appointed by Rear Admiral Kirk to be Bridge Announcer. "After all," said Admiral Kirk, "this is a democratic war, and I believe that men who are willing to give their lives for democracy have the right to be included in what is going on."

To say Lt. Brown fulfilled the job well is an understatement. Speaking from the bridge of the flagship of the United States Atlantic Fleet's Amphibious Force, he takes you across the Atlantic to Africa and thence to the invasion of Sicily. He describes each day's happenings, telling the trivial as well as the momentous, the tiny things that made up daily life aboard a darkened ship. His announcements were fluently given and a travelogue in disguise. He makes you feel the tension when a sub is spotted, the release of tension when Gibraltar is sighted, famous "D" day, and (after the successful invasion) the glorious homeward-bound. M. K. W.

THE TRAGEDIES OF SHAKESPEARE. 1157 pp.; notes; glossary. The Modern Library. 95c.

THE COMEDIES OF SHAKESPEARE. 1007 pp.; notes; glossary. The Modern Library. 95c.

THE HISTORIES AND POEMS OF SHAKESPEARE. 1047 pp.; notes; glossary. The Modern Library. 95c.

Complete and unabridged, these are fine companion volumes for anyone's use. Attractively bound, they would grace any library. Clearly printed in compact format, they can be read under difficult lighting conditions and easily carried. Their low price makes them ideal for dayrooms or for toting in the field. And of course their contents speak for themselves.

THE BOMBED BUILDINGS OF BRITAIN. Edited by J. M. Richards; with notes by John Summerson. 138 pages; index; photographs. Oxford University Press. \$4.50.

Here is record of architectural casualties, 1940-41, in Britain. It is of course not complete and doubtless never will be, but is limited to buildings that were of architectural importance in life and to places where damage has been severe.

The first section of the book is given to London, the six shorter sections that follow it to the six provincial cities that have suffered most severely. The next section covers other cities where architectural losses have not been so great as to warrant their being given a separate section each. Finally damage outside the big cities, in other towns, and where stray bombs have struck unluckily in the country, are shown. The pictures are magnificent and the explanations interesting.

M. K. W.

CONDITION RED: Destroyer Action in the South Pacific. By Comdr. Frederick J. Bell, USN. 267 pages; index; photographs and maps. Longmans, Green & Co. \$3.00.

Destroyers are the fightin'est thing afloat, and even among these the *G* hung up new records. She made more trips into Guadalcanal and spent a longer time in the advanced fighting area than any other destroyer. From June to December her crew had no chance for shore leave—a record for the modern navy.

Comdr. Bell does full justice to the combat career of the *G*. He tells of Guadalcanal, Tulagi, Gavutu, Tanambogo, names now semidistant in the news but which will rightly live in martial and naval history. It's a swell book.

A BOOK OF WAR LETTERS. Edited by Harry E. Maule. 328 pages. Random House. \$2.00.

If you have a son or daughter in the armed forces and do not hear from them as often as you would like, read this book. It will tell you a great deal about the training, food, living conditions, combat, and kind of country overseas where they are on active duty. It is divided into sections so that if your son or daughter in England, North Africa, Australia, or anywhere else, just turn to the chapters in which other soldiers from those areas or services tell their experiences. M. K. W.

DANGER IN THE CARDS. By Michael MacDougall. 236 pages. Ziff-Davis Publishing Co. \$2.50.

This book is a "honey," any way you take it! Mr. MacDougall used to be a card manipulator in vaudeville, learned subtler and more skillful sleights from professional gamblers, then turned his talents to the expose of crooks and cheaters. He tells his experiences and observations in a lively fashion that makes swell light reading. More important, though, the once-fleeced lamb who reads his tales can be sure he'll never again be shorn, whether his gambling is via dice, cards, roulette, or what-have-you.

THE CHEMICAL FRONT. By Williams Haynes. 254 pages; index. Alfred A. Knopf. \$3.00.

Don't shy away from this book because of the title. Yes, it is about chemistry, but it tells the story in a much different style than is found in technical handbooks or college texts. Mr. Haynes has presented the readers with the spectacular part that chemistry is playing in this technical war. He writes of the chemical munitions of the present war, of the men who discovered them, how they were made and used, and what they promise in the future.

All of it is written not in a complicated technical style, but in a clear dramatic style which is as easy to read as a modern novel. A remarkable book, and extremely interesting. B. H. W.

TALES OF THE PIONEERS. By W. A. Chalfont. 129 pages. Stanford University Press. \$3.00.

