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FIELD ARTILLERY
Journal



NOVEMBER, 1944

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The Field Artillery Journal

NOVEMBER, 1944—Vol. 34, No. 11

SELF-PROPELLED M-12s are in the thick of the assault on the Siegfried Line. This month's cover shows a battery of them lined up almost track-to-track, firing into the German town of Bildchen, three miles southwest of Aachen.

THIS PAST MONTH, like those that have gone before, brought your Association a tremendous number of address changes. Even so, undoubtedly many a member was just too busy to notify us that he had moved. Remember, we make promptly *all* stencil changes that are requested—but we must have your cooperation too. If your JOURNAL is missing or your friends aren't receiving theirs, send us the proper current address; the chances are that earlier cards went astray.

Please bear in mind too that magazines are *not* forwarded from temporary APOs (those with four or five figures). Just keep us posted of any change in your address, however small, and we'll keep your JOURNALS properly flowing toward you.

WHILE ON THE SUBJECT of mail and the JOURNAL, we are glad to report the fine reception given (1) the overseas "pony" edition and (2) the new facilities for sending it by first-class mail. An extra \$1 per year is all that is required for your JOURNAL to reach you overseas more promptly than ever before. Wish we could send all of them that way without extra charge, but it just can't be done.

ENEMY MORTARS are a very "live" subject in all theaters. Consequently next month's article *Countermortar*, by Lt. Col. Robert C. Gildart, FA, should be especially useful.

M-7 units will be interested in a detailed description of a simple support for the camouflage net, which is more flexible and effective than most others and which affords more working space for the cannoners.

Also in the works are overseas articles on topics ranging from headquarters units to the heavies.

And all Air OP people will study carefully Lt. Col. Gordon I. Wolf's remarks about the *Seagoing Grasshoppers*.

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Shell Crater Analysis

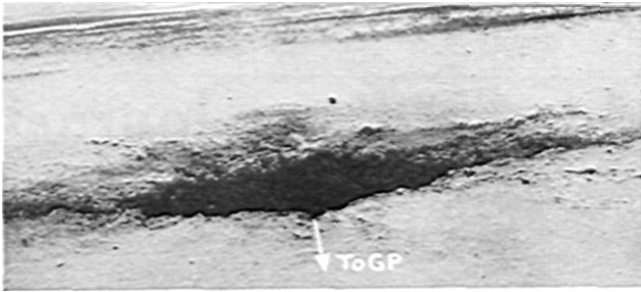


Figure 1. Perfect 105-mm howitzer FQ shell crater. Field covered with several inches of snow at time crater was made. Unusual fringe of dark earth probably caused by snow retaining powder-burned soil particles.

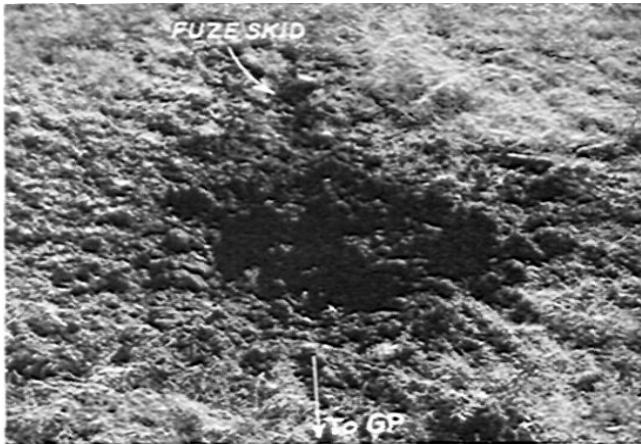


Figure 2. 105-mm howitzer FQ crater with moderate angle of fall, in loamy heavy-turfed soil. Note groove caused by fuze fragments.



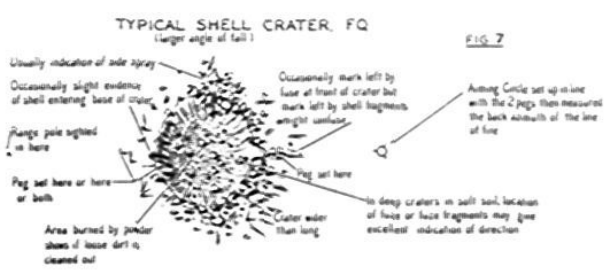
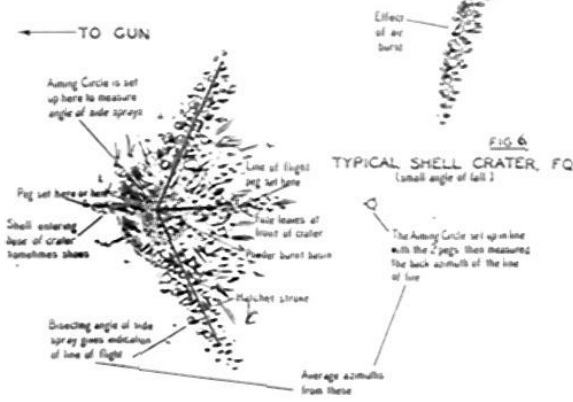
Figure 3. 105-mm crater in hard-packed earth. Solid crown of road resisted side spray which blew out the lower (weaker) side only.

Figure 4a. Typical ricochet furrow in loamy soil, of 105-mm howitzer shell. Considerable slope of fall; channel baked hard and partly marked by paint scraped off shell.



Figure 4b. Big guns leave tell-tale marks, too. Typical ricochet furrow of 14" naval rifle, from which direction is obviously discernible. foreground is where shell (dud) came out.

METHODS OF OBTAINING DIRECTION OF FIRE



for Location and Identification of Enemy Artillery

By Maj. Lee O. Rostenberg, FA

AUTHOR'S NOTE

Identification of shells as to caliber and type from their fragments was first done in World War I, but only to a slight extent. Very little of the information obtained then carried over to this war. A fresh start therefore had to be made.

In the spring of 1942 research began on the determination of the location of pieces from the craters made by their shells. Emphasis was on accuracy of direction as developed from patterns on the ground. This was a new development entirely. The British, however, did some good work along this line at Tobruk.

The first American work on identification from fragments was begun at Medjez-el-Bab in December, 1942, by Maj. G. E. Morgan. His was the first data on German artillery compiled by our troops in battle. He and his Corps have continued the outstanding work begun at that time.

Experience has shown that early location and identification of enemy artillery and mortars are of paramount importance in combat. Unceasing effort, and all possible means and methods, must be employed to provide *promptly* the information and data necessary to knock out such enemy weapons. This mission and the gathering of information essential to its accomplishment are of vital interest to all soldiers, but of primary concern to all artillerymen.

A knowledge of the mass, disposition, and zones of fire, by caliber and type, of the enemy's heavy weapons is of great value in estimating his tactical capabilities. The success of an entire operation depends to a considerable extent upon the accuracy and completeness of this knowledge.

Systematic examination of craters and shell fragments may disclose information about new types of enemy ammunition and weapons, a knowledge of which may permit us to develop early and effective counter-measures. This knowledge may also suggest improvements in our own ammunition or weapons.

LOCATION BY CRATER ANALYSIS

A projectile's direction of flight frequently can be determined quite accurately from its crater or ricochet furrow. By locating the crater accurately and measuring the direction of flight as indicated below, back-azimuths or rays can be obtained which will pass through or very near the actual gun, battery, or battalion position. The position area of a battery can be located by plotting the intersection of the average back azimuths from two or more widely separated groups of craters, and by other methods described herein. The direction to a battery can be determined with fair accuracy from the back azimuth obtained from even one crater or ricochet furrow.

USES AND VALUE

Ability to determine direction from shell craters is a valuable auxiliary to direct observation, aerial photography, sound and flash ranging, and other available means. By analysis of shell craters, it is possible to:

1. Verify as active and genuine the locations obtained by other means, thus reducing the possibility of being misled (as in an air photo) by abandoned, alternate, or dummy positions.
2. Detect presence of enemy batteries not previously suspected.
3. Obtain an early indication of the general location and direction of the mass of enemy artillery.
4. Assist air and ground observation in accomplishing counterbattery missions by greatly reducing the sector necessary to search.

INSPECTION OF CRATERS

Upon observing enemy shelling, nearby personnel should immediately prepare to submit a shelling report such as Form A. Upon cessation of shelling it is highly desirable that trained personnel go immediately to the shelled area to inspect and analyze craters and any fragments that can be found, collecting specimens of the latter if they cannot be immediately recognized. Definite sector responsibility for these reports can be assigned to artillery officers and NCOs near their posts of duty. Reverse slopes, folds in the terrain, hedgerows, and buildings in shelled areas will offer the greatest chance of finding ricochet furrows and other markings useful in determining accurately the direction of flight and slope of fall.

CRATER SURVEY FOR LOCATION

Craters must be located accurately on the map or airphoto. Deliberate survey methods are not essential—hasty survey by pacing for distance, and using the aiming circle for direction, usually is adequate. Frequently a quick, short traverse to a known road junction, the battery position, or an OP is all that is necessary. In some cases the crater can be located by pin-pointing on an airphoto.

DETERMINING DIRECTION AND ANGLE OF FALL

The actual pattern produced on the ground by the detonating shell gives a clear indication of the general direction from which artillery fire is received. This is illustrated in Figs. 1, 2, 3, and 4.

Factors Affecting Pattern

1. It must be kept in mind that due to irregularities of terrain and soil condition the "typical" shell crater pattern is the exception, not the rule.
2. The principal effect from fragmentation is always from side spray, with much less effect from nose spray; back spray is negligible. The width, angle, and density of the side spray vary with different types of projectiles.
3. In evaluating direction, due consideration must be given to the way the earth is thrown, the effect of stones, stumps, roots, variations in soil density and type, and the slope of terrain at the point of impact. Out of any group only those craters most clearly defined and nearest to typical should be utilized.

Range Dispersion

In case the firing has been from a single gun, or a very limited number of guns, range dispersion will give a fair indication of the direction of fire.

Marks on Vegetation and Other Objects

The direction from which a round was fired and its angle of fall are often accurately indicated by markings left as it cuts through trees, shrubs, grass, snow, and various objects. These markings frequently can be used to determine the angle of fall. With the caliber and type of shell known, and an appropriate enemy range table available, an approximate range can be determined. This range may corroborate ranges obtained by plotting or other means.

Ricochet Furrows and Duds

Ricochet furrows usually furnish the best information. The average direction of a few such furrows from the same gun will give a line within a few mils of the true direction of flight. Ricochets will occur in most concentrations even at extreme ranges. Of equal or superior value are grooves in thick grass or bushes, holes through materiel, buildings, trees, and other objects from which angle of fall may be determined frequently.

Technique (see Fig. 5): Carefully remove loose dirt from furrow with hands, leaving smooth, hard channel intact. Drive two thin stakes or survey pins at each end of the usable part of the furrow. Make sure to set the stakes straight and in the center of the channel. These stakes represent the line of fire, the azimuth of which may be measured with an aiming circle placed 5-15 feet from the furrow and in line with it. The slope of fall can be determined with an M2 compass sighted along the bottom of the furrow or entrance hole.

Fuze Quick Craters

At small angles of fall, fuze quick craters furnish information nearly as accurate as that from ricochet furrows. Judging the direction of the trajectory increases in difficulty with an increase in angle of incidence, therefore for equally practical results more craters must be analyzed. If the angle of incidence is small or moderate, the crater generally is pear-shaped. The crater is usually wider than it is long. If the angle of incidence is larger, the crater generally is oval with the narrower diameter in the direction of flight.

Technique (see Figs. 6 and 7): Use of channel in ground where shell entered and/or left: Place a stake in center of channel. Place a second stake on opposite side of crater. Sight along these to obtain back-azimuth as with ricochet furrows. Position of fuze may give an excellent indication of direction of fire.

Use of side spray shown by dirt and cut grass: Place a stake in the center of each line of side spray equally distant from the crater. Putting the aiming circle in the exact center of the crater, measure the angle between the stakes. The bisector of this angle is the approximate line of fire, and its azimuth (or back azimuth) can be determined.

The average of the back azimuths obtained from the two methods will be more accurate than the result from either method alone.

Deep Craters

Least reliable direction is from deep craters. In soft soil, however, good approximate direction can be obtained if a nose fuze had been employed and the fuze and fragments are located. These will often be found in a tunnel in prolongation of the shell's line of flight. A line can be established from this in conjunction with the other characteristics. The crater pattern ordinarily will be round or oval, and of varying depths.

Technique. It is necessary to clean out carefully by hand the loose dirt so as to expose the hard burned inner crater caused by the shell detonation. It is generally discolored and easily recognizable. Fix in its center a small stake. Then equally carefully dig to find and expose the fuze tunnel and the fuze or major fuze fragments. Align an aiming circle with the line connecting the stake centered on the inner crater basin and the location of the fuze tunnel or fuze itself, and measure the back-azimuth. In soft soil this will indicate the direction of the gun.

Sometimes the marking of the shell entering can be seen and utilized also to get direction.

Time Fire

Low air bursts furnish excellent information of the line of flight of the projectile. In any time concentration there will be some impact bursts from which good direction lines can be obtained.

LOCATION OF BATTERIES

Batteries may be indicated or located approximately from:

1. Single back azimuth rays plus analysis of terrain along the rays.
2. Single rays plus slopes of fall.
3. Single rays plus time readings from fuzes.

Enemy batteries will be more accurately located by triangulation (long base intersection) from back-azimuths determined in different shelled areas.

Single Ray Method

1. By inspection. A mean back-azimuth obtained from a group of ricochet furrows and fuze quick craters, which closely match for direction, will pass near or through the responsible battery position. If no data are available for close approximation of range, an examination of maps, air photos, or visual examination of the terrain will often indicate probable areas near the ray where batteries might be located. The capabilities and limitations of the weapons believed employed, as determined by identification of shell fragments, must be considered. For example, locations behind masses from which these particular weapons could not possibly shoot can be eliminated. On ray A of Fig. 8 areas ①, ②, and ③ are probable locations for enemy guns.

2. By slope of fall or time setting of fuze. In either case,

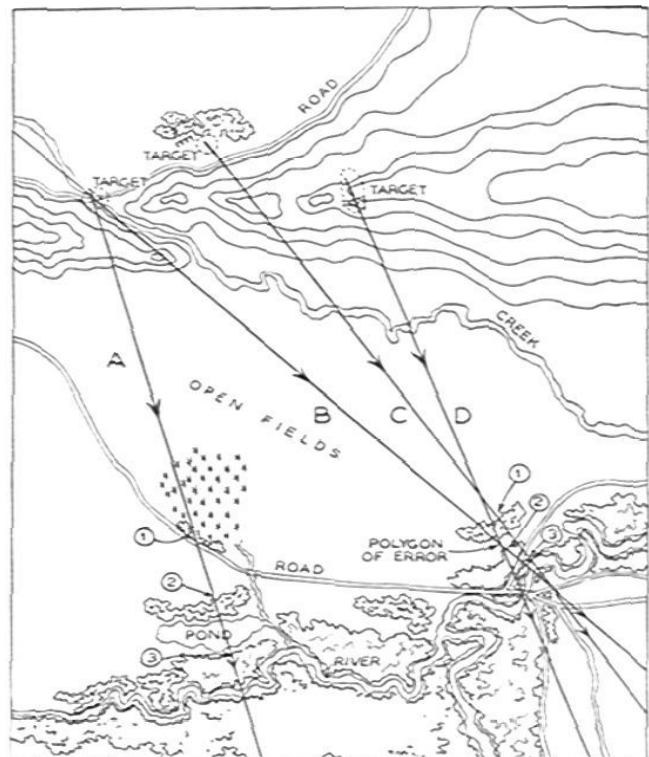


Figure 8. Method of inspection.

approximate ranges can be estimated or obtained closely from appropriate range tables knowing caliber of weapon and the type of ammunition employed.

Intersection Method

Basically, this method is long-base intersection of mean back-azimuth rays from widely separated shelled areas, where the rays originated from craters of shells of identical caliber and type and have been reasonably identified as having been fired from the same gun or battery, as explained below. The intersection of two or more of these rays is taken as the gun, battery, or battalion location. Fig. 9 illustrates centers of battalion areas characteristically obtained by this method, while Fig. 10 indicates battery locations as well as battalion.

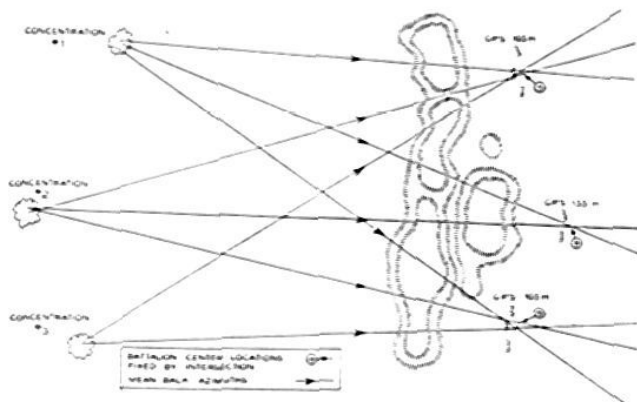


Figure 9. Location of battalion areas.

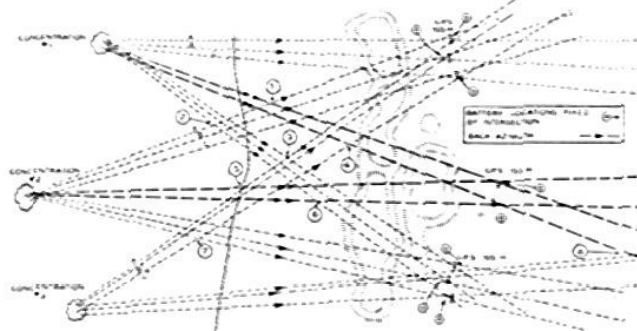


Figure 10. Location of batteries; elimination of "false" intersections.

In case of a resulting small triangle or polygon of error the center, as determined by usual means, can usually be taken as the location. In large polygons of error the area should be inspected for probable locations, as is done in single ray method. Referring again to Fig. 8, the intersection of rays B, C, and D produces a triangle of error which contains probable battery positions at ①, ②, and ③. Suspected position ② seems most probable as it is also nearest the center of the triangle.

"False" Intersections

When many batteries are active on a small front the many back-azimuths tend to be dense and confusing. If all are plotted on the same map many "false" intersections will be obtained. See Fig. 10 again. Most of these can be eliminated by simple inspection, since many "false" intersections will be within or near the front lines (as are ②, ③, and ⑦) or beyond the probable range of the two batteries (as is ⑧). Intersections of different calibers (as are ①, ④, ⑤, and ⑥), are obviously "false."

It will be noted that rays marked "A" from each concentration match up on intersection as being all "left" back-azimuths at each concentration, those marked "B" are each "center," and those marked "C" are "right." Each "A," "B," and "C" ordinarily ties into the same battery, respectively.

"False" intersections can be much reduced by using different colored rays for different caliber and type, and/or employing overlays according to caliber and type of weapon. Times of shelling should be marked along each ray.

Metro Corrections

The accuracy of this method will be improved by the application of metro and drift corrections to the direction of flight.

PERSONNEL AND TRAINING REQUIRED

An individual can perform the necessary operations at each impact area, but for speed and other practical considerations a crew of two or three is recommended. Inexperienced personnel can get direction from ricochet furrows with very little instruction. More instruction or experience is necessary in the cases of craters, certain types of ricochet, and for identification of fragments. Knowledge of the elements of exterior ballistics, firing tables, and their use is helpful, but knowledge of enemy ammunition, fuzes, and weapons is definitely necessary. Since the enemy may use captured weapons against us, familiarity with the weapons and ammunition of our Allies also is important.

AIR OBSERVATION

An air observer can discern the general direction of fire from a shelled area, and by lining in with this can greatly narrow the sector of observation.

Very often directions to guns from ground patterns of shell fire are more easily discernible from in the air than from on the ground. This is especially true for heavy caliber shell craters, as is illustrated in Fig. 11.

Even if the enemy battery ceases firing upon appearance of our plane, persistence of some smoke or dust on the prolongation of the line of fire from the craters may indicate to the observer the correct battery position.

The air observer also can locate and report shelled areas for later examination by ground personnel.

IDENTIFICATION OF INDIVIDUAL GUNS AND BATTERIES

It is possible to identify specific guns and batteries. Duds, fragments, crater patterns, and time of shelling in a specific shelled area are indications which may yield identifying characteristics.

The enemy generally utilizes his artillery much as we do. He calibrates his guns and assigns those that are least worn to one battery, those moderately worn to another, etc. Each gun leaves distinctive marks on the rotating band (as is shown in Fig. 12) and frequently on the bourrelet of the projectile fired. These marks are excellent individual identification.

While Germans follow a definite plan for marking ammunition, frequent differences in ammunition and fuze lots will be found which may differentiate between battalions and sometimes batteries. Slight variations in design and manufacturing anomalies show up very often in the rotating band keying and also distinguish between ammunition lots.

In crater analysis the differences in slopes of fall, burst patterns of the projectiles, directions of flight, and settings to

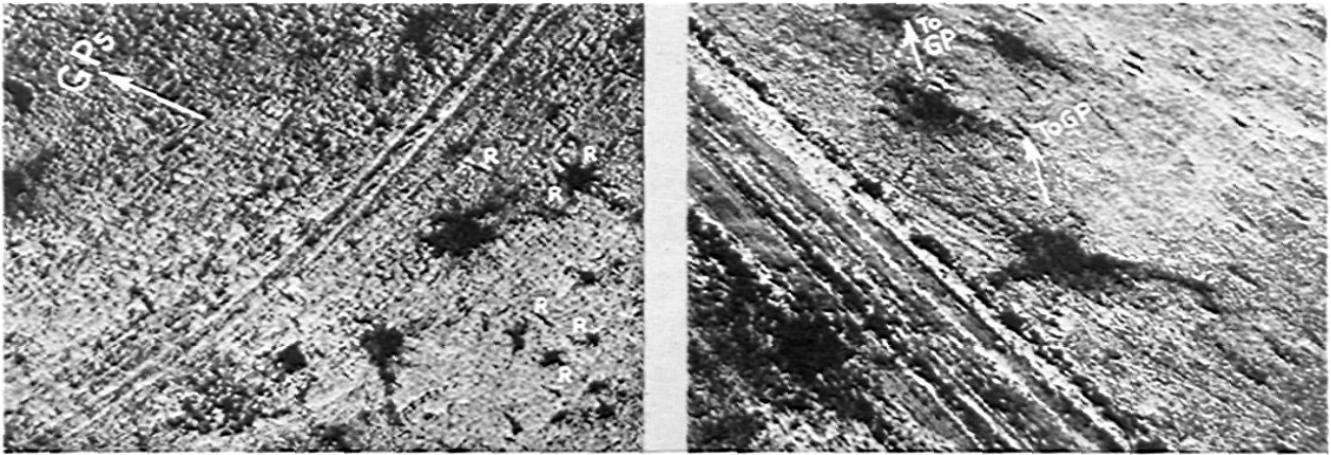


Figure 11. Direction to enemy guns is clearly indicated to air observers, although it may not be utterly apparent from photos. At left, "R" = ricochet; at right, an oblique photo.

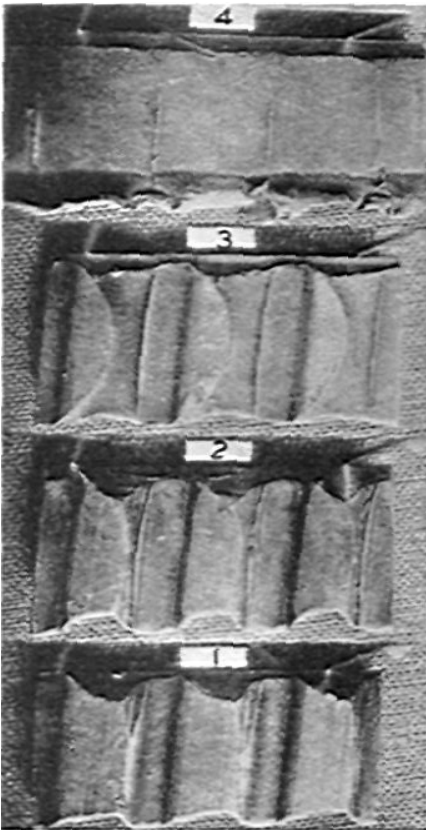


Figure 12. Markings of wear on rotation bands. 1. Section of band from recovered 75-mm shell fired from a new gun. Note unsymmetrical engraving due to variable twist of rifling, and scorings on the forward covers of ridges. 2. Section of band from recovered 75-mm shell fired from a slightly worn gun. 3. Recovered 75-mm band fired from worn gun. 4. Recovered 75-mm band fired from a very worn gun.

time fuzes will all aid in distinguishing between specific guns, batteries, and battalions.

IDENTIFICATION OF ENEMY SHELLS AND SHELL FRAGMENTS

The caliber of a shell, as well as the type of weapon from which it was fired, can be determined in nearly all cases by analysis of its fragments. Dimensions of projectiles vary with caliber and type. Identification is frequently possible if fragments can be found and these measurements taken.

FRAGMENTS SOUGHT

Caliber is determined best from duds, next best from undeformed or little deformed fragments of low order bursts. Shell detonation tends to distort and stretch fragments, therefore thick base sections (including rotating band grooves) are most informative and permit the speediest identification. With experience, however, caliber can be determined accurately from small fragments of high order bursts.

ROTATING BANDS

Pattern of imprints, width, number, size of band or bands, dimensions of keying imprints within the groove or on the back of bands—all give very important indications as to caliber and type. Keying design is almost always conclusive as to nationality (see Figs. 13 and 14).

The width of the land plus that of the groove is an indication of caliber. This width, groove plus land, is

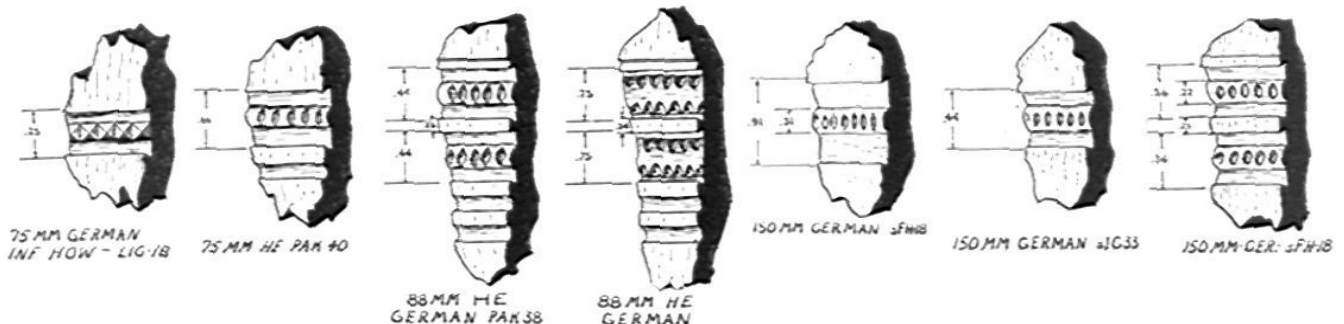


Figure 13. Caliber and type are indicated from rotating band grooves or backs of bands.

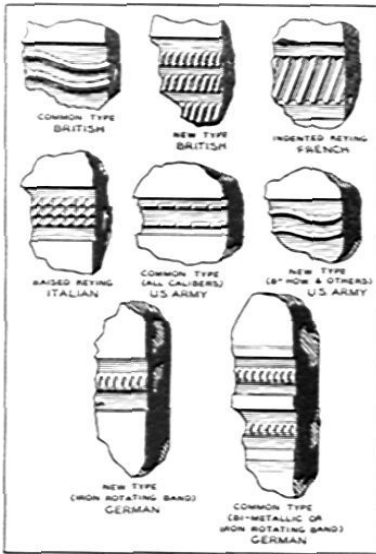


Figure 14. Identification of nationality from rotating band keying.

termed "r," and may be found for each caliber shell by the following formula:

$$r = \frac{C\pi}{N}$$

or

$$C = \frac{rN}{\pi}$$

Where C = caliber, N = number, and $\pi = 3.1416$. "r" is relatively constant throughout the life of the weapon. See Fig. 15.

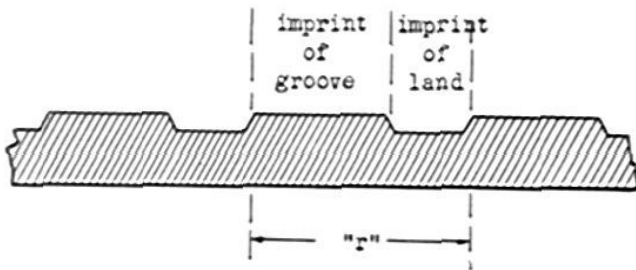


Figure 15. Cross-section of typical rotating band.

MARKINGS AND OPENINGS

On the body of the projectile itself or on fragments, bits of paint, stenciling, stampings, openings, thread counts, adapters, etc., are all important clues to the properly trained and equipped investigator. See Fig. 16.

FUZES

Fuzes and fuze fragments must be considered cautiously, as the same fuze may be used with a number of different caliber shells. They may be made of different materials (aluminum, copper, brass, plastics, iron, steel, etc.) and have characteristic appearances, shapes, details, openings, and stampings.

CRATERS

The size, width, and depth of the crater is some indication of caliber. This is generally unreliable, however.

READY REFERENCE IDENTIFICATION SYSTEM

Any two shells of different caliber or type necessarily have certain differences in size and shape. Even shells of similar caliber and type may have great difference in some respects. By breaking down a shell into its significant or "critical" dimensions and characteristics, and arranging these into a series of tables with columns for individual items, systematic elimination or selection is possible. This results in the correct identification of a shell from a few clues from a small fragment or two. A ready reference manual based on such a system is now in preparation.



Figure 16. Three German shells of similar caliber but different type. Note closely differences in stamping, stenciling, openings, etc., which may aid identification after fragmentation. Left: 88-mm HE shell (German); AA and AT gun; projectile is filled from bore end. Center: 88-mm APC projectile (German); AA and AT gun; note base-detonating fuze and iron rotating bands. Right: 81-mm HE shell (German); S.G.R.W. (Schwerer-Granatewerfer) heavy mortar shell can be used in U. S. mortar.

SHELLING REPORT

(Use for Artillery, Mortars, and Aviation Bombing)

Date

- (A) Name, Rank, Org. Time
- (B) Your map location (C) Estimated direction (Y-Azimuth) of enemy guns by flash, smoke, sound (tell which)
- (D) Estimated distance to or location of guns
- (E) Location of shelled area or direction (Y-Azimuth) and estimated distance from you
- (F) Time shelling started (G) Ended
- (H) Number and caliber of guns firing
- (I) Number of shells; type of fire (time, rico, perc)
- (J) Nature of shelling (CB, Regist., Harassing, OP, Neut. (Preparation) (Interdiction).
- (K) Damage (NEVER send by radio "in the clear")
- (L) Flash-bang (time interval between flash and gun sound)

SHELL CRATER ANALYSIS

When shelling ends, go at once to shelled area, and determine:

- (M) Back-azimuths of ricochets and craters (average)
- (N) Average location of craters used
- (O) Slopes of fall
- (P) Calibers and types of shell (from duds or fragments) (When doubtful collect fragments, tag, and transmit with this report.)
- (Q) Remarks (include anything special you note)

SHELLING REPORT																
Use Applicable Columns to Report Mortar Fire and Aviation Bombings												DATE _____		ORGANIZATION _____		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Reported by (Time)	Map Loc. of Obsr.	Direction by Flash, Sound or Other	Estimate Distance or Location	Area being Shelled	Time from	Time to	No. and Type of Guns	No. of Shells; Type of Fire	Nature of Fire *	Damage X	Flash Bang Sec.	Crater Back-Azi-muths	Surveyed Crater Location (Average)	Slopes of Hill	Cal. & Type Fragments Ident.	Remarks
*CB, Regist., Harassing, CP Mort., Inf Mort. (Preparation), Interdiction X WILL NEVER be sent "in the clear" by radio.																

Form B

SHELLING REPORTS

Shelling reports are the means of getting information concerning active enemy batteries back to where it can be evaluated and acted upon properly. To be of maximum value, information from observers must be detailed and accurate, it must be as complete as possible and it must be transmitted without delay. A definite form and sequence for shelling reports is therefore advisable. A suggested form for the observer's reports to his headquarters is Form A, above; this form is suitable for printing on a card to be glued into a Field Message Book. Form B is suitable for recording this information at battalion and higher headquarters as the shelling reports pass through them.

The silencing of enemy batteries is of vital interest to all soldiers. All should be encouraged to submit shelling reports, regardless of arm or service. Since, however, a high percentage of all enemy concentrations will fall somewhere near an artilleryman, artillerymen should be especially trained so that their reports will be accurate, complete, and prompt. A smaller number of reports which are complete and accurate are of greater value than many reports of a general nature. The best reports are submitted by trained men who have actually surveyed the craters in the shelled area and have either analyzed the available shell fragments or submitted them for analysis along with their reports.

Brig. Gen. T. E. Lewis, Artillery Officer of the Fifth Army, calls our attention to a recent visit of Prime Minister Churchill to a 240-mm howitzer position of the 697th Field Artillery Battalion in the vicinity of Leghorn, Italy. Says he:

"The 240-mm howitzer has played a most important role in the Italian Campaign. The accuracy of the weapon along with the weight of steel at the business end of the trajectory has blasted away German fortifications and silenced their counterbattery fires. The adjustment of fire is usually conducted by observers in high performance air planes.

"Mr. Churchill was visibly impressed with the well constructed and camouflaged gun pit, the training of the gun squad, and the efficiency with which the entire shoot was performed."



Prime Minister Churchill with Lt. Gen. Mark W. Clark. On the Prime Minister's right is Lt. Col. Floyd Christian, Commander of the 697th FA Bn.

B. E. SMOKE

When using base ejection smoke, keep in mind the following principles:

1. Get the smoke cloud, not the projectile, on the target.
2. Start with fuze setting two full seconds short of firing table value or setting for zero height of burst (in case of previous registration).
3. Make changes in height of burst by varying the time setting by full seconds.

WHAT MAKES AN ARMY AN ARMY

By Maj. Gen. John A. Crane

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Somewhere along the line in the development of our command and general staff technique the field artillery dropped into a notch and stuck. It was probably in our enthusiasm for the combat team as a means of integrating infantry and artillery that we lost sight of the importance of field artillery as a separate supporting arm. Tactics and technique of the artillery battalion kept abreast (if not ahead) of the best in the world. The employment of division artillery, as such, received some attention. Corps artillery was forgotten. Yet the coordinated support of artillery is essential to corps action; without it the strength of an army is divided.

TACTICAL CONTROL

Division Artillery

Since the appearance of a device for indirect laying, this principle has been the distinguishing feature of artillery. It enables the commander to influence the course of battle or to counter enemy action over a wide front without displacing or changing the disposition of his troops. The larger the force the more important this becomes. By the end of the last war great masses of artillery were directly controlled by the corps artillery commander, a major general on the staff of the corps commander. Massive rolling barrages preceded the advance of the infantry. These fires, closely controlled and coordinated, were used to further the progress of the force as a whole. To the doughboy, artillery fire became an inevitable part of the battle scene. Like the terrain and the weather, it influenced his action, but its source was as remote and often as impersonal as the gods of the Greeks.

Perhaps for this reason, but more certainly because of our limited facilities during peacetime, the development of artillery and infantry grew farther and farther apart for almost twenty years. The undesirable features of this arrangement were apparent to infantry and artillery officers alike, and when the combat team idea came along we snapped it up. We went into the 1940 and '41 maneuvers with the idea that the corps commander need ask no further blessings than his divisions of combat teams. These teams had to be careful about tank attacks and know when to call for air support, but in all other respects they were sleek, fast, hard-hitting, self-sufficient combat units. Of course, there was some corps artillery—a brigade, wasn't it?—that was supposed to do something about counterbattery, nobody was sure just what.

In spite of the difficulty of getting reality into the play of artillery in maneuvers, the division artillery commander soon saw where he stood in the picture and didn't like it. Whenever he tried to mass his fires on some particularly lucrative target, a traffic jam or tank concentration, he found his battalions scattered around, sited for antitank defense, half of them pointed to the rear. On the other hand, the division commander found that he must bring his artillery commander in on his planning. It was often embarrassing to discover capabilities of the artillery too late to be of use. Still more embarrassing was an occasionally belated realization of artillery limitations. A great stride had been made in the right direction.

Corps Artillery

And so we came to Africa. The corps artillery officer, a full colonel and fortunately, very decidedly a staff officer close to the

corps commander, managed to bring along the artillery brigade, most of it at any rate, though few outside the immediate family knew why. It was only through his unflagging insistence that it was finally agreed to include one battalion of long-range guns in the shipment of corps artillery to North Africa. Yet this battalion moved to the front from the docks and is the only unit that has been in action continuously, with only enough time out to move from one sector to another, since its first day of combat a month before we put a corps into the fight.

Starting in Africa with one battery guarding the Spanish Moroccan border, a battalion supporting the British in Tunisia, 800 miles away, this corps artillery brigade finally worked up to the direct control of thirteen battalions, including a Canadian regiment of 5.5-inch guns, in support of an American corps in Italy (see cut). It had supported a corps on fronts varying from seven to seventy miles. It had attached to it battalions, regiments, and in one case the whole division artillery of an armored division. It had formed artillery groups using the regimental headquarters, and had furnished battalions and groups in support of divisions acting alone. We had learned that it took artillery and still more artillery to counter tanks and enemy batteries. Air support had done some good work in softening up strong points in Sicily but it took the constant pounding of artillery to keep the square-heads down. As one officer put it: If you have a good stout stick and an ugly opponent, will you throw the stick at him, then run and cut another one, or will you step boldly up and belabor him with it? Incidentally, in such a situation it is well to provide yourself with a stick a little heavier and a little longer than your opponent's and seize it with a firm grasp.

The almighty division did its stuff and did it well. But the tough country around Mateur showed that often the commander's plan had to be built up around the capabilities of his artillery. Not only that, but it was seen that a division could invite trouble by getting beyond the range of assistance from the artillery in adjacent sectors. Artillery planning became a concern of the corps. The corps commander must have an artillery officer of rank and experience, capable of advising him in the employment of his artillery, of controlling the employment of that artillery, and of furnishing artillery intelligence on which to base his estimate of the enemy capabilities and intentions, and thus his own plan.

The keynote of all battle experience reports on artillery employment during this time has been flexibility. As a matter of choice, flexibility is a desirable asset; as a necessity it smacks of instability or at least lack of organization. One counterbattery officer compared the organization of his section to Harriet Beecher Stowe's Topsy. Fortunately, we had our British Allies' experience to draw from in developing our technique in the operation of artillery control. Unfortunately, we do not have their unbroken chain of artillery command to solidify it. The lessons learned must be learned again by each new division, corps, or army as it comes into the fight. But the second stride has been taken.

ADMINISTRATION

Experience has shown that tactical employment will work itself out, but what about the administrative problems? The division artillery is securely fixed under the firm guiding hand of a brigadier general, the division artillery commander. It is part of a unit recognized by all administrative echelons. Not so the separate battalion. Will this new idea of having twenty or thirty separate battalions of artillery working directly with a harassed Army Quartermaster or AG work? We don't know yet, but we think not.

The brigade was not an administrative headquarters; the regiment had no supply functions, but it didn't take a month after the organization of our first corps brigade to find that the administrative echelons were not willing to deal separately with our eleven supply officers and five personnel adjutants. This understandable reluctance was even more pronounced in combat. We centralized administration in the brigade and there it has remained. Even then we had our little problems, too numerous to list in detail. The source of most of these troubles was, of course, that we had no recognized organization. The term "combat troops" meant divisions. Corps troops were non-combat troops.



Fire capabilities of the corps artillery in support of a two-division corps near Venafro, demonstrating the importance of command control of artillery fires.

This in spite of the fact that some of our corps artillery battalions were the only units which have remained in combat continuously from the beginning of every campaign. Priority in all supply was rightly given to combat troops. One result was that some of our cannoneers went for weeks without cigarettes while their buddies in the division artillery smoked—a minor point but an irritating one. More serious was the difficulty we experienced, for the same reason, in obtaining clothing and other equipment for units of the corps artillery during the preparations for the Sicilian campaign.

Look at the other side of the picture. A group commander has an officer on his little staff who just isn't working out as a staff officer though possibly good material for battery executive or forward observer. He has to make a dicker with one of the battalions temporarily under his control, and then go to army to effect the transfer. Again, a minor point but an irritating one. Battalions constantly changing from one group to another suffer in morale and discipline. They feel no sense of loyalty to a group commander who cannot know them or their special problems. The group commander, on the other hand, cannot be expected to get the best out of battalions that are strange to him.

In other words, separate battalions and separate group headquarters are a nuisance. They work under a decided handicap and constitute an uncoordinated mass of administrative chaff in an otherwise well organized system. There is a decided need for extra battalions of artillery to bolster up the organic artillery when the going is tough. There is no need whatsoever to break up organic corps artillery into separate battalions and separate headquarters like headless bodies and bodyless heads. That such a breakdown is

needed to give flexibility to artillery support is a mistaken and highly theoretical assumption is readily shown by the amazing flexibility of organization demonstrated by the only American artillery brigade present during the first year of fighting in the Mediterranean theater. Regimental headquarters are perfectly capable of controlling additional battalions. The tactical separation of battalions from the parent regiment causes no undue hardship. On the contrary, it has been found that these detached battalions make a special effort out of pride in their own organization.

ARTILLERY PLANNING

Still higher on the scale:

There is the problem of having the right kind of artillery in the proper amounts in the theater. Tank destroyers, tanks, and heavy antiaircraft have been used as field artillery. Special purpose paratroop and pack battalions have been used as ordinary reinforcing artillery. The need for the super-long-range 8-inch gun was recognized and accepted by all artillerymen up to the army eighteen months before it was finally received in the theater.

Tables of organization and equipment are based on minimum requirements. In every theater and under all sorts of varying conditions, special allowances have to be made. As a result of the need for a bulldozer to assist in the preparation of difficult positions, it was suggested that every battalion be permanently equipped with this bulky materiel, but the more practicable plan of establishing an operations pool was adopted.

Overstrength for units in combat is allowed only to infantry, based on the indisputable fact that the infantry receives a much larger percentage of casualties. The result is that the artillery functions continuously twenty-four hours a day, with an understrength of the five to seven per cent normally absent.

Replacements filter into artillery units slowly but there is no opportunity for specialist training during combat. Schools for specialists and refresher training are needed. A two-week period for rehabilitation and training at the end of (say) ninety days of combat would be of inestimable value to the battalion.

Does anyone doubt that there must be some one at the top to advise the theater commander in these and the myriad other questions that come up concerning the artillery?

CONCLUSION

The answer, I am convinced, is to return to the old organization for field artillery that we had in the last war. We all know that the infantry battalion with a battery of field artillery is the basic combat unit, but when the regiment is in the picture there must be artillery battalion control. Our infantry divisions in all theaters have demonstrated the soundness of their knowledge that the division is more than a loose collection of combat teams. Why should we question the value of an unbroken chain of command in the artillery—the supporting arm furnishing the link that makes a corps more than a group of divisions, that makes an army an army?

SHELLREPS

By Maj. Arthur J. Peterson, FA

EDITOR'S NOTE

One of our divisions long in combat recently conducted an Intelligence School for its S-2 personnel. Maj. Peterson's material was there used so effectively that the Acting G-2 sent it along for the benefit of others.

Probably one of the most uncomfortable sensations you will ever experience is that of being spotted in the open by Jerry artillery. You feel as though there is nothing you can do about it but sweat it out. Your first reaction will be to hug the ground and pray that nothing comes your way. That mistake is frequently fatal. The first thing to do is to get the hell away from where you are before the Kraut is registered on you. He is generally a methodical Joe and will continue to register on the same place even after there is nothing there. The next thing to do is holler for help. Unless you have the Jerry gun spotted cold there is only one guy in the Army who can help you silence that so-and-so who seems to carry a personal grudge against you. That is the counterbattery officer.

From the beginning of any operation the CBO keeps track of all the antics of enemy artillery by means of PW interrogation, partisan reports, air photos, and *shelling reports*. He generally has a pretty good idea where Jerry has his artillery or where he has his alternate positions. You are the only man who can tell him when Jerry is active. In order to pin down the offending battery the following information is of vital importance:

(1) "From what direction is he firing?" This will indicate the general area. (This information is of no value unless the CBO knows where *you* are.) If you can see the flash you can report a fairly accurate direction to the enemy gun or your trained ear will enable you to estimate the direction if a flash cannot be seen. If you get a chance to examine the shell crater the furrow may indicate the direction of fire, especially if the shell has gone through some foliage before landing. "Duds" will sometimes give you pretty accurate direction of fire.

(2) "What time did the rounds come in?" The CBO needs this dope so he can tie your report in to others he gets. Two or more reports on the same shelling may locate the enemy guns accurately enough to begin firing unobserved fire right away. This is very important in the case of SP guns because of their ability to change position so often that the CBO can't keep them located.

(3) "Where are the rounds landing?" The answer to this keeps the CBO posted on what the enemy is trying to do. Fire falling on our front line troops often precedes a counterattack and information about it will enable our unit COs to alert the artillery to be prepared to fire in that sector. Fire falling on roads and trails indicates that the enemy probably thinks our front line troops are being too well supplied with "C" rations. If the Jerry's attention is directed to our artillery you can bet that some Kraut dog-face has called up his artillery and asked them what in hell are you going to do about those SOBs who are cutting us to pieces. The answer probably was, "How in hell do youse guys expect us to fire if you don't turn in any shell-reps?"

(4) "How many rounds have come in?" We want to know this so we can maintain our 2 for 1 ratio and also to find out just how serious he is about the whole thing. Actually, we toss back about five times the number of rounds he throws in.

(5) "How many guns are firing and what kind of guns are they?" You can tell how many guns are firing by listening to the guns' report or the rounds striking. If they are right together or if the time between bursts is very short he is using more than one gun because you can't fire an artillery piece like an M-1 even though it sometimes seems that way. Everyone knows that the round that lands close sounds like the Anzio Express but don't let that fool you. Experience has taught you to distinguish between light, medium, or heavy artillery. The size of the crater or shell fragments sent in will enable the CBO to determine accurately the size and type of weapon that is shooting at you. If the shell comes lobbing in slowly the chances are that it comes from a howitzer. Fast traveling shells come from a gun. The kind that zip over your head before you hear the report of the gun can come from either an 88 or a tank. Report these as high velocity. The purpose of this is to enable the CBO to tie the firing in with the particular one of our friends (?) so that he can be properly remembered with a bouquet of shells. Report any other useful information, such as the flash-bang time, whether he is using airburst, super-quick, or delay fuze, and anything he is doing that is unusual.

These are things to remember about shell reports: your location, direction of fire, time of firing, the place shells are landing, number of rounds, number and type of guns. Be patient—a single shell-rep can't turn off the enemy firing like a faucet but it will let us know you are being shelled. Our flying OPs, forward observers, and the CBO will be put to work with minimum delay.

Heavy Artillery Observation Requirements

By "H. A. A. G."

FOREWORD

The theory and matter set forth here may seem controversial to those who have had extensive combat experience with heavy field artillery, but data and reports of actual performance from the combat theaters are very sketchy. It is believed that the ideas here advanced are sound, and merit consideration until more data can be obtained. In the final analysis the value of theories relating to artillery can be provided only by actual experience on the battle front. Until such experience is recorded for the benefit of those engaged in training and experimental work, the following thoughts pertaining to observation requirements for the employment of heavy field artillery are believed to be the most practicable which are available.

In heavy field artillery, as in light and medium units, adequate observation is essential. Accurate observation will result in the saving of ammunition and more efficient accomplishment of assigned missions. In heavy artillery, savings in ammunition expenditure are of paramount importance due to the increased difficulties of supply, transportation, and necessary handling of the ammunition.

In considering the requirements of observation for heavy field artillery it must always be remembered that these weapons are designed to deliver fire at varying ranges up to 35,000 yards, as the following list of maximum ranges indicates:

<i>Weapon</i>	<i>Maximum Range</i>
155-mm Gun	25,600 yds
8-inch Howitzer	18,400 yds
240-mm Howitzer	25,200 yds
8-inch Gun	35,500 yds

Most missions will be at the longer ranges of the weapon being used. If lesser ranges are used, some of the advantages inherent in the design of heavy field artillery are sacrificed for other considerations. Requirements of individual missions or of specific tactical situations may justify such sacrifice of long-range fire power; if, however, such sacrifice is due to lack of observation, there is an inefficient use of powerful and costly materiel.

It will be assumed, therefore, that whenever the situation permits, the shorter range missions will be fired by other weapons (either light or medium field artillery), permitting the heavy field artillery to utilize its long range characteristics. The following considerations of the available means of observing fire from heavy field artillery is based upon this assumption.

AXIAL TERRESTRIAL OBSERVATION

This type of observation is basic in all field artillery, regardless of the weapon's caliber or characteristics. Because of its basic nature, training in this type of observation must be continued even though it appears doubtful whether combat will furnish many opportunities to use it. The optimum range of heavy field artillery usually renders observation of this type impossible. Special situations can, of course, be readily called to mind in which a ground observer may be able by virtue of exceptionally favorable terrain and weather conditions to look far into enemy-held territory and to adjust fire satisfactorily. If these weapons are placed within a few thousand yards of the front lines,

however, an observer must look ten or fifteen miles to the target. It appears axiomatic that satisfactory observation and adjustment of field artillery fire at such a great range will rarely be attained by axial terrestrial observation.

LATERAL TERRESTRIAL OBSERVATION

This type of observation is also necessary in field artillery training, regardless of the caliber of the weapons under consideration. It is reasonable, though, to believe that only in exceptional circumstances will this type of observation be used in combat. Recalling the ranges at which heavy field artillery will necessarily fire into enemy-held territory, one sees that normal forward observation positions would have to be located several miles inside hostile territory. It would therefore appear that the greater number of missions fired by lateral or flank observation will occur when it is necessary to mass artillery fire in given areas to accomplish specific missions—such as repelling counterattacks, reducing strong points, and the like—and that in these cases the heavy field artillery will be firing on other than its normal mission of long range fire on targets deep in enemy territory. It may be concluded, therefore, that the normal ranges necessary to accomplish the missions of heavy field artillery, except under very exceptional circumstances, will preclude the possibility of observing and adjusting fire by means of lateral terrestrial observation.

FIELD ARTILLERY LIAISON PLANES

Use of the present field artillery liaison plane to secure adequate observation for heavy artillery presents many difficulties due to the limitations of the plane and the normal manner of its use. If the liaison plane restricts its flight to territory held by friendly forces, it suffers from the same difficulties of observation at long ranges as does terrestrial observation. Also, the liaison plane climbs so slowly that considerable time will be required to obtain sufficient altitude for observation, even if the terrain and weather conditions are such that satisfactory visibility can be secured from the plane while it remains over friendly territory.

If the liaison plane does not restrict its flight to "friendly" territory, the inherent difficulties are greatly multiplied. There is very great danger of loss of pilot and plane due to enemy AA fire or attack by hostile aircraft. Even where so-called air superiority exists the high rate of casualties resulting from the use of field artillery liaison planes on missions far behind the enemy lines is sufficient to make this impracticable in most cases.

In addition to the difficulties already pointed out, another factor becomes of major importance in many cases—communications. Only under exceptional circumstances can satisfactory performance be expected from present artillery communication facilities when the liaison plane is operating ten to twenty miles inside enemy-held territory.

SOUND AND FLASH TEAMS

Conduct of artillery fire by sound and flash bases of the observation battalion has been little used by the light and medium division artillery. But with the longer range of the heavy artillery, the demand for long range observation of artillery fire has been partially fulfilled by the sound and flash teams after complete survey. Flash teams observing from

OPs well forward permit the location and adjustment of fire by bilateral methods. Despite excellent observing instruments, however, the observing range is restricted by terrain, such climatic conditions as haze, fog, dust, and heat waves, and the curvature of the earth. The sound base permits the location of enemy artillery by day or night and the adjustment of artillery fire on located targets within range—but the range at which this adjustment can be made is a variable factor, again dependent upon climatic conditions and terrain and upon the amount of sound coming from the general target area which may interfere with interpretation of the sound track. A head wind or very rough terrain decreases the effective range. A large number of enemy pieces firing simultaneously may preclude interpretation of the sound track. Under ideal conditions, though, adjustment can be made up to 25,000 yards.

OBSERVATION BY HIGH-PERFORMANCE AIRCRAFT

The foregoing analyses present the limitations which are encountered in attempting to secure adequate observation for the conduct of fire of the heavy field artillery weapons by any one or all of the means mentioned. It is seen that each of these means fails to permit the maximum use of the long range fire capabilities of heavy field artillery, and that when considered as a composite whole there are "dead spaces" in long range observation. It is evident that it is necessary that a satisfactory means of observation, other than those suitable for light and medium weapons, be used for the upper limits of the range capabilities of the 155-mm gun and 240-mm howitzer, and for those ranges (25,000-35,000 yards) at which the 8-inch gun should normally be employed.

High-performance airplanes constitute the most logical means now available for observation of heavy field artillery fire. There are certain definite advantages and disadvantages, from an artillery viewpoint, in the use of high-performance aircraft for the observation and adjustment of long range fires which, if clearly understood, will greatly facilitate the use of this means of observation.

Advantages

The most obvious advantage of the use of high-performance airplanes is the ability of the pilot-observer to fly over enemy territory to a sufficient depth to observe and adjust the long range fire of heavy field artillery.

It is also possible to obtain a nearly vertical view of the target area. Thus the observer will not be deceived by distorted distances or defiladed areas, as in the case of more oblique observation with the liaison plane and terrestrial observation, and can therefore accurately sense bursts relative to the gun-target line.

High-performance aircraft permit evasive and protective action against AA fire or fighter aircraft. To decrease the possibility of surprise and interference, one or more planes should accompany the pilot-observer's plane on each mission. The pilots of these additional planes serve as observers on the alert for the approach of enemy aircraft, or can (if the contingency arises) take over the mission of observation.

Disadvantages

The most marked disadvantage of this type of observation is the difficulty of securing sufficient planes for long range fire missions. Present plans for allotting a definite quota of these planes for artillery missions should do much to eliminate this trouble.

High-performance planes will not usually be able to use improvised landing strips, as can the artillery liaison planes. These planes must normally operate from AAF installations, thus necessitating a very close cooperation between ground and air forces so that equipment and facilities can be used most advantageously.

Air-ground communication presents some difficulties. The air forces can and do furnish the necessary radio sets and operating personnel for both air and ground—the SCR 522-A (in the plane) and the SCR 624-A (which is the ground set). Since these are very high frequency (VHF) sets they possess line-of-site transmission characteristics which cause transmission failures when operating in adverse locales.

ARTILLERY RECONNAISSANCE FIRING

By Capt. Paul R. Lowry, FA

Within its operational and observation spheres, the "grasshopper" plane has astounded with its efficiency even its staunchest supporters. It not only relieves the Air Corps of what to it had been a rather unwanted burden, but gives the artillery (and its supported infantry) that immediate response which is essential on the battlefield itself.

For targets at greater ranges, however, other solutions were necessary. It is of this situation that Capt. Lowry writes.

THE PROBLEM

This is not a story of a new technique in American artillery, but rather an adaptation of a British development. In 1940 the British artillery foresaw difficulties in using only "grasshopper" planes as air OPs. If terrain would permit their use, enemy aircraft and AA artillery created a danger that was fully realized. They knew from experience that terrestrial observation for long-range artillery would seldom be feasible. Thus the British gunners sought a different solution.

At this same time the High Command was worried about the intentions of the German army. The old type observation plane

was not able to fly beyond the enemy lines. It was unable to secure the much-needed information. The British Army turned the problem over to the Royal Air Forces. To give the army eyes with which to watch the enemy, the RAF developed the Fighter Reconnaissance Squadron. This was set up to be an army cooperation squadron, equipped with high performance fighter-type aircraft fitted with cameras and flown by pilots trained in ground observation. They developed tactics for evasion of flak and protection from enemy aircraft. They had speed to fly well into enemy territory and return with the information.

In solving the problem of eyes for intelligence, the RAF gave observation to long-range artillery. Shortly after the Fighter Reconnaissance Squadron was adopted the British artillery requested tests for adjustment of fire by these planes. Pilots were trained, tests were conducted, procedure modified, and communications improved. At last came success and adoption of what is termed by the British, *Artillery Reconnaissance Shooting*.

THE SOLUTION

Following the development of British reconnaissance, our air force has abandoned the O-47 and O-52 planes for observation and reconnaissance. It replaced them with P-51 and P-40 aircraft, but unfortunately in following British experience we neglected the training of pilots and their necessary organization and equipment for artillery adjustment. In the Tunisian and Sicilian campaigns, however, an American squadron was used for reconnaissance in a manner similar to the British, but not until the Italian campaign was an American fighter plane used to adjust American artillery. Before this was possible there had to be a study of British methods and experience, and development of a procedure that would satisfy the Air Corps.

The adjustment of long range artillery by fighter type aircraft requires a high degree of coordination between artillery units firing, and the observing plane. Lack of communication may cause the shoot to be abandoned; enemy antiaircraft fire may hinder the mission; failure of the observer to follow good firing practices may delay the fire for effect; but by far the most dangerous threat to the success of the mission, the plane, and life of the pilot, is interception by *enemy fighters*. It must be remembered that enemy RDF stations may be able to locate our planes as soon as they take the air and certainly after they enter enemy territory. With the view in mind that enemy fighters may be at any time vectored onto the adjusting plane, every effort must be made to keep to a minimum the time required for adjustment. To reduce the danger of surprise by enemy planes missions are flown by two planes: one to adjust fire, the other to weave and observe for hostile aircraft. To reduce the time required over area, standard air-ground methods have been modified.

There are two types of missions expected to be carried out: (1) adjustment of long range artillery for accurate transfer of fire within transfer limits, when terrestrial observation or observation by cub plane is impossible; (2) bracket adjustment for counterbattery work or fire on troop and vehicle concentrations or enemy supply installations. In both types it is imperative that a definite target or small area be designated before the pilot takes the air.

Precision Adjustment

This type of fire is used only where adjustment is needed in order to transfer fire. A base point must be selected that is a prominent terrain feature, easy for the pilot to identify from the air. Time of shoot must be agreed upon and battery laid with map data, ready to fire on the selected base point at the agreed time. Both pilots are briefed carefully as to the mission and so instructed that if the designated observer fails to make radio contact but the weaver does contact the ground, the weaver can take over mission. Their procedure in the air is:

<i>Pilot to Ground</i>	<i>Ground to Pilot</i>	<i>Remarks</i>
Call Sign—TOPIC	Call Sign—MABLE	Pilot arrives over area, identifies target, and reports in.
(1) MABLE from TOPIC — I am ready to observe.	(2) TOPIC from MABLE—Battery is ready—45 seconds.	Pilot needs time of flight to allow him to be in position to observe.
(1) Fire	(2) On the way	Battery is always fired at command of pilot.
(1) 200 right 200 short.	(2) Battery is ready.	
(3) Fire.	(4) On the way.	

Observer continues to adjust by regular air-ground methods until he splits a 100-yard range bracket, or a round falls close enough so that if a number of rounds are fired at that elevation and deflection setting there would be both shorts and overs. The observer then sends "Fire for effect." The battery fires three rounds. If three rounds give both shorts and overs this is considered adjusted data and observer sends "Range correct, deflection correct" and returns to his base. If the three rounds all fall short or over, to right or left of target, observer will sense their center and request "Repeat fire for effect." He remains in area to sense this second group and then returns to base.

Bracket Adjustment

In bracket adjustment on any type of target, if the target cannot be accurately located a small area in which it can be found must be designated. This area cannot exceed 1,500 square yards. It is suggested that in the case of hostile batteries, the battery first be located in a general area by sound and flash units. This area is given to the observer who is left to search out his target within it. To accomplish a speedy and simple adjustment there must be selected in the area some prearranged point on which the battery is laid, ready to fire, at the moment the observer locates his target and asks for fire; this prearranged point must be the most prominent terrain feature in the area to let the observer know where to expect the initial round. He seeks a 100-yard bracket before firing for effect, and if conditions permit will remain in area to give the results of this fire. The following procedure should be used:

<i>Pilot to Ground</i>	<i>Ground to Pilot</i>	<i>Remarks</i>
Call sign—TOPIC	Call sign—MABLE	Pilot arrives over area and searches out target; upon identifying it and the prearranged point, he reports.
(1) MABLE from TOPIC — Enemy battery well dispersed. I am ready to observe.	(2) TOPIC from MABLE—Battery is ready—45 seconds.	Time of flight is given to observer.
(3) Fire	(4) On the way	
(5) 400 left, 400 short.	(6) Battery is ready.	Observer adjusts fire to target from initial round.
(7) Fire.	(8) On the way.	

Observer continues to adjust until he obtains and splits a 100-yard range bracket or has a round fall close enough to the target to warrant fire for effect. He remains in the area (if conditions permit) to observe results of fire for effect, and reports such to the battery. To conserve ammunition the adjustment can be carried out by one piece. The adjustment will be to the center of the target, and before firing for effect the battery can center its sheaf.

One-Way Procedure

In some instances the ground set may be able to receive the aircraft set but not vice versa, in which case the shoot can be carried out by one-way procedure. This is accomplished by the observer sending "Mable from Topic—revert to one-way procedure." The observer then pauses for one minute and sends "Mable from Topic—fire." On receiving the command "fire," the battery times the firing so that the round will fall one minute after the command is given by the observer. All messages transmitted by observer will be repeated once.

When heavy artillery is shooting at extreme ranges that cause a time of flight of more than 50 seconds, the one-minute interval between command fire and impact of round must be increased. This increase in time interval will be coordinated by the Air Liaison Officer at the Air Squadron before the observer takes the air.

Communications

From plane to ground the communication must be by SCR-522 (VHF) radio. It is desirable to have the ground sets mounted on ¼-ton trucks. At least 2 sets should be available to each corps artillery, to be dispatched by them to the battery that is to do the firing. If possible a separate channel from the regular 4 channels used by aircraft should be requested from the Air Force.

Training

It is a responsibility of the army to train the squadron in artillery adjustment and to coordinate the work of the squadron with the ground forces. Under ordinary conditions only one squadron will support an army. To accomplish best training of pilots and promote relations between the squadron and its supported army, there should be established an Air Liaison Section as part of the army staff. This section will be responsible for both the reconnaissance and artillery phases of the squadron work. To enable the liaison officers to become known to and to know every pilot of the squadron, the section should be attached to the squadron and become members of the squadron commander's staff.

THE RECORD

In early May, 1943, the ZZZth Reconnaissance Squadron was put in support of the newly formed Seventh U. S. Army for the ensuing operations. This squadron was equipped with P-51 type aircraft. Air Liaison Officers were attached from army for training purposes. The training schedule included adjustment of artillery from their high-speed planes. The pilots were drilled with theory and blackboard shoots. A practice shoot was arranged, but then came the blow—Seventh Army

cancelled the shoot and informed the squadron that artillery adjustment training would be discontinued.

Through the Sicilian Campaign this squadron flew over 400 sorties on reconnaissance missions—not one on artillery adjustment. The British used artillery reconnaissance shoots in the Catania sector. We could have used it to advantage at Nicosia, Troina, and Randazzo.

Before the Salerno landing our navy asked to use the ZZZth's planes and pilots to adjust navy fire. This request was approved. On D day, 4 missions of adjusting naval gunfire were carried out. Between D day and D + 8, 5 missions of adjusting naval gunfire were carried out with very successful results.

On September 18th the first adjustment of artillery by fighter type aircraft by our army artillery in combat was recorded in Italy. A battalion of 155-mm guns of the CPth FA was in position not more than 4,000 yards from the landing field. A ground radio set was established at the field and a direct line laid to that battalion. The target was an enemy battery (located generally near Postiglione), firing on elements of the CPth Division. The pilot was briefed, instructed to search the area for the battery; he located the battery and adjusted in five rounds. The division reported that the battery was completely silenced.

This adjustment is typical of the advantages offered by this observation. The battery fired upon was over 24,000 yards from the battery firing. At this range cub observation and terrestrial observation would have been impossible.

Up to the date of this writing only 4 missions have been fired; one was a complete failure because of breakdown of communication, three were successful. U. S. VI Corps artillery and Fifth Army artillery are convinced of the value of the method and have made plans for extensive use of this observation that has always been within reach of our army but never used.

ADJUSTMENT WITH HIGH PERFORMANCE PLANES

By Lt. Col. John D. Salmon, FA

"High performance airplanes may be used to observe and adjust artillery fire, particularly long range fire," says FM 6-20.

The sky is the limit on how far we may go in proving correctness of the above quotation, but too often it has been true that we do not even get off the ground. After a period of 40 consecutive days of following up such "shoots" with both P-51s and Spitfires, I have a firm conviction that the heavy caliber units of the Corps Artillery must be proficient in this type of adjustment. This conviction is shared by all who watched the adjustments, including those who had previously argued that the results would not justify the efforts.

Terrain conditions that permit adjustment of fire at ranges in excess of 20,000 yards are rare indeed. It imposes too great a burden on the artillery observation planes to ask them to attempt it. In fact, they cannot do it (but don't ask the pilots—they'll try anything). What, then, are we to do? Shall we go ahead and fire map data corrected when the metro message stopped at line 5? On the Fifth Army Southern Front we held high ground that served as OPs for fire on close-in targets, but

the Italian mountains still concealed things that the 8" and 240 howitzers and *Long Toms* needed to hit with observed fire. These calibers must "get" all possible out of every round fired. At the Anzio Beachhead the question of observation was somewhat acute and the development of every means of delivering observed fire was a "must." On the northwest sector the Krauts were favored with wadis that concealed many good targets from the usual methods of observation. By patience and perseverance the deficiencies in observation were satisfactorily overcome by employing the high performance airplane.

At the outset there was a pronounced lack of enthusiasm for the "shoots" on the part of all the artillerymen. Fire direction personnel said the communications were always bad. And some members of Corps Artillery Headquarters said, "Why worry around with all the details involved, when the same two planes can dive-bomb the target and be away in a matter of seconds, instead of having to hover over the target and be subjected to flak for a much longer time?"

That last objection is about the only one that needs comment, and the answers are fairly simple. For example, the dive-bomber terminates its dive at between 1,500 and 3,000 feet (with the latter more often the case), and effect depends upon the one effort. Compare this with the adjusting mission, bearing in mind the following:

The plane is afforded wide latitude in the position from which it observes. The areas of heaviest ack-ack are generally known and the pilot is able to avoid them. On one occasion the pilot actually flew well behind the target, which put him deeper in enemy territory but placed him out of flak range. The hazard of fighter-plane opposition will vary, but with a "weaver" plane covering the adjusting one there seems little cause for concern. Anyway, the planes, being fighters themselves, can take care of the situation if a "dog-fight" becomes imminent.

An adjusting plane encounters less flak than does a dive-bomber. At the Anzio Beachhead the Germans had about the heaviest concentration of ack-ack that has been encountered in Italy, and yet during the entire period we had only one plane appreciably damaged by flak. In several cases, when the pilot was annoyed by heavy AA he temporarily abandoned his primary mission, effectively engaged the guns firing, and then returned to his target. The Germans seem to know that these planes are equipped with cameras (not always true of "Spits") and show reluctance about disclosing their positions by firing.

The pilot is observing all the while. In this way his time spent in the air also yields information of a general intelligence nature. The "weaver" plane provides security for the adjusting one, which permits the pilot to devote himself solely to the role of adjuster-observer.

From the adjusted data obtained other targets within transfer limits may be subsequently engaged. This finest of all features enabled us to shorten the time the pilot must spend over the target by having him switch to a second and third target as soon as his adjustment was completed. At varying times throughout the remainder of the day the FDC could drop on the target a concentration of either its own or other battalions with telling effect. We soon learned that it was a waste of time to have the pilot buzz around waiting to observe fire for effect. Sometimes while he was adjusting on a second target with one piece (all pilots preferred adjustment with smoke from one piece) the battalion delivered fire for effect with the remainder of the battalion (or battalions). Before departing the pilot might double back over and snap a picture so PRU could accurately appraise our fire for effect.

The steps that must be gone through to set up these shoots might offer some few difficulties of coordination, since at least three different agencies must necessarily be involved. Early, however, we established a routine that took care of everything in grand style. It became SOP that the Recon Squadron furnished 3 flights every day. Targets and time over each naturally changed daily, but the procedure between FDCs and pilots soon became standardized. Whether an American or British pilot came over made no difference (except that RAF pilots had a slight edge over our own). The procedure involves location of target from a vertical, and this may be done by either the photo interpretation officer with PRU or someone



Germany's 170-mm gun has a maximum range of around 34,000 yards, so high performance planes are usually needed to direct counterbattery fire against it. This undamaged specimen was captured near Cori, Italy.

with Corps Artillery Section. Next, a request is submitted to the Air Force for a mission. They examine the photo, consider the nature of the target, and either accept or decline the mission. They are generally accepted, but some of the grounds for refusal are that a later photo shows a nullifying change in the target; that a flight of bombers should attack it; that it is sufficiently close for our own artillery planes to adjust; that an intense concentration of AA guns makes the mission too hazardous to warrant it; and finally, that other scheduled missions take precedence.

The pilot is briefed in his own squadron, where all other details are attended to, as this was found preferable to having a conference between the pilot and S-3 of the FDC. This presupposes, of course, that the pilots have been trained, and are proficient in making artillery adjustments.

Shoots were conducted on the Beachhead with three weapons. 155-mm guns (*Long Tom*) fired against medium and heavy artillery batteries and heavy AA. 8" howitzers were used on houses, and on medium and heavy batteries that could not be reached by the *Long Toms* due to their flatter trajectory. 240-mm howitzers were used mainly against bridges.

For a while the Boche held just about every advantage over our Corps Artillery, except that his supply of ammunition was sometimes on the short side. He had weapons that could outrange ours, his observation looked "down our throats," the beachhead was so crowded with troops and supplies that he could hardly miss inflicting some damage with any concentration he dropped (except the *overs* that fell into the Tyrrhenian Sea, for which Anzio and Netruno were always grateful), and lastly, when one of our batteries became accurately pin-pointed by the German artillery there just wasn't any alternate position to move to. Under such circumstances it was necessary for our Corps Artillery to employ every trick in the bag, and it is believed that the air shoots contributed in generous measure toward gaining the supremacy which is now ours.

By recording instrument direction over the base point using a high burst and laying a lateral instrument on the base point, up-to-date transfer data can quickly be obtained night or day with one round in the air for direction and two on the ground for range.



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 ALLIED ADVANCE THROUGH FRANCE (19 Aug to 18 Sep 44)

An Allied Expeditionary Force under Gen. Dwight D. Eisenhower had at the beginning of the period secured a large beachhead in Normandy. The total strength of this force was revealed to have exceeded one million men on 4 July. No subsequent strength reports have been received, but it was announced that the number of additional troops landed by the Allies in France averaged 25,000 men a day. This would be somewhat more than one division a day, plus usual corps and army troops. At this rate the strength on 19 Aug was in the vicinity of 2 350,000, and growing daily.

This force was divided into Army Groups and Armies, as follows (from left to right):

21st Army Group (Gen. (later Field Marshal) Sir Bernard L. Montgomery)

First Canadian Army (Lt.-Gen. H. D. G. Crerar)

Second British Army (Lt.-Gen. J. T. Crocker)

12th Army Group (Gen. Omar N. Bradley)

First U. S. Army (Lt. Gen. Courtney H. Hodges)

Third U. S. Army (Lt. Gen. George S. Patton)

In addition to the foregoing a detached force consisting of Seventh U. S. Army (Lt. Gen. Alexander M. Patch)

had landed on 15 Aug in south France east of Marseille and Toulon. This latter force's mission was to advance up the valley of the Rhone, thence around the north frontier of Switzerland toward the Rhine. The mission of the main body was to advance eastward from Normandy to eventually join its right with the detached force, and form a continuous line from the North Sea to the Swiss border.

The enemy consisted of an estimated 60 divisions under Marshal von Kluge. These were divided into four armies of which the 7th and 15th German Armies with 25 divisions were opposing the main Allied force in Normandy. About 5 more divisions were on detached service as garrisons for Nazaire, Lorient, Brest, and minor places.

1st German Army was evacuating southwest France.

19th German Army was evacuating southeast France. It was opposing the Allied detached force with rear guards.

The 1st and 19th German Armies together with the German reserve amounted to only 30 divisions as a maximum. The reserve had been the 5th Panzer Army, which had had about 6 panzer divisions. This army appears to have been dissolved by transfer of its divisions to other armies.

OPERATIONS IN NORTH FRANCE

On 19 Aug the line (all places inclusive except as noted) was Varaville (1st Canadian)—Troarn (Can)—Mezidon (Can)—Trun (Can)—Chambois (Can)—Montabard (2nd British)—Putanges (2nd Br; exc)—Ecouche (1st US; exc)—Nonancourt (3d US; exc)—Dreux (3d US)—east bank Eure River north to Pacy (3d US; excluding Pacy)—Vernon (3d US)—Mantes (3d US)—Rambouillet (3d US)—Etampes (3d US; exc)—Orleans (3d US)—Loire River to Atlantic Ocean (with enemy beachheads at St. Nazaire, Lorient, and Brest; and Cezambre Island).

The foregoing line formed an enemy-held pocket in the vicinity of Argentan, 18 miles from west to east and half that amount from north to south. This pocket had been considerably greater. It had included the town of Falaise on the north, from which it had become known as the Falaise Pocket. Operations for its reduction had been in full operation for 10 days, and were described in the October issue of this JOURNAL. These operations were now approaching a conclusion.

COMPLETION OF THE FALAISE BATTLE

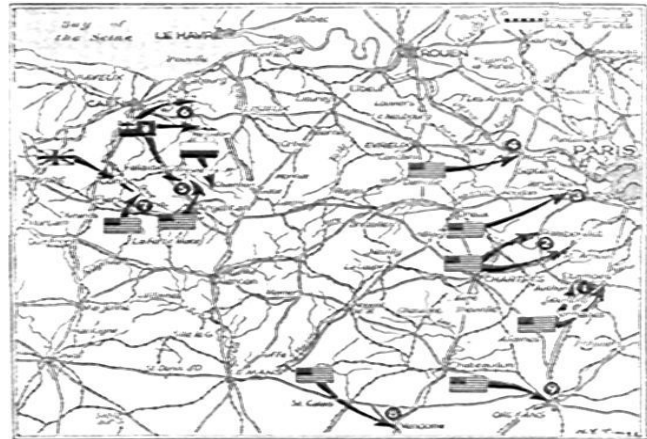
On 19 Aug American troops attacking north from Nonant made contact with troops of the First Canadian Army near Chambois, thus cutting the base of the pocket and isolating the enemy therein. No special enemy road movements out of the pocket had been previously observed. The enemy withdrew from the Putanges area, and Allied troops closed around the head of the pocket. About 2,000 German prisoners were taken near Chambois, making a total of approximately 14,900 from the pocket area to date. It was estimated that 10,000 Germans remained within the pocket. From prisoners it was ascertained that these troops belonged to 14 different divisions.

On 20 Aug the encircled Germans made an attempt to break out by attacking northeast between Trun and Chambois. They ran into a Polish division from the First Canadian Army. The brief accounts available of this fight indicate that the attack was spearheaded by 70 tanks. Some of the Germans got through, but the number has not been learned. The Allies continued to close around the pocket and entered Argentan at 1100 hrs.

On the 21st the Falaise battle ended with another and partially successful attempt of the Germans to break out to the northeast.

CAPTURE OF PARIS

On 17 Aug the head of the French State (Marshal Petain) was



As this period opened, south of Paris our forces captured Authon (1) and were reported attacking Etampes. They were also driving ahead near Rambouillet (2). There were unconfirmed reports one spearhead had entered Versailles (3). Other American units reached the Seine near Mantes (4) to cut off the bomb-battered Seventh German Army, most of which had made good its escape from the Falaise-Argentan pocket (5). The gap there was almost closed as the Poles won Chambois, the Canadians took Fresne-la-Mere, and the Americans pushed north. The Canadians also seized Mezidon (6) and pushed six miles beyond Troarn. British and American advances collapsed the western part of the pocket (7). One of our armored columns swept through Vendome (8). German resistance at Orleans (9) was weak.

stationed at Vichy, while the President du Conseil (equivalent to Prime Minister) (M. Laval) had his headquarters at Paris. On that date the German ambassador (Otto Abetz) advised M. Laval by letter that in view of the military situation the French Government should move to Belfort. By letter, same day, M. Laval refused to move. Marshal Petain knew nothing about this. He was visited about 7 PM by Dr. Rente-Finck, personal representative of Hitler, who indicated that Vichy was no longer safe and asked him to move to an eastern city which he did not name. Marshal Petain declined to answer until after he had consulted his Prime Minister. Being unable to get him by phone, he sent a letter by special messenger informing Laval of the facts, but without recommendation.