For 55 years Bill Chalfont has been a California newspaper editor. His whole life has been spent near the California-Nevada border. From this background he has drawn tales of this country, its inhabitants, ups and downs of some of the camps and prospectors, luck both good and bad. He doesn't stick to the "headline" characters of the old days, whose deeds are well known, nor are his anecdotes the "tall tales" of apocryphal stature. *Tales of the Pioneers* is a vignette of history, full of revealing sidelights, and good Americana.

LOVE POEMS: Old and New. Selected by Catharine Connell. 196 pages; indexes. Random House. \$1.50.

In this pocket-sized book you will find lines familiar and lines new to you, but all are delightful.

WITH GENERAL CHENNAULT: The Story of the Flying Tigers. By Robert B. Hotz, with the assistance of George L. Paxton, Robert H. Neale, and Parker S. Dupuy. 261 pages; appendix; photographs; endpaper maps. Coward-McCann, Inc. \$3.00.

On December 20, 1941, the American Volunteer Group—the "Flying Tigers"—was blooded in combat with the Japs. This was the climax of years of dreams and plain hard work by Claire Lee Chennault, top-flight flyer and confidant of Chiang Kai Shek. From then

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until July 4, 1942, this Group's exploits ran counter to the current of Jap invasion and conquest. On that latter date it was absorbed into our AAF.

Hotz, long a deep admirer of Chennault, has written "the" story of the Flying Tigers and their hero, their leader. Here is the full, complete account of the Group's background, organization, and operations. It is lively in style, and it is accurate: Gen. Chennault himself read and approved it before publication. And it is no personal money-maker, as all royalties go to the A.V.G. Memorial Fund.

MY NATIVE LAND. By Louis Adamic. 507 pages; illustrated. Harper & Bros. \$3.75.

Yugoslavia is much in the news. *Chetniks* and partisans battle the Nazis—and battle each other. Revolution and counter-revolution smolder. The past struggles against the future. And steadily continues a connecting, continuing thread: Germany's "technique of depopulation."

As a nation Yugoslavia has been little known and less understood. A "treaty" country, it attempted to amalgamate disparate groups into the Kingdom of the Serbs, Croats, and Slovenes. Long before unity of hot-blooded races could be achieved the Nazis overran it.

Louis Adamic, a native of that section, sheds much light on both background and present conditions. Through the years he has made lengthy visits to his homeland and is thoroughly articulate in telling of his findings. Just now it is more important that he has maintained contact with friends there. We thus have the stories behind the headlines; the tale of Yugoslav resistance, of years of intensifying guerrilla warfare, of a complicated struggle that has been sadly and unnecessarily confused, bitter, and tragic.

In view of the political possibilities of these Slavic peoples, partly resulting from Russia's natural interest in that race and in the Balkans, it behooves us to learn all obtainable facts about them. Mr. Adamic makes a notable contribution toward an understanding.

THIS IS INDIA. By Peter Muir. 234 pages; index; endpaper map. Doubleday, Doran & Co., Inc. \$2.50.

In a manner as forthright and unembellished as the title of his book, Peter Muir tells of what he saw in India. So great are the social and economic extremes that, to the Western way of thinking, these conditions are scarcely less than chaotic. Superstitions, the caste system, countless taboos, and astonishing inconsistencies divide the people and preclude any clear-cut political objective.

Peter Muir's job of relating India's position in the war to possible effects on the rest of the world is no simple undertaking. In view of all the factors involved his achievement is creditable. If one finishes the book with a lack of a clear understanding of India, at least one has some understanding of the lack.

F. E. J.

A HISTORY OF THE COLT REVOLVER. By Charles T. Haven and Frank A. Belden. 659 pages; glossary; index. William Morrow & Co. \$10.00.

For collectors and students of weapons and firearms, Messrs. Haven and Belden have written a fascinating and authentic history and record of all types and models of Colt firearms from 1836 to 1940. Both collectors and the Colt company cooperated to make new evidence available and to provide photos of many extremely rare models. Divided into four parts, this volume covers the entire subject; excellent for reference, it also sheds many a sidelight on our history.

THE NORTH STAR. By Lillian Hellman. 118 pages. The Viking Press. \$2.00.

This story, in script form, brings into sharp focus the character and existence of the inhabitants of a Russian village before invasion; then the tragedy, horrors, and cruelty of Nazi aggression. So masterful is the dialogue—so clearly are the bravery, dignity, and human heartaches of the villagers portrayed—that readers will be not only deeply moved, but truly challenged.