After receiving Laval's refusal to move, Abetz sent him another letter stating that if the French Government refused to move the German authorities would use forceful means. Laval acknowledged receipt, stating that he was forced to comply but that under the circumstances he would no longer exercise his duties as Prime Minister. About midnight a German guard conducted Laval and other members of the government out of Paris. On 18 Aug the Germans similarly removed Marshal Petain. It is presumed that they initially went to Belfort.

Before leaving Petain signed a General Order to be issued after his arrest and removal, urging all Frenchmen to unite together and not fight one another. He asked that order reign. As he represented order, as the legitimately and constitutionally elected head he asked recognition of that one government.

These events became generally known in Paris during the 18th. On the morning of the 19th the Paris police went on strike. The French Force of the Interior (underground movement) ordered a general insurrection in Paris and vicinity. The city was garrisoned by about 10,000 Germans under Gen. Von Choltitz. Led by the police, the FFI promptly mustered what they claimed as 50,000 un-uniformed men with some kind of arms, and 200,000 others without arms. They seized the Ile de la Cite, at the very center of Paris. This small island in the Seine River contains the City Hall, Notre Dame Cathedral, and other public buildings.

Fighting thereupon spread throughout Paris. The FFI, who had previously received infantry weapons, forced the German garrison into a few centers of resistance and by night of 22 Aug held the greater part of Paris. Around noon on this day an excited officer of the FFI burst into the CP of the 12th Army Group stating he was the commander in Paris. He wanted help and represented that he had concluded an armistice in Paris to expire at noon 23 Aug. Although it interfered with other plans, Gen. Bradley took the 2nd French Armd Div (Gen.

Leclerc) out of line and ordered it with certain U. S. troops to Paris, to arrive by noon next day.

Gen. Leclerc failed to reach Paris at any time next day. He arrived near Rambouillet, 20 miles southwest from Paris. He explained that his failure to reach the indicated destination was due to an impossible order. He claimed that G-3 had calculated the march distance of his troops as 80 kilometers, whereas it was in fact 200 kilometers.

On 24 Aug, moving cautiously, Gen. Leclerc entered the southern outskirts of Paris. On 25 Aug the 2nd French Armd Div, with American troops attached, entered Paris and attacked the German centers of resistance. The fight did not last long. At 1800 hrs. Gen. von Choltitz surrendered. He had about 10,000 men.

THE BATTLE OF THE SEINE

After the reduction of the Falaise pocket the German 7th Army and part of the 15th Army which had joined commenced their withdrawal to across the Seine River between Le Havre and Paris, both exclusive. At date of writing the German orders for this operation have not been received, and it is not known to what ultimate line the retreat was ordered or the rate of speed of the movement.

On 19 Aug leading elements of the Third U. S. Army had already arrived at the Seine River, 150 yards wide, in the vicinity of Mantes. Only weak enemy forces were on the opposite bank. The main body of the First Canadian Army moved east to the La Vie River, which was crossed near Livarot.

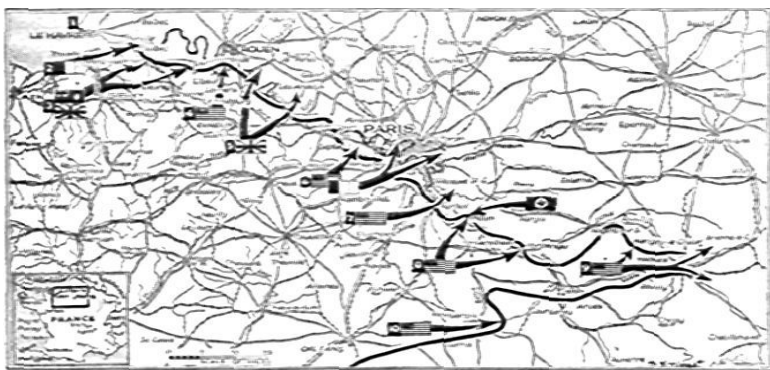
On 20 Aug an advance on the coast reached Cabourg, while the main body closed toward Lisieux against rather stiff opposition. The Third U. S. Army got some tanks across the Seine near Mantes. Next day this advance gained slightly, always against continued resistance. First U. S. Army troops advanced from the Dreux—Pacy area toward Evreux, which was reached but not taken. The mission of this movement was to repeat the Falaise maneuver by bottling the large German forces south of the Seine in the area southwest of Rouen.

This movement was pushed in great force on the 22nd. The Canadian Army reached the line Trouville—Lisieux (inc)—Orbec en Auge. The Second British Army extended this line to Laigle, which was captured. The First U. S. Army (attacking northward) took Nonancourt and continued on to St. Andre de l'Eure. The Third U. S. Army was attacking astride the Seine near Vernon, with 2 divisions on each bank.

On the 23d the greatest advance was on the right, where the Americans advanced through Nonancourt and Verneuil to Evreux and Conches. There was a severe battle just east of Lisieux, where the enemy held heights which dominated the town. Here the advance was slight. During the battles around Lisieux that place had been reduced to a heap of rubble, but the famous basilica escaped major injury. The enemy on the heights was flanked on the south and withdrew. By evening of the 24th the line had reached Honfleur (exc) — Corneilles (exc) — Thiberville — Bernay—Conches—Evreux.

During the night 24/25 Aug the enemy made a considerable withdrawal. On the 25th the line was advanced to Honfleur—Pont Audemer (exc)—Montfort sur Risle—St. Leger (exc)—Elbeuf. After having been taken, the latter place was lost to an enemy counterattack. Except for this fight there had been no serious resistance.

In view of the lack of resistance met and of previous successes, Allied GHQ were now of the opinion that the German 7th Army (estimated as 15 divisions without armor) had been practically eliminated. At best but a handful of survivors would remain who might fight delaying actions on their way back to Germany. It was estimated that between 30,000 and 45,000 Germans remained south of the Seine. The British Second Army took over the front along the Seine from Elbeuf to Vernon. The American bridgehead near Vernon had been withdrawn under strong enemy attacks. The British this day started a new one near Vernon, and a second opposite Louviers.



By 26 Aug the Germans were abandoning Le Havre (1) by land and sea. The plight of 30,000 to 45,000 south of the Seine grew increasingly desperate as the Belgians seized Berville and Foulbec (2), the Canadians and British captured Pont-Audemer and drove northeast between there and Bourgheroulde (3), and the Americans brought Rouen under shellfire (4). The British established new bridgeheads across the Seine near Louviers and Vernon (5) and smashed north, threatening to outflank the rocket coast. The Americans cleaned up the south bank of the Seine between Mantes and Paris (6) and with the French were wiping out resistance in the capital's northern suburbs. At bridgeheads south of Paris, our forces drove northeast from Corbeil (7), met brisk resistance near Melun (8), but enlarged their footing at Montereau and at Montargis (10). Gen. Patton's easternmost spearheads took Marignyle-Chatel and fanned out from Troyes (9). The Americans began a heavy land, sea, and air attack on Brest (A on inset).

The Canadian Army captured Pont Audemer and advanced beyond Bourgheroulde was taken.

On 27 Aug the Canadians established a new bridgehead across the Seine near Elbeuf. Their left closed toward Rouen and occupied Bourg Achard. Next day the Allies concentrated on enlarging their bridgeheads southeast of Rouen. Progress was made at all against considerable resistance. A new bridgehead was started near Louviers. The Germans continued to withdraw from south of the Seine, and the Allies closed in toward Rouen. In withdrawing the Germans were subjected to constant air attack, but they were aided by numerous thick woods, which concealed their locations by day. At night temporary bridges were thrown across the Seine, as many as 20 to 30 being used. Troops were crossed over, but vehicles (including armor and guns) were freely sacrificed. Dark nights and rain aided the enemy to avoid considerable losses from air attacks.

On 29 Aug the Second British Army attacked strongly across the Seine. Troops from the Louviers and Vernon bridgeheads reached the line Ecois—Etrepagny, a maximum advance of 10 miles. The German High Command thereupon ordered the evacuation of Rouen and the withdrawal of their forces to in rear of the Somme River. Rouen was abandoned during the night 29/30, less a rear guard which held until the morning of the 30th. Upon their departure the local French police hoisted the French flag. Canadian troops arrived during the afternoon.

ALLIED PURSUIT SOUTH OF PARIS

On 22 Aug the Third U. S. Army, having had troops to the north of Paris relieved by First Army troops, started to advance eastward on the front Paris (exc)—Orleans. Its mission was to swing around Paris, then turn north and endeavor to cut off the hostile forces retreating from the Allies along the Seine between Paris and the sea. On the first day the line was advanced to include Etampes and Pithiviers, with armored patrols at Sens. No substantial resistance was met. Next day the line reached the Seine and Yonne Rivers from Paris (exc) to Sens. Patrols reached the vicinity of Troyes. The Air Force scouted for the Third Army, and enemy were found across the Seine. On the 24th, troops closed in on the Seine and prepared to force crossings in the sector between Melun and Fontainebleau. Montereau was occupied. As central France was occupied by German troops, a flank guard was sent to Montargis. Patrols reached the vicinity of Romilly and Troyes.

On 25 Aug initial exploratory crossings of the Seine were made between Corbeil and Melun. During the ensuing night armored troops were brought over, and in the morning widened the bridgehead. On the right, armored patrols between Montereau and Sens, finding no substantial resistance, reached the Seine River around Troyes (exc). On the 27th troops crossed the Seine between Montereau and Romilly without much resistance, and advanced to a line through Provins and facing north. This outflanked the German position opposite the bridgehead near Melun, where fighting was heavy. In view of this situation the Germans abandoned their positions along the Seine during the night 27/28 and withdrew to north of the Marne River. On the 28th the Americans closed in to the south side of the Marne from La Ferte-sous-Jouarre to Chateau Thierry. Troyes was occupied; advance elements sent out on the road to Chalons-sur-Marne reached Arcis-sur-Aube. According to American intelligence reports the enemy along the Marne on a front of some 50 miles had 3 infantry and 2 panzer divisions. Germans' estimate was that the pursuing Americans had at least 8 divisions in line, exclusive of reserves.

ALLIED ADVANCE FROM THE SEINE AND TO THE NORTHEAST

The First U. S. Army had been engaged since the fall of Paris with mopping isolated German detachments in the vicinity. This mission was completed by 28 Aug. The 12th Army Group in compliance with orders from GHQ thereupon directed a united advance of the First and Third Armies to the north, with the mission of encircling the German armies retreating from the lower Seine area in

front of the Americans. The line Meaux—Soissons—Laon was the boundary between the two armies.

On 29 Aug, without meeting much opposition, the right of the First Army reached the outskirts of Soissons. Its left met strong opposition and only reached the line Pontoise (exc)—Montmorency. The Third Army, meeting only slight resistance, reached Pont Arey (east of Soissons)—Epernay (exc)—Chalons-sur-Marne (exc)—bridgehead over the Marne to include Marson—Vitry-le-Francois (exc).

The 21st Army Group, also starting forward, likewise met resistance. At the end of the day it had reached the line Rouen—Ecois—Etrepagny—Magny—Meulan.

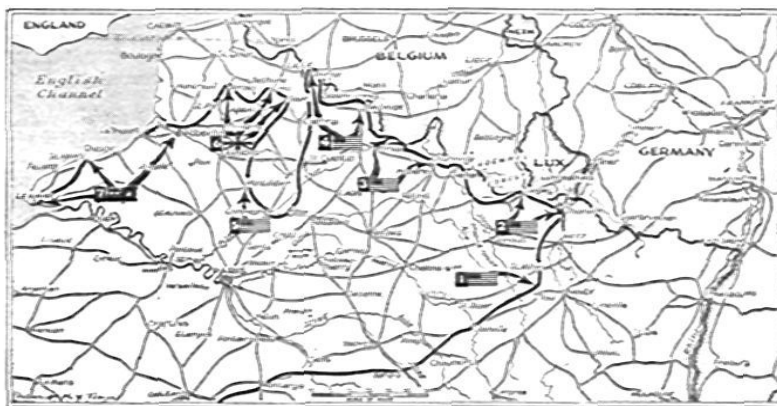
On 30 Aug the First Canadian Army, seeking to advance between the sea and Rouen, found strong opposition and made but minor gains. The Second British Army found that the enemy had retreated, and reached the line Gournay—Beauvais—Meru. At Beauvais a strong enemy rear guard stopped the advance for the day. The left of the First U. S. Army was held up but the right went ahead fast. It took over part of the zone previously held by the Third U. S. Army and reached Ham (exc)—Laon—Warmeriville (NE of Reims). The Third Army, regrouping, occupied St. Dizier.

On 31 Aug the First Canadian Army, still meeting resistance from enemy forces covering the withdrawal from the Le Havre—Rouen area, reached the line St. Romain de Colbosc—Lillebonne—Caudebec—Rouen. The Second British Army made a night march (night 30/31) in three armored columns—one from Bray and two from Beauvais—all directed on Amiens. Contrary to expectation, the columns arrived at Amiens about daylight and found the enemy gone, less small detachments, of which one was important. This contained Lt. Gen. Eberbach, the commanding general of the 7th German Army, who was caught at breakfast in a small restaurant. The British pushed on to Corbie and Rosieres (exc).

The First U. S. Army's left engaged in very heavy fighting with a strong enemy force in the Foret de Compiègne. The right, meeting little or no opposition, while holding at Laon against an enemy counterattack, pushed on to Mezieres—Sedan (both exc). The Third U. S. Army, also meeting but slight resistance, reached the Meuse River from Verdun to St. Mihiel (both inc).

On 1 Sep the First Canadian Army, meeting no resistance, entered Dieppe. Le Treport and the south edge of Abbeville were reached. An enemy force remaining in the vicinity of Le Havre was being gradually forced back into that place, which was prepared for all-around defense.

Armor from the Second British Army reached Arras by midday. Doullens was taken and a fairly solid line established with the Canadians (really a Polish division) near Abbeville. The left of the



As September arrived the Americans were driving from St. Mihiel toward Nancy (1), They had reached Thionville (2), only 11 miles from the German frontier, and Longwy, according to the enemy. Our forces neared the Belgian border between Charleville and Hirson (3) and swept across north of the latter town. Troops also entered Belgium after having won Maubeuge (4) and took Tournai. The Americans also seized Compiègne and Montdidier (5). The British advanced through Douai and Lens (6) and were only 14 miles from Lille. They sent patrols as far north as Pernes. The Canadians were believed to have captured Abbeville (7). They also took St. Valery in mopping up and drove into the outskirts of Le Havre.

First U. S. Army was still engaged in the Foret de Compiègne against an estimated force of 8 hostile divisions. The right pushed on to beyond Sedan. The Third U. S. Army reached the line Varennes-en-Argonne—Verdun—Commercy—Joinville, all inclusive.

On 2 Sep the Canadians met resistance at Abbeville. The British advanced only some 10 miles beyond Arras to St. Pol (exc)—Lens—Douai. The battle near Compiègne continued, but the right of the First U. S. Army crossed into Belgium, meeting slight resistance at the end of the day northeast from Montcornet. The Third U. S. Army advanced eastward and reached the vicinity of Thionville, Metz, and Nancy.

On 3 Sep a Polish division of the First Canadian Army captured Abbeville. The Second British Army, finding no enemy in their front, advanced rapidly into Belgium and reached Brussels. Our First Army had two hostile forces to contend with: that near Compiègne and a new one near Mons, Belgium. The main body reached Charleroi, Belgium, with patrols as far forward as Aachen. Other troops reached the west border of Luxembourg.

Next day the Canadian Army was engaged against enemy rear guards withdrawing north from Abbeville. The Second British Army without resistance occupied central Belgium to the line Lille—Ghent (exc)—Antwerp—Mechlin (Malines)—Louvain. The First U. S. Army suppressed the Germans near Mons, found to have numbered over 10,000; 9,000 prisoners were taken. Several smaller enemy pockets were eliminated. These minor operations delayed the advance of the main body. A surprise of the day was that the great port of Antwerp was neither defended nor destroyed. The enemy held, however, the islands of Walcheren and South Beveland, on the north side of the Hond (West Schelde) River, which closed the entrance to Antwerp.

On 5 Sep the First Canadian Army, by-passing Boulogne, reached a line through St. Omer, ever confronted by a strongly resisting rear guard which was retiring on a course parallel to the coast. The British Army was occupied in mopping small enemy detachments, and in regrouping. Our First Army completed the reduction of the enemy force near Compiègne; reports as to final results are not yet available. The main body, turning eastward, crossed the Meuse River without opposition, on the front Namur—Dinant—Givet. The Third Army found resistance everywhere and made no advance. This army on account of its rapid march had difficulty in securing supplies. The base still was mainly the open beaches of Normandy, recently supplemented by the partial reopening of the port of Cherbourg. This port was unable, however, to care for more than a fraction of the needs of some two million men on shore. Railroads were not open; truck transportation was over long routes aggregating 700 miles for a round trip. Recourse was had to air transportation to supplement ground means. Gasoline, food, and ammunition were the main items needed. Materiel had in general stood up well, and replacements required were not numerous.

On 6 Sep the Canadians advanced to a line through Calais (exc), that place being held by an enemy garrison. The British occupied Ghent. The First U. S. Army advanced east against light opposition from infantry detachments and reached a line about 15 miles east of the Meuse at Dinant. Our Third Army attacked the line Thionville—Metz—Pont-a-Mousson—Toul. It met such a strong resistance that previous ideas that the enemy would fight only a delaying action along the Moselle River had to be abandoned.

GHQ now ordered the Second British and First U. S. Armies to attack and ease the resistance against the Third U. S. Army. Next day the British attacked northeastwardly from the line Antwerp—Louvain. There was no resistance until the Albert Canal was reached; the British established a bridgehead across it opposite Bourg Leopold. The First U. S. Army extended its left to Liege (exc)—Huy; thence the line was almost due south to St. Pierre. Our Third Army renewed its attacks, and established a bridgehead across the Moselle north of Pont-a-Mousson against stiff opposition. On the left the Canadian Army advanced slowly past Calais.

On 8 Sep the Canadians reached a line through Ostend. The Second British Army attacked toward northeast. The bridgehead near Bourg Leopold was extended to include that town, but other portions of the bridgehead were lost. The right of the British was at St. Trond. The First U. S. Army went through Liege (not seriously defended) and for some

miles beyond. This army's right was 12 miles east of Sedan. The Third U. S. Army renewed its attacks and established a bridgehead south of Metz across the Moselle. Very strong resistance was met. Nancy, which had been in possession of weak American forces, was lost to what appeared to be new strong hostile forces.

A renewal of attacks on the 9th resulted only in advances of the Canadians on the left against light opposition, and of the First U. S. Army to a line Liege—Arlon (exc) against enemy delaying forces.

On 10 Sep the Canadian Army in spite of heavy attacks made only half-mile gains along the general line Ostend—Bruges—Ghent. The Second British Army enlarged its bridgehead over the Albert Canal eastwardly to include Beeringen, but was unable to increase it in depth. A slight advance was made east from St. Trond. The First U. S. Army, still meeting only minor resistance, almost reached the border of Germany, its right passing through Luxembourg. Our Third Army's left was established at Aumetz, which had a Maginot Line fort, found abandoned and in good order. The attack against Metz had no success except in the bridgehead south of the city. Under cover of extensive smoke screens laid by the Chemical Warfare Service and with the aid of a strong air bombardment controlled and directed from ground OPs, the bridgehead was expanded.

On the 11th the Canadian attack failed to get forward. The left of the Second British Army crossed the Albert Canal and advanced halfway to Eindhoven, but attempts to enlarge the bridgehead around Bourg Leopold did not succeed. Our First Army reached the German frontier at places. The Third U. S. Army continued to meet very strong resistance. It established a new bridgehead across the Moselle south of Nancy, opposite Luneville.

On 12 Sep the 49th British Division of the First Canadian Army, detached and left behind at Le Havre, after a two-week campaign captured that important port, held by about 8,000 Germans. The attack had been repeatedly aided by very strong air preparations



About 13 Sep, on the northern flank of the Allied line the British were reported by the enemy to be in the vicinity of Eindhoven (1) and the Germans had withdrawn from the Albert Canal to the Schelde-Meuse Canal. The Americans crashed into the fringe of the Siegfried Line near Aachen (2). In this area (inset map) one column took Roetgen, the first German town to be captured, and another drove north of Hergenrath to Aachen's outskirts. Still another American force went through Clervaux (c) to a point close to the border. Below the Luxembourg frontier our troops battled in the western part of Thionville (4), Gen. Patton's Third Army plowed toward Luncville, fought its way into Charmes, and captured Neufchatcau (5). Other Third Army elements were joined by French troops at Chailion (6). Near the Belfort gap the Americans advanced to Flagey (7) and the French battled between Pont de Roide and Villersexel (8).

against the concrete works of defense. This port is ruined; it needs extensive reconditioning before it can be used. The main body of the Canadian Army was unable to advance.

The Second British Army's advance toward Eindhoven was stopped, but the British right advanced from Bourg Leopold to Peer. The First U. S. Army captured the frontier towns of Eupen and Malmédy, but found the enemy's opposition had noticeably increased. Great numbers of medium bombers and fighter bombers swarmed and bombed the enemy West Wall positions, just across the border in front of the advancing lines. The Third U. S. Army enlarged its bridgehead opposite Luneville.

On 13 Sep the First Canadian Army reached the line Zeebrugge—Bruges—Ghent—St. Nicolas. The Second British Army had its left 3 miles north of Antwerp, thence generally along the Albert Canal with bridgehead at Heel. East of Moll the line followed nearly the Meuse—Schelde or Escaut Canal. Troops crossed the Meuse near Maastricht. The First U. S. Army attacked toward Aachen; they met strong resistance and failed to gain. Farther south American troops closed in on the German frontier. Our Third Army gained only on its extreme right. Here the bridgehead troops south of Nancy reached the south edge of Luneville. An attack was started northward astride the Moselle in order to recapture Nancy.

On the 14th the Canadian Army made a slight advance northeast from Bruges. The enemy continued to hold his lines south of the Hond or West Schelde River. The Second British Army closed along the Meuse—Schelde Canal and occupied Maastricht. The First U. S. Army made a strong attack against Aachen with main effort south of that city. On a 9-mile front, this made a maximum gain of 8 miles, going through the outer belt of the West Wall. This was found to consist of an extensive antitank obstacle of truncated pyramidal concrete blocks covered by machine guns in pill boxes. The engineers found it impracticable to blow a way through this obstacle under fire, so 155s blasted paths through which tanks could pass. Enemy resistance was disjointed and with little artillery. At the end of the day the line reached the west outskirts of Aachen and passed around on the south to near Stolberg, after a hard day's battle. The Third U. S. Army occupied Luneville and closed on Nancy.

OPERATIONS OF THE SEVENTH U. S. ARMY

This army (under Maj. Gen. (now Lt. Gen.) Alexander M. Patch) had landed in southeast France on 15 Aug and by morning of the 19th had advanced to the line, all inclusive except as noted, **Hyerès (exc)—Sollies-Pont—Puget-Ville—Besse-sur-Issole—Le Luc—Lorgues—Flayose—Draguignan—Bargemon—Fayence—Siagne River.** The VI U. S. Corps was on the right, a French corps on the left. The mission of this army was to advance up the Rhone valley and join the right of Gen. Eisenhower's Army Groups. Incidentally, it was to open the ports of Toulon and Marseille.



Seventh Army situation 21 Aug 44. French forces around Toulon (1) crashed past Le Revest and Mont Caume and penetrated the big port from the north and west. In addition they drove westward through Le Beausset and Cuges-les-Pins. From the northeast American troops moved to the vicinity of St. Zacharie (2). The only important German resistance developed in the outskirts of Aix (3), American units joined French patriots to capture Pertuis (4). In a deep thrust northward, United States contingents seized Valensole (5) and threw out patrols into the Asse River Valley.

The French corps was charged with the reduction of Toulon and Marseille, the American corps with a rapid advance to the north. From French underground sources there was good information as to the enemy. The 19th German Army had already begun withdrawing, and was opposing the Seventh U. S. Army by a rear guard and detached garrisons at the two ports.

By 20 Aug the Americans reached the Durance River near Aix, while the French entered the outskirts of Toulon. Next day the Americans forced a crossing of the Durance between Aix and Manosque. The French met heavy resistance in Toulon. Meeting practically no resistance, the Americans on the 22nd reached Grenoble, over 125 miles inland.

On 23 Aug the French entered Marseille, with the enemy holding on to island forts in the harbor. Toulon was entered, but here too the Germans had the port blocked. American troops reached the lower Rhone near Arles without resistance. On the 24th American troops coming from the east found and attacked a hostile force near Montelimar which barred the Rhone valley. The attack failed to clear the valley until the night 28/29, when the enemy withdrew. About 800 German tanks were abandoned.

On 29 Aug two German forts off Marseille surrendered. By this date the French corps had started north on the west side of the Rhone and had reached Bagnols. The Americans had reached the line Drome River. The right flank was covered by troops which arrived at Briancon on the 25th and at the Var River. No important enemy forces were found in this direction, however. Numerous small enemy detachments taken since 15 Aug by now amounted to about 45,000 prisoners, including 35,000 from Marseille and Toulon.

On 30 Aug the French reached Bourg St. Anedol while the Americans forced the Drome River, in both cases against considerable resistance. Next day the French failed to advance but the Americans after a sharp engagement arrived at the Isere River. In view of the enemy's resistance in the Rhone valley, the American force at Grenoble was reinforced and on 1 Sep made the major attack, advancing to Voiron. The French in the Rhone valley advanced to a line through St. Agreve abreast of the Americans across the river.

During the night 1/2 Sep the enemy's main body cleared Lyon moving north, while his rear guard fell back to that city. This resulted in an Allied advance during the 2nd which brought the French to north of St. Etienne, the main American force to Vienne, and the right column to Laverpilliere, southeast of Lyon. On the 3d Lyon was entered without opposition. At this date the right of the army along the Mediterranean had taken Nice against minor resistance. The enemy rear guard retired to a flank position along the Cote d'Or, on the west side of the road to Dijon.

Our Seventh Army now advanced up the Saone valley with the French on the west side and the American corps on the east side of that river. The German main body cleared Dijon on 5 Sep. At this date the Seventh Army's advance was on the line Chalons-sur-Saone (Fr)—Lons le Saunier (US), in touch with the enemy's rear guards and 35 miles away from his main forces. On the 6th an American motorized column passed rapidly close to the Swiss border to Baume les Dames, 15 miles northeast of Besancon. An attempt to cross the Doubs River at this place met strong resistance and failed. The main American force advanced to Poligny. On the 7th after a warm fight along the Loue River it reached Besancon with its left and Pontarlier with its right.

On Sep 8 the Americans entered Besancon. French troops had now been attached to this army on its right, and moved forward to Pierrefontaine against considerable resistance. The French corps on the left of the valley had a battle against strong enemy forces during the 7th and 8th when it arrived on the line Le Creusot—Beaune facing northwest. It had encountered strong hostile forces in the flank position along the hills of the Cote d'Or.

On 9 Sep the American corps after some hard fighting arrived at the line Baume les Dames—Clerval—Pont de Roide, and appeared to be opposed by an enemy prepared to fight.

By 11 Sep the French corps on the left had advanced from Le Creusot against considerable resistance to Autun. However, no enemy was found at Dijon and troops passed through to Is-sur-Tille. The left of the American troops advanced (also against resistance) to Vesoul, but the right found it impracticable to advance. On the 12th the left of the Seventh U. S. Army effected liaison with the right of our Third Army at Chatillon. By the 13th the Seventh

Army had reached the line Langres—Vesoul—Villersexel—Pont de Roide.

BATTLE OF THE FRONTIER

The connection effected between the Third and Seventh U. S. Armies completed the mission of the latter. It was now transferred out of the Mediterranean Command to which it had belonged and was assigned to Gen. Eisenhower's command. The latter formed a 6th Army Group under Lt. Gen. Jacob L. Devers, which contained our Seventh Army and a newly formed French one. The Ninth U. S. Army had also joined; its assignment and position were not given.

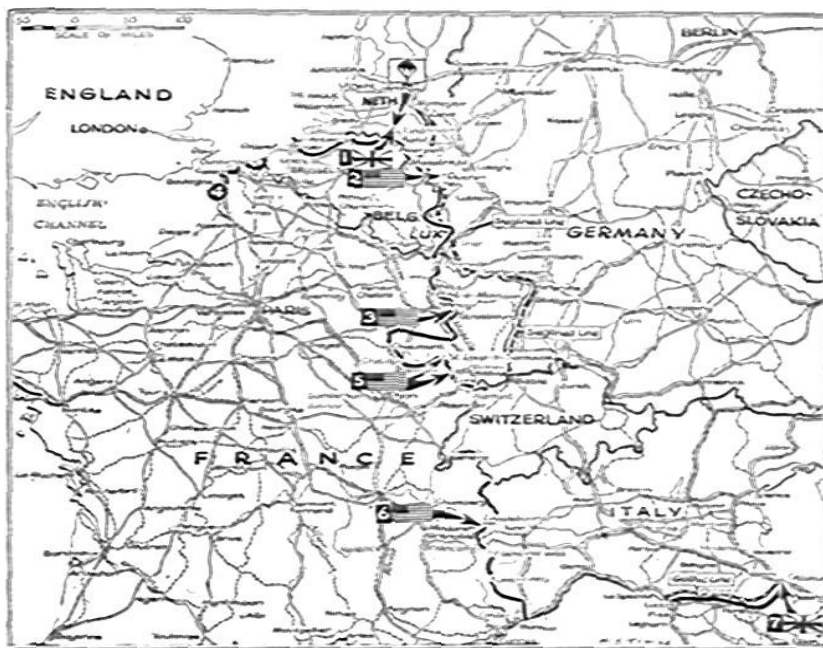
On the 15th Sep the 21st, 12th, and 6th Army Groups from left to right had a continuous line from the North Sea below Antwerp around through Maastricht, Aachen (exc), and the Moselle River to the vicinity of Lure and the Swiss frontier. In places it was in contact with the West Wall. The latter is not a wall but a zone of closely scattered posts, some for large guns and others for small weapons. There are some forts, but in general the posts are small. Depth of the zone varies from 5 to 10 miles, according to the terrain. The posts are not intended to hold indefinitely; their mission is to break up an attack, which is to be repulsed by counterattack troops launched after the attackers become exhausted. Success of this plan depends on having counterattack troops in suitable numbers at the right place and time. Allied intelligence reports indicated that the Germans were weak, and probably did not have sufficient troops to provide appropriate reserves for a 400-mile front. It was decided to attack along the entire line, in the belief that somewhere there would be so few Germans that a breakthrough would be effected.

On 15 Sep the First Canadian Army engaged the enemy south of the Hond, and reached a line close to the Belgian-Dutch border. The Second British Army attacked along the front of the Meuse—Schelde Canal and made slight progress about Maastricht. The First U. S. Army continued its attacks about Aachen. Meeting stubborn resistance, its progress was slight. Our Third Army heavily bombed and shelled the defenses around Metz but was unable to make progress. Its right found that Nancy had been abandoned by the enemy during the preceding night; that city was occupied at 1100 hrs. The new 6th Army Group advanced its left to near Epinal, but the right failed to get forward.

On the 16th the battle was renewed. The right of the First U. S. Army advanced to northwest of Trier. Otherwise there was no substantial change, the enemy's defense being strong.

In view of the very small progress against the German defenses in Holland and Belgium, which after 10 days' fighting had not been seriously dented, a new operation started on 17 Sep. The plan was to advance the Second British Army northeast to across the Meuse River toward the line Nimwegen (Nijmegen)—Cleves (Kleve), turning the German right.

To accomplish this purpose the First Airborne Army (Lt. Gen. Lewis H. Brereton) mostly American but with some British and Polish troops, was to be dropped in rear of the German front with the immediate mission of seizing and holding bridges across the Meuse (Maas) and Rhine (Waal) Rivers. A powerful air preparation preceded the air invasion; it lasted until noon; special attention was given to AAA batteries. After 1200 hrs. the airborne troops landed in over a thousand gliders and transport planes in the vicinity of Nimwegen, Tilburg, and Eindhoven. At 1430 hours the second British Army attacked toward its objective. At the end of the day this attack was 15 miles from Eindhoven. The airborne troops had no important immediate opposition, and had time to unload their guns, jeeps, etc., and organize the area where they landed. This day's cloudiness aided the air operations, as



As this period closed, a British armored column in a long advance into the Netherlands joined the Allied airborne army in the neighborhood of Eindhoven (1) and the two smashed northward in an effort to circle the upper end of the Siegfried Line and gain the Hanover plain, which leads to Berlin. East of Aachen (2) the Germans frantically tried to stem an American advance that was reported to have reached Dueren, 20 miles from Cologne. The enemy attacked east of Pont-a-Mousson, but the Americans in this sector had moved to a point 18 miles east of Nancy (3). Far behind the advanced lines the Canadians took the citadel of the port of Boulogne (4). At the Belfort gap the Americans occupied St. Loup-sur-Samouse and Lure (5). Near the Italian frontier our troops drove to Lanslebourg (6). In Italy British Eighth Army units smashed to within 2 miles of Rimini (7). Gothic Line anchor.

enemy AAA batteries had only restricted observation.

Attacks by the First U. S. Army made slight gains. Heavy attacks against Metz resulted in an advance of but a few yards. East of Nancy the Third U. S. Army advanced to the line Chateau Salins—Luneville (both exc). In the south Lure was reached, as well as St. Loup-sur-Semouse.

On 18 Sep the airborne troops in Holland were reinforced. There was some enemy air opposition. German ground troops were closing in. The airborne troops attacking south from Eindhoven and British troops attacking north toward the same objective made contact by patrols which passed around contested areas. The attack of the Second British Army met very strong opposition, but it nevertheless made progress. Both British troops north of Aachen and American troops south thereof made slight advances. In the south, where the only other advance was made, the line was pushed forward 5 miles from St. Loup-sur-Semouse to Fougères.

As this account closes the line is approximately (all places inclusive, except as noted):

south border of Holland from the North Sea to northwest of Antwerp—Cappellen—Turnhout—Heel—Eindhoven—Bree—Beek—Heerlen—Simpelveld (7 miles north of Aachen)—Aachen (exc)—Stolberg—Malmedy—St. Vith—Prum River—Our (Ur) River—Mosel (Moselle) River (with enemy bridgehead at Metz and US bridgeheads 5 miles south of Metz)—Pont-a-Mousson (exc)—Nomeny (exc)—Chateau Salins (exc)—Luneville (exc)—Epinal (exc)—Fougères—Lure—Pont de Roide.

MISCELLANEOUS

On 18 Sep, with closing of this account, the Germans held a detached post at the mouth of the Gironde River blocking the harbor of Bordeaux. La Rochelle had been captured by French forces, with condition of harbor unknown. St. Nazaire and Lorient were held by German garrisons under attack by American troops. No progress against these places had been reported.

A German garrison of 3 divisions has been defending Brest. This has been under heavy attack by the VIII U. S. Corps. By 18 Sep the Germans had been driven into a restricted area, and were all but

overcome. A similar situation existed at Boulogne, which Canadian troops had all but captured.

Off St. Malo the fortified island of Cezembre surrendered at the end of August to American troops, thereby unblocking that harbor. This is very small, but is suitable for cross-Channel boats usually plying between England and north France. Calais, held by a German garrison, is blocked by troops from the First Canadian Army. Antwerp is blocked by the enemy's holding the Schelde River between it and the sea.

WAR ON THE RUSSIAN FRONT (19 Aug to 18 Sep 44)

FINLAND

On 19 Aug the line was

Liza River (30 miles east of Petsamo)—Notosersk (Russian)—south branch Lake Nuot—Lake Pyav—Magovoritsk (R)—Lake Yushk—Lake Ruka—Lake Tolva—Ilamantsi (Finn)—Lake Loimola—Lake Suo—north edge Lake Ladoga—Taipaie (F)—Rautu (?)—Lake Suvanto—Lake Vuoksi (Russian bridgehead at Vuosalmi)—Heinjoki (R)—Karisalmi (R)—Ihantala (F)—Viipuri (R)—Viipuri Bay.

The front was inactive. That part of it north of Magovoritsk was held by the German Arctic Army of about 7 divisions. The Finns held the southern section, aided by German detachments (including air corps) equivalent to about 3 divisions.

Through the Russian Minister at Stockholm, Finland applied for peace on 25 Aug. After consultation with Washington and London, Russia replied on 29 Aug agreeing to an armistice provided Finland publicly severed relations with Germany, demanded withdrawal of German troops by 15 Sep, and in case of Germany's not doing so disarmed and interned German forces remaining. Russian forces aiding if necessary. On 2 Sep Finland began to comply. She did not accept

In the south latest reports are that Marseille and Toulon were blocked by small enemy garrisons out on islands.

French partisan forces have taken many thousand Germans found in central France who were unable to withdraw before the junction of our Third and Seventh Armies closed the last line of retreat. As far as can now be determined these troops were odds and ends and did not include first line troops.

the offer of Russian aid to disarm Germans until next day. Hostilities ceased on the morning of 5 Sep.

German forces in south Finland withdrew without incident. In north Finland the German reported that on 10 Sep Russian troops commenced an attack which was continued daily thereafter. On 16 Sep the German High Command announced that they had not objected to withdrawal, but that the time limit of the 15th was not sufficient and that this was known to Russia when she fixed that date. They announced that in view of this, and the continuous Russian attacks, they would take such measures as were necessary for their own interests—whereupon they began to destroy towns and bridges and to lay mines as they retreated. The position of these Germans when this account closes was not known. For the Germans to withdraw from north Finland it is approximately 225 miles to Gulf of Bothnia ports and 350 miles to Norway.

ESTONIA, LATVIA, AND LITHUANIA

At the date this account opens four Russian Army Groups were engaged in offensives along the line

isthmus between Gulf of Finland and Lake Peipus, about on line Johvi and Isaku—Lake Peipus—line 10 miles south of and parallel to the Ema River—point 18 miles west of Voru (Verro)—Aluksne (German)—Gulbene (G)—Madona (G)—Plavinas (G)—Jelgava (Russian)—Slovka (G) [at this point a 10-mile wide Russian corridor to the Gulf of Riga]—Angern (G)—Tukums (R)—Auce (G)—Siauliai (R)—Raseiniai (R)—Vilkaviskis (R)—Suvalki (G)—Augustov (G)—Osovet (R)—Bobe River.

The Army Groups were, in order from north to south:

Leningrad (Marshal Leonid Govorov)—north of Lake Pskov 3d Baltic (Col. Gen. Ivan S. Maslanikov)—north of Gulbene 2nd Baltic (Gen. Andrei I. Yeremenko)—north of Daugava River 1st Baltic (Col. Gen. Ivan C. Bagramian)—north of Kaunas 3d White Russian (Col. Gen. Ivan D. Chernyakovsky)—south to Grodno, inclusive

The German forces in same order were the 18th, 16th, 3d Panzer, 4th Panzer, and 9th Armies. Their boundaries and commanders were not ascertained.

On 19 Aug Russian major offensives were under way on the front of 150 miles between Lake Peipus and the Daugava River. South of there a major German offensive was in progress toward Jelgava, with the mission of destroying the Russian corridor to the Gulf of Riga which blocked land communication from Germany to Riga and Estonia. A secondary Russian offensive was attacking westward at the south end of Lithuania.

Both main offensives made gains, the left of the Russian one going through the German line past Madona. Aluksne was also taken.

On 20 Aug the Russians just north of the Daugava River who had pierced the German defensive system gained 15 miles toward Riga. Their right advanced a few miles. The German offensive was extended to a 100-mile front between the Gulf of Riga and Siauliai. This was the most ambitious German offensive of this year. It resulted from the policy of the new German chief of staff—Col. Gen. Guderian—to stabilize the Russian front rather than undertake a major offensive in France. He had sent troops to Russia by withdrawals from other fronts. This particular offensive made its main effort on its left and was of a non-stop nature. Attacks were continuous day and night on a 20-mile front. About 400 tanks were employed at a time in connection with accompanying fighter planes. This attack broke the corridor. Most of the Russians withdrew in time, but by 23 Aug the Germans had opened a land route into Riga.



At the end of the period, in a renewed drive on Riga, Soviet troops advanced from Bauska to Kekava (1), 7 miles from the Latvian capital. From the southeast they moved to Jaunjelgava (2). To the north the Red Army captured the important junction of Valga (3).

To relieve the pressure in this area the Russians on the 24th commenced an attack at the south end of Lithuania on a 100-mile front, using 30 infantry divisions plus an undetermined number of armored and artillery divisions. The offensive in north Latvia and Estonia kept right on with daily attacks, which entered Tartu on 26 Aug. Russian progress was slow in the north; there was none in Lithuania.

By 1 Sep the German High Command was so well satisfied with results on this front and also in Poland that it issued a special communique stating that north of the Carpathians the Russian summer offensive had been stemmed.

On 12 and 13 Sep the Russians conducted a large number of raids throughout the entire front to secure identifications and information. Then on the 14th they started a new major offensive on the same 150-mile front from Lake Peipus at the Ema River to the Daugava River. 40 infantry divisions were in line, exclusive of armored divisions. This attack had been foreseen by the German command, and a very bitter and savage action followed. Notwithstanding resistance met with, the Russians made progress. On the 17th the Germans started a counteroffensive against the line Jelgava—Joniskis. Next day the main Russian offensive, disregarding this threat to the left, extended the attack commenced north of the Daugava River by attacking along the south bank toward Riga.

At the end of the day the line was

Johvi (G)—Iiasaku (G)—Lake Peipus—Ema River—Lake Virts—Valga (G)—Valka (G)—Smiltēn (G)—Jaunjelgava (R)—Jelgava (R)—Zagare (R)—Siauliai (R)—Rascinai (R)—Vilkaviskis (R)—Suvalki (G)—Augustov (G)—Osoverts (R)—Bobr River.

NORTH POLAND

On 19 Aug the Russian Army Groups

**2nd White Russian (Col. Matvei Zakharov)—south of Grodno
1st White Russian (Gen. Konstantin K. Rokossovsky)—south of Ostrow and north from Krasnik**

held this front. The Germans had their 9th (in part) and 2nd Armies. The line was

Bobr River—Malkinia (G)—Lochov (G)—Tluseze (G)—Praga (G)—Vistula River (with Russian bridgehead south of the Pilica River).

The Russians were generally on the offensive from Warsaw (inc) northward, and on the defensive to the south. Main Russian effort was toward Warsaw. Against this the Germans were not only defending but counterattacking frequently and with vigor.

On 24 Aug the direct Russian attacks against Warsaw not having produced much effect, a major offensive was launched by the 2nd White Russian Army Group between the Bug and Narew Rivers, on a 100-mile front directed toward Lomzha with a view of eventually turning Warsaw from the north. 30 divisions were used for the initial attack. This became a very violent battle and continued on day after day. A German counteroffensive started northeast from Praga on the 27th but was on too small a scale to accomplish much. The Russian attack toward Lomzha, after getting about halfway there, was temporarily discontinued on 31 Aug. Renewed on 4 Sep, it made better progress than before; on the 6th it captured Ostroleka.

On 10 Sep the Russian attack was again renewed, with main effort on its left. On the 13th Lomzha fell. The Germans thereupon abandoned the south bank of the Narew. Russian efforts during the next few days to cross the Narew were unsuccessful.

The Russians promptly turned their attacks toward Praga, which they carried by storm on the 13th. Then attempts to cross the Vistula during the period ending on the 18th failed.

On 18 Sep the line was

Bobr River—Narew River—Radzymim (?)—Praga (R)—Vistula River (Russian bridgehead south of the Pilica River).

SOUTH POLAND



The Red Army has occupied the Bulgarian capital of Sofia (1). It is in contact with the Yugoslav partisans in the Negotin area (2). Continuing their drive through Transylvania, the Russians seized Maiaad (3) and Vatra-Dornei (4). Slovak patriots reported contact with Soviet forces driving into eastern Slovakia (5) from southern Poland. The Hungarians said they were fighting the Romanians in the Beius-Incu-Lipova region (6). Marshal Tito's men enveloped Valjevo and took Slovak and Lajkovac (7). Following up their capture of Brac, they seized the Adriatic islands of Curzola, Meleda and Lesina (8) in an important blow at German communications.

The line on this part of the front was

Vistula River (with Russian bridgehead about Sandomierz)—Mielec (R)—Rzeszow (R)—Sanok (R)—Usko (R)—Boryslav (R)—Dolina (R)—Nadworna (R)—Delatyn (R)—Kuty (R).

Near Boryslav was the boundary between the 1st Ukraine Army Group (Marshal Gregory K. Zhukov) on the north and the 4th Ukraine Army Group (Col. Gen. Ivan Y. Petrov) on the south. The German forces were the 1st Panzer (north) and 4th Panzer (south) Armies.

At the beginning of the period fighting centered around the Sandomierz bridgehead, which the Russians were trying to enlarge and the Germans to reduce. Early successes were with the Russians. This was not sustained, and in spite of the use of 12 infantry and 4 armored divisions, the advance was checked with considerable losses by the 24th. On 31 Aug the Germans attacked in their turn, striking from the north. They succeeded in reducing the bridgehead by forcing the north boundary about 8 miles to the south from the vicinity of Annapol.

On 9 Sep the Russians started an offensive headed southwest toward the Carpathian passes in rear of the line Krosno—Sanok. This is very rough country, with numerous woods and steep slopes. In spite of this condition, the Russians attacking almost every day worked up into the mountains. At the end of the period they had made a substantial advance. At this time the line was

Vistula River (with Russian bridgehead about Sandomierz)—Mielec (R)—Rzeszow (R)—Jaslo (G)—Dukla (?)—Jasliska (?)—Dolina (R)—Nadworna (R)—Delatyn (R)—Kuty (R).

ROMANIA

Here the line was

Kuty (R)—Radauti (G)—Suceava (G)—Harlau (G)—point 8 miles north of Iasi—Koroneshty (G)—Orhei (R)—Reut River—Dnestr River.

The Prut River (less a small sector northeast of Iasi) was the boundary between 2nd Ukraine Army Group (Marshal Rodio Y. Malinovsky) to the northwest and the 3d Ukraine Army Group (Gen. Feodor

Tolbukhin) to the southeast. The German order of battle is unknown. At the start of the period Romania was an ally of Germany and had about 18 divisions in line, aiding in holding this front. There had been no major activities for some time.

On 19 Aug numerous Russian raids occurred, each of which was in itself a battle, accompanied by considerable artillery and air support. On the 20th the Russians commenced a major assault which was the main one for their entire front. The 2nd Ukraine attacked southward between the Siret and Prut Rivers, while the 3d Ukraines attacked southwest from the line Orhei—Tiraspol. All attacks were preceded by a concentrated air and artillery preparation, and all had initial success. By 22 Aug the Russians had taken Iasi, and held Targu-Frumos to the west and Ungeni to the east. Southeast of Tiraspol a bridgehead had been obtained to include Zaim—Kaushany—Manzyr. Aided by an amphibious expedition, another bridgehead had been established near the mouth of the Dnestr, to include Akkerman. At Chisinau (Kishinev) a strong group of German divisions had prevented much advance in their sector. The Russian advance continued on the 23d by spreading toward adjacent salients rather than by advancing.

At 2125 hrs. that day, the King of Romania by broadcast announced that Romania had accepted armistice conditions offered, and that war with the Allies ceased. By inference he announced war with Germany and Hungary. He directed his divisions to act accordingly. Although Germany had foreseen a shift by Romania from one side to the other in the war and had a plan for such an event, the date of this shift was a surprise; German troops were not in the positions they should have been. German GHQ ordered all German troops to retire at once to in rear of the Siret River. For most of the Germans in line east of the Prut River, this order was too late.

On the 24th Romanian troops, overjoyed to be out of the war, quit fighting. Thousands surrendered to any Russians they met. Near the mouth of the Dnestr the 9th German Division found itself surrounded by Russians and Romanians and was captured. The Germans in central Bessarabia started their movement to the Siret River very promptly, and the Russians following entered Chisinau. They closed in around the Germans, who were mostly in slow moving infantry divisions whereas the Russians had many motorized divisions. At the same time the 2nd Ukraine started for Bucuresti and the 3d Ukraine for the lower Danube, which they reached on the 26th. By the 27th, 6 complete Romanian divisions and parts of numerous others had surrendered to the Russians. By the end of the month the Russians, meeting no resistance, had arrived at Bucuresti and at Constanta.

On 28 Aug the 2nd Ukraine started an attack westward toward the Carpathian Mountains from the line Pascani—Roman. The initial success of the first day brought the advance to Piatra-Neamt.

By 1 Sep a new front had begun to be established, initially with weak forces on both sides. Romanian (and later Russian) forces moved north from Ploesti to Brasov. Romanian troops already in the area concentrated along the line of the Muresul River from Targu-Mures southwest. The Russian force from the 2nd Ukraine attacked the Bekas and Gyimes passes. This gave a triangular front, with apex near Brasov, held by Axis troops. The salient in their possession was known as the Szekely Tip with its head on the line Brasov—Oitoz Pass. German GHQ decided to evacuate the tip.

On 3 Sep a part of the German force which had withdrawn from the Chisinau area crossed the Siretul River south of Bacu. This force appears to have originally consisted of 3 corps (XXX, F (*sic*) and IV) and 10 slow infantry divisions (76th, 79th, 15th, 106th, 258th, 282nd, 294th,

302nd, 370th, and 384th). Adding the 9th Division caught near Akkerman, 11 German divisions plus corps and army troops and services were caught by Romania's defection. The total number was about 150,000 men. How many escaped is unknown.

By 5 Sep the Romanian troops had crossed the Muresul River and reached the vicinity of Cluj. At this point an offensive by Hungarian troops was encountered. This drove the Romanians back through Turda to south of the Muresul River, by the 8th. The Axis evacuation of the Szekely Tip was well under way by this date, and on the 9th Russians coming from the east entered Targul-Sacuse. Next day troops from the Brasov area occupied Sfantul-Gheorghe.

On 13 Sep the Axis completed evacuation of the Szekely Tip and Russian and Romanian troops closed in to occupy the line Targu-Mures—Odorhei—Mercuria—Gheorgeni. This same date Russia and Romania signed an armistice, the military provisions of which were that Romania should furnish not less than 12 divisions to fight under Russian direction.

Only minor changes occurred in the line thereafter, to the date of closing this account. On 18 Sep the line was

Kuty (R)—Radauti (G)—Suceava (?)—Falticeni (R)—Gheorgeni (R)—Odorhei (R)—Targu-Mures (G)—Turda (G)—Hucdin (G)—Beius (R)—Ineu (?)—Arad (G)—Timisoara (G)—Oravita (R)—Danube River to boundary of Bulgaria.

BULGARIA

The 3d Ukraine Army Group reached the border of Bulgaria in Dobrudja on 2 Sep. At 1900 hrs. on 5 Sep Russia declared war against Bulgaria. At dawn next morning Russian troops crossed the frontier and marched rapidly south. The Bulgars made no opposition. Thousands surrendered. On 7 September the Russians reached the Turk border at Diaymoteikhon (Demotika) and then spread out over the entire country. At 2200 hrs. on the 9th Russia granted a cessation of hostilities, in consideration of which Bulgaria declared war against Germany.

The Germans were not caught by surprise. They commenced countermeasures without delay. The Bulgarians had about 2 divisions in the area between Nis and the Danube near their own frontier. These were partly disarmed, and during the next few days the balance were driven back into their own country. About one Bulgar division near Kriva Palanka was also driven eastward. In the Vardar valley was stationed the Bulgar 5th Army, garrisoning all important places. These troops now closed the Vardar valley route into Greece, thereby cutting the German line of communications to Greece and the Aegean Islands. In view of this situation, after having cleared out the Bulgars at Nis and below who were on the same route, German troops closed in on the 5th Bulgar Army which had about 3 divisions. Two of these (18th and 29th) got into a fight near Kumanovo with Partisans belonging to Tito's Yugoslav forces. They retired toward Kriva Palanka, and the Partisans thereupon undertook to block the German line of communications. The 15th Bulgar Division was at Prilep. This was encircled by German troops. As this account closes it appeared that it would be unable to maintain its situation.

On 18 Sep the line was

Danube River along boundary between Romania and Yugoslavia—boundary between Bulgaria and Yugoslavia to St. Nicholas pass—Piro (Bulgar)—Kriva Palanka (G)—Strumitsa (?).

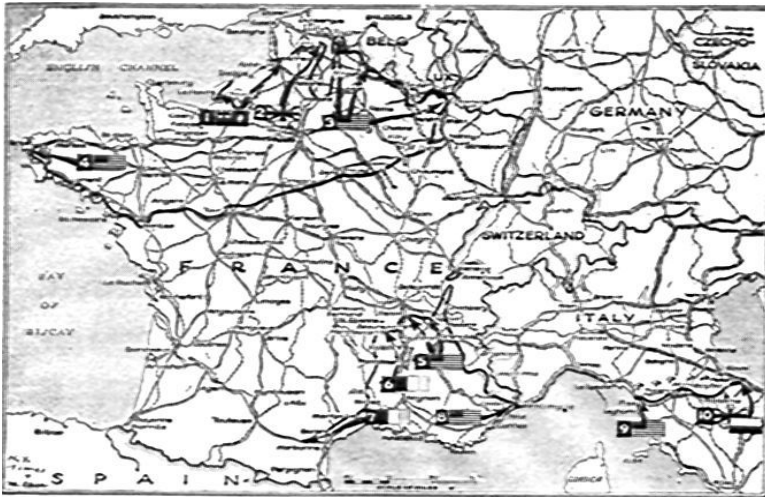
There is no report as to the line below Strumitsa, where troops of both sides are mixed over a wide zone. The Russian occupation of Bulgaria was just reaching the south and west boundaries, but no Russian troops had yet appeared in line along the west frontier.

THE WAR IN ITALY (19 Aug to 18 Sep 44)

An Allied Group of two armies—Fifth U. S. and Eighth British, from left to right—composed an army group under Gen. Sir Harold R. L. G. Alexander. At the beginning of the period they were on the line **Arno River—Pontassieve (German)—Bibbiena (G)—Sansepolero (G)—Cesano River.**

The enemy was a German army estimated as about 15 divisions, as against 25 a month earlier, commanded by Marshal von Kesselring. The Allies had overwhelming air superiority: air attacks on lines of communication were conducted daily on an extensive program.

German air operations were in general limited to reconnaissances. Ground operations centered along the east end of the line, where the Allies engaged in attacks with limited objectives, netting small but constant gains. The plan was gradually to drive back the enemy's left and thereby turn his really very strong positions among the mountains in the center and in the western sector. Initially the forcing of the enemy to across the Metauro River was envisaged. The Eighth Army covered the line east from Florence.



On Sep 2 progress was being made in France and Italy. In northern France the Americans were reported 11 miles from the German border and they crossed into Belgium above Hirson and to Tournai (1). The British took Lens (2) on the way to Lille; the Canadians won Abbeville (3) and were in the outskirts of Le Havre. The Americans were said to have broken into Brest (4). In the south our forces were 5 miles beyond Voiron and seized Beaurepaire and Vienne (5), only 14 miles from Lyon. The French won Tournon and Montfaucon (6), but reported no further progress toward Toulouse (7). Northeast of Nice (8) the Americans won Contes. In Italy the Fifth Army seized Pisa (9) and the Eighth Army pierced the Gothic Line (10) to a depth of 3 to 4 miles.

These daily attacks resulted in Polish and Italian troops' reaching the south side of the Metauro River by 22 Aug—a 7 to 8 mile advance in three days, on a 12-mile front inland from the Adriatic. Following this success the Germans commenced to withdraw in the central mountain area.

On 26 Aug the Eighth Army (having regrouped troops on the east sector) started a major offensive on a 25-mile front to cross the Metauro River. Strong resistance was encountered but a foothold was secured on the north side of the river and the attack was ordered continued. By evening of the 28th the line had been pushed forward to Urbino (exc)—Fano (inc), always against constant enemy resistance. In the mountains, with minor fighting the Eighth Army passed Pontassieve on the east and closed around Bibbiena. Next day the main attack in part reached the south side of the Foglia River, to which line the enemy was withdrawing. Bibbiena was occupied without a serious fight. The left of the advance arrived at 5 miles north of Pontassieve.

On 30 Aug Urbino was captured and an attack began against Pesaro. North of Pontassieve strong enemy resistance was now met. The attack near the Adriatic continued uninterrupted through 2 Sep, British naval forces aiding by furnishing enfilade artillery fire against the enemy's left. Very large numbers of tanks were used and strong artillery and air support. Tank wastage is stated to have exceeded 50 a day. By dark of the 2nd Pesaro had been taken and the Foglia River crossed. The Fifth Army commenced an attack due north from Florence.

The Army Group was much pleased at the results obtained from their offensive. They had gained 15 miles in 8 days over most difficult

country. A General Order of congratulations was issued stating that the Eighth Army "has now broken through the enemy's elaborately prepared defenses on a twenty-mile front to a depth of three to four miles . . . the last enemy prepared defense south of the Po River has been breached."

In view of the Allied success the German High Command ordered a withdrawal of their right and center to what the Allies called the Gothic Line. The enemy appears to have had no such name, but he had a partially prepared line along the mountain range extending generally from Spezia on the west coast to Rimini on the east coast (both inc).

The Fifth Army's new offensive was extended to an attack along the high ground north of Lucca—Prato. The Eighth Army continued this operation across the entire peninsula, with its main effort along the Adriatic coast. Stiff resistance was met everywhere, and very heavy fighting developed. By 6 Sep the Fifth Army was in spots on its objective north of Prato; the advance on the east coast was being opposed very strenuously. The Germans here began to counterattack with a sizable force of armor. For three days the Allies were principally engaged in warding off enemy assaults. By 8 Sep the line had reached

Serchio River (5th Army) — Lucca (5th) — Pistoja (German)—Prato (5th)—point 8 miles north of Florence—Mt. Fulterano (?)—Gemmano (G)—Croce (9 miles SW of Rimini) (8th)—point on coast 4 miles south of Rimini.

In an all-day battle British took Gemmano on the 9th.

On 10 Sep strong Allied attacks on the west side brought the line forward to the high ground north of Lucca—Pistoja—Prato—Dicomano. It was now in contact with the Gothic Line. The attack on the east continued, but made only slow progress. Naval forces continued to aid the advance along the Adriatic, but the enemy's resistance did not decline. The Germans advanced their left slightly to Riccione (6 miles down the coast from Rimini) and recaptured Gemmano. The main fighting centered about the ridge extending inland from Riccione through Coriano. It took until 14 Sep for British and India divisions to clear this ridge around Coriano. Next day Gemmano was retaken.

In view of this success a determined attack against Rimini was started on the 16th. Greek troops entered line close to the Adriatic. The Fifth Army (using American, British, Indian, and Brazilian divisions—first entry into battle for Brazil) attacked on its entire front. The Fifth Army made the greatest gains, and by the 18th had reached the crest of the Apennines. The Eighth Army had a long and savage fight, and made only slight advances. At this time the line was **Viareggio (G)—Pte. Moriano (5th)—high ground north of Pistoja—Barberino di Mugello (5th)—point 5 miles south of Firenzuola (5th)—Galeata (G)—San Marino (neutral state between the lines)—point on coast 4 miles southeast of Rimini (8th).**

In one month the Allies had advanced

along the Adriatic	36 miles	1.2 miles	per day average
in center	15 miles	.5	do
along the Ligurian	10 miles	.33	do

THE WAR AGAINST JAPAN (19 Aug to 18 Sep 44)

NOTE: All dates in this section are local, or east longitude dates. USN communiques are ordinarily in west longitude time, which makes their dates one day earlier than standard.

SOUTHEAST ASIA

Kandy, Ceylon, is headquarters of the Southeast Pacific Command, whose Supreme Commander is Lord Louis Mountbatten. The Meridian 110° East Longitude is the boundary between this command and that of the Southwest Pacific, as far north as Latitude 20°. Above this line is the area assigned to the command of Admiral Nimitz, which includes all of China and Japan.

Southeast Asia has an active front with the enemy along the entire boundary between India and Burma. Occasional forays are made to the Andaman Islands and Sumatra, held by the Japanese. All of Thailand and Indochina and the west half of Java are within its jurisdiction, and are prospective theaters of operations.

During the period discussed the rainy season was generally prevalent. It will continue on into November, when a dry season favorable for operations will start and last until May, 1945.

Sumatra. Two air raids have been made by naval task forces, one on 24 Aug against Padang and the other on 18 Sep against Segli. Padang, the main commercial city on Sumatra, is located at about the center of the west coast. There are no important industries at that port but the harbor is good and probably a center of enemy activity. Segli, at the northeast end of the island, has the local railroad shops. There was little opposition to the raid on Padang and none at all at Segli.

Burma has a 600-mile front between the Bay of Bengal and the Naga Hills, inclusive. It is held by the Fourteenth British Army (Lt.-Gen. W. J. Slim). There are two active sectors.

The *Arakan front* of less than 50 miles is close to the sea, on the Burma side of the India boundary. Only minor operations have occurred, the principal one being a British attack between 8 and 11 Sep which secured heights southwest of Buthedaung. The line has remained practically unchanged: Maungdaw (British)—Buthedaung (Jap)—Paletwa (J).

North of Arakan are about 200 miles of jungle-covered mountains where there are no operations. Then comes the India state of *Manipur*. The Japanese invasion of that state is now completely over, the Japs having withdrawn. The British followed the Japs south along the Tiddim road from Manipur boundary and east along the Tamu road.

During the period the 5th India Division advanced southward from 2 miles north of the Manipur boundary to about 12 miles from Tiddim, or some 75 miles. On the Tamu Road the advance was from 19 miles east of Tamu. On the Tiddim Road the point is in contact with Japanese rear guards. On the Tamu road contact with the enemy was lost on 25 Aug, whereupon the line was advanced about 10 miles to the Chindwin River. Across the river no organized enemy has been found. The line has stayed on this river.

200 miles northeast of the Manipur area is the *North Burma front* (Gen. Joseph Stilwell). The mission of this command has been to construct the Ledo Road, from the Assam railhead of that name to a junction with the Burma Road. At the beginning of the period the command had cleared the way as far as Mogaung. It had just secured Myitkyina, 30 miles in an air line to the east. The two places were connected by a railroad.

The original intention was to continue the Ledo road beyond Mogaung to Blanco, 75 miles away, where the Burma road started from the Irrawaddy river head. Possession of Myitkyina suggested changing the route to through that town and on to Tengyueh. This would be about 120 miles of road to be constructed, but the through route would be at least 50 miles shorter. The decision has been to proceed directly toward Tengyueh. The road is reported working into Myitkyina.

Operations have been restricted, partly due to the rainy season. The 36th India Div covers the right. A Chinese corps (14th, 22nd, 30th, 39th, and 50th Divs) covers the center toward the south and the advance toward Tengyueh. No operations have been reported by the famous Chindits.

The enemy is reported to the south. Only patrol encounters have occurred.

The Salween Front faces west along the west side of the Salween river astride the two branches of the Burma Road which pass through Tengyueh and thence on to Bhamo; and through Lungling on the way to Lashio. Tengyueh and Lungling, 35 miles apart, are connected by a lateral road. At the beginning of the period these two towns, which are enclosed by thick stone walls, were occupied by the enemy as road blocks.

The 20th Chinese Army Group (Gen. Wei Li-huang) with about 16 divisions estimated as having a combat strength of some 5,000 men each, was besieging the road blocks with the mission of pushing west to a connection with Gen. Stilwell. U. S. engineers and medical corps detachments were attached, but the high command was exclusively Chinese. To it was attached Brig. Gen. Frank Dorn, without command, as liaison officer. Troop equipment was generally American but was incomplete.

This country is covered with very high mountains. Notwithstanding the summer season it was cold, especially at nights. There are few roads, and roads and trails have excessively steep grades. They are frequently on sides of precipices, and slippery. Many men were lost falling off them.

The siege of Tengyueh commenced on 23 June. The first serious attack was on 25 July. The walls about the town were 30' high and 15' thick. Neither the heavy infantry weapons nor the pack artillery were

able to breach the walls. This was accomplished by the 10th and 14th U. S. Air Forces, by skip-bombing. The city, less two streets, solidly lined with stone houses, consisted of a mass of temples and compounds, each surrounded by walls and each of which required a separate military operation. Except for dropping of supplies the enemy made no attempt to relieve this garrison, and Tengyueh was captured on 14 Sep. Its garrison estimated as 2,000 men all died, except 9 prisoners taken.

The siege of Lungling has not progressed so well. On 3 Sep the enemy started a relief expedition from Bhamo, which arrived at Lungling on the 15th. The Japs then undertook against the besiegers an offensive which was still in progress when this account closed. South of Lungling the enemy had detached posts at Hsiangta and Pingka. Repeated attempts to capture these have not succeeded.

THE SOUTHWEST PACIFIC COMMAND

This command of Gen. Douglas MacArthur's covers a vast area.

On the right, troops hold a considerable sized beachhead on the west side of Bougainville Island of the Solomon Islands. The enemy holds the major part of the island, also adjacent Choiseul Island.

Northwest of the Solomons the enemy holds New Ireland, with the main base near Kavieng. He also holds the east end of New Britain, while the west end is held by Allied forces.

On New Guinea the enemy has sizable forces near Wewak, blocked to both east and west. Minor forces are near Sarmi and still others on Vogelkop. Allied forces hold the entire north shore, less the enemy areas indicated, and all of the south shore from Merauke (inc) eastward. The Admiralty Islands are held by the Allies.

No direct operations of importance have been directed during the period against these hostile forces. The plan is to let them wither away from lack of supplies and food through an air and sea blockade. The Allies have uncontested supremacy on the sea and in the air. Nevertheless, some traffic does reach the detached enemy posts—partly by barges, partly by submarines.

The Japanese main force is believed to be in Java and adjacent islands. It is reported as two armies—16th and 19th, estimated as having perhaps 200,000 combat troops, exclusive of native levies (if any).

The only important Allied operation has been the seizing of Morotai Island off the north end of Halmahera. The latter island contained several enemy air bases under their 6th Air Div. Commencing on 21 Aug, and until 13 Sep, these airfields were bombed on 15 days, when they were reported as finally neutralized. On 14 Sep Morotai Island was bombed. Next day an amphibious expedition after a naval and air operation landed on the south end of Morotai. There was opposition only from patrols who fled almost at once. Measures were at once taken to establish an air base. This will be 400 miles from Vogelkop, previous most advanced Allied base, and only 300 miles from the south coast of Mindanao.

Enemy air fields on northeast Celebes were attacked 8 times between 3 and 14 Sep. Main enemy base in this area is near Manado.

Other air attacks have been almost daily against Rabaul on New Britain, Kavieng on New Ireland, and enemy bases on Bougainville. Minor air attacks have been constant against Timor, Tanimbar (Tenimber), Aroe (Aru) Islands, Ceram, and Beoroe (Buru).

PHILIPPINE ISLANDS

The boundary between the Southwest Pacific Command and that of Admiral Nimitz is the Equator as far west as Meridian 110°, thence north to Latitude 20°, thence west to the China coast. This places the Philippine Islands within the Southwest Command. Both commands, however, have been conducting operations over the Philippines.

Commencing on 2 Sep and thereafter to include the 11th, the SWP bombed around the Gulf of Davao 9 times. The Talaud Islands about 100 miles south of Mindanao were bombed once. On 13 Sep the airdrome near Zamboanga was bombed.

The most important attacks have been made by a Pacific Fleet Task Force. This assembled off east Mindanao from where on 9 Sep planes from aircraft carriers bombed 6 airfields in the east half of Mindanao. The ships discovered an enemy convoy off Mindanao Bay and sank all of it—32 small ships, plus towed sampans. 8 enemy planes were reported downed and 60 destroyed on the ground.

On 12, 13, and 14 Sep the same Task Force sent out its planes to

attack the Visayan Islands, including Panay, Cebu, Leyte, and Negros. There was considerable enemy air opposition on the first day, less on the second, and none on the third. 156 enemy planes were reported downed and 277 destroyed on the ground.

The mission of the foregoing attacks seems to have been to furnish protection to an amphibious expedition en route to Palau, by destroying enemy possibilities of air attacks based upon the Philippines.

PACIFIC AREA

The main operation has been the attack on Palau, a group of volcanic islands 100 miles long extending northeast and southwest. Main island is Babelthup, nearly in the center of the group. Just off its south end are several small islands, including Koror. Here is where the enemy's main base in the central Pacific is believed to have been.

Following the raids on the Philippines to neutralize enemy air forces who might interfere from that direction, the 3d Amphibious Force (Vice Admiral T. S. Wilkinson) landed on 15 Sep at Angaur (81st Inf Div) and Peleliu (1st Marine Div). There was opposition at both places; it was very heavy on Peleliu, where the enemy was found to be heavily entrenched, well supplied with weapons, and to have a force estimated as one division. The force on Angaur appears to have been about 1,200 strong.

By 18 Sep the 1st Marine Div had in hard fighting captured more than half of Peleliu, which is 10 miles long and about 2 miles wide. The airfield had been captured and the Seabees were at work reconditioning it. On Angaur enemy opposition had all but been suppressed. Enemy casualties are reported to have been in all 48 killed on Angaur and 5,495 killed on Peleliu. Our own casualties were not made public.

Previous to the attack Palau had been bombed heavily 21 times between 19 Aug and 14 Sep.

The Central Pacific includes the Marshall, Caroline, Marianas, and Bonin Islands. In the Marshalls the enemy holds Wotje, Maloelap, Mili, and Jaluit, which were bombed respectively 10, 5, 12, and 4 times. In the Caroline Islands Yap was close enough to Palau to warrant special attention; it was bombed 15 times prior to the Palau landing. Other islands bombed and number of times were Ulithi (4), Woleai (4), Truk (7), Ponape (7), and Nauru (16).

A naval task force visited the Bonins between 31 Aug and 2 Sep, heavily attacking Chichi and Haha. 46 enemy planes were reported downed or destroyed and 1 light cruiser and 5 small ships were sunk. The same TF also attacked Iwo, which was bombed 13 other times.

In the Marianas, islands bombed with number of times were Maug (1), Pagan (24), Alamaga (2), Aguigan (5), and Rota (10).

North Pacific operations have been limited to bombing of islands. In the Kuriles Paramushiru, Onnekotan, and Shimushiri were bombed respectively 11, 3, and 2 times. Marcus was bombed 5 times and Wake Island twice, besides being attacked by a TF on 4 Sep.

There is no reliable information as to the results of this extensive bombing program, other than a general cessation of enemy naval and air activity throughout the area.

CHINA

The Japanese have entered on an active campaign in the provinces of Hunan, Kwantung, and Kwangsi. Commencing in May they had opened a line of communications southward from Hankow, following the railroad along the Siang River to include Hengyang, taken on 8 Aug.

Using this as a base, an expedition was started southwestward on 2 Sep, directed toward Kweilin (about 200 miles away) where the 14th U.

S. Air Forces had a major base. This force consisted of the 3d, 13th, 37th, and 40th Divs. Three of these in as many columns marched toward the objective; the remaining division was in army reserve. The latter has about 200 special narrow gauge tanks, suitable for the narrow bridges and roads found in this part of China. A right flank guard of about 2 divisions was sent from Hengyang westward toward Paoking, 63 miles across the Heng mountains, which do not exceed 3,000 feet altitude.

Two other Jap columns, strength unknown, started west at the same time from the Canton area, astride the Si (West) River. A third column started north from the coast of Hainan with the objective of joining the West River expeditions in the vicinity of Wuchow. From there the combined force would act according to the situation at the time.

The Chinese Forces defending Kweilin are assigned to the 4th War Area (Gen. Chang Fak-kwei). His troops are reported as tired and meagerly equipped. They have been defeated repeatedly during the entire summer campaign, and have no successes to their credit. Their morale is reported to be low. The 14th U. S. Air Force is bolstering the Chinese by constantly attacking Jap forward troops, and particularly their line of communications.

By 18 Sep the Japanese columns had all advanced. The main force was 40 miles northeast of Kweilin, advancing regularly. In view of this the 14th Air Force dismantled and abandoned its base at that place. The column directed on Paoking had reached that city but had not taken it, finding it defended by Chinese troops. The West River columns were 28 miles east of Wuchow, with no important Chinese forces to oppose them. The Jap column from the south coast is stated to have made progress, but no definite information as to its location was ascertained.

The areas thus being occupied by the Japanese contain excellent agricultural regions. This further affects the already serious economic condition of Chungking's China.

Efforts to arrange an understanding between Chungking (or Kuomintang) China and Communist China have failed. The two parties are not fighting one another, but they are not cooperating.

A minor Japanese column has occupied the port of Wenchow in Chekiang Province.

JAPAN

Military operations have been limited to two raids by the 20th U. S. Air Force, using super-bombers. The first raid on 20 Aug was against the Yawata steel works in Japan proper; the second was over Anshan in Manchukuo.

Japan's Strategic Policy. Japan recognizes the overwhelming naval and air superiority of the United States in the Pacific. She is about reconciled to the naval superiority, and is limiting naval action to use of submarines and barges to supply her still numerous advanced posts scattered throughout the Pacific. Japan is endeavoring to meet the United States and her Allies in the air. She needs time to develop more manufacturing facilities for building planes and to train more pilots. She hopes that the outlying posts can be supported long enough to gain this time. Consequently, they have all been strenuously defended.

Japan is seeking to make her armies in China completely independent of the home land. In this she is having some success. Her propaganda seeks to induce the Chinese to follow Japan as the Asiatic leader, rather than submit to domination by the white races, which is what is represented as the only alternative. In this too some success is being had, but how much is hard to determine. In order to further these schemes, occupation of additional Chinese territory is to be expected.

ARTILLERY SNIPING

In last July's JOURNAL Lt. Col. Joseph R. Couch told of sniping with a 155-mm howitzer. Smaller calibers are taking up the practice, according to an Associated Press correspondent with our airborne troops in Holland. Under date of 21 Sep he wrote:

"Lt. John Spooner of Wilmington, N. C., demonstrated his marksmanship heritage today by picking off a German observer from a telephone pole at 6,000 yards with a field artillery gun, but his feat did not entirely please his commanding officer.

"Spooner got his man after firing three smoke bursts and then ten rounds with a 75-mm gun. His colonel, however, figured the ammunition cost the taxpayers \$100, whereas 'the infantry kills Germans at 5 cents a round.'"

That's not quite the whole story, of course. The \$100 can't be directly compared with the nickel, for many a bullet is fired for each Nazi killed. And 6,000 yards would be quite a range for small arms fire to be used against an effective enemy observer!

MORRIS S. SIMPSON

By Maj. Gen. Robert M. Danford

President McKinley's proclamation of July 4, 1901, opened up to white settlers the Kiowa-Comanche lands of the Indian territory. For some 49 years prior thereto Fort Sill had been garrisoned, and was the United States Army outpost in the Indian country. Since 1875 William H. Quinette had been Post Trader and Indian Trader at Fort Sill, while the Apache Prisoners of War (headed by the old Chief, Geronimo) had been on the Reservation since October, 1894.

It was on August 6, 1901—a day on which a burning sun beat down from a cloudless sky, the kind of day so well known to all veterans of Fort Sill—that the City of Lawton was born. Twenty-five to thirty thousand persons were on hand for the great land lottery and to stake their claims in accordance with their drawing of the lucky numbers. In addition to adventurous pioneers consisting of men, women, and children, this multitude included Indians, Indian agents, cowboys, soldiers, U. S. marshals, deputy sheriffs, rangers, and the usual fringe of gamblers, ruffians, and desperadoes. Yet, with all this motley group, kindness, friendliness, and generosity were conspicuously evident.

On this hot August day the earth was parched and burned. Not a blade of green grass was to be found. Clouds of dust filled the air. Thirst was the painful condition of everyone. Water, hauled from a nearly dry Cache Creek, sold at exorbitant prices, and was perhaps even harder to get than liquor dispensed from a considerable number of saloons hastily set up for business, housed under canvas.