A. E. H.

THE RIFLE IN AMERICA. By Philip B. Sharpe. 577 pages; appendices; indexes; profusely illustrated. William Morrow & Co. \$10.00.

For anyone interested in rifles, their ammunition, or their accessories, this is *the* book. Written by a man who thoroughly knows and understands the subject, it covers all ramifications. Early rifles, rifle history and development, sights, the rise and fall of different makes and types, military and custom guns—all with complete illustration—form the subject of Mr. Sharpe's magnificent round-up.

Appendices complete the picture, listing the American cartridges of today, the ballistic specifications for centerfire rifle cartridges, barrel dimensions, and reference addresses of makers of and dealers in arms, ammunition, and accessories.

This is a weighty tome, but an indispensable one if you are honestly interested in American rifles past or present.

MANY MOONS. By James Thurber; illustrated by Louis Slobodkin. 45 pages. Harcourt, Brace & Co. \$2.00.

With this volume James Thurber shows a new facet: the writer of stories for children. This lovely book with many delightful illustrations in color, tells the tale of a little princess who wanted the moon, and of how she got it. It is a grand gift for your own or someone else's child.

THE RUSSIAN ENIGMA. By William Henry Chamberlin. 306 pages; index. Charles Scribner's Sons. \$2.75.

An understanding of Russia is what this book offers. The author feels that too much has been written on Russia that was propaganda, "pro" or "anti," and too little of straightforward facts. A background of twelve years in Russia as a foreign correspondent and extensive research in Soviet newspapers and magazines qualifies Mr. Chamberlin for such an undertaking.

One who wishes to be well informed about Russia should put this book on his must list.

B. H. W.

SEMPER FIDELIS: The U. S. Marines in Action. By Keith Ayling. 194 pp.; photographs. Houghton Mifflin Co. \$2.00.

A rounded account, *Semper Fidelis* tells something of the making of a Marine, of the Corps and its history, and of the opportunities it affords. Most of it, however, is composed of straight-out, authentic stories of marines under fire in this present war. Men just back from Guadalcanal, from Midway, from tropical heat and tropical jungle, told their tales directly to Keith Ayling. His record is no stilted, twisted, second-hand account, though. You really fight with a raider battalion. You fly with those Marine aces who have done so much in the Pacific and Southwest Pacific Theaters. You crawl through jungle muck with Marine writers who don't just pound a typewriter 'way back at the end of a long 'phone line.

The whole thing *flows*. It is a fine tribute to a splendid Corps, fittingly done by a graphic writer.

A COMPREHENSIVE SMALL ARMS MANUAL. By Charles T. Haven. 155 pp.; bibliography; illustrated. Wm. Morrow & Co. \$1.50.

Realizing that state guards, police auxiliaries, plant guards, and the civilian himself, in this time of war frequently have contact with more or less out-of-date firearms, Mr. Haven worked up this little volume which indeed answers many a question. He restricts himself to other than strictly modern military weapons. The result is a volume of not just current value, but one which will greatly help the returning soldier or sailor evaluate that second-hand gun (or shotgun or pistol) he may be thinking of for sport or household protection. Cogent comments about permissible ammunition are mighty useful, too. The soundness of this book is attested by its author, who with Melvin M. Johnson, Jr., wrote *Automatic Arms*, the authoritative work in that field.

LONG, LONG AGO. By Alexander Woollcott. 278 pages. The Viking Press. \$2.75.

A collection of the magazine articles and radio broadcasts of the late Alexander Woollcott. If you are a devotee of the gentleman you will be able to hear his voice clearly as you read. A most satisfactory feeling, I assure you.

In the book you will find stories of people well known to you—Oliver Wendell Holmes, Clarence Day, Harpo Marx, Katherine Cornell—as well as of people and things you never heard about, but will appreciate henceforth.

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Woollcott wrote in an easy-flowing manner and could put his thoughts in a way that made them cling to your memory. He possessed a faculty for making you feel what he felt. But on the whole I did not find *Long, Long Ago* quite up to his *While Rome Burns*. Perhaps that is due to the fact that he did not have the time left him in which to work it over as thoroughly as was his wont. His supernatural stories in his earlier work can not be beat, and I missed them in this new book.

By all means read *Long, Long Ago*, but then be sure to read or reread *While Rome Burns*.
J. M. C.

AS I SEE IT: Story Drawings of Life in the Army. By Cpl. L. T. Shackelford, Jr. 96 pages of sketches. Alfred A. Knopf. \$1.50.