Along the south and east sides of the town site which, like a great athletic field, was kept cleared of occupants by the U. S. marshals, the thousands of migrants had squatted down in what was known as "Tent Town." The street on the east side of the town site, near the present railway tracks, was named "Goo-Goo Street" from the fact that a female entertainer in front of her tent there frequently was heard singing the hit song of the day, "Just Because She Made Those Goo-Goo Eyes."

Immediately after the drawing and staking of claims, government auctioneers began selling the lots of the reserved town site. These sales yielded something over \$400,000. This was the money with which the town government initiated its program for the construction of municipal facilities.

A few weeks prior to this time one of the August 6th pioneers, Mr. Ransome Payne by name, had attended the interment services at Arlington National Cemetery of Major General Henry W. Lawton. As General Lawton had commanded American troops in Cuba and then in the Philippines, where he had been killed in action, his name at this time was a household word throughout the nation. Accordingly, Mr. Payne proposed that the new town be named for this distinguished soldier. This suggestion was adopted.

Morris Simpson was one of the original "1901'ers." Born in Mitau, Kurland, Latvia, Russia, on October 8, 1863, he came to America in 1883 and settled in Texas. He lived one year at Marshall, then went to Dallas, where for a number of years he was a traveling salesman for a millinery house. In December of 1890 he married Pauline Iralson of Dallas. In 1901 he resigned his sales job and associated himself with his brother-in-law,



Mr. M. Iralson. Thereupon this partnership headed for "the opening" of the Indian country.

Some weeks prior to the opening, and anxious to secure its exact date (which had not then been divulged), Mr. Iralson went to Washington, D. C. After much effort, climaxed by an interview with President McKinley himself, he learned that August 6th was the appointed day. Iralson then proceeded to the markets of New York and Chicago, where he purchased a complete stock of dry goods, clothing, shoes, hats, furnishing goods, etc., together with a large tent under which the merchandise could be displayed, protected, and sold. There being no railroad to Fort Sill at that time, this merchandise, together with a store building constructed in sections, was collected at Marlow. From there it was hauled across country by teams and wagons hired for the purpose. Simpson and Iralson accompanied this wagon train and arrived at the new town site about July 21st. They at once set up their tent, arranged their merchandise, and opened for business. Their first customer was an Indian named "Oyah," to whom they sold a fancy Indian blanket. This store enjoyed a thriving trade from the very beginning; ultimately it grew into one of the large department stores of the Southwest.

On August 6th Iralson purchased the lots on which the Lawton Mercantile Company stood for so many years. Three days later their sectionalized frame building had been erected, their stock moved in, and the store opened for business. Two years later Mr. Iralson erected the brick building that still stands. In 1903 Simpson purchased Iralson's interest in this store, which then became known as "Simpson's Bargain Store" and later as the "Lawton Mercantile Company."

Lawton was not yet one year old when, on January 29, 1902, the 29th Battery of Field Artillery was sent to Fort Sill for station. As this was the first unit of Field Artillery to be located at Fort Sill, it may be said that Fort Sill, as a Field Artillery garrison, and Lawton were born and grew up together.

In the summer and fall of 1905, the field batteries of the Artillery Corps having just been rearmed with the new carriage-controlled-recoil, rapid-fire field gun, the War Department ordered as a test of organization two "Provisional Regiments" of Field Artillery—one at Fort Riley, the other at Fort Sill. The one at Fort Sill included the 2nd, 8th, 13th, 14th, 15th, and 21st Batteries. Thus it was that in 1905, when Lawton was just four years old, Fort Sill became a station of great importance to the Field Artillery. With the separation of the Coast and Field Artillery in 1907 plans were initiated

for new construction at Fort Sill to house a regiment of Field Artillery and to accommodate a "School of Fire."

The citizens of Lawton most prominent in the efforts to expand and enlarge Fort Sill, and provide for its facilities, were W. H. Quinette and Morris Simpson. Construction of the new post was begun on June 20, 1909, and by the opening of the first course at the School of Fire on September 15th, 1911, the new post was completed and had become the home station of the entire Fifth Field Artillery. Colonel Granger Adams commanded this Regiment and Captain Dan T. Moore organized and was the first Commandant of the School of Fire.

These years, from 1902 to the expansion of the Army in 1916, saw probably 99% of all Field Artillery Officers on duty at Fort Sill at some time or other. The one store in Lawton known to and patronized by them all was Simpson's. Those were the days when transportation to Lawton was by horseback, by mule-drawn "buckboard" or "glass wagon," or by trap or buggy owned by individual officers. The first private automobile did not

put in its appearance at the post until about 1913. As these conglomerate conveyances always transported a number of individuals, the point of rendezvous for the trip back to the post was Simpson's. Indeed, this store was in truth a forerunner of the present day U.S.O. In the back of the store a comfortable waiting room had been set up, and its agreeable and hospitable hostesses were the two always present and faithful clerks in the store, Mrs. Simpson and Morris's sister, Miss Rose. In cold, disagreeable weather, when "northerners" came down with the suddenness of a change in the wind, many an officer and his wife have warmed themselves around the comfortable stove at Simpson's before beginning the disagreeable trip back to the Post.

This, then, was the way that Morris and Pauline Simpson came to know and be known by practically all of the pre-World War I generation of Field Artillerymen. Of this group, numbering in all only about 250, and known to the Simpsons when for the most part these officers held the grades of Captain and Lieutenant, over 50 have risen to the grade of General Officer. Nothing today pleases Mrs. Simpson quite so much as to learn that another of her friends of years gone by has risen to the grade of General Officer.

In the early history of Lawton Morris Simpson soon established an enviable reputation for honesty, integrity, and fair dealing in all of his business transactions. He was kind to and befriended by the Indians who came with braves, squaws, and papooses, across the prairies from all directions, in their "surries with a fringe on the top," to trade at his store. Quannah Parker, the locally celebrated

Chief of the Comanches, named his youngest son "Morris Simpson" in honor of his good white friend. The aging Geronimo, before his death at Fort Sill in February, 1909, used to hover around the porch of Simpson's store selling post cards that he had proudly and laboriously inscribed with his name.

With the growth of Lawton Morris Simpson's activities increased. His pride and leadership in all civic affairs never flagged. He became a successful buyer of cotton, for the cotton farmers regarded him as a dealer who paid every cent their cotton was worth and a man who sold his merchandise always at a fair price. He acquired extensive farm interests and engaged in

agriculture, cattle raising, and the oil business.

He was greatly interested in the Cameron State School of Agriculture and in the education of rural boys and girls, many of whom he assisted financially in attending this school. Each year he contributed a silver cup to the honor student, always making the presentation in person. He

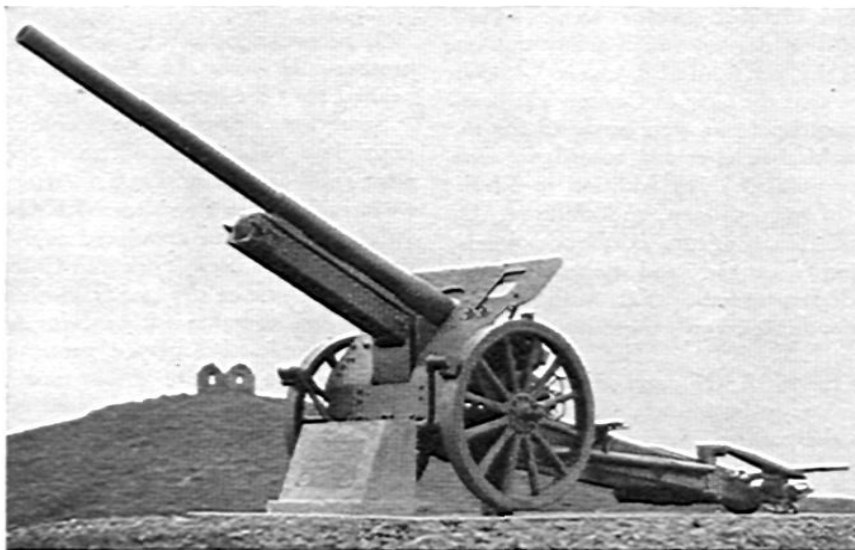
generously

supported the School's Department of Athletics. The President of the institution honored him by designating the residence located south of the Administration Building as "Simpson Cottage."

Always the good Samaritan, it is related that one bitter night in January a large party of Indians arrived in Lawton on their way to Anadarko to collect their "grass" (pasturage) payment from the Agency. As they were without funds, no one could be found to take them in until Morris Simpson was located and told of their plight. He promptly turned his store into a hotel, had them spread their blankets upon the floors and on the counters, paid for their supper and breakfast, and sent them on their way happy.

On the outbreak of the war in 1917 it was Morris Simpson who, with Congressman Scott Ferris and officers from the School, laid plans and made extensive reconnaissances to enlarge the Fort Sill reservation. This enlargement, however, did not come until just before World War II, when the additions in acreage and plots were substantially those which had been planned in 1917.

In 1920 Morris Simpson was stricken with that dread disease, cancer. The greatest diagnosticians and medical authorities in the country were consulted in his case. In spite of the fact that he was rarely without pain, his heroic spirit would not surrender, however, and he continued to a remarkable extent his activities in business and civic affairs. His case became one of the marvels of medical history. In 1929, although his illness had then continued for nearly 9 years, it was he who proposed and was most active in placing a captured German 105-mm gun on the skyline of Signal Mountain as a memorial to the soldiers of Fort Sill who died in the World War. This memorial was dedicated with appropriate military ceremonies



The Simpson Gun on Signal Mountain, with Blockhouse ("BHSM") in background.

during the incumbency of Brigadier General Dwight E. Aultman as Commanding General at Fort Sill. On top of the gun is a bronze plate which reads, "This gun was emplaced upon the suggestion of Morris Simpson, an original settler of Lawton and a staunch friend of the Army." Hence it is that this memorial, so strikingly appropriate for the post of Fort Sill, will always be known as "The Simpson Gun."

When official news was received that Fort Sill was designated as the permanent site of the Field Artillery School, the happiest man in Lawton was a dying man, Morris Simpson.

This good man, of generous and noble character, passed away on February 24, 1931. He was laid to rest in Dallas, Texas, four days later. The rites were conducted by the Masonic Fraternity, with a brief Hebrew service. Pallbearers at the funeral service included three Fort Sill officers, headed by the late Lieutenant General (then Lieutenant Colonel) Lesley J. McNair.

Pauline Simpson, the devoted wife of this fine gentleman, still carries on quietly, comfortably, and yes, happily, with her sister-in-law, Miss Jennie, in the old home at 404 Gore Boulevard, Lawton. While she lives much in the past and enjoys its memories and her civilian and Army friends of long ago, she maintains an alert and active interest in the present and finds time to know many Field Artillery families of the present generation. Her home is a veritable photograph gallery of the Field Artillery. Her skill in entertaining and her gracious hospitality manifest themselves at best when a Lieutenant or Captain of the 1905-16 vintage drops in to visit or inspect the

post, and finds as his most prized invitation the one to dine with her and with the many old friends whom she assembles for the occasion. Never in the South, with all its reputation for hospitality and food, could anything be found to surpass the table that she spreads on such an occasion. Both she and Miss Jennie are rare culinary artists. Not long ago ex-Congressman Scott Ferris wrote her, "You are the most wonderful woman in all the Southwest. When Presidents come, you entertain them—when Speakers of the American Congress come, you entertain them—when great and distinguished generals come, you entertain them. Your heart is always open to entertain everybody that comes."

Fort Sill, for many of us, is a memory and a promise. Its Spartan harshness in cold, heat, wind, and drought is forgotten and forgiven when the verdure of Spring, with its riot of wild flowers, clothes the wide, open, exhilarating freedom of this spot that lies in the foothills of the Wichitas, and again is that harshness forgiven and forgotten when the gorgeous days of the autumn are turning the leaves of the pecan, elm, and sycamore to brilliant colors. Fort Sill is our Field Artillery home and our Field Artillery inspiration. Its happy friendships and associations of yesterday, so cherished in countless hearts, have fashioned the Fort Sill that today is making heroic history and building priceless traditions on battlefields all over the world. The Fort Sill of yesterday promises a greater and a richer Fort Sill for tomorrow.

Morris and Pauline Simpson helped to build the Fort Sill of yesterday.

AIR OPs IN NEW GUINEA

By Lt. Col. Charles W. Stratton, FA

While engaged in the battle of Lone Tree Hill, Rocky Point, New Guinea, June, 1944, one of my pilots, Lt. Telford L. Pederson, set I believe some kind of a record. During the period June 18 to 26 he was in the air 43 hours. On June 21st his flying time was 8 hours and 45 minutes. During the operation he flew 43 separate missions, including reconnaissance, firing, observation, location of front lines, and the dropping of blood plasma and medical supplies to the infantry. He also established communication between front line units and higher headquarters. Front lines being sometimes less than 25 yards apart and terrestrial observation practically nil due to jungle conditions, the artillery was virtually blind and without the liaison plane would have had difficulty locating enemy gun positions and assisting in the adjustment of counterbattery fire that succeeded in knocking out a battalion of Jap artillery. In all, our pilot in a little over a month of combat has flown 107 missions over enemy lines.

His experiences have taught us a number of lessons. Flame throwers are invaluable in marking front lines. Jap artillery, antiaircraft, and ground heavy weapons seldom will fire when a plane is in position to observe. Also, they will normally not fire on a liaison plane unless it is heading away from them. Air matting is a "must" for successful operation in this theater. Smoke is invaluable, and the proportions should be high: Japs are deathly afraid of it. Intercept and interrogation have revealed the high respect the Japs have for this plane. Ludicrously enough, they list it as a 3-place armed job having a speed in excess of 200 miles an hour!

TIPS FROM OVERSEAS—III

By Lt. Col. John Embry, FA

Contrary to some earlier teachings, the Air OP often must fly forward of rather than behind the position area, even if you have to get friendly aircraft to protect you.

We do some flash basing on our own initiative and get some pretty good intersections, but we still have to work all the time at locating targets. The Infantry helps us more at this than ever before.

Get a switchboard set-up in fire direction whereby the S-3 can monitor all calls from a place near the board. Run a "snoop phone" to S-2 so he can get the information at the same time.

Fuze a 105 projectile with a 90-mm mechanical time fuze. This will run your time range out to your maximum range. You must adjust, however, using HE on impact, and then bring in the time since it does not burst on impact. Invariably, when you change from shell to time (90-mm fuze) the bursts seem to be quite high. If you use the mechanical time fuze initially, put them up in the air to get all airs. A disadvantage is that effect is hard to sense at such long ranges.

Always lay lateral lines between all the artillery units you can, if you stop for that long. They in fact become reinforcing artillery, even though the order might not say so.

Keep shucking your excess as it will accumulate faster than you imagine. Most of us carry too much. I sent home two boxes of clothes which I had carried around all over Italy.

Well trained forward observers with judgment remain the backbone of our organization.

TRENDS in Field Artillery Organization & Equipment

Improvement has been made upon equipment used in two important functions of Field Artillery units: command post tent lights and intra-battery communication. The Lamp, electric, portable, command post, is powered by two 6-volt batteries. In order to provide a unit to keep the batteries charged and also to furnish auxiliary power when needed, the Power Unit PE-210-() is now approved for issue on the basis of 4 per headquarters battery (except headquarters battery, Armored Division Artillery; and Pack Artillery); 2 per headquarters battery Pack Artillery. The PE-210-() is a 450 watt, 14.6 D-C, gasoline-engine-driven generator for use as a battery charger or a direct source of 12-volt power. It weighs 45 lbs., develops 3,600 RPM and 1 hp.

Telephone EE-8-() with headset, chest set, and microphone, are now used for communication between the executive and chiefs of sections. These are being replaced by the Intercommunication Set PA-8 in the Continental United States and outside Continental United States when authorized by Theater of Operations Commander. When the PA-8 is not issued, telephones, headsets, chest sets, and microphones will be the authorized substitute.

The PA-8 is a public address communication set which provides two-way voice communication between the executive and gun sections when dispersed over a wide front. Standard field wire is used to connect the blast-proof speakers and master station. Weights are: one master station, 30 lbs.; one battery box, 19 lbs.; four speakers, 8 lbs. each; carrying container, 55 lbs.; total, 136 lbs. Six speakers are provided for 6-gun batteries.

The Emergency Switchboard SB-18/GT is an emergency substitute six-line magneto telephone switchboard for use in forward areas. It consists of seven Adapter Plugs U4/GT, one combined container and holding rack for such plugs, and one waterproof bag or pouch for carrying the container with plugs when not in use. Adapter Plug U4/GT contains a neon lamp which flashes when ringing current is applied to the line to which it is connected. The bag or pouch is designed for attachment to a standard cartridge belt. The entire equipment weighs approximately 1¼ lbs. This switchboard is authorized on the basis of two per battalion headquarters battery (except armored) and one per gun or howitzer battery. It is to be used to supplement the standard switchboard in situations where the weight or bulk of the larger unit makes it impractical for them to be used. It is not a replacement for the Switchboard BD-71 or BD-72.

A truck, 2½-ton, 6×6, cargo, and driver have been added to T/O & E 6-357, Field Artillery Battery, Motorized, 155-mm Gun, Tractor-Drawn, in order to furnish sufficient transportation to haul all cannoneers and extra wheels.

Wire W-143 has replaced 20 miles of Wire W-110-B in the Observation Battery T/O & E 6-77. The W-143 is to be used for Sound Ranging purposes.

Metal containers for charges of 155-mm gun and howitzer ammunition and complete rounds of 105-mm howitzer ammunition are to be issued in certain theaters of operation. A recommended loading of ammunition in the Trailer, ammunition, M10, when metal cartridge storage cases are issued, is:

105-mm howitzer, M2A2 or M3 Shell, HE, with cartridge storage cases, T29 39 rds
 155-mm howitzer, M1A1, Shell, HE (either M3, M4, or M4A1 propelling charge), with cartridge storage cases, M13 18 rds
 155-mm gun, M1, Shell, HE, with cartridge storage cases, M16 16 rds

The Ammunition Frame, M14 (3 rounds), for 240-mm howitzer is limited standard and is replaced by the Frame, ammunition, M28 (5 rounds), and Frame, propelling charge, M29 (5 rounds). These new frames will hold projectiles and charges for either M1918 modified or M1, 240-mm howitzers.

The following changes should be made to the Ammunition Loading Chart on page 225 of this JOURNAL for April, 1944, to reflect the M28 and M29 frames:

Delete the columns which refer to Ammunition Frame, M14, and "5 projectile frame" 240-mm howitzer and insert the loadings indicated below:

T/O & E	M28 (5 rds) 240-mm How	M29 (5 ch) 240-mm How
6-97		
	<i>Truck-drawn, 240-mm How, M1918. Modified, Firing Battery</i>	
	Truck, 7½-ton, prime mover	3 3
	Truck, 7½-ton, 3d section	3 3
	Truck, 2½-ton, firing btry hq	1 1
	Trailer, ammunition, M10	1 1
6-397		
	<i>Tractor-drawn, 240-mm How, Firing Btry</i>	
	Truck, 2½-ton, firing btry hq	1 1
	Trailer, ammunition, M10	1 1

A clock, message center, M2, to furnish a master time control in Corps Artillery is being included in T/O & E 6-50-1. Headquarters and Headquarters Battery, Corps Artillery.

Revised tables of organization and equipment for Airborne Artillery, dated 1 August 1944, are now being distributed by The Adjutant General.

Standard Nomenclature Lists for medium and heavy artillery are to be changed to include the Aiming post, M12, and Carrying case, M60. This aiming post consists of a standard aiming post plus a cross-bar of 1/16" sheet steel, 2½" wide and 26" long, this cross-bar is marked by evenly spaced white geometric figures on a black background. Corrections for sight displacement are made by sighting on the two identical figures on the cross bar which are in line. Thus, the line of sighting established is parallel to the original line of sighting and any deflection error is eliminated. Its purpose is to aid the gunner to compensate for lateral displacement of the sight from the center of rotation of the gun when making large deflection shifts or following movement of the carriage during firing.

War Department has approved an increase in grade of the fire direction computers, technician, grade 5 and unrated, to technician, grade 4, in all Field Artillery battalions. This change will be reflected in the next published changes to battalion headquarters battery T/O & E's.

In the Field Artillery Group, Headquarters Battery, the command post truck has been changed from a truck, ¾-ton, weapons carrier with trailer, ¼-ton to a truck, 2½-ton cargo with trailer, 1-ton. A truck, ¼-ton and trailer, ¼-ton, are authorized for the additional dentist when more than three battalions are attached to the Group Headquarters Battery.

COVER UP WITH WHAT YOU HAVE

By Capt. Herbert W. Pike, FA

Containers of various types are often put to a secondary use after their original contents have been consumed. The cigar box is perhaps the most notable example of a container that outlives its original expectancy. Many a flour sack has been bleached brand-free to emerge as a tea towel or a pair of underdrawers, and the soap box has traditionally been linked with the institution of free speech. Combat pictures show oil drums, just off the salvage pile, which have been reincarnated as tent stoves, bath tubs, and easy chairs.

So the suggestion to use fiber ammunition containers instead of logs for covering trenches is not without precedent. Such a proposal is based on overseas reports that construction timber is usually scarce and that empty ammunition containers are plentiful, even to the point of creating a disposal problem.

AMMUNITION SHELTER

Fig. 1 shows an ammunition shelter designed for use in an embankment or in the parapet of a gun emplacement. It is



Figure 1. Ammunition shelter using dirt-filled fiber containers to support sandbag cover.

patterned after the standard type shown in FM 5-15, *Field Fortifications*, except that ammunition containers have been used instead of logs for covering the trench. The fiber containers are filled with tamped dirt to make them stronger and to offer more resistance to penetration. Containers may be filled individually by using the container as a scoop, or they may be filled in batteries by standing several containers together on end and filling with a shovel.

Note from the cross-section drawing (Fig. 2) that a single layer

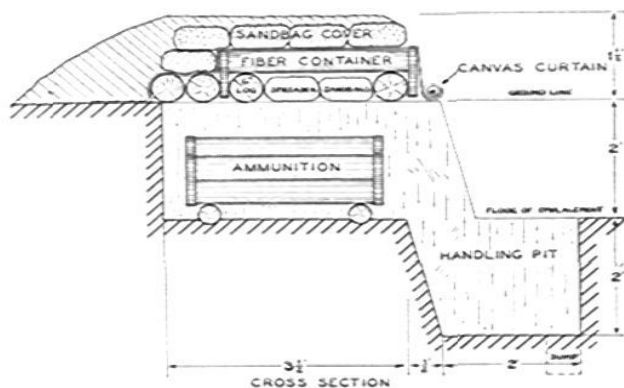


Figure 2. Cross-section of ammunition shelter pictured in Figure 1. Two logs support a roof made from discarded ammunition containers.



"Fire two more fer effect, Joe—I'm makin' a stovepipe."

of fiber containers is supported by two 6-inch logs. Several additional poles or planks are needed at the rear to give a sufficiently wide shelter to allow for an air space around the ammunition. Two fiber containers are assembled in the cloverleaf packing and placed on the supporting logs, with the metal clips for the third round overhanging the supports. The end clips hold the pairs of containers in place and keep the logs from spreading. Sandbags, laid between the support logs at each end of the pit, keep the supports from crowding together. The roof of the shelter is covered with sandbags and dirt to afford greater protection and concealment.

APPLICATIONS TO PERSONNEL TRENCHES

Fiber containers for 105-mm howitzer ammunition are 32 inches long and so can be used to cover personnel trenches. They are placed side by side over a trench, staked in place with the bundle assembly rods, and further protected by dirt or sandbags.

Once fiber containers become thoroughly water-soaked they lose much of their load-bearing strength. Some protection from moisture deterioration is afforded by placing a layer of canvas or



Figure 3. Test span indicating strength of dirt-filled ammunition containers in crate. Vehicle is a 1 1/2-ton truck.

tin between the containers and the sandbags. Added strength and durability can also be obtained by placing two containers in the wooden packing crate. Fig. 3 shows such a test span supporting the front wheel of a 1 1/2-ton truck.

Where heavier cover is desired two layers of dirt-filled, 3-round bundles may be nested together.

Fiber containers for 155-mm gun propelling charges measure

38 inches long. Those for the green-bag charges, 155-mm howitzer M1, are 33 inches long. Most of the other containers are too short to span the typical 2-foot personnel trench.

STORAGE OF NEW 105-MM PACKING

Much of the 105-mm howitzer ammunition is now packed with projectile and cartridge case in separate fiber containers,

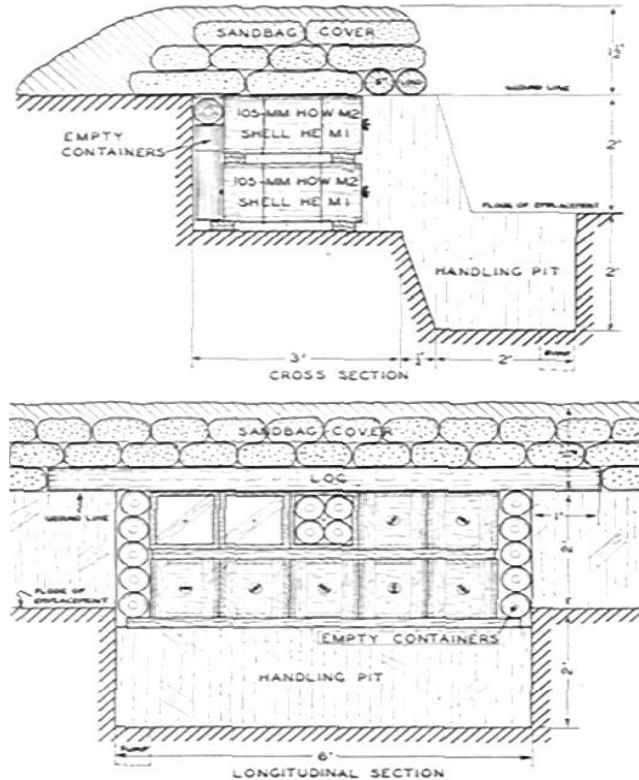


Figure 4. Boxed ammunition for the 105-mm howitzer may be dug into the side of the emplacement and covered with sandbags. Empty containers are used to insulate the ammunition from ground moisture.

two complete rounds (four fiber containers) in a wooden box, 2' × 1' × 1'. The box opens at the end, which is held in place with an assembly rod much like a cloverleaf bundle. Fig. 4 shows how the new type packing boxes might be dug into the wall of a howitzer emplacement and covered with sandbags without constructing a roof for the shelter. The boxes form a series of two-round pigeonholes in which the rounds remain until fired.¹ Should the battery displace, the sandbags may be removed and the ammunition loaded back in the trucks, boxes and all.

Poles or boards are placed under and between the boxes to create an air space. The boxes should be sloped toward the center of the emplacement to facilitate drainage of surface water. Empty fiber containers are placed between the boxes and the earthen walls to provide insulation from moisture. The handling pit and sump are identical with those of the standard type parapet shelter.

REVTMENTS

In all but the hardest ground some measures must be taken to prevent the crumbling of walls from occupation, rain, and the shock from firing and nearby explosions. Sandbags are commonly used for revetments. They should be laid up in double rows with a slope of 4 on 1, making sure to tie the *stretchers* (bags laid lengthwise) together with alternate layers of *headers* (bags laid crosswise). The issue sandbag filled three-fourths full weighs about 65 pounds and occupies a space 5 × 10 × 19 inches.

Dirt-filled fiber containers also make satisfactory revetments. Stand them on end in the ground like posts or lay them horizontally in three-round bundles. Bundles may be laid end to end around the edge of the gun emplacement and the spoil piled against them on the outside to form a parapet. Parapets should be at least three feet thick. Ammunition boxes and crating are apt to cause dangerous splinters if exposed to enemy fire, but may be used for duckboards and interior revetments.

¹A vertical version of the pigeonhole idea was employed on the Anno beachhead, where a 155-mm outfit sunk propelling charge containers into the ground and used them for storing projectiles. See photo on page 705 of this JOURNAL for October, 1944.

W. D. L. O.

There's no time like the present to check up on your War Department Lubrication Orders (WDLOs), because they are now being made available for almost all the equipment of each of the technical services. In the case of items for which the WDLOs are already available but are missing due to loss or damage, you'll find them listed in FM 21-6, 1 Feb 44. As the new WDLOs become available they are listed in Changes to FM 21-6, which come out once a month.

Distribution of WDLOs is made as automatic as possible. However, there are times when automatic distribution is not possible, and in this case it will be necessary for using organizations to requisition them, for it is mandatory that each piece of equipment be accompanied by its WDLO at all times (see Cir. No. 114, W.D., 1944) and it is the responsibility of the using organizations to comply with this requirement. Addresses to which requisitions for WDLOs must be sent are given on the newer WDLOs and are also listed in Change 4 to FM 21-6, page 46. If you can, use the directions on the WDLO you want—otherwise follow FM 21-6.

WDLOs come in three forms. One is known as the rimmed type. This is a metal-bound card designed to stand up under hard

usage, and it is issued for the larger items of equipment such as trucks and gun carriages. Another is the decalcomania. This type is for use on equipment which may be subject to the weather, but which is too small to carry the larger, metal-bound type. Many items of materials handling equipment, for example, come in this category. The third type is the pressboard card, which is designed for use with such smaller equipment as cameras, portable flame throwers, and the like. Here, the card is usually attached to the inside of the carrying case and so is subject to much less wear and tear than the other types.

The importance of WDLOs cannot be over-emphasized, for their use insures the correct lubrication of equipment that is necessary for most efficient operation and longest possible life of the equipment. Yet continuing reports from many sources indicate that WDLOs are not being used faithfully at all times. For instance, requisitions are frequently received for grades of lubricants which are not specified in any WDLO. Final responsibility for obtaining and complying with WDLOs is a command function. Therefore, lower command echelons should be familiarized with all requirements pertaining to their use.



BORNEO

By Col. Conrad H. Lanza

Borneo is one of the largest islands of the world; its area is approximately one tenth of that of continental United States—not quite 300,000 square miles. Its greatest length (measured in a NE-SW direction) is 830 miles, or as far as from New York City to Florida. Its maximum breadth is some 600 miles, or as far as from Indianapolis to the Atlantic Ocean.

This island, with Sumatra and Java, belongs geographically with Asia, with which there may at one time have been a land connection. In all three of these great islands the vegetation and animal life is similar, but not identical, with that of Asia's southeastern regions.

Borneo's population does not correspond with its size. Although six times as large as Java, it has only about one fifteenth of its population. Except in limited areas there has never been a census, but it is estimated that Borneo's inhabitants number about 3,100,000. This low density of population is accounted for by the absence of volcanoes: in general volcanic islands are markedly more fertile than non-volcanic ones. Borneo's soil is poor compared with Sumatra's and Java's, which accounts for the lower standard of life in that vast island.

With minor exceptions, Borneo is shaped rather like a campaign hat—a flat brim borders the sea on all sides, and the interior is high. The coasts are largely mangrove swamps, edged by a dense forest, but there are some sand beaches, of which few have access to the interior. Off the coast the sea is usually shallow, with coral reefs which may extend outward several miles. Large ships can not come close to shore.

Travel inland is difficult and limited.

Politically, prior to the present war Borneo was divided between the British and Dutch Empires. The Dutch held about two thirds of the island; the British part was on the northwest and north sides of the island. The British section is the better developed of the two.

Borneo is largely undeveloped, although it is supposed to contain vast mineral wealth. Coal is found in the British area, where its mining has not been commercially successful. In the Dutch area the coal mines are large and have been profitable. Greatest present mineral production is oil, all of it in one district in the Dutch part.

The climate is hot and moist, with no distinct dry and rainy seasons. It rains all the year round. In the south half of the

island the monsoons blow from the southeast from April to October and from the northwest for the balance of the year. During the southeast monsoon, the rainfall averages somewhat more than half of what falls during the northwest monsoon. It usually rains every day, however, generally as heavy showers. In the north half of the island the monsoon blows from the southwest from April to October, and from the northeast for the remainder of the year.

There are no military objectives in the interior of Borneo. The oil area has an economic value but is close to the coast. Some of the ports have a military value. Indications are that military expeditions against Borneo would center against isolated coastal sectors not within supporting distance of one another.

Part of the British territories have a road or a trail parallel to the sea. At intervals, branches extend some distance into the interior. In the Dutch territory there is a road or trail along the south and east coasts, and no roads inland.

Communication with the interior is generally by water. This is practicable for small parties but difficult for a large expedition.

DUTCH BORNEO

Dutch Borneo is divided into two administrative divisions—West, and the South and East. Except for the coast settlements the entire interior is a vast tropical jungle, inhabited sparsely by villages of Dyaks which are located on water courses. Dyaks are pagan Malays. Until recently villages have been constantly at war with neighboring villages. The mission of the incessant tribal wars has been heads, which are required for pagan religious rites. In recent years the Dutch have done much to eradicate this unpleasant custom. Due to the religious factor involved, removal of the heads (in addition to punishing of proven head hunters) has acted as an incentive to immediately lay in a new supply.

Dyaks are inclined to be lazy and are not dependable for labor. They are affected by omens to an extraordinary extent. Such simple things as a bird flying close by, or a snake crossing a path, will suffice for Dyaks' abandoning any work on hand. As such incidents occur regularly and frequently, it is

hard to get any work out of Dyaks on any kind of schedule. Dyaks drink heavily, and when intoxicated are savage.

In case of invasion there would be no immediate necessity of entering the interior of Borneo. The usual method is to follow stream lines, but the forest, although primeval, is not impenetrable. Overhead the dense vegetation of the tropical jungle forms a complete cover to the ground, where sunlight seldom penetrates. Without a compass all sense of direction is soon lost in the jungle, but fair time can be made through it. It is advisable to blaze the trail in order to be able to return.

Near the villages there is agricultural ground for rice, bananas, and other products. These are abandoned when the fertility of the soil is exhausted; the ground then grows back into jungle. Second growth jungle is impenetrable—a path must be hacked out.

All of Dutch Borneo is infected with dysentery and malaria. Skin and eye diseases are common among the natives. Other tropical diseases should not give much trouble to invasion parties. The worst places for malaria and dysentery are the very coast districts most likely to be taken for military purposes.

Borneo natives on the coast are Malays, like the Dyaks of the interior. Most of the coast natives belong to the Mohammedan church and are fairly civilized. The Mohammedan religion in the East Indies is not of the fanatical type, and its adherents do not practice their religion except to a limited extent. Mohammedan law generally governs; with this the Dutch have not interfered.

The capital of the West Division is Pontianak, in southwest Borneo. This is a river port in the delta of the Kapoeas River and is accessible to small ocean-going ships. This river is navigable for river launches for over 300 miles, and for canoes

still another hundred miles. As there is nothing of military value in this area, its occupation could well be postponed until more important places had been taken.

Going east from Pontianak, there is not another port accessible for ships until Bandjermasin (550 miles away) is reached. This has been the most important port in Dutch Borneo. It is also the capital of the South and East Division. A garrison was located here.

Ships ascend the Barito River and then the Martapoera River to reach Bandjermasin. This is a trading center, but is reputed to be unhealthy, as it lies in a delta and is encircled by swamps. There are good hotels, and the usual civilized conveniences. The Barito River, navigable for launches for 200 to 300 miles inland, brings a fair volume of trade. There is no military objective nearby. Like Pontianak, it is an administrative and commercial center.

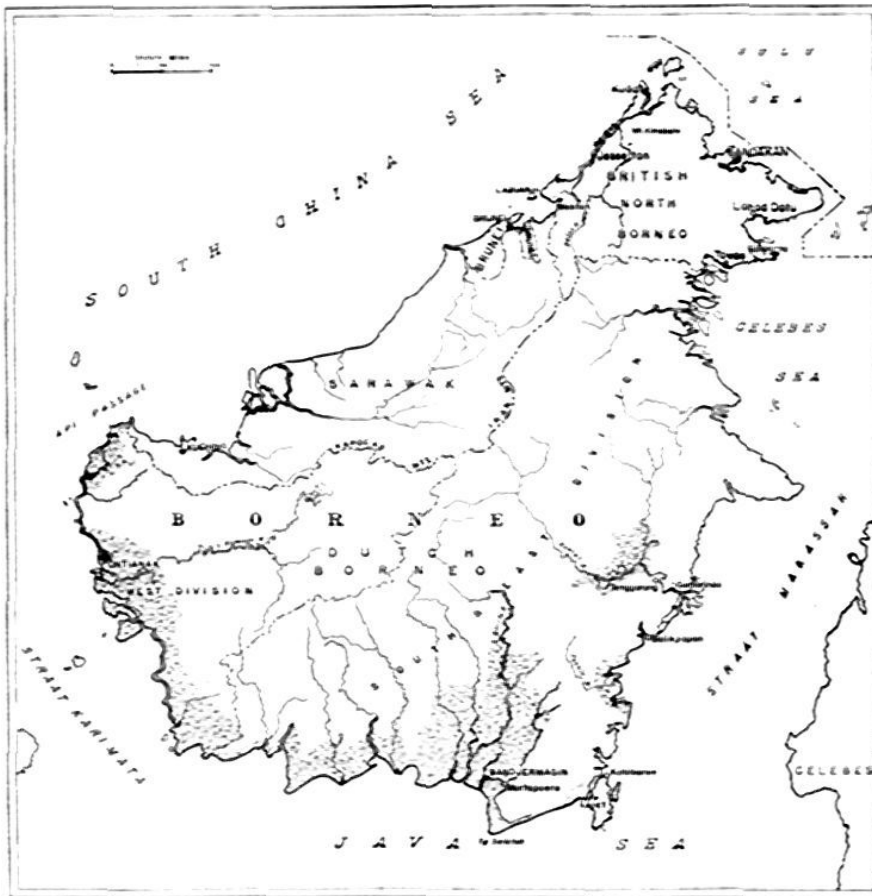
Proceeding around the coast to the east, Cape Selatan (Silat on some maps) is the southernmost point of Borneo. Continuing thence northeast and then north, the Straits of Laet are at the southeast corner of the island, separating a low swampy coast on the west from the island of Poeloe Laet (Laut on some maps). This hilly island contains very good coal mines. Within the strait is a port—Semblinbingan—equipped with piers and coal shipping machinery. Just north of this place the name of the strait changes to Kota Baroe (Kota Baru), where there is a good harbor and (on the island side) more shipping facilities for coal. The north entrance of this strait has high ground on the east (island) side, on which it is understood the enemy has fortifications.

Kota Baroe is a suitable port for a minor military expedition.

It could be used as an air base, and is about the only place near the coast of southeast Borneo where the land is not swampy or subject to inundation. Besides coal, there is a commercial trade in pepper. Outside of this item, an expeditionary force needs to bring with it all supplies required.

Slightly over 100 miles north from Kota Baroe on the mainland of Borneo is Passir, located near the mouth of a river of the same name. This is a small port of slight or no military value. It is an artificial settlement, having been organized by the Dutch government within this century. It is the center of the rattan trade. Close by here is a Sultan governing the small state of Passir, which extends for about 100 miles along the coast but only 20 miles or so inland. The inhabitants are Mohammedan Malays, and have no control over the pagan Dyaks of the interior.

Seventy miles farther north is the very important port of Balik Papan. This too is a new establishment, and is on a fine bay suitable for military purposes. Unlike other Borneo ports, it is not on a river, although the Koetai River (Kutai on some maps) is not far to the north. Because there is no river there is no sand bar across the entrance of Balik Papan



Bay, so the largest ships can use this harbor.

Balik Papan is the center of the Borneo oil industry. Most of the oil is piped from the hills in the interior. There is a fleet of river tank steamers carrying 400 tons of oil each, which can be used if the pipe line is broken. The oil is found at two levels: the upper level (about 600 feet down) produces a heavy oil of the asphalt type, the second level (about 1,200 feet down) produces a lighter oil suitable for refining into gasoline and fuel oil. The raw oil can be burnt in ordinary ships' burners without refining; for military purposes it is therefore of special value. Destroying the refineries by bombing would not deprive the enemy of the use of this source of oil, nor is it probable that intermittent bombing would seriously interfere with the oil pipe line or with the river tankers.

The enemy is holding Balik Papan with forces of unknown strength. There is anti-aircraft protection, and airfields are in the vicinity. Balik* Papan Bay could be made into a naval base.

Thirty miles to the north is the nearest of several entrances to the Koetai River, which affords communication by launches for over 100 miles inland. Coal is mined in this vicinity. A few miles up the river is the town of Samarinda, a trading center for rattan, gutta-percha, and minor articles. A few miles beyond is Tenggarong, where the most important Sultan in Borneo has his headquarters. As in the case of the other Sultans, his jurisdiction is limited to the Mohammedan Malays of the coast and does not include the Dyaks of the interior.

Beyond Samarinda there are no other Dutch ports.

The ports described above are the only ones of importance in Dutch Borneo. Excepting those on Poeloe Laoet, they are connected by a road which extends from Pontianak, through Bandjermasin, to Samarinda. The road is not—or was not at date of Japanese occupation—hard surfaced; at least in part, it may be by now. Most of this road extends through low forest land subject to inundation.

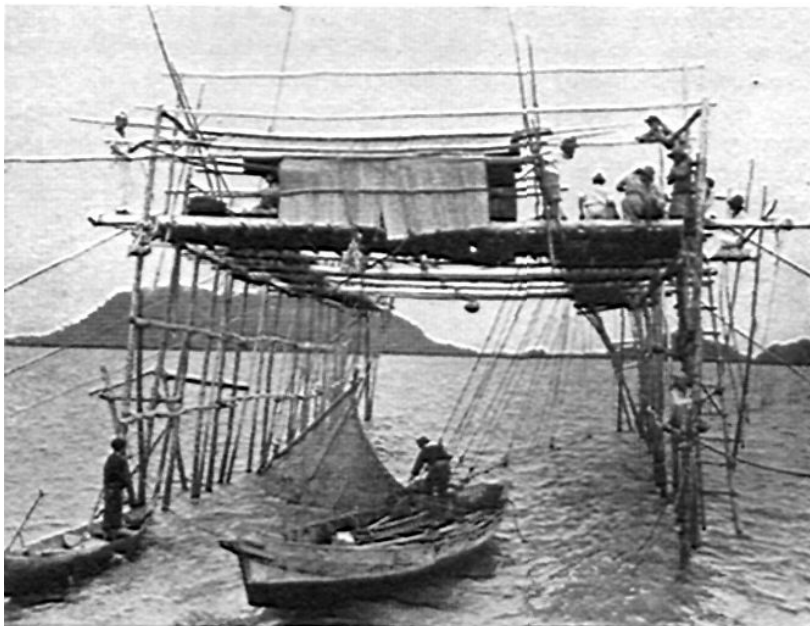
Theoretically this road would afford the enemy possibilities for moving troops from one sector to another. The main difficulty about doing this is the road itself (unless it has been surfaced) and food. Borneo does not produce food beyond its own needs except as to minor articles including sago, pepper, and coconuts. It would be difficult for Japan to subsist a large force if its sea communications with the home country are cut.

An invading force having sea communications can land where it pleases, and will have no trouble in receiving supplies. A land force can not hope to maintain itself in Borneo for long if supplies are cut off.

BRITISH BORNEO

The boundary between Dutch and British Borneo is in general a mountain range, with no established lines of communication across them.

The mountains of Borneo run in all directions throughout the interior. The Kapoeas Mts. separate the Dutch West Division from Sarawak; they do not exceed 6,000 feet in height. The boundary on the west side of the Dutch South and East Division is the Iran Mountains, which at Mt. Tebang reach an



Malay fish trap in Sarawak

altitude of 10,000 feet. The chain continues on into British North Borneo and has its maximum elevation in Mt. Kinabalu (13,455 feet). This is just below the snow line, but ice occasionally forms on the upper part of this mountain.

Sarawak

This is a strip of territory over 400 miles long on the northwest coast of Borneo. It originally formed part of the state of Brunei. The Sultan of Brunei successively ceded large territories—first to the British Sir Charles Johnson Brooke and later to his successors—in return for a fixed annual payment of money. Brooke became a native ruler under the title of Rajah, with hereditary succession within his family. Until the arrival of the Japanese the sovereignty of the Brooke family, whose rule is absolute, was acknowledged officially by the British Government. The latter controls foreign affairs. This is the only state known of in the East Indies where the "native" ruler is a white man.

The population of this state is estimated as 600,000, spread over 55,000 square miles. There are four administrative divisions, based primarily upon river systems which form the backbone of communication between the sea and the interior. There is a reasonable amount of trade in coconuts, rubber, sago, and other articles.

The capital is Kuching, at the very south end. This (like the Dutch ports) is located about 20 miles up a river. It is accessible to medium ships.

In Sarawak there is no important objective other than Kuching, which might be useful as a small base in case military operations are required in north Borneo. There are no ready made facilities, but the site is good. An airfield is available.

Brunei

This province is the remains of what at one time had been a large native state. At present the state has a coast line of 80 miles, which forms the base of a triangular tract having an altitude of 45 miles. The population numbers 38,000 in an area of 1,700 square miles.

The Sultan rules only over native matters. He has been controlled by a British Resident, who was the real ruler but

*Pronounced Bali—final K in Malay is not pronounced. C. H. L.

who usually consulted the Sultan on important matters. The Sultan claims spiritual jurisdiction over the American Sulu Islands. The Sultan of Jolo recognized this jurisdiction, and from time to time made official visits to Brunei to pay his respects to his superior. In view of this situation, an invasion force landing in Brunei should preferably pay some attention to the Sultan.

The capital is also named Brunei. It is on a river a few miles from the sea, and is accessible to medium sized ships.

There are no military objectives in Brunei.

Labuan

Six miles off the Borneo coast is this small island containing but 30 square miles and only 8,000 people. The British occupied it in 1848 (at which time it was uninhabited) because of its very fine harbor. It was at one time expected to rival Singapore. It never did but at this date it has several good piers and could be used as a military, air, or naval base. In this lies its value.

British North Borneo

This state contains about 31,000 square miles, with a population of over 300,000. It is the best developed part of Borneo. It was ruled by the British North Borneo Company, a commercial organization, believed to be the last instance of private rule over colonial territories.

Most of the territory is jungle-covered mountains, with valleys and plateaus available for cultivation. The North Borneo Company has developed a relatively considerable area in rubber and other plantations, and has opened up a system of roads and trails fairly well covering the country. There is even a railroad, 100 miles long, which is the only one in Borneo.

For administrative purposes the country is divided into five Residencies.

The West Coast Residency extends along the west coast northeastwardly from Brunei. The capital and port, suitable for small ships, is Jesselton. A road and a railroad extend south from here to Weston on Brunei Bay, with a branch extending inland up the valley of the Padas River. This residency is practically a 15-mile-wide strip between the sea and the mountains. It contains nothing of particular importance.

Adjoining to the northeast is Kudat Residency. Kudat Harbor is undeveloped but would make a possible base for operations against the Philippine Islands. The inhabitants of Kudat are mostly Chinese, with no special liking for the Malays. There is a considerable agricultural development in this area. Hard surfaced roads, in addition to numerous unimproved roads, would permit the establishment of camps and airfields.

Southeast of Kudat is Sandakan Residency. The town of the same name has a harbor which is one of the finest in the Far East: it is 5 miles wide and 17 long, and is suitable for a base. It is the best site available in Borneo from which to base operations toward the Philippines. Until the present time this port has had only a restricted trade. There were no

developments of a military nature, other than a barracks for the Military Police.

Sandakan is the only area in Borneo where the elephant is found wild in the jungle. Why that animal remains in this sector and is found nowhere else is unknown.

South of Sandakan is the East Coast Residency, which extends to Dutch Borneo. It has good but undeveloped harbors in Darvel Bay and in Cowie Harbor. Either of these could be used for military bases, provided the necessary development work was undertaken. As compared with Sandakan, the latter is better and is closer to the probable objectives in the Philippines.

On Darvel Bay the main port is Lahad Datu, on the north side. There is nothing here except a small village. The surrounding country is mostly tobacco plantations. A second port is on the south side near the entrance—Simporna, principally peopled by Mohammedan Malays belonging to the same tribes as the American Sulu Islands. The place is noted for its brass work.

On Cowie Harbor is Tawao, an artificial settlement created by the British in 1892 as a center for proposed rubber and coconut plantations. These are now flourishing and the surrounding country has a good set of roads. During the past twenty years Japanese moved in in such numbers that the place looked like a Japanese colony. The Japs had bought out the plantations and were running them themselves. The local situation as to the Japanese was similar to that at Davao in Mindanao.

There is no information as to Japanese activities in British Borneo. Sandakan had no road connections with other Residencies. The West Coast, Kudat, and an Interior Residency were united by roads. The Interior Residency (as its name implies) is a mountain territory, separating the West Coast from Sandakan and the East Coast. It has no military importance.

COMMENTS

Borneo's position is such that, if held by the enemy, it is an important obstacle against an advance from the south toward either China or the Philippines. For the enemy it is an outpost.

Borneo is so large and so close to other enemy-held islands that a complete blockade would be difficult. This would probably not be necessary. The restricted number and quality of roads within Borneo, and the lack of surplus food, make the Japanese forces in Borneo peculiarly susceptible to being starved out by interrupting main lines of supply.

The oil area in Borneo is valuable to Japan. It is the source of natural oil nearest to Japan, requiring the minimum length of transportation routes. Since it is all centered around Balikpapan this point would seem to be a primary objective for an invasion.

Occupation of Labuan as a base from which to cover the south China Sea, and of Sandakan as a base toward Mindanao and the south Philippines, would be all that the Allies would require initially. Reduction of Japanese forces which temporarily might hold out in other sectors could be deferred and even might never have to be undertaken.

With control of the sea and of the air, the occupation of so much of Borneo as is necessary should not require major expeditions. Thereafter time would be needed to develop bases for an advance beyond.

NEW FIELD MANUALS

The following manuals have recently been published and are now being distributed:

FM 6-74—Service of the Piece, 105-mm Howitzer Motor Carriage M7

FM 6-105—The Armored Field Artillery Battalion and Battery

FM 6-150—Organic Field Artillery Air Observation

FM 17-12—Tank Gunnery

FM 17-70—Signal Communication for Armored Units

FM 18-5—Tactical Employment of Tank Destroyer Units

TDs APPROACH MATURITY

By Lt. Col. J. P. Barney, Jr., FA

ABOUT THE AUTHOR

Lt. Col. Barney knows whereof he speaks when he talks of Tank Destroyer combat action. He was commanding officer of a Tank Destroyer Battalion through the African and Italian campaigns. Twice he was awarded the Silver Star for outstanding gallantry in action, once the Bronze Star. He was the first TD battalion commander to pioneer employment of TD guns as supplementary artillery. His battalion conducted indirect fire at Maknassy in Africa at a time when the TDs were supposed to be limited to direct fire action against armor. In the Italian campaign he worked in close cooperation with field artillery units on indirect fire missions.

The ultimate test of combat—by which military units succeed or fail, according to their ability to cope with ever-changing situations and enemy tactics—has wrought major changes in the original conception of Tank Destroyer units.

Initially the TDs were given a "Jack-the-Giant-Killer" role of seeking, striking, and destroying, but the efficacy of Herr Schickelgruber's medium and heavy tanks soon changed this. A new Tank Destroyer motto was framed—"Seek a good position, strike hard and fast with accurate fire, and totally destroy." This, I believe, was the correct original concept of the units, but due to misinterpretation the idea of charging enemy tanks crept into being until it was more or less forcibly ejected with some assistance by Hitler's Panzers.

During the closing phase of the Tunisian campaign German armor had been seriously crippled by continuous operation and a clash or two with our TD units. Thereafter, Field Marshal Erwin Rommel did not choose to lose his few remaining tanks in direct assault: he preferred to employ them primarily as self-propelled artillery to harass our troops. Their effectiveness in this role can be vouched for by those of us who were subjected to their pointed attention over the extended period of the African campaign. As a result of Rommel's shift in tactics, employment of TDs in their primary role rapidly dwindled to an occasional pot shot at an unusually foolhardy tank commander who rashly exposed himself.

INITIATION

From the very first the 3" gun on the M-10 motor carriage very definitely sold itself to the destroyer crews who served it and the commanding generals who witnessed its devastating



When in a reinforcing role, TDs fire far more than their usual complement of ammunition.

fire. Naturally the inactivity of these magnificent artillery pieces caused by the absence of German armored attacks began to pall on the TD commanders, and the situation did not set too well with the generals who were, at that time, short of men and guns.

This gave me the opportunity I had been waiting for. As a field artillery officer I wanted to prove in combat that our 3" guns could cause the enemy just as much grief by indirect fire as they had by direct fire. I asked permission to attack enemy installations that had been acting nastily for some time in the vicinity of the now-famous mine at Maknassy.¹ Many of these installations were beyond the range of the organic artillery.

After ascertaining that we had done a lot of work on indirect fire on the "QT" and that we had many trained artillery officers in the battalion, the division commander readily granted our request. Great was the joy in our TD gun companies when extra ammunition was brought up preparatory to making the first repayment in kind for the shelling we had been receiving from the Krauts.

I remember vividly the first fire request from the division. The target was a 6-gun battery way up a pass in rear of the mines. Company A drew the honor and prepared its data. When those first rounds cracked off, I'll admit I had my fingers crossed and a firm grasp on the medal of Santa Barbara, patron saint of the field artillery. When the rounds burst close—very close—to the target and my young forward observer's sensings crackled over the air I uncrossed my fingers, released my grasp on Santa Barbara, and sat back complacently with that "I knew we could do it" look. Adjustment was fast and accurate. Effectiveness of the fire was soon reported by the air OP with the simple message, "Mission accomplished."

I was happier than a general with new stars. My TD officers and men had convinced the artillerymen that we too could throw scrap iron where and when it was needed. After that the calls for long range interdiction, neutralization of OPs, and other similar missions came at pleasantly regular intervals. Like a sophomore halfback, we had shown the coach that we could run, block, kick, and carry the ball. From that day we had a berth on the first string.

EXPERIENCE

Our next big mission provided us the greatest thrill of our combat experience up until that time. Rommel's retreat in front of the British Eighth Army was along "Gum Tree Road" at the base of the mountains south of Maknassy.² Col. McPheters had practically hoisted a battery of artillery into the hills where he could "work over" the German columns, but range limitations were letting Jerry get a lot of stuff by. I located a route into a pass into the hills and received permission to move my destroyers into firing positions.

¹See p. 891 of this JOURNAL for December, 1943.—Ed.

²See p. 2 of this JOURNAL for January, 1944.—Ed.

In order to see over the low foothills we had to climb to the peak of the mountains to observe fire. As hard as it was, this climb was worth every bit of the sweat it cost. The sight from the peak was enough to make an artilleryman weep for joy. Down below us we could see endless columns of guns, trucks, and tanks jamming the road. Like jittery water bugs, staff cars were cutting in and out of the column, passing all other vehicles.

Our instruments were practically non-existent: they consisted of only a protractor and scale, compass, map, and a wonderful German 'scope. The range scaled at 14,000 yards and we had no smoke shell. Despite these handicaps we started to work in high anticipation.

The initial adjustment was made on a junction of the two main roads in the area. After much shifting we were adjusted at an elevation of 511 *m*; site was approximately—100 *m*. Round after round, the shells landed so close to the same spot that I could hardly believe my eyes. That was where I really learned to love the 3" gun.

For three days we fired observed fire in daylight and interdiction fire at night, until the advance elements of the Eighth Army came so close we had to cease firing. Much as we hated it we had to call it quits, but during those three days we had found out just what a gun we had. It was wonderful. I make no claims as to the number of vehicles we hit, but it was considerable. We could see the smoke of burning vehicles, and personnel abandoning others that stuck in the sand as drivers made hectic attempts to bypass damaged trucks and escape our fire. Reports received later from officers who visited the scene proved beyond all doubt the accuracy and efficiency of our fire.

These experiences were the real birth of indirect fire for tank destroyer units. In spite of our unorthodox methods, we had pioneered a secondary mission for all TD units.

Another opportunity to engage in our secondary role came in the preparation for the attack on Mateur. Having proved to our friends that we could shoot as artillery and hit a point target, it was only natural that our division artillery should assign us the mission of close support for the armored attack. We moved well forward during the night to previously selected positions and went to work as soon as it was light enough for us to pick up targets.

The Germans were retreating so fast they didn't have time to emplace and camouflage their guns with their usual thoroughness. Many were easily discernible. All three companies began firing on the observed guns at ranges from 700 to 7,500 yards. Direct and indirect fire were used as the situation demanded. The gunner's quadrant was used for all indirect missions. Fire was by single pieces so the guns could

ammunition. As soon as the observed guns were knocked out we started firing upon all suspicious points in the area. During this period the division artillery and attached artillery fired counterbattery and other prearranged fires in preparation for the armored attack.

When our armor attacked we covered the advance by fire from the flanks until the tanks had closed on their objective. The destroyers then pushed forward, occupied hull-down positions, and again fired direct fire on all appropriate targets.

As soon as the tanks were reorganized the attack proceeded, with the destroyers again providing covering fire.

Worth of this day-long, leap-frog covering action can best be determined by questioning the commanders of the 1st Arm'd Div. We know the results, but we would rather have the tankers make the report. One tanker's opinion was vividly reported by Ernie Pyle in his book *Here Is Your War*. More adequate praise even *I*, as battalion commander, would be loath to attempt.

One other unusual mission for tank destroyers during the closing days of the African campaign offers final proof of

the real acceptance of tank destroyers in their secondary role. A TD officer observed a battalion of German artillery occupying positions in the hills south of Lac Bizerte. He radioed the information to the TD liaison officer of division headquarters with the well-known phrase, "I can observe." In a few moments the observer was informed that a battalion of 155-mm guns would be put on the target and that sensings were to go by radio to the liaison officer, who would phone them direct to the battalion FDC. The adjustment was conducted, the effect was glorious, and the TD officer conducting the fire nearly busted the buttons off his shirt. The thrill of smashing the German battalion was nothing compared to the knowledge that the artillery officer of a veteran division would trust the TDs to conduct fire for the 155s.

DEVELOPMENT

We of the battalion were now thoroughly sold on the indirect fire possibilities of our guns. As soon as we moved back into the desert for rest we went to work to train our officers and crews in all the ramifications of being "sure 'nuff" cannon soldiers. We had captured enough BC 'scopes, aiming circles, observers' instruments, telephones, switchboards, etc., to equip all the companies. The acquisition of the necessary ammunition I would rather skip as being one of those real "military secrets."

During this period we were careful not to advertise our training schedule. Quietly, almost secretly, we held class after class in indirect fire for officers and men. We also continued training in our primary role. Finally came the day for the proof of the pudding. We "snuck" out to the range. There were no visitors that day. It was hotter than the proverbial hinges, but that didn't faze the men. I never saw such enthusiasm.



Virtues of a roadside position show clearly in this photo from the Littoria area of Italy. Muzzle blast will not show on the roadway, and extra elevation is readily had for increased range.

The officers and men sweated, cursed, and blistered—and they loved it.

At the end of the day's firing we knew we were ready for any indirect fire mission. The men had learned their lessons well. The surveys checked. The data were good, the laying superior. We had shot platoons all over the map and massed the fire of the battalion for a final *piece de resistance*. Everything worked. Officers fired percussion precision and FO problems with the greatest of ease.

As those things will, news of our show finally got out and the secondary role was given immediate recognition by the African TD Training Center Headquarters. They went to work wholeheartedly with us in working out indirect fire details. Soon the news bubbled up to the Fifth Army artillery and things really started to pop. Artillery battalions from a nearby division arrived at the TD Center to shoot with us and help in working out the final details of coordination of the two units. Then for the first time ammunition was made available to us—legally.

Tests and experiments were run for army dignitaries who came down to have a "look see" and left with satisfied smiles. Again we demonstrated we could shoot our cannons. Wise heads in the Fifth Army sent us more ammunition and the TD Center began training other TD battalions for indirect fire. Out of this came a semblance of an SOP. It had not been tried in combat, but we felt sure it was good.

METHODS

We used 6-gun platoons. We had tried the 4-gun platoons and they worked well, but there were several reasons for shifting to the 6-gun setup. First, the effective coverage of the 6-gun platoon compares very closely to that of a 4-gun battery of 105s; hence, in assigning fire missions the division artillery S-3 simply considered each platoon as a battery. Second, the 6-gun platoon released a platoon leader to help in the company FDC or for use as a liaison officer with the infantry. Further, this reduced by a third the number of positions necessary, and believe me that is a real problem when every bush conceals a field artillery piece. The disadvantage of having to break up a platoon is not so great as one might think at first glance. When acting in a secondary role it is not probable that the TDs will be suddenly used in their primary role. Platoons are generally close enough together, however, so that the platoon leader or sergeant can round up his guns and move in a few moments if it becomes necessary to go into action against tanks.

In each company we organized a fire direction center, as far as possible using security men for the computers and other necessary personnel. The company executive became survey officer and trained his survey team. Wire crews were trained from security elements. When I mention use of security men it does not imply that only men from these sections were used in these key positions—men from various sections of the company with special aptitude for the particular task were used in the indirect-fire organization. In one company the armorer turned out to be the survey chief, and a good one. Another company had a cook as plotter in the FDC, and so it went.

By working one TD company continuously with the same FA battalion we obtained smooth teamwork between the two units. The TD company commander accompanied the FA battalion commander when he went forward on reconnaissance, and selected his TD positions while the FA commander picked his. Little interference between the units

resulted under this plan. The 105 howitzers selected positions in valleys while the TD guns moved to higher ground where the rounds could clear the hill mask.

It was not practicable to place the responsibility for selection of TD positions on the artillerymen. They had enough trouble getting their own guns into action, and the siting of TDs—because of the characteristics of the high-velocity gun—is almost diametrically opposed to that of the howitzer.

Communications problems were simplified by the nearness with which the two units usually went into positions. After position areas were selected the artillery survey team ran a traverse and located place stakes for both the artillery batteries and the TD platoons. If time permitted (and you were on good terms with the artillery survey officer) he would run the position survey for you, otherwise your own survey men did the job. It is desirable, if the artillery can and will do it, to have the FA crew do all the survey work: this reduces the number of men milling around to draw enemy attention and fire upon the area.

Our TD companies tied in with the artillery battalions and operated directly with them on fire missions and target assignments, rather than through the TD battalion CP. This eliminated one step in the chain of command and speeded up operations. Each company kept its own firing chart. A similar one was kept at the TD battalion CP. Fire missions were assigned to the TDs by the artillery battalion FDC exactly as they were to its organic batteries.

The status of the TD battalion and companies in this method of fire should be emphasized. TDs operate with the artillery, but are not attached to them in the military sense of the word. It must be understood by all concerned that the responsibility for antitank action remains with the TD battalion. The TD battalion commander must be wholly free to move his units to meet any armored threat. The artillery will lay wire to the companies, but it will not haul ammunition, fuel, or rations. All elements of the TD battalion function exactly as they do in their primary role.

The characteristics of the 3" gun made it an ideal weapon for deepening the fire of the artillery. It was less suitable for short range missions. Long range interdiction of roads and bridges was one of the most appropriate types of missions assigned to the TDs.

In making forward displacements the TD battalion FDC took over the fire direction task and fired all missions until the artillery battalion was in its new position. As soon as the artillery was ready to resume fire the TDs displaced forward. This system provided the division with continuous fire support even while elements of artillery or TDs were on the move. When both units were in firing positions the fire power of the division artillery was nearly doubled—and what division commander doesn't want that fire power to help his doughboys over the rough spots?

ITALIAN PROOF

This system works, and works well, as we found out in Italy. My battalion originally arrived at Salerno with a most unique mission—that of corps cavalry and corps artillery. Initially the reconnaissance and some security elements were in action as corps reconnaissance from Salerno up to the Volturno River. Then the guns came up and immediately went into position to reinforce the division artillery. In this role they operated for many months without relief. The thousands of rounds they

fired on missions from division artillery provided adequate proof of their effectiveness. The longer we worked with the artillery units, the smoother became our cooperative efforts. Finally, when we were attached to a division receiving its baptism of fire we were able to present the *modus operandi* to them in such light that they immediately adopted our cooperative fire plan. Again it worked. One proof, if another were needed, was the breakthrough by this division to make the junction with the Anzio beachhead forces.

Here I have mentioned only a few of the secondary missions suitable for tank destroyers. We have met and solved the problems arising in connection with supplementing artillery fire, but because of the almost unlimited possibilities of the TD battalion's tremendous fire power and self-sufficiency, many more problems will arise in connection with additional fire missions. Solution of these problems, which leads to the utter defeat of our enemy, is a fascinating challenge to all TD battalion commanders who really enjoy a good fight.

A NEW FIGHTING TEAM

By Capt. P. C. Meachem as told to Lt. L. R. Barnhill

Within two months of the thunderous kickoff of the stubborn Italian campaign on the Salerno beaches a new and terrifying fighting team was forged by tank destroyers and field artillery units of the Fifth Army.

Employment of the tremendous fire power of the 36 high-velocity, 3" guns in a tank destroyer battalion as supplementary artillery had been discussed among military men since the activation of the Tank Destroyer Tactical and Firing Center at Fort Meade in 1941. Tests proceeded at the Fifth Army Battle School during the African campaign, but at that time there were more than enough German tanks running loose over the North African desert to keep the tank destroyers busily engaged, for the most part, in their primary—that of destroying tanks by direct fire.

Even so, there arose occasions in Africa when tank destroyers employed indirect fire to cuff the enemy around a bit. One came at Maknassy, where M10 tank destroyers of one battalion ripped apart a retreating German column far beyond the range for effective direct fire.

First official War Department note of this burgeoning tactical development came in Training Circular 88, dated 24 June 1943, setting forth "direct and indirect fire to reinforce or supplement that of artillery units" as a suitable secondary mission for tank destroyers. Four months later Training Circular 125 expanded on the secondary mission of tank destroyers, providing for instruction of tank destroyers in execution of fire commands in accordance with field artillery procedure.

Meanwhile, the tank destroyers were winning new laurels in their primary role on the Salerno beaches by smashing repeated German armored thrusts that threatened the Allied positions. One tank destroyer lieutenant won the Silver Star for outstanding gallantry in this action. Two days after his own destroyer was disabled for combat by German shell fire he directed his platoon in knocking out eight German tanks that drove to within 400 yards of his position before they were stopped.

Once the German armor was knocked out at Salerno and the slow, tortuous push northward gained momentum, the tank destroyers were employed as the "handymen" for the infantry regiments. They were called on to provide direct assault fire for the doughboys, to smash pillboxes, blow up suspected snipers' nests, and to set up antitank defenses. Sporadically they participated in indirect fire missions, but this was not carried

on generally until the Allies hit the strong German lines in the vicinity of Venafro.

Here, in the mountainous terrain of Italy, conditions were unfavorable for employment of massed German tank attacks. The line was stable and the artillery had caught up with the infantry. Under these circumstances the tank destroyers received their first combat opportunity to participate on a large scale in artillery missions.

How one tank destroyer battalion fitted into this pattern of warfare is related by Capt. P. C. Meachem, the battalion S-3, who has since returned to this country on rotation. His report is not intended as a statement of doctrine. It is merely a forthright and frank explanation of how one tank destroyer battalion met and solved the problems arising out of the combination of tank destroyer and division artillery into a coordinated fighting team. So successful was this particular joint operation that it was noted officially in the field artillery bulletin of the Fifth Army.

"From the day we landed at Salerno until we were pulled out of the lines and moved into a rest area near Piedmonte d' Alife we had been too busy providing antitank defenses and direct assault fire for infantry regiments to think much about reinforcing artillery fires, though we had been hearing increased talk of this idea. We were the handymen of the division during the first phase of the Italian campaign. Immediately after the beach landings we were busy beating off repeated German armored attacks. We also gave direct support to our infantrymen. At times we fired missions we thought might have best been handled by the infantry's own 57-mm guns or even their mortars. At one time we even taught our men to fire mortars so they could help out the infantry.

"We learned a lot about tank destroyer employment during this phase of combat, and so did the infantry and the field artillery officers with whom we were working. This was to prove very beneficial when we went back into action after our rest period.

"In the rest area at Piedmonte d' Alife we had our first opportunity to exchange ideas with the division artillery officers. We got together to swap experiences and talk of the possibilities of using for indirect fire our 3" guns on the motor carriage M10. Soon we were eating at each other's messes and working up a keen enthusiasm for employment of our tank destroyer weapons to augment the fire of the division artillery. This was particularly so in our battalion, where most of us had been field artillery officers before we transferred to the tank destroyers. We decided that when we were committed to

action again we would try out the plan. We didn't know just how soon that opportunity was to come.

"On the 31st of October our battalion commander, all our company commanders, and I went forward in the vicinity of Vairana, about nine miles south of Venafro, to select likely gun positions. We marked several on our maps after walking over several miles of rugged terrain along both banks of the meandering Volturno River.

"We returned from the reconnaissance at 2000 hours, in time for supper. A couple of officers from the division artillery dropped in to eat with us. We were just finishing our meal when the battalion commander was called to division headquarters. He returned at 2300 hours with our orders and by 0200 hours Co C had moved out. Co A moved out by 0500 hours, and Co B the next night at 2030 hours.

"Our field orders gave us the mission of antitank defense for the division and to participate in the division artillery preparation fire prior to the attack toward Venafro. This is what we had been waiting for.

"The pioneer platoon rushed up ahead of the gun companies to cut two by-passes across branches of the Volturno river for Co C. The position we had selected for Co C was on a forward wooded slope near Vairano, where the guns had a clear field of fire up a valley extending all the way to Venafro. Co B moved into an antitank position near Raviscanina, east of the Volturno. Co A went into an indirect firing position between the C and B positions.

"During the first two weeks of November the battalion fired infrequent indirect fire missions and was, for the most part, employed in assault fire missions. We advanced in the wake of the infantry up a broad valley south of Venafro. At each move we smoothed out the bugs in our teamwork with the artillery. At first the field artillery did our survey work. Later we received aiming circles and did our own surveys.

"The three gun companies were each attached to a field artillery battalion. They received fire missions directly from the reinforced battalion or the tank destroyer battalion headquarters. Our reconnaissance company maintained at least one OP for each gun company. Radios were provided for the OPs by the gun companies so the observer could stay on the company net. Our reconnaissance OPs worked in close cooperation with the field artillery OPs. Targets that could not be taken under fire by the gun companies or the field artillery battalions to which they were attached were reported to division artillery. In this manner one private in our reconnaissance received the commendation of the division artillery general for his outstanding work in directing the fire of a 155-mm battery on six German trucks bogged down in the mud. The private adjusted on the trucks on the second round and blew them up. Three were loaded with gasoline, three with ammunition.

"During this phase of combat, when our positions were stable, the companies were regrouped into two 6-gun batteries instead of in the regular three tank destroyer platoons. This eliminated one supply point, one FDC, and one set of communication wires, and relieved one lieutenant for duty in forward OPs. We maintained our own company FDCs; the personnel consisted of the company commander and a radio operator, who doubled on the phone.



Tanks as well as TDs have been acting as reinforcing artillery. In this Italian scene note the spurt of flame from the second tank, which has just fired.

"We received our fire missions on the basis of fire possibility charts submitted by the TD S-3 to the division artillery. I don't recall of ever having one of our missions called off because we were too slow or too far off on our firing data.

"Necessary information was given the reinforced battalions so they could compute data for the TD companies after they had been registered. In most cases the companies were given a point to fire on by coordinates, and the company FDC did the necessary computing. This procedure made it possible for the company to fire missions given by the division artillery, the reinforced battalion, and the tank destroyer battalion headquarters. Division gave the tank destroyer battalion a block of concentration numbers to use for their missions. These were broken down for the companies.

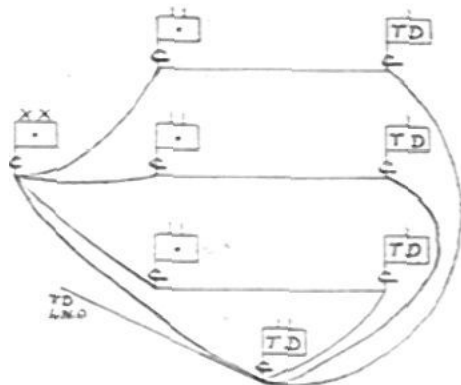
"Soon after we started operating under this setup the artillery was sold completely on having the tank destroyers work with them. At first there was some question about the tremendous muzzle blast of the TDs. The field artillery officers felt that it would attract counterbattery fire, but during the more than a month we fired in that area we received very little counterbattery fire. The nearest shell exploded 10 feet in front of one M10 and it didn't cause any harm to personnel or materiel.

"We assumed most of the night fire missions. This gave the field artillerymen a chance to sleep at night. We caught up on our sleep in the daytime. Most of our night interdiction missions were fired at ranges from 12,000 to 14,000 yards, with excellent results. Map data were fired by the battalion with accurate results. We also fired missions in which the sensings were made by aerial OPs.

"We maintained radio contact with all units in the battalion at all times. We also used 10 miles of wire to establish phone communications. Procurement was easy. The division artillery supply point was within a few hundred yards of our positions. The wire was laid by the tank destroyer command post personnel and maintained by the companies. Because of limited personnel in the command post communications sections, arrangements were made to have the companies lay their own wire to the command post. Men of the security sections were used for this work.

"Two 6-drop switchboards—also received from the field artillery—were

at battalion headquarters. A direct line was run from the tank destroyer battalion CP to the division artillery. Another direct line was run to the TD liaison officer at division headquarters. This relieved traffic through the division switchboard and gave



Schematic wire setup between TDs and FA

the tank destroyers a direct hookup with everything that was going on at the division CP. [See sketch.]

"Tank destroyer ammunition expenditure during this period of indirect fire in support of the artillery units was particularly heavy but we didn't experience any difficulty in maintaining our supplies. Throughout this period of operation in our secondary mission we kept intact our basic ammunition load. We never knew when we would be called on to fight tanks and we didn't want to be caught without a full load of ammunition.

"Ammunition for indirect fire was kept in dumps near the destroyers. Our M10 drivers, assistant drivers, and men from the security section were used to pass it up to the gunner during fire missions.

"During November the battalion expended more than 9,000 rounds of ammunition, the bulk of it high explosive. Most of it was fired on road junctions and on interdiction missions in and around Vitucoso north of Venafro, though enemy gun positions, personnel, and equipment also were taken under fire. Highest ammunition expenditure by one company was made by Co C late in the month: more than 500 rounds were fired on interdiction missions in one night.

"Co A almost tied the mark by firing 400 rounds at ranges of 2,000 and 3,000 yards during he first night in December. During this same push Co C fired more than 50 rounds of HE at ranges of 6,500 yards in direct assault upon enemy infantry. Observers in our infantry reported that the result of ricochet fire was terrific. They told us that some of the Germans tripped on their own mines in their rush to scatter under the murderous tank destroyer barrage.

"We were hampered somewhat during our indirect fire missions by lack of smoke shells. It was difficult to pick up the burst of 3" HE shells. For this reason we adjusted by platoons.

"Our ammunition expenditure continued to be heavy during the first part of December, until each gun was cut down to 7 rounds a day. Later the allotment was raised to 11 and at the end of the month all restrictions were removed. During this month the battalion ammunition expenditure soared above the 14,000 mark. Despite this rate of expenditure the supply lines were short enough to permit the tank destroyer battalion train to keep up with the demand. The only ammunition curtailment was caused by a shortage of 3" ammunition in the theater of operations, and this was of only a very short duration.

"Our guns stood up exceptionally well under the heavy rate of fire. One gun that had fired 1,307 rounds was inspected by ordnance and pronounced in good firing condition.

"Through this period the artillery gained a new appreciation of the capabilities and limitations of the 3" gun, which proved to be extremely accurate for direct fire missions up to 6,000 yards and was very effective for indirect fire missions at all ranges up to 14,000 yards. Most of the interdiction fires on Vitucoso were fired at ranges of 12,000 and 14,000 yards.

"Such ranges served to deepen the effective fire of the reinforced artillery battalions by 4,000 yards, as the 105s were not of too much use beyond 10,000 yards. On the other hand, the 105s could drop rounds in close behind mountains that couldn't be touched by the flat-trajectory fire of the TD guns. Once these capabilities and limitations were fully appreciated, the combined team of tank destroyers and field artillery was indeed a terrifying one to the Germans.

"At Venafro we were able to group the platoons within 100-yard fronts. The front was somewhat longer when we formed the 6-gun batteries. This enabled the platoon leaders to conduct fire by radio, arm and hand signals, and at times by voice. The M10s were dug in behind stone walls and in defilade. There was plenty of digging to be done by everybody. It took almost eight hours to dig in one M10. I believe most tank destroyers would gladly swap the air compressor in the pioneer platoon for one bulldozer, and I know the field artillerymen working with us would have parted with some of their most prized possessions for even a pint-sized bulldozer.

"While our primary mission continues to be that of destruction of tanks by direct fire, I believe that at Venafro we proved that the tank destroyers can hold up their end of the fighting in their secondary role—that of teaming with the field artillery to blast the enemy wherever we meet him within 14,000 yards."

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

In compliance with Article VII, Section 1, of the Constitution, notice is hereby given that the Executive Council has fixed 5:30 P. M., Monday, December 18, 1944, as the time of the annual meeting of the Association to be held at the Army and Navy Club, 1627 Eye St., N. W., Washington, D. C.

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

T.N.T. WHOLESALE

By Maj. Edward A. Raymond, FA

The Field Artillery family is growing steadily. With the publication of War Department Training Circulars on use of high-velocity guns as field artillery, our FDCs started putting pins on their firing charts to denote tank destroyer platoons, tank platoons, and batteries of 90-mm AA guns. In Italy the Germans have used their mortars to good effect from heavily defiladed positions, to reach which our artillery was forced to use high angle fire. The increase in probable error inherent in this type of fire, added to the difficulty of locating enemy mortar emplacements exactly, made this solution inadequate. Time fire failed to provide a satisfactory answer, as the German crews usually dug into stream banks and the sides of hills and gullies and obtained overhead cover.



4.2-inch chemical mortars were among the first ground weapons to fire HE against fortifications on the French coast. At extreme right appears a "Weasel," that superb vehicle for amphibious or boggy travel.

White phosphorus did not produce enough anti-personnel effect.

One division's field artillery turned to the 4.2-inch chemical mortar battalions, and set up a countermortar program in the counterbattery section of the division artillery. It was found that the best way of dealing with German mortars was with other mortars—bigger, better mortars using the same observation and fire direction facilities as conventional artillery. The system was made general throughout the Central Mediterranean Theater. The Chemical Warfare Service joined the Field Artillery family. This is the story of the ETth Chemical Battalion on the Anzio Beachhead, the story of the first CWS unit to make a countermortar program a success in combat. It is given in considerable detail in order to introduce these men and their weapons to the Field Artillery.

AMPHIBIOUS PHASE

The Ranger Force attached to VI Corps had the mission of seizing the town of Anzio on January 22nd and establishing a beachhead. Companies "A" and "B" of the ETth Chemical Battalion (4.2-inch mortars) were its "artillery." Aboard an LST, Companies "C" and "D" plus a detachment from Headquarters Company reached the harbor of Anzio on 25 Jan 44.

Because of the large number of men on board the quarters were crowded and many men were sleeping on the top deck, around and under vehicles. The sea was extremely rough and a strong wind was blowing offshore. At 0520 on 26 Jan the ship was hit by a mine. There were 1,484 rounds of 4.2-inch mortar ammunition on board besides numerous cases of .50-caliber and 40-mm (AA) ammunition. Efforts were made to cut down life rafts but much of this work was stopped by the flames and exploding ammunition. Acts of heroism on the part of members of the ETth Chemical Battalion were numerous. The crews of landing craft came in close to pick up survivors.

ACTION OF THE RANGERS

By January 26th the Germans had completed a line around the beachhead strong enough to contain reconnaissance patrols.

Enemy shelling and bombing increased. By 28 Jan the Allied divisions, less some artillery and armor, had disembarked.

At 1330 hours on 28 Jan a German counterattack on the Ranger front was beaten back with heavy losses. Concentrations of artillery and mortar fire helped to break up the attack. That night the battalion displaced to the Cisterna area, in support of an attack on that town.

Zero hour was 0100 hours. Two Ranger Battalions were to attack across-country between the Isola Bella—Cisterna Road and the Borgo Podgora—Cisterna Road, with Cisterna as their objective. An hour later another Ranger Battalion was to advance astride the Isola Bella—Cisterna Road, wiping out all opposition along the way and clearing the road of mines.

This ill-fated attack's story is too well known to need repetition in detail. The Rangers were permitted to advance, prevented from making contact with the infantry attacking on their left, and then cut off. Splendid fighting men, few were captured; individuals and small groups fanned out in the enemy's rear, those who were killed exacting a high price from the enemy; and a certain number infiltrated back to our own lines during the next two or three days. The Chemical Battalion did not accompany the assault battalions, and its losses were light. The Battalion did, however, inflict heavy casualties on the enemy, and its WP smoke screens were of great value. At one point it plugged a hole in the lines as infantry.

From many incidents which occurred during the fight two are selected at random: At 1600 hours on 30 Jan the commander of one of the Ranger Battalions called to a chemical mortar platoon commander a fire mission on a lone enemy machine gun which had pinned him down. He called back forward observer sensings, making 25- and even 15-yard adjustments, and put the machine gun out of action.

On February 9th the ETth Chemical Battalion, "The Ranger Artillery," was relieved of assignment to the Ranger Force. 4.2-inch mortars seem to have an affinity for fighting: the new assignment of the battalion was to the 45th Division.

GERMAN DRIVE

On February 16th the Germans started their major attack down the Anzio—Rome Road, near the boundary between the 45th Division and the British. The regiment on the left suffered from especially heavy shelling, from infantry assaults, and from infiltration. Contact with adjoining units was poor, but Lt. O'Neil of Company "B" directed the fire of a battery of 155-mm guns and knocked out a Mark VI tank.

"B" Blue remained in position supporting the right regiment. Next day both "B" Company platoons were moved to support the left of this badly mauled regiment. 12 Focke-Wulf 190s dive-bombed the "B" CP, killing an officer and a private and injuring two men. Considerable communications equipment was destroyed. "A" Red supported a counterattack in the center at 2300 hours, firing WP for ten minutes into and behind enemy positions to illuminate and silhouette them for the attack. On February 18th Lt. O'Connor fired on enemy tanks and infantry until pinned down at 0230 hours by direct fire from six Mark VI tanks. He later succeeded in slipping back to his platoon area.

Strong enemy forces continued to attack all day long. 1st Sgt. L. R. Kenney of "A" Company was the only observer in a farmhouse; he continued to direct the mortar fire of his company on advancing enemy infantry and tanks throughout the day. At the height of the action the six Mark VI tanks which had fired on Lt. O'Connor shot out the rooms above, below, and to the right of the corner room he was occupying, using point-blank fire. Sgt. Kenney continued to direct mortar fire on these tanks and others to such good effect that they were obliged to take evasive action, release smoke bombs, and finally withdraw. His accurate adjustments were of great effect in stopping and forcing back several subsequent enemy threats. From 1400 hours to 1800 hours his was the only observed fire placed in support of the beachhead line in this sector.

At 1530 heavy concentrations were fired by Company "B" on seven Mark VI tanks. Three tanks were knocked out and the other four fled. Fire was shifted to enemy infantry with good effect.

At the end of this 24-hour period "A" Company had five serviceable mortars, six unserviceable mortars, and one destroyed—less than 50% of its fire power remained.

On the 20th the enemy still persisted in his stubborn effort to drive south toward Anzio and the sea. His losses had been very heavy.

At 0930 Company "B" laid down a company concentration in connection with artillery fires on an enemy infantry company massing for an attack on the right flank of the left regiment. Immediately after the fire was lifted our infantry mopped up the area and took 60 prisoners. At 1800 hours "B" Red fired on tanks moving down the Anzio—Rome road 1,000 yards north of the overpass. At 2100 hours an enemy attack of company strength on the center sector was met with WP. Considerable artillery fire was also put down, and infantry patrols that went out an hour later reported a large number of German dead.

At 0600 on February 21st the left regiment reported to Company "B" that enemy tanks were on the road 600 yards north of the overpass. Concentrations of HE fired by

"Red" platoon caused the tanks to withdraw. At 1400 hours "A" Blue commenced firing on enemy infantry thought to be massing for an attack. During the next day the fighting died down and the Nazis tried to find softer opposition in attacking in the eastern sector of the beachhead from Cisterna.

COUNTERMORTAR SYSTEM

This second attempt convinced the Nazis that the beachhead was impregnable. War of attrition set in. During this period the 45th Div Arty and the officers of the ETth worked out the counter mortar system which has been adopted throughout the Central Mediterranean theater.

On May 3d the DivArty Sec, 45th Div, put its counter mortar program into operation. This was organized exactly like the counter battery installation except that the historical files were kept at division, not at corps. The worksheet devised combined the historical file, correspondence file, and record of fires. As in counter battery work, interpretation of aerial photographs was found the most prolific source of locations, but this was supplemented by Air OP and ground observers' reports. Like the counter battery system, the counter mortar program operates through the medium of shelling reports from all units in the division. The standard artillery "Shellrep" form was used (see cut). A daily enemy mortar list was published. Approximately half the missions were assigned to the division artillery and the remainder to the chemical battalion.

The Chemical Battalion had its positions surveyed in and checked by registration. The battalion FDC served as a detailed mortar operations room where observers were oriented before going forward to their OPs, which were commonly established in farmhouses in the front lines. An intelligent conception of where his own and other mortars could fire, and also of positions and fire possibilities of the DivArty observers, aided the observer in adjusting all the firepower necessary to do his job. Artillery liaison officers used the mortar battalion's fire chart in making their own fire plans.

The battalion has done away with the idea of using three 4-gun platoons per company; for round-the-clock operation, it finds it simply can not function on that basis. An attempt is made to keep two 6-gun platoons going per company, but in practice four guns are more commonly in action. It takes a lot of manpower to carry the ammunition which a 4.2-inch chemical mortar can burn.

SHELLING REPORT FORM										DATE -----	
Use Applicable Columns to Report Aviation Bombings											
A	B	C	D	E	F	G	H	I	J	K	L
Reported by (Time)	Map Loc of Obser	Direction by Flash, Sound or Furrow	Estimate Distance or Location	Area Being Shelled	Time from	Time to	No. and Type of Guns	No., Cal., & Type of Shell	Nature of Fire	Damage	Flash-Bang Seconds

• C B, Regist harassing, OP Neut, Inf Neut (Preparation) Interdiction -
 • Will NEVER be sent "in the clear" by Radio

THE 4.2-INCH CHEMICAL MORTAR

If the historical recital contained in this article has served to introduce the Chemical Battalions as something akin to artillery, so much the better. Perhaps also it has shown how far the use of 4.2-inch chemical mortars has broadened out from the purpose for which they were made. As their name implies, they were designed to function like streamlined Livens Projectors, and could build up large concentrations of gas in areas of considerable size in the event the enemy introduced gas warfare. Hence their baseplates and delicate standards, limited traverse and crude sights, and the somewhat cumbersome organization of 48 mortars per battalion, with limited means of supply. The mortars were first used in the Sicilian invasion by Lt. Col. William O. Darby's Ranger Force, attached to the 1st U. S. Inf Div, firing smoke and incendiaries. They were a smash hit.

Brig. Gen. Alden H. Waitt, CWS, has given the following technical facts about the 4.2-inch chemical mortar: "It is muzzle-loading, rifled, and fires a high capacity shell at a high angle with the accuracy of an artillery piece at ranges from 600 to over 4,000 yards. For sustained fire it can deliver five rounds per minute for an indefinite period. For short periods a rate of 20 to 30 rounds per minute can be obtained by trained crews. . .

"The mortar consists of a barrel, a standard, and a base plate. Its equipment includes certain spare parts and accessories for its installation and maintenance, and a two-wheeled, rubber-tired, hand-drawn cart for transportation in forward areas. The barrel complete weighs 91 pounds. The standard weighs 53 pounds. The base plate is the heaviest part of the mortar, weighing 155 pounds.

"The mortar shell has thin walls and large capacity, and was designed especially for firing chemical agents. It weighs approximately 25½ pounds ready to fire, and holds 6 to 8 pounds of chemical. It is prepared for firing by inserting a cartridge into its base and placing on the cartridge container sufficient rings of powder to give the desired range. When the shell is loaded into the muzzle of the mortar it slides down to the bottom of the barrel, where the cartridge is ignited by the striker pin. The cartridge then ignites the rings. The explosion expands the soft metal plate at the base of the shell so that the shell engages in the rifling of the barrel, thereby giving the shell a rotating flight. Inside the shell is a perforated steel vane which causes the liquid filling (gas) to rotate with the shell and give the shell added stability in flight.

"The 4.2-inch mortar has been used with success by mechanized troops. Installed on a mechanized mount it has the same mobility as a tank, personnel carrier, or other tracklaying vehicle. It should be especially useful to armored forces for laying smoke screens to permit advance against antitank gun fire or to conceal movement to attack positions.

"The chemical mortar is the most effective mobile weapon available for firing gas or smoke within its ranges. A chemical company firing at the maximum rate can place nearly two tons of non-persistent chemical agent (such as phosgene) on the target in two minutes. . . . A platoon under average conditions can maintain an effective smoke screen across a front of over 1,000 yards. One platoon in Sicily covered a hill crest with WP smoke



In Italy these mortars had one of their first real chances to prove themselves. Their high-angle fire and extreme mobility were invaluable among the mountains.

nearly a whole day, lifting the screen occasionally to permit dive-bombing attack. A single white-phosphorus mortar shell, when it bursts, covers an area about 40 yards in diameter. . . ."

It has a very steep angle of fall—as the Irish sergeant put it, "Them Krauts would have to jump off a precipice to get defilade from us, and they'd break their necks doing that."

WHITE PHOSPHORUS

Battlefield opinion of the relative merits of smoke screen laid down by artillery and by chemical mortars is all in favor of the latter within their range. With its big particles and large quantity of phosphorus per shell, and with its high rate of fire, the chemical mortar is an ideal screening weapon. Smoke is useful to armor and infantry in screening deployment or withdrawal, and serves the field artillery by blinding enemy observation. Screens may be laid down on known or probable OPs, or on any intervening high ground, to cover artillery programs. The smoke then makes it difficult or impossible to locate the flashes of or guns. This can only be done under special circumstances and after weighing the extent to which the mortars will expose their own positions in the process.

Use of white phosphorus against personnel is a somewhat controversial issue at the present time. There were early claims that WP would drive tank crews out of their tanks and force infantry to abandon trenches and dugouts. These were perhaps not entirely fanciful—if the Germans were panicked by an unfamiliar scare-weapon. Tests have shown that tank crews in their tanks were not injured by WP. American men and officers who have found themselves caught in friendly artillery concentrations have come through uninjured by WP. A tendency to belittle its casualty-producing effect has now set in. The particles released by a 4.2-inch mortar shell are larger than those given off by a 105-mm howitzer shell, and the ETth Chemical Battalion is convinced that interspersing WP with HE increases the casualty-producing effect of a concentration fired on troops under protective cover. Grass fires can be started in dry weather and camouflage materials can be ignited. A high percentage of WP is used for unobserved fires and as much WP is used in observed fires as is possible without obscuring the target.

Use of WP for silhouetting targets at night has been mentioned above. The illuminating effect of phosphorus bursts deserves comment. In this connection 4.2-inch mortar men

would like to be able to fire parachute flares for extensive, lasting illumination of the battlefield against night infantry or armored attacks.

It is worth noting briefly that lone concentrations of smoke have sometimes seemed to bother the Germans. Evidently they were interpreted as signals of some sort, and the Jerry artillery has frequently put down a like screen nearby to confuse anyone trying to get a message from the American screen. Smoke has also worried German machine gunners, who have opened up at various times when their vision was obscured, firing at nothing.

CONCLUSION

If the 4.2-inch chemical mortars are going to continue to function as a supplement to field artillery—as they will—more flexibility in their fire would be desirable. Some suggestions are a jeep-drawn field carriage of artillery type, with an on-carriage panoramic sight. There could well be more fire

direction and survey equipment, more communications, and more training in firing with centralized control.

Introduction of these changes would cut down the mobility of the mortar, which can now be carried by men or mules. For special operations some 4.2-inch mortar battalions should undoubtedly stay as they are.

During rapidly moving phases of a campaign, furthermore, counter mortar programs are not so practical as they are on a stable front. This is equally true of counterbattery work for the same reasons. Time is lacking to survey in bases and build up files on hostile locations before the enemy mortars pull out.

Combat experience has indicated that there is a place in the infantry division for 4.2-inch mortar battalions, battalions which can do the things the ETth did on the Anzio Beachhead: fire almost without regard to their own or hostile defilade, lay down an ideal smoke screen in enemy territory within its range, and deliver high explosives wholesale.

ON TO BERLIN

By Maj. Ernest J. Whitaker, FA

When in Rome, which appeared in the June issue of this JOURNAL, dealt with experiences of armored artillery units in a stabilized situation. Recently these units have had experience in a successful offensive and pursuit action, during which operations they were able to put into practice the special type of work for which they had trained. That the results were "mission accomplished, beautiful effect" is proved by praise received from doughfoot up to and including army commander. Of added interest is the fact that the battalions operated for the first time under the new T/O & E, although they still retained their excess personnel.

OFFENSIVE AND PURSUIT

Reconnaissance

The primary mission of armored artillery is accomplished by successful employment in fast-moving situations, such as pursuit. To have successful employment calls for aggressive thought and action on the part of all the members of the unit. It is necessary to have up-to-the-minute information of the situation and locations of forward elements, constantly to have reconnaissance out seeking forward positions, and to keep the unit in effective artillery range. Often units of the battalion are "on the road" before positions have been selected, but it is up to the RO to get the positions and pick up the units to lead them into the position. Incidentally, the battalion and battery commanders usually perform the reconnaissance themselves. One battery, operating alone, displaced as many as six times during one day. Another, also operating alone, displaced by echelon, three guns at a time, thus rendering continuous support.

Yet reconnaissance should proceed with a certain amount of caution: artillery, even armored, can get too far forward at times and have unnecessary losses. The fact that they are called "armored artillery" does not mean that the personnel are

immune to rifle and mortar fire. Pieces cannot be laid and serviced, wire put out from guns to the executive, all under cover of the armor of the vehicles. A better name—and one often used—would be "self-propelled artillery," since mobility is its principal feature, although the armor, of course, adds to the protection of the crews.

Units can displace as many times as necessary with little difficulty and still stay out of small arms and mortar range (three to four thousand yards behind the front lines usually satisfies this requirement in a pursuit).

A further comment on reconnaissance has been made concerning the type of vehicle available in which to perform it. Present possibilities are tank, half-track, and ¼-ton, the latter usually being selected. It is believed by many, however, that if the present half-track reconnaissance vehicles were Staghounds or Greyhounds they would be much more practical for reconnaissance in areas which have not been cleared of snipers and isolated machine gun nests.

Observation

Aggressive observation and liaison must be maintained. This usually means that more than T/O LnOs and FOs must be sent out. At one time one battalion had three LnOs and seven FOs out! Fortunately they had an excess of officers available at the time, but the requirement was soon reduced.

AOPs are invaluable in pursuit, for they can reach out after retreating columns that ground observers cannot pick up. They also can furnish valuable intelligence information, and often are the sole means of enemy observation. Battalion AOP sections of two planes are sometimes required to maintain constant daylight observation, which during the summer amounts to 16 hours. As a result it becomes quite a task. Most units maintain one or two officers at the air strip to fly as observers, thus relieving the pilots from the added strain of shooting the missions. One such officer already has the air medal with three clusters.

Survey

Survey boils down to map plot or map survey, and fire charts are usually observed fire charts. When moving long distances, check must be kept on the declination constants of the aiming circles. Sometimes Observation Battalion sections can set up declination stations. If not, the map constant is simply applied. 1/50,000 maps are generally in vogue in a fast moving situation, 1/25,000 maps being impractical for either supply or use.

Communication

The primary means of communication becomes radio, of course, yet wire is still desirable if possible. In fast action radio communication presents many problems of security; many infractions occur. The recent publication of a prearranged message code for use of all units has relieved the situation a great deal, yet constant guard must be maintained to insure that no information of value to the enemy is transmitted in the clear on the radio.

Supply

In keeping with the aggressive action required of the firing batteries and headquarters sections, the ammunition and supply sections must work as they never had to work in a stabilized situation. It is usually a matter of telling the S-3 or ammo officer, "We need it; you get it"—and they often must deliver ammunition, rations, and gas without knowing more than a location of the batteries on the preceding night. Things were never held up, though, by a lack of ammunition or rations.

Service Battery's position was normally approximately 8,000 yards behind the firing battery, but the supply dumps fell many miles behind. Supply vehicles were on the road day and night; it became a problem to get Service Battery displaced, since its vehicles were out on the road so much of the time. On one occasion a round trip of 90 miles was required to get ammunition to a firing battery.

Organization

A good combination in pursuit action, and one which has proved itself, is an armored artillery battalion with a battery of 155 howitzers attached. This gives the battalion immediate availability of that added punch, that "heavy stuff," which is

capable of stopping effectively enemy counterattacks with tanks and which is needed in firing on enemy fortified positions or emplacements.

SUNDRIES

An interesting experiment which was conducted under actual battle conditions was laying wire from a Cub plane. The method had previously proved successful in tests. Later, in combat, a situation presented itself. A supported unit's CP was located so far forward and in such a place that wire laying was impossible during the day due to direct fire and shelling, was difficult at night, and wire when laid was usually shot out. Radio communication was practically impossible due to a hill mass. The Cub plane, with a specially made reel attached, dropped 3 miles of W-130 wire over the hill mass so that linemen were able to pick it up at each end and then extend it to the switchboards. Details of this device were worked out by T/Sgt. Cole of our Group Headquarters Air Section.

In regard to acquainting other branches with the artillery, it is believed that every officer of a combat branch—especially infantrymen, tankers, and reconnaissance officers—should know how to conduct artillery fire using FO methods. It is a simple method which does not require a great amount of study or practice to learn and retain, and comes in mighty handy when the artillery FO is not around yet fire is needed. In pursuit in hilly terrain such as Italy, an FO for every ravine or small valley is necessary for complete artillery support. It is impossible for the artillery battalion to furnish him. When the reconnaissance platoon leader learns to handle artillery fire and the communication problem is worked out, then artillery in the pursuit will reach maximum efficiency.

Some experiences with larger caliber artillery battalions proved of interest to an armored artillery Group HQ. During one phase this headquarters had a Long Tom battalion and an 8" howitzer battalion attached. Some of the roads they travelled over and some of the positions they occupied would probably amaze even the ordnance people who designed the equipment. They were able to keep up with the tanks and armored artillery in country which was very rough and difficult, and sometimes beat the armored battalions out of select positions.

AMPHIBIOUS CROSSINGS

REPUBLISHED BY COURTESY OF "THE SATURDAY EVENING POST"

Natural barriers such as the English Channel and the Alps in Europe have always been the greatest obstacles to military expeditions. But they have been crossed, sometimes victoriously and sometimes in vain. Below are ten questions on historic crossings. Can you match them up with the names and dates in the right-hand column? A score of 8 or over is good, 5 to 7 fair; 4 or less and you must have crossed a history course—and lost. *Answers inverted at bottom.*

WHO

- | | |
|---|----------------------------------|
| 1. Crossed the Alps and won? | a. Julius Caesar, 49 B.C. |
| 2. Crossed the North Sea and lost? | b. Mohammed II, 1453. |
| 3. Crossed the Hellespont and won? | c. Santa Anna, 1836. |
| 4. Crossed the Hellespont and lost? | d. William I, 1066. |
| 5. Crossed the Rubicon and won? | e. Xerxes, 480 B.C. |
| 6. Crossed the English Channel and won? | f. Napoleon, 1797. |
| 7. Crossed the Bosphorus and won? | g. Duke of Monmouth, 1685. |
| 8. Crossed the Rio Grande and won? | h. George Washington, 1776. |
| 9. Crossed the Rio Grande and lost? | i. Zachary Taylor, 1846. |
| 10. Crossed the Delaware and won? | j. Alexander the Great, 334 B.C. |

S. J. SABIN

Answers: 1—f, 2—g, 3—j, 4—e, 5—a, 6—d, 7—b, 8—i, 9—c, 10—b.

AMBUSHING WITH ARTILLERY

By Maj. Parapov

BY RADIO FROM MOSCOW, DIRECTLY TO THIS JOURNAL

In one sector Red Army troops broke through enemy defenses and, developing their offensive, pushed on to a vital enemy strongpoint. Intending to hold on, the Germans brought up reserves. Their idea was to isolate our spearhead by cutting it off at its base. Thanks to a well organized reconnaissance service our commander learned of this concentration in time to frustrate the enemy intentions. Here is how it happened.

Sizing up the situation, the Soviet commander took steps to strengthen the captured positions. Furthermore, our artillery group commander decided to organize an artillery ambush. Two regiments took up positions on a strip of ground between two lakes, which was considered the most likely route of German tank approach. Our artillery was echeloned two to three kilometers in depth, so in case German tanks succeeded in evading the first line of guns they would encounter fire from the deeper defenses.

Events justified this reasoning. The Germans undertook their counterthrust in this very direction. Their attack was preceded by a 2-hour pounding of our positions, but in order not to reveal their positions our ambushing batteries did not fire a single round.

When the preparation died down our gunners heard the drone of engines; soon afterward German tanks appeared. They approached in two echelons with a total of some 60 vehicles. In front were medium tanks and in their wake were heavy "Tigers." On the flanks were self-propelled "Ferdinands" which stopped now and again to fire their cannon. The tanks carried tommy-gunners and behind them followed the infantry.

Evidently the Germans expected a speedy victory—until suddenly they encountered our ambushed guns. Of 11 tanks which attacked the battery under Lt. Pravduk, 6 were set on fire and the remainder milled about in confusion. This enabled the gunners under Lt. Nemirovsky to knock out a few more.

The Germans found themselves in a critical position but continued to drive stubbornly. They rolled up a number of

antitank guns to support their tanks by direct fire and brought in 4 more Ferdinands. More machines were set on fire and many enemy guns were silenced. Some tanks, however, did succeed in breaking through, but were met by our second echelon. Finally the enemy, losing heavily, was forced to fall back.

The efficiency of our ambushing artillery in this battle is evident. Of 60 tanks employed the Germans lost 45. In addition, 5 self-propelled guns were destroyed along with 4 AT guns, an AA armored car, 11 machine guns, and more than half of the participating infantry.

Similar ambushes were undertaken on other occasions in this sector. At one point a unit drove a deep wedge into the enemy position, threatening to outflank the Germans. Finding themselves in an unfavorable position the latter launched several desperate counterattacks. They employed not only tanks and infantry but also artillery and air forces. One village was shelled for more than 24 hours. 9 field batteries and 2 of 6-barrelled mortars virtually rained projectiles on this locality. Before their first assault, from 0400 to 1000 hrs. the Germans fired over 2,000 shells and rockets. Their counterthrust continued for 5 days and occurred from 10 to 12 times per day at one point or another, but all their efforts were in vain. Wherever they probed they met the fire of our artillery.

Speaking of artillery ambushes, a few remarks on organization are pertinent. They appear to be most effective as defenses in depth facing in tank-dangerous directions. Such an arrangement insures secrecy, and during the enemy's artillery preparation prior to an attack they are liable to sustain only comparatively few losses. There is a tactical advantage from disposition in depth: while the counterattacking enemy is engaged in overcoming our front line positions his formation is split up, and that is bound to have considerable effect on his fighting efficiency. In such a situation it is easier for the ambushed artillery to deal the final blow.

Artillery Counter-Preparation from Intermediate Positions

By Maj. S. Luginya

BY RADIO FROM MOSCOW DIRECTLY TO THIS JOURNAL

Artillery counterpreparations are effective not only when the enemy's positions are stabilized—that is, when his intentions are known long before he commences active operations—but also to combat counterattacks launched from intermediate positions (where the attacking force is delayed, even though for only a brief time). In the latter case a cleverly conducted artillery counterpreparation proves to be a very serious factor and permits us to forestall the enemy's attempt to counterattack. Timely intervention by artillery is apt to disorganize the direction of his troops and silence his gun and mortar batteries, thus depriving his tanks and infantry of

efficient fire support. In addition to this, action of the artillery inflicts heavy losses in men and demoralizes the remainder, thus making much easier the task of dislodging the enemy from intermediate positions and continuing our advance.

On one sector of our front we learned from scouts, air reconnaissance, and prisoners that the Germans were bringing up tanks, infantry, and guns in preparation for a counterattack. This intention was also evident from increased enemy reconnaissance activities. For example, at one place where German activities had been limited to rifle fire, the enemy undertook local attacks by a company of infantry plus 10 to 15 tanks; seeing that these clashes bore little fruit the Germans threw in

stronger forces. In neighboring sectors things were pretty quiet but prisoners related that there too soldiers were given 3 days' rations, 60 rounds per rifle, and 2 belts per machine gun, and were warned of the forthcoming counterattack.

Knowing that the Germans would not risk an attack without first pounding our positions, the Soviet commander ordered a counterpreparation. By this time, thanks to good reconnaissance, the artillery staffs had reliable information regarding the enemy and were able to make their plans without delay. These provided that clearly defined targets would be subjected to bombardment for a specific period and with a definite number of shells. The plan was made known to the battery commanders, who were each assigned their objectives so they could get ready for action. As fresh information came in changes and additions were made accordingly. All modifications were immediately brought to the attention of all concerned.

Eventually the exact time for the German attack was ascertained and final plans for the artillery counterpreparation were made. Officers, from platoon commanders up, went to their OPs. Before the Germans fired a single round a rocket signal was given and the enemy's gun emplacements were subjected to heavy fire. Then a brief lull set in with the object of disorienting the Germans with regard to their further intentions, then another pounding began. After this a systematic fire was continued for 15 more minutes and ended up with mass fire and concentrations against enemy infantry, tanks, CPs, and road junctions.

Our guns and mortars fired from their original positions. For purposes of camouflage rockets, smoke pots, and other means were employed to prevent the enemy from locating our artillery positions. The result was that the enemy fire became weak and ineffective. Even those enemy batteries which were not listed as targets to be destroyed during our counterpreparation fired at random.

The net result of our counterpreparation, in one sector only, was 12 artillery and 17 mortar batteries silenced, several tanks



Soviet SP guns fording a river on the Second Baltic front in Latvia.

knocked out, and up to 3,000 officers and men disabled. Effectiveness and timeliness of our fire can be gathered from the statement of one prisoner, Lt. Hans Dorfel. He declared that one regiment massed for the attack lost as many as 600 officers and men.

Despite that, the Germans launched their attack with infantry and tanks—but it was poorly organized. Without fire support and sustaining heavy losses, the attackers soon began a hurried retreat. Not one tank or soldier reached our positions. Next day the Germans renewed their assault with air support, but this attempt also failed as their artillery had not yet recovered from the blow and was unable to render adequate support.

Our hammering of enemy artillery eased the situation for our rear areas as the Germans were forced to use their bombers against our front line positions and were unable to give attention to our rear lines of communication.

Self-Propelled Artillery versus Tanks

By Lt. Col. P. Slesarev

BY RADIO FROM MOSCOW DIRECTLY TO THIS JOURNAL

Self-propelled weapons are playing an ever increasing part in offensive operations. This is due less to the fact that they have increased in numbers, than to their improved performance. Superior to its recent counterparts, today's SP gun has stronger armor and increased mobility. This renders the weapon more flexible and more effective in all tank actions.

Self-propelled artillery which is called on to support tanks which are attacking, can carry out its mission in two ways. The more common is where these guns are coordinated with the tanks, and advance either behind them or on the flanks of armored echelons. Relatively favorable conditions are not always found, however. Frequently enough when enemy contact is made, SP guns may find themselves compelled to repel alone the pressure of massed panzers.

Advancing under conditions of the spring thaw on one sector of the front, our tank units severed the enemy's main line of communications. The tanks plunged ahead until there was considerable space between them and the infantry following in their wake. Thus the left flank of the unit was nearly uncovered

and poorly protected. Emerging on the main highway at the village of Levada, the weak force protecting the flank of the tank echelon consisted only of 6 AT guns and about a company of infantry. This village, it should be mentioned, was of considerable tactical importance to both sides. If the enemy should have broken through here toward the west he would not only have been able to evade his incipient encirclement, but also have severed communications between our tank units and their rear.

At dawn two columns of German tanks—30 or 40 in each—attempted to storm a bridge over the Iset River and capture Levada. Our antitank guns repelled this attack and destroyed two Panthers (PzKw-V). The staff of our tank force was informed of this new development. As it was necessary to eliminate this dangerous enemy grouping near Levada, a force of SP guns and 2 platoons of T-34 tanks were rushed to that place. The SP guns took up positions at intervals of 500 to 600 meters from one another; such emplacements allowed them to maneuver free.

After their first abortive attack the Germans turned off the



Germany's PzKw-V, commonly called the "Panther," is armed with a 7.5-cm gun. Alongside this piece is a 7.92-mm machine gun, but the front of the hull lacks the machine gun usually found there. Its crew of five is protected with 4" frontal armor, and 1¾" plate on the sides. Its quite long, sloping front plate makes it resemble Russia's T-34; tracks, of a new pattern, also show Russian influence.

highway and, fording the river, again concentrated some 5 or 4 kilometers south of Levada. This lull in the fighting lasted about an hour, during which the enemy noticed that our SP weapons had been brought up from the west. Having reconnoitered the terrain the Germans now launched a second attack, preceded by an air bombardment.

After the preparatory bombing the force of the German tanks went into action, advancing in 3 groups. The main striking forces, on the flanks, were made up of 30 tanks each, and the central spearhead of 10. In a single echelon the central group advanced about a kilometer toward Levada. Here it paused and opened fire on the outskirts of the village, where our T-34s

were waiting. The enemy's calculations were simple: his spearhead force was to draw upon itself the fire of our tanks and SP guns, thereby compelling them to reveal their positions.

This simple ruse had been anticipated. In a several-minute exchange of fire our T-34s managed to cripple two panzers. Then the two main German striking forces, supported by a battalion of tommy gunners, went into action at the flanks, attempting to gain a pincer hold on the village. When these were within close range, Lt. Matyukhin's SP guns opened fire. Four Tigers and Panthers of the Nazi left flank force burst into flames. The enemy wavered and his attacking line was broken.

Then our T-34 tanks and self-propelled guns shifted their fire against the center force. In a few minutes 6 machines were crippled and the rest fell back to their initial positions.

With their third attack the Germans revealed that they had limited their aims somewhat. Now they were striving only to capture the village, but in this too they were unsuccessful. Maneuvering from house to house and firing from behind hedges, our SP guns set ablaze six more Tigers and Panthers. At no time did they lose their hold on the enemy flanks or permit the latter to approach within 1,000 meters. The action eventually assumed the character of a prolonged artillery duel, which lasted about 5 hours. Worn down by evening, the Germans had to relinquish their pressure—having failed to regain the highway. Other artillery elements of ours were drawn from the west after dark. The enemy tanks and trucks were forced to turn south, but by now they were completely encircled.

ARTILLERY OFFENSIVE

By Lt. Col. Smirnov

BY RADIO FROM MOSCOW DIRECTLY TO THIS JOURNAL

Artillery units operating on the Karelian Isthmus were confronted with the complicated task of clearing a path for both tanks and infantry in the face of exceptionally strong enemy defenses. The artillery had to blast a gap in the first line of defense, prevent the Finns from establishing themselves on the second, and help our infantry to dislodge them from the Mannerheim Line, while paralyzing enemy attempts to resist on any intermediate ridges or strong points. This mission was accomplished despite the fact that the Karelian Isthmus is very unfavorable for the operations of large forces.

Throughout this campaign the basic principle of artillery operations was to concentrate the precision fire of all tactical groups and batteries. During the artillery preparation the following problems were solved: mastery over the enemy's mortar system, reduction of trenches, and the destruction of blockhouses and strong points. The Finnish defenses had to be demolished throughout their depth (four to six kilometers). Each gun crew was assigned to its target—pill boxes, OPs, dugouts with communication trenches, etc.—and each gun had its own spotter; this of course required excellent training of battery commanders. To prevent the enemy from maneuvering and resuming fire from greater depth, each trench was reduced at several points simultaneously.

Superiority was achieved not so much by the strength of our

artillery as by its ability to utilize all available means. As was to be expected, our guns were massed principally in the sector scheduled for the main effort. In secondary directions, where there were fewer guns, everything depended upon able management. Targets were pounded with greater or lesser force depending on how far they at that particular moment hindered the advance of our infantry.

Destruction fire received exclusive attention. In the Neve attack the whole first day was devoted to reducing the enemy's first line of trenches. That line was not so formidable as the rest, but it was more important because there was determined the speed of our advance, and hence a large part of the result of the operation. To conceal the direction of our main effort we conducted reducing fire simultaneously along the entire front—from the Gulf of Finland to Lake Ladoga. Special attention was paid to the destruction of strong points.

All this was carefully planned in time and space to enable battery commanders to correct their fire. The location of the Finns' OPs and CPs, headquarters, and communication points were spotted and charted beforehand, but these installations were left in peace until such time as we could deal a crushing blow. Another means of accomplishing tactical surprise was our employment of only part of the batteries emplaced for this mission, while the remainder held their fire until the appointed hour. An objective was considered destroyed not

when a certain number of direct hits were scored, but when the target gave visible signs of destruction.

Batteries opened up after the enemy positions were subjected to severe machine gun fire which forced the Finns to occupy battle positions. The heavy 5-minute barrage which followed caused tremendous casualties to the Finns in the front line. The fact that 180 enemy strong points were thoroughly demolished during the first day shows how effective our bombardment was. Toward the end of the day some units engaged in battle reconnaissance blasted wedges in the enemy defenses and captured many prisoners, which until this operation was rarely possible. All night our fire was conducted according to plan, to prevent the enemy from restoring his demolished targets.

Our artillery preparation was not conducted along customary lines—there was not the usual alternation of intense fire with lulls or complete silence. Our gun fire was carried out systematically along the entire length and tactical depth of the enemy defenses. Targets were clearly defined beforehand. The task was not to silence the enemy's fire, but to completely destroy his trenches, pill boxes, and blockhouses. In addition to that, hundreds of guns opened fire at certain hours on enemy OPs, CPs, headquarters, and communications centers.

This precision fire during the artillery preparation and also during the attack dazed the foe. For several minutes the Soviet infantry which rushed the trenches met practically no resistance.

Prisoners said they couldn't make out whether our artillery preparation was at an end or not. They lay pressed to the ground and did not recover their senses until our troops captured the first line of trenches. As our infantry advanced, the artillery fire was gradually moved forward fifty or one hundred meters. Fire was shifted at the request of artillery commanders posted with infantry battalion commanders.

This unceasing fire prevented any enemy maneuverability and paralyzed his fire power. After capturing the first line of trenches our infantry set out in pursuit. On the first day it advanced over 20 kilometers.

Characteristic feature of this operation was the maneuverability of our artillery. Not only did the gunners follow the infantry to support them in action, but entire larger artillery units were moved. Crews of heavy guns also kept up with the foot troops. They quickly went into action to break the resistance of the Finns.

The high command brought strong artillery forces from other sectors to support the tactical successes of infantry units. It should be noted that these transfers were accomplished in record time. In one instance several units covered 30 kilometers in five hours, and did this on the isthmus despite its water barriers and limited roads. One artillery unit moved 300 kilometers during a 100-kilometer advance of the troops, going from point to point depending upon where additional fire power was needed.

A GLIMPSE OF GUAM

By Sgt. Charles M. Platt, Marine Corps Combat Correspondent

In its biggest test against the enemy, on Guam and elsewhere in the Marianas, the Marines' heaviest artillery has shown that it can be employed both efficiently and effectively in support of island invasions and jungle warfare. The performance on Guam of one battalion of 155-mm howitzers is perhaps illustrative.

This battalion, under the command of Col. James J. Keating, landed during the initial phase of the assault, four of its pieces making it ashore the first day. By afternoon of the second day all the unit's pieces were in position a few hundred yards behind the front lines and in plain view of enemy hill positions.

In the first 18 days of the campaign the outfit displaced four times and brought virtually the entire 225 square miles of the island within range of its batteries. In that period it fired approximately 7,000 rounds at enemy concentrations, bridges, roads, batteries, and tanks. In one 24-hour period the battalion hurled nearly 1,000 rounds. One gun, breaking its own previous time, fired five projectiles in 22 seconds.

The problems of logistics encountered by the unit have been all but insurmountable. The worst barrier reefs yet hit in the Pacific, and the tropical jungles of the island, complicated the landing and movement of the vast quantities of materials involved. The 7,000 rounds actually fired during the first 18

days represent nearly a million pounds of projectiles, propelling charges, fuzes, and primers. Additional tonnage included oil for lubrication and recoil mechanisms, spare parts for the howitzers, small arms ammunition for local security, nearly 50 miles of communications wire, and such other items as food, fire direction equipment, and many other kinds of gear.

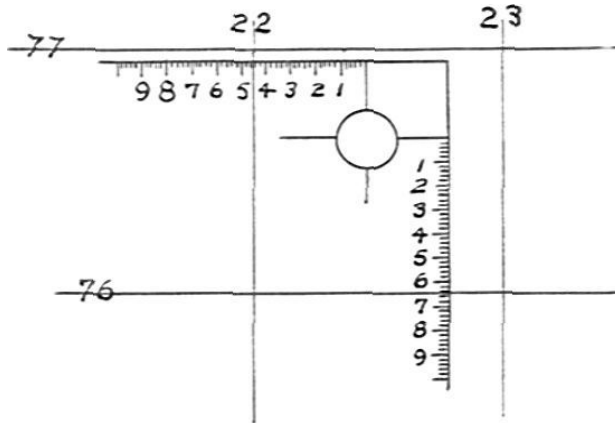
All the materials and much of the gear, from the time it was hoisted from ship holds into landing boats, had to be moved manually from the large boats to amphibian tractors (which alone were able to negotiate the reefs with full loads), from the amphtracs to trucks on the beach, and from the trucks to dumps at the unit's position. Where there were no roads to the actual gun positions the ammunition was moved in again by hand. Each displacement required partial repetition of this performance.

The speed with which the unit landed and set up drew high commendation from Brig. Gen. Pedro del Valle, Commanding General, Corps Artillery, III Amphibious Corps, under which Col. Keating's outfit operates. Later in the operation the outfit received perhaps even more significant praises, from grateful frontline infantrymen who "enjoyed" the artillery's support.

The main purpose of preventive maintenance in the Army is winning battles. Cleaning, lubricating, and careful handling are as essential to the proper functioning of a piece of equipment as supplying fuel for a vehicle or ammunition for a gun. That's why preventive maintenance should be performed as faithfully and carefully as any military operation. When you get right down to it, it is a military operation.

Not in the BOOK

FAST COORDINATE SQUARE



Here is another gadget that we find useful in preparing Div Arty fire plans. It permits me to plot concentrations and read their coordinates at the same time.

It is simply a hole in the corner of a heavy acetate sheet (the Fort Sill template serves nicely), the size of the hole approximately 200 yds, to the scale of the firing chart to be used, with the edges of the sheet graduated like a coordinate square, starting at the center line of the hole. Coordinates of the concentration shown are 2245-7665. The hole is cut by using dividers as a compass and scratching until the center breaks out. Graduations are scratched in with divider points and a straight edge, and filled with colored pencil.

LT. COL. R. B. SHREVE, FA

A PROBLEM IN PROBABILITY

If the probable error of the gun at a certain range is 15 yards, the probable error in location of the target is 30 yards, and the location of the position is only accurate to the nearest 50 yards, what is the depth of the area which must be covered to probably include the target?

The answer is found by taking the mean root square—the square root of the sum of the squares, which in the above problem is 60.2 yards.

MAJ. E. A. RAYMOND, FA

CONTINUOUS COMMUNICATION

The infantry had moved forward several hundred yards since crossing the line of departure. "Stop and connect your phone so I can send a fire mission," cried an excited FO, running toward his telephone operator. Every FO experiences and dreads this period of a broken circuit—a matter of perhaps only seconds, or of long decisive minutes—when he is cut off from his FDC. Wouldn't it be wonderful always to be able to feel that the FDC is at one's side? Here is what does that very thing—as proved last month when our battalion fired a rolling barrage over its infantry.

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.

To all appearances the FO and his party depended upon the usual equipment, an RL-39 wound with several hundred yards of W-130 wire. But they advanced without disconnecting the phone and splicing the wire. The observer was even describing the bursting volleys to his S-3 as more wire was being unreeled.

Rather fantastic, perhaps, but a close inspection of their remodeled RL-39 reveals several things. Along the end of the drum opposite the crank there are two brass plates, one about 3½" in diameter, the other 2½".¹ The smaller fits just in front of the larger with about ⅛" of pressed fiber-board insulation between them. Three small bolts hold them concentrically on the axle of the drum. An insulated copper wire is soldered to each plate connecting it to the permanent terminals on this end of the drum.

The handles of the reel also show a few additions: two metal lugs, ¾" long and ½" wide, are welded along the outer handle, parallel to the brass plates. The lower lug is on the outer edge of the handle 3" from the axle, while the upper is on the inside edge 3½" from the axle. A hole² bored in each lug allows a bolt³ to pass through, holding a 2" piece of a hack-saw blade. On the opposite end of each blade is welded an empty carbine shell⁴ to hold a small cylinder of carbon⁵ tightly against its corresponding brass plate.⁶

A current can now be picked up from the plates by these carbon brushes. It passes on to the shell cases, then up through the steel hack-saw blades. Here the bolts, which serve as terminals, connect it to the observer's phone. As the forward party advances and is extending its lines, it can now rely on a continuous current flowing through the reel—a perfect metallic circuit!

¹Insulation and brass plates were machined and dressed down by lathes at the Post Ordnance shop. However, the bases of 105-mm and 57-mm shell cases would make very efficient brass plates.

²A 5/16" hole is needed here to avoid having the current jumping onto this outer handle.

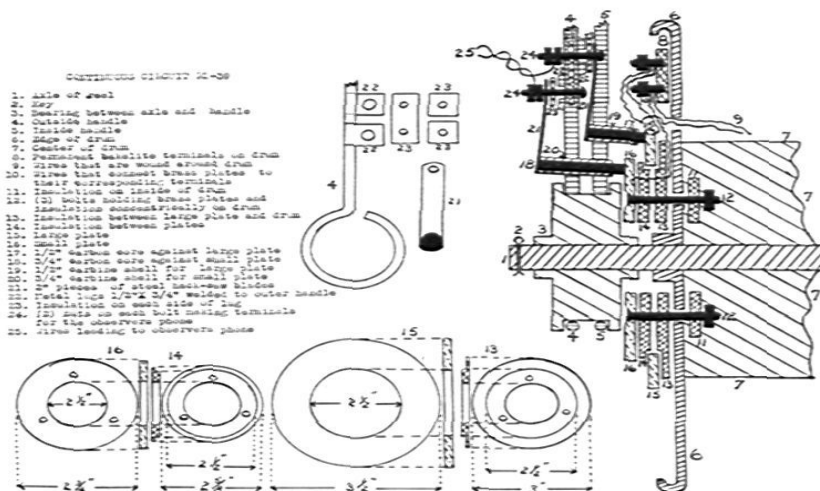
³The current follows the 3/16" bolts which have double nuts as terminals for the observer's phone. See diagram for the insulation around these bolts.

⁴The shell from the outer lug is ¼" long, while the shell from the inside lug is ½" in length.

⁵This carbon was taken from the core of an old BA-30 battery.

⁶Carbine shells and carbon cores must be at least ¼" longer than the actual distance between the hack-saw blade and its corresponding brass plate. This will cause a continuous tension on the plates.

LT. KENNETH W. FINKNER, FA



Diary of War Events

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

SEPTEMBER, 1944

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| <p>1st British 8th Army in Italy breaches the German Gothic Line in 3 places.</p> <p>7th Jap Division in China launches an offensive against Kweilin, stronghold in Kwangsi Province.</p> <p>2nd U. S. troops smash into Belgium. Other troops advance to within 7 miles of German border.</p> <p>U.S. troops in Italy capture Pisa.</p> <p>500 Allied bombers from Italy raid Yugoslavia.</p> <p>Russian troops advance to the Danube River.</p> <p>U.S. fliers bomb Davao in the Philippines. Wreck 3 airfields and destroy 38 planes.</p> <p>3rd Allied planes drop 1,700 tons of bombs on Brest. U.S. planes from Britain bomb Ludwigshafen area of Germany.</p> <p>U.S. bombers again raid Davao in the Philippines.</p> <p>4th British and U.S. troops capture Brussels and continue through the Netherlands into Germany.</p> <p>Allied troops in Italy smash great holes in the Gothic Line and penetrate as deep as 12 miles.</p> <p>Finland signs armistice with Russia.</p> <p>U.S. warships and planes raid Jap holdings in the Pacific; sink 29 ships at Bonins, Volcanos, and Wake. Destroy 46 planes, sink 12 ships at Mindanao in the Philippines. Destroy or damage 8 ships and 22 planes at Celebes.</p> <p>5th U.S. 8th Air Force bombers raid German manufacturing and transport centers at Karlsruhe, Ludwigshafen, and Stuttgart. Planes from Italy bomb Budapest and Hungary areas.</p> <p>Russia declares war on Bulgaria.</p> <p>6th U.S. 3d Army advances across the Moselle River.</p> <p>RAF bombers raid Emden, chief refuge for Germans evacuating channel ports by sea.</p> <p>French troops in southern France capture Chalons-sur-Saone and U.S. troops take St. Germain-du-Plain.</p> <p>Russian troops capture Turnu-Severin in Romania and reach the Yugoslav border.</p> <p>7th U.S. 1st Army liberates Sedan in France; Allied units from Italy join Marshal Tito's forces in Yugoslavia and push across country for a union with the Red Army.</p> <p>U.S. carrier planes bomb Palau Islands and Jap bases from Kuriles through Nauru and Pagan.</p> <p>8th U.S. 1st Army advances 20 miles toward the Siegfried line.</p> <p>3,000 Allied planes bomb supply and communication centers in the Rhineland and Yugoslavia.</p> <p>100 or more U.S. superfortresses bomb Jap arsenal of Anshan, industrial center in Southern Manchuria.</p> <p>9th Allied heavy bombers smash factories and communications in the Ruhr. Russia ends 4-day war with Bulgaria.</p> <p>10th In France British troops enter Hechtel, 10 miles from the Netherlands; U.S. 1st Army enters Luxembourg.</p> <p>Allied fortresses and Liberators bomb plane, tank, and truck factories in Stuttgart, Nuremberg, and Ulm areas.</p> <p>Red Army advances 18 miles into Hungarian annexed Transylvania and closes in on the city of Cluj.</p> <p>Allied forces in the Pacific destroy 10,000-ton Jap tanker off the Philippines and pound Celebes with 180 tons of bombs.</p> <p>Prime Minister Churchill arrives in Quebec for conference with President Roosevelt.</p> <p>11th U.S. Army invades Germany from Luxembourg. Advances 5 miles into the heart of the Siegfried Line north of Trier.</p> <p>U.S. 7th Army establishes contact with U.S. 3d Army at Somberhon, 12 miles west of Dijon.</p> <p>U.S. 8th Air Force destroys 175 German planes, 1,000 heavy bombers smash industrial targets from southeast of Berlin to Hanover. We lose 48 bombers and 29 fighters.</p> <p>12th A 2nd U.S. column smashes into Germany east of Eupen and 39 miles west of Cologne.</p> <p>U.S. 8th Air Force for the 2nd straight day raids Germany. Destroys 105 planes; loses 43 bombers and 17 fighters.</p> | <p>Allied fliers in the Pacific again bomb Celebes.</p> <p>Japs capture Chekiang seaport of Wenchow in China.</p> <p>13th U.S. 1st Army captures Roetgen, the 1st German town ever to fall to American troops.</p> <p>Canadian troops clear the Channel coast from Zeebrugge to Nieuport, U.S. 7th Army captures Vesoul.</p> <p>War Department reports the 9th U.S. Army under command of Lt. Gen. William H. Simpson is in action in France.</p> <p>5,000 Allied planes smash Germany with 600,000 incendiary bombs, 3,000 tons of high explosives. Destroy 53 planes.</p> <p>Pacific Fleet planes bomb Cebu, Negros, and Panay in the central Philippines.</p> <p>14th 2 more columns of U.S. 1st Army smash into Germany in the Aachen area.</p> <p>British units join U.S. 5th Army in Italy.</p> <p>Red Army advances to the outskirts of Warsaw.</p> <p>Pacific Fleet carrier planes end 3-day assault on Panay, Cebu, Negros, Leyte Islands. Destroy 433 planes, sink 84 ships.</p> <p>Chinese troops capture Tengyuch, a major point on the Burma Road.</p> <p>15th Allied troops in France continue advances; German forces attack Suursaari, a strategic Finnish island in the Gulf of Finland.</p> <p>Gen. MacArthur's troops land on Morotai, in the Halmahera group, and Admiral Nimitz's 3d Amphibious Force invades Peleliu Island.</p> <p>16th President Roosevelt and Prime Minister Churchill end Quebec Conference with a pledge to launch strong assault against the Japs as soon as the conflict in Europe ceases.</p> <p>17th Allied airborne army lands in the Rhine Delta of the Netherlands.</p> <p>German army of 20,000 men surrenders to U.S. general at Orleans in central France.</p> <p>81st Inf. Div. invades Angaur, southernmost of the group of Palau Islands in the Pacific.</p> <p>18th British 2nd Army joins Allied airborne troops in the Netherlands.</p> <p>Admiral Nimitz announces that Gen. MacArthur will command the invasion of the Philippines.</p> <p>19th In France the British 2nd Army crosses the Maas River and advances to the outskirts of Nijmegen on the German border.</p> <p>U.S. 1st Army captures Sittard, 12 miles N.W. of Maastricht and Hoefen, 17 miles S.E. of Aachen.</p> <p>20th U.S. troops in France capture Brest, former U-boat base, and capture 17,000 prisoners.</p> <p>21st Fliers in the southwest Pacific sink 12 Jap ships and bomb air center on Celebes.</p> <p>22nd Canadian troops capture Boulogne on the Channel coast of France.</p> <p>650 U.S. heavy bombers raid Kassel, Germany.</p> <p>British 8th Army in Italy captures Rimini.</p> <p>23rd Russians advance 50 miles across Estonia to the Gulf of Riga.</p> <p>24th Allied planes drop 4,000 tons of bombs on the inland harbor and rail center of Neuss, near Duesseldorf, and on Muenster.</p> <p>Admiral Halsey's 3rd fleet makes 2nd attack on the Philippines. Destroys 357 planes. We lose 11 planes and 15 men.</p> <p>25th 1,200 U.S. heavy bombers raid railroad yards at Frankfort on the Main, Coblenz, and Ludwigshafen, Germany.</p> <p>26th British 8th Army in Italy crosses Rubicon River; captures Bordonchio, 6 miles north of Rimini.</p> <p>U.S. superfortresses bomb Manchuria.</p> <p>27th Australian-based planes fly 3,000 miles to first bomb the Batavia area of Java.</p> <p>28th 2,000 Allied planes bomb Magdeburg, Cassel, Merseburg, and Kaiserslautern in Germany. Destroy 36 planes. Lose 49 bombers and 12 fighters.</p> <p>29th Red Army liberates the mainland of Estonia. U.S. Marines capture 2 more of the 26 islands of the Palau group.</p> <p>30th 2,000 Allied planes bomb oil plants and rail centers in Germany.</p> |
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For Heroism and Service



DISTINGUISHED SERVICE MEDAL

MAJ. GEN. ANDREW D. BRUCE, for service in planning, organizing, establishing, and operating initially the Tank Destroyer Center, Camp Hood, Texas. His superior technical knowledge, untiring zeal and splendid judgment resulted in the organization and training of tank destroyer units whose tactical mission was not contemplated previously in the organization of our Army. He contributed materially to the development of tank destroyer tactics employed by our armed forces in all the theaters of operation.

BRIG. GEN. JOHN M. LENTZ, for the detailed formulation of training policies upon which the mobilization of the Army Ground Forces was based. He originated the standard Field Artillery battalion firing tests which proved to be the most potent single factor responsible for the high operating efficiency of that arm in battle. He devised a system of field inspections which were of substantial value in the training problems of the Army Ground Forces. After a survey of the entire system of Army Ground Forces schools, he analyzed in detail the overhead setup of courses and methods and as a result effected a large degree of standardization with a marked economy of personnel and improvement of instructional efficiency. Home Address: 1911 "R" St., N. W., Washington, D. C.

LEGION OF MERIT

COL. WILLIAM H. HILL, 350 Blue Bonnet Blvd., San Antonio, Tex.

M/SGT. PAUL F. LEATHERS, Jacksonville, Mo.

T/SGT. WALTER W. WEISPFENNING, Fredonia, N. D.

For exceptionally meritorious conduct in the performance of outstanding services from Jan 43 to Apr 44, in the North African Theater of Operations.

CAPT. BURNS T. BAILEY. In the North African Theater from 15 Sept 43 to 15 Feb 44, he contributed materially to his battalion's success by tirelessly training new battalion observers in combat zones, greatly increasing the speed and completeness of their records. He analyzed and reported results of enemy shelling, spending many hours collecting shell fragments for determination of caliber and type of enemy guns, as well as personally interviewing prisoners of war and examining captured documents and materiel. Home address: Blitzen, Ore.

LT. COL. GRADY S. BROOKS. As a regimental executive officer in the North African Theater from 9 Feb 43 to 4 Mar 44, he coordinated the staff work of the regiment and battalions while they were widely separated during combat. Later as a successful commander of a battalion throughout two campaigns, his battalion was chosen to be the first heavy artillery unit to be used on a certain beachhead. Home address: Lyman, S. C.

LT. COL. FRANCIS A. GLENN, for outstanding services from 17 Jul 43 to 13 Oct 43 in the North African Theater. Assuming command, the only field officer of the battalion, he successfully led his command in its first major engagement as a separate unit, and into a second campaign, eliciting from all supported units great praise for its ability and efficiency. Though operating with a serious shortage of men and vehicles, his outstanding professional skill, his inspiring leadership, excellent judgment, contagious enthusiasm and boundless energy were of a conspicuously superior quality.

COL. LOUIS T. HEATH, for effecting numerous improvements on armored vehicles at the Test and Engineering Section, Armored Force Board, Fort Knox, Kentucky, from Jan 41 until Apr 43. Among other important items, he was directly responsible for the adoption of water-protected ammunition racks which are now installed in all our armored vehicles. His practical knowledge, engineering abilities and untiring devotion to duty have inspired all who worked with him. Home address: 18 Roberts Point, Siesta Key, Sarasota, Fla.

BRIG. GEN. FOSTER J. TATE, for displaying exceptional ability and unusual skill in accomplishing the activation, organization and training of the 75th Division Artillery from Feb 43 to Apr 44. The selection and progressive training of the necessary officers, the energetic personal supervision of modern training methods, in addition to overall administrative duties, were performed by him with foresight, cooperation and devotion to duty. He contributed immeasurably to the development of an outstanding component of the 75th Infantry Division. Home address: Eunice, La.

COL. WILLIAM E. WATERS, for exceptionally meritorious conduct in the performance of outstanding services from 8 Jul 42 to 24 Jan 44, in the European Theater of Operations. Home address: Louisville, Ky.

SILVER STAR (Posthumously)

T/5 ARGYL L. DRYDEN, for assistance in maintaining communication between an observation post and the battery position in Italy on 4 Feb 44. Several times he volunteered to repair communications wire which intense enemy artillery barrages had severed. He successfully repaired a number of breaks in the wire, which was the only means of transmitting fire commands from the observation post, travelling over terrain constantly blasted by enemy artillery shells. Contemtpuous of personal danger, he sacrificed his life in order that artillery fire could be successfully directed against the enemy forces.

T/5 JAMES C. GREYDANUS, for outstanding work as a radio operator at a forward observation post supporting an infantry battalion in Italy on 8 Aug 43. When the forward observer ordered his party back to a comparatively safer place, Corporal Greydanus asked that he be allowed to stay with the observer. He was killed by mortar fire while transmitting his commands to his battery. His untiring efforts, disregard for his own personal safety and devotion to duty were in the finest traditions of the military service and were an inspiration to those who knew him.

2D LT. RONALD D. MCKAY, for setting up an observation post in the face of intense enemy machine gun fire on a hill in Italy on 2 Feb 44. As forward observer, he realized the necessity for bringing immediate, effective artillery fire on the enemy guns and, regarding the safety of his men above personal security, left his radio at the foot of the hill and without assistance started laying wire up to an observation post from which he could direct the artillery fire.

S/SGT. CLAUDE A. PERSON, for successfully accomplishing difficult missions while a pilot of a Field Artillery liaison plane in Italy on 16 Feb 44. Although forced down several times and his observer was wounded, he took off again and completed his missions.

PFC. THEODORE TRYBA, for volunteering to accompany a relief detail to replace the forward observers who had become casualties in Italy 16 Dec 43. Constantly exposed to concentrated artillery, mortar and small arms fire, he fearlessly undertook to maintain the forward communications lines and devoted himself untiringly to his hazardous task. His outstanding courage and exemplary devotion to duty contributed materially to the successful accomplishment of the important Infantry assault.

SILVER STAR

T/5 AUGUST M. AMEND, for proceeding across a large open field, under constant enemy observation and heavy artillery fire, with an officer and two other enlisted men to aid some casualties in a draw about 2,000 yards from the battalion aid station during action in Italy in Nov 43. Finding one man dead and the other seriously injured, they administered first aid to the injured man. The ambulance had attracted a heavy concentration of fire and, while lifting the litter into the ambulance, one man was instantly killed by a shell. Undaunted, they drove back across the open field and brought the

wounded man to safety. Home address: RFD 3, Wheeling, W. Va.

T/5 GEORGE BRUNDAGE, for organizing and leading rescue party of six fellow soldiers to the wreckage of a command post in Italy on 28 Mar 44. Six occupants were trapped in the wreckage; disregarding the smoke and flames and continued shelling, he and his men succeeded in removing the six occupants, three of whom were still alive. His prompt action and inspiring leadership reflect the high traditions of the Armed Forces. Home address: Bath, N. Y.

1ST LT. ROBERT P. CHEW, for crawling 775 yards under enemy machine gun and rifle fire to help men who were wounded during an Infantry-tank assault at Bougainville, Solomon Islands, on 30 Jan 44. In the face of sniper fire, which killed three and wounded five, he moved one man to cover and then administered prompt first aid to the others. Home address: 290 Park Ave., New York, N. Y.

LT. COL. JOHN J. GARNER, while commanding a Field Artillery battalion on 9 Sep 43, skillfully led a column of amphibious vehicles of his unit toward the shore during the bitterly contested establishment of a beachhead in Italy. When his approach was met with a hail of enemy artillery and machine gun fire from well-established and strongly fortified emplacements along the beach, he displayed outstanding initiative in refusing to be drawn within the enemy trap and safely landed his men. Home address: Corsicana, Tex.

CPL. MELVIN B. HALEY, for exposing himself to continuous shelling while moving from one gun position to another to render first aid to his wounded men on 18 Mar 44 in Italy. When the enemy had discovered the position of his gun battery the three guns in it were subjected to such furious artillery shelling that the casualties inflicted among the gun crew were extremely numerous. By capable and intelligent handling of casualties in the inferno and confusion many of his comrades' lives were saved. Home address: Box 113, Fleetwood, Okla.

PFC. EDWARD F. JABER, for gallantry in action near San Fratello, Sicily, on 5 Aug 43; he ran to the side of a wounded man who lay near a burning ammunition truck and carried him to a position 65 yards distant. In spite of the enemy shells which fell at the rate of four rounds per minute, he rendered first aid to the wounded man for ten minutes until medical aid arrived. His prompt action saved the life of the injured man. Home address: 4 S. Boardman St., Fond du Lac, Wis.

PFC. PHILIP KOWICE. During a severe midnight shelling of his battery area in Italy on 29 Mar 44, he emerged from his dugout to go to the assistance of an injured man. Before he could reach him, a shell hit nearby, knocking him unconscious into a dugout. Upon regaining consciousness, although badly bruised and dazed, he immediately began to administer first aid to the wounded man. Another shell, hitting a nearby dump, set it afire, covering the area with a thick blanket of acrid smoke; he proceeded, under continued shellfire, 200 yards up the road to summon an ambulance. His exceptional courage and devotion to duty reflect great credit upon himself and the military service. Home address: Gallup, N. Mex.

T/4 ROBERT B. LIVINGSTON, for establishing radio communications with an observation post that was adjusting the fire of the battery on enemy guns in San Fratello, Sicily, on 5 Aug 43. Although four shells burst within ten yards of his position, he continued to operate the radio until the shelling ceased and wire communication was restored. Home address: RFD 3, Rochester, Minn.

M/SGT. VERNON L. OSBORNE, for leaving the cover of his slit trench during a severe concentration of enemy artillery fire near Caronia, Sicily, on 5 Aug 43 and extinguishing the flames in a vehicle which had been set afire by enemy shelling. Even though shells were exploding within six to twenty-five yards of him, he ran 50 yards through the impact area to the side of the burning vehicle, secured a fire extinguisher and succeeded in extinguishing the fire and driving the vehicle from the danger area. His gallant and speedy action saved the truck and prevented a possible increase in the intensity of the enemy shelling by removing an

excellent registration point. Home address: 1736 Belmont Ave., N. Seattle, Wash.

1ST LT. CHARLES C. STANABACK, for crawling, under enemy fire, to an observation point overlooking a bridge during an attack on a bridge objective in Italy, 30 Jan 44. He then directed such effective fire that the attack rallied and the objective was taken. His outstanding courage and decisive action reflect great credit upon himself and the military service. Home address: 12392 Stoepel Ave., Detroit, Mich.

SGT. WILLIAM S. STEVENSON, for action in Italy on 30 Jan 44. He left the cover of a ditch in order to adjust the fire of a Field Artillery battery on a machine gun and 20-mm cannon which had temporarily halted the advance of nearby infantry. Although machine gun bullets struck the ground within 18 inches of his body, he crawled 100 yards to a house, set up an observation post and directed effective fire which silenced the enemy guns and enabled the infantry to advance. Home address: Box 81, Atlanta, O.

CAPT. ADDISON G. WILSON, JR., for meritorious action in the vicinity of Mount Defensa, Italy, on 6 Dec 43, while descending a trail down the mountains, which had been zeroed in by enemy mortars. He and other members of his unit were caught in a heavy mortar concentration which killed four infantrymen and wounded others. Capt. Wilson and his men repeatedly exposed themselves to continued mortar and artillery fire in giving first aid to the wounded. The risking of their lives in voluntarily exposing themselves to heavy mortar and shell fire was far beyond the call of duty and reflects the highest traditions of the military service. Home address: 5406 Richmond St., Dallas, Tex.

BRONZE STAR

CAPT. DONALD N. NIBE (Posthumously)

PVT. JOHN D. ALLING, 190 Leonard Ave., Onondaga, N. Y.

PVT. ARNOLD W. ALTWINE, RFD 2, Pierce, Neb.

1ST LT. JACK J. ANDERSON, 16 Alexander St., Newark, N. J.

T/5 JOE C. ANDERSON, JR., Hickory, N. C.

PFC. WENDELL B. ANDERSON, RFD 5, Madisonville, Ky.

PVT. EMIL J. ANTOLIK, 435 Wilbur St., Scranton, Pa.

T/5 RICHARD L. WRIGHT, for meritorious achievement in connection with military operations against the enemy at Guadalcanal on 17 Jan 43. Home address: 364 Deeds Ave., Dayton, Ohio.

AIR MEDAL

2D LT. ALLEN S. MOU, 3221 N. 25th St., Philadelphia, Pa.

S/SGT. CLARENCE A. NORDBERG, 912 W. 16th St., Joplin, Mo.

2D LT. HERBERT R. ROBERTS, 749 Arnett Blvd., Rochester, N. Y.

For participation in aerial flights; by performing 35 Field Artillery observation sorties against the enemy in Italy, as pilot and observer from 6 Feb 44 to 10 May 44.

1ST LT. CHARLES A. LOVE, 220 18th St., Merced, Calif.

2D LT. GENE R. MONCRIEFF, 324 S. Spalding Dr., Beverly Hills, Calif.

1ST LT. MARION W. PARKS, JR., 417 Wheeling Ave., Muncie, Ind.

1ST LT. DONALD D. THOMSON, 100 Wedgewood Park, Rochester, N. Y.

For participation in 50 to 99 operational flights over enemy territory at Bougainville, Solomon Islands, between 7 Feb 44 and 2 May 44. Frequently flying at dangerously low altitudes and encountering antiaircraft fire on vital missions in connection with observation and adjustment of artillery fire, contributing immeasurably to the destruction of Japanese installations.

1ST LT. WILLIAM M. DAVIS, JR., for participation in 42 operational flights at Bougainville, Solomon Islands, from 7 Dec 42 to 31 Jan 44. These flights represent a total of over 106 hours in the air, much of that time over enemy-held territory on reconnaissance and adjustment of artillery fire missions. Home address: RFD 2, Baton Rouge, La.

EDMUND W. SEARBY

It is the painful duty of the Executive Council of the United States Field Artillery Association to announce to its members the death of Brigadier General Edmund W. Searby. General Searby, a member of the Executive Council since December 14, 1942, was killed in action in France on September 14, 1944. At the time of his death he was serving as Artillery Officer of the 80th Infantry Division.

BOOK REVIEWS



LEE'S LIEUTENANTS: A STUDY IN COMMAND—Vol. 3: Gettysburg to Appomattox. By Douglas Southall Freeman. 825 pp.; index; maps and illustrations. Charles Scribner's Sons. \$5.00.

With publication of this third volume Dr. Freeman completes this study, which without question is the most important recent contribution to military literature. From Manassas to Appomattox the Armies of the South have been examined in detail, with particular reference to leadership and command. Throughout is found the highest of scholarship. The whole is a most fruitful result of thirty years of intelligent research.

In addition to vivid and lifelike re-creation of military operations and their leaders, in this final volume Dr. Freeman summarizes the lessons to be learned from the experiences of the Army of Northern Virginia. First among these is vindication of the theory that professional training in arms is essential for those who are to exercise command. Possession of such training is not, however, any guarantee of success as a combat officer—entirely aside from any questions of luck or the "fortunes of war." The most successful commanders in prolonged operations were those who kept their troops best disciplined and physically fit while in camp—a matter as true today as it was 80 years ago.

Dr. Freeman holds that the greatness of the South's Army lay in its supreme command and in its infantry. On the other hand, although artillery pieces were inferior and ammunition was poor, and although in '64 and '65 the cavalry was hindered by lack of horses, the average performance of the cavalry and artillery field officers was above that of comparable infantry officers.

Our highest officers have found the first two volumes worthy of the closest scrutiny. This final one is eminently up to their standard. Our only regret is that there is now not another to look forward to.

INVASION! By Charles Christian Wertenbaker. 168 pp.; photographs; endpaper map. D. Appleton-Century Co. \$2.50.

Any way you take it, a mighty fine job has been done in this book.

First of all there's a top-notch piece of writing. Through June the headlines were flying so fast, yet so many details of unit designations and the like had to be kept secret, that it was hard to get a balanced and coherent picture of events from D-day through the fall of Cherbourg. This correspondent for *Time* and *Life* was with Gen. Bradley's headquarters and the 9th Division during that time. He has written a fine, detailed account which also picks up just enough of the earlier events to place the whole in proper perspective.

Next are the photos, by the justly-famed Robert Capa. No more need be said.

Then there's the map. These publishers not only were wise enough to include one, but they went further. Instead of relying on an incomplete sketch they use a Hammond map of the whole of northwest France, covering the area from Le Havre to Quiberon Bay.

Finally there is the timeliness. *Invasion!* came straight from the battlefield, with all the intimate details that can be set down only from a fresh recollection of events.

The war has moved eastward very fast since June, but the invasion itself will ever remain a classic. Much will be written of it in years to come but I doubt if so clear an over-all account as this one will be found.

CLOUD AND WEATHER ATLAS. By Hugh Duncan Grant. 286 pp.; index; illustrated. Coward-McCann, Inc. \$7.50.

Mr. Grant, former Superintendent of the Meteorological Service of the Royal Navy and a Fellow of the Royal Meteorological Society, has prepared a definite work of immense value not just to the meteorologist, but to the mariner, the aviator, and the farmer as well—in fact, to anyone needing a knowledge of the impending weather. Its domestic accuracy and importance are attested by the foreword by James H. Kimball, late Principal Meteorologist of the U. S. Weather Bureau in New York.

Chapter by chapter Mr. Grant takes up such topics as how clouds are formed; cloud regions and beyond; cloud classification; heights of clouds; major air movements; air-mass and frontal analysis; for and visibility; etc. Of greatest value, however, are the plentiful (more than 160), clear, and artistically lovely photographs that so clearly show precisely what the text is speaking of. Nearly every chapter has a group of these, all of large size. Every form of cloud is not only represented, but is identified by family, genus, species, and variety according to the International System of Cloud Classification. In addition there are such technical aids as numerous charts and tables, and such other figures as the International Meteorological Symbols, explanation of weather code and symbols, a typical weather map, etc.

This book, prepared to aid observers in the identification of cloud forms and to interpret their meaning as to forthcoming weather, is indeed comprehensive enough to warrant the term of "atlas." Its preparation was a major undertaking, well done.

A BASIC HISTORY OF THE UNITED STATES. By Charles A. Beard and Mary R. Beard. 496 pp.; index; maps and charts. The New Home Library. 69c.

In many ways this is a most remarkable book.

For some 40 years the Beards have been looking at and into American civilization, studying and examining it to learn the causes of its peculiar strengths and weaknesses. For half that time they have collaborated in writing about it. This *Basic History* is a distillation of that study, observation, and thought. It also brings to a close the authors' many years of cooperative effort in seeking to interpret the course of American history.

This is a new book, a fresh one with a fresh approach—not a reprint or digest of earlier material. The Beards have an excellent flair for clearly compressing their views of what physical, social, military, political, economic, intellectual, and spiritual events and circumstances

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contrived to produce the American civilization in which we find ourselves today. Their views are clear ones, too. Unbiased, they look not necessarily with a jaundiced eye on even today's "sacred cows"; it is rather with the eye of judgment and perspective, one which is not unduly swayed by the moment's events. Especially fine are the chapters on "Centralization of Economy" and "Centralization as Involved in the Political Struggle," which deal with events the reaction to which still impinges upon us.

Despite its low price, *A Basic History of the United States* is a fullblown book of high material quality. Its paper is fine, its cloth binding excellent. Incidentally, contrary to usual publishing practice it first appears in this addition; soon a more expensive edition will appear as a Book-of-the-Month Club dividend, and only thereafter will an illustrated edition be printed (at about a five-fold price).

As I said before, a most remarkable book, however it is approached.

A GUIDE TO NAVAL STRATEGY. By Bernard Brodie. 293 pp.; reading list; index; illustrated. Princeton University Press. \$2.75.

In 1942 was published Lt. Brodie's *A Layman's Guide to Naval Strategy*. Although addressed primarily to laymen, it rightly had much official Navy recognition, including adoption for training courses. Under that title it had two reprintings, three revisions, and two editions. Now it has been thoroughly revised again and brought down-to-the-minute.

For an understanding of naval strategy and a good bit of its tactics, this book has no modern peer. Ship types, their advantages, limitations, and *modus operandi*; fleet composition and tactics; the true meaning of and need for bases; naval support of land-sea operations and defense of shipping in general—these are the principal matters discussed. All are well illustrated by actual historical events, some of them as recent as the landings on Saipan and Normandy. The whole is well organized and written in an easy, readable, and understandable style.

ESSENTIALS OF AERIAL SURVEYING AND PHOTO INTERPRETATION. By Talbert Abrams. 262 pp.; glossary; bibliography; index; illustrations. McGraw-Hill Book Co. \$3.00.

Present day map making, especially photogrammetry, requires a good grounding in common mathematics, ground surveying methods, and map projections. Therefore the arrangement of this textbook-handbook is distinctly logical, although at first glance one may be surprised at having to penetrate to page 83 before reaching the discussion of topographic drafting. The first five chapters are designed as a refresher in math, surveying, maps and globes, map projections, and orientation and location.

Ten chapters (164 pages) contain a tremendous amount of accurate and detailed information on the making, interpretation, and use of aerial photos. Stereovision, interpretation, restitution and rectification, radial line control, and the making of mosaics and topographic relief models are carefully explained. Descriptions of methods and processes are supplemented by a wealth of photographs (many of them stereo pairs) and line drawings. Appearance of instruments and how to use them are thus made clear, so that much can be gained from a study of this book even though all the tools may not be at hand; at the least, one can become acquainted with methods—and often substitute equipment can be devised on the basis of this treatment.

THE GOBI DESERT. By Mildred Cable with Francesca French. 302 pp.; map; photographs. The Macmillan Co. \$3.50.

Either as missionaries or as travelers, Miss Cable