Through months of training, Shackelford's notebook was never far away. His on-the-spot sketches furnish delightful background for these pungent, humorous drawings of life in barracks and in the field. *As I See It* is a fine little gift volume.

THE STORY OF WEST POINT. By Col. R. Ernest Dupuy. 282 pp. *The Infantry Journal.* 25c.

Initially appearing under the title *Where They Have Trod*, this gives an excellent picture of the development of a system of education in a national institution, and its impact upon and relationship to our country, from 1802 to 1943.

AUTOMATIC ARMS: Their History, Development, and Use. By Capt. Melvin M. Johnson and Charles T. Haven. 358 pp.; index; illustrated. Wm. Morrow & Co. \$5.00.

Although not a new book (it was first published in 1941, has since been somewhat revised), *Automatic Arms* is such a classic in its field that each newcoming "generation" in the army should be made thoroughly aware of it. Its subtitle suggests that it covers a lot of ground. It does, and well. In fact, it is *the* book on automatic and semi-automatic weapons.

It starts right back at the beginning of automatic firearms. Many types have been tried; some worked, some failed, and these thoroughly posted authors detail the virtues and vices of each type. Carrying on, they cover the types that have survived the tests and the years and tell how and why they can be used to best advantage.

As it is divided into sections the book provides easy reference for those seeking specific kinds of information. Into appendices are packed a tremendous amount of detailed information about the world's automatic weapons, their characteristics, and the like. Here also are drawings of the operating parts of many arms in current use.

In short, *Automatic Arms* is the finest of reference books.

BLITZKRIEG: ARMIES ON WHEELS. By Lt. Col. S. L. A. Marshall. 259 pp.; sketch maps. *The Infantry Journal.* 25c.

Originally published in two separate books, this account of the first two years of the present war has been condensed into pocket size.

ANIMAL REVEILLE. By Richard Dempewolff. 269 pp.; photographs. Doubleday, Doran & Co. \$3.00.

Horses, pigeons, mules, and dogs are the animals usually thought of in connection with war. Actually, though, the list is much, much longer, and includes not only elephants and donkeys but also such life as canaries and llamas, spiders and slugs. And the more familiar ones are performing a new variety of tasks: dogs not only serve as messengers, but stretch 'phone wires, act as sentries, perform scouting duty, pull stretchers. . . . Even cats have been so useful in Britain that they are allowed food ration cards.

This story is sympathetically told by an obvious animal lover, but there is no mawkish sentiment. Rather, this is a comprehensive, fascinating, amusing narrative of the war work done by animals in general and by some outstanding specimens in particular.

JAPAN'S MILITARY MASTERS. By Hillis Lory. 188 pp. *The Infantry Journal.* 25c (to members of the Armed Services only).

With a foreword by Joseph C. Grew, Mr. Lory gives a splendid account of the relation of Japan's army to the balance of the country, and the methods of education and training that yield the "honorable" (?) *Bushido*.

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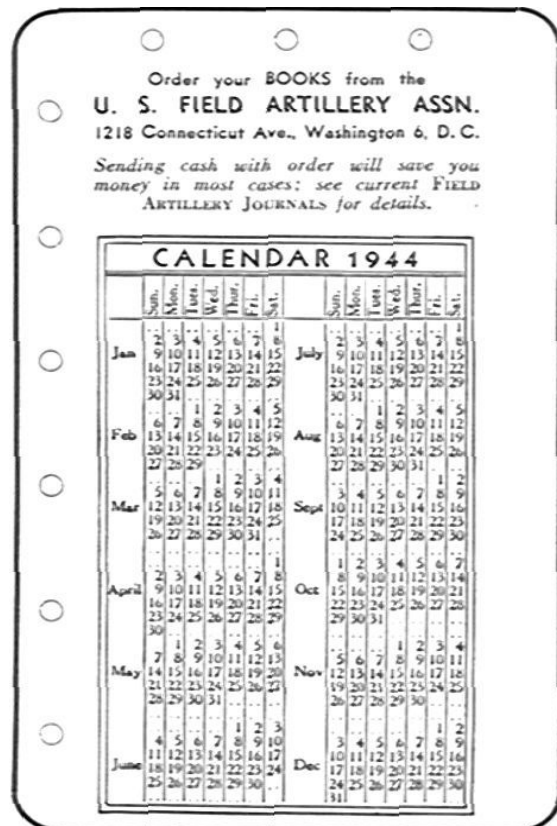
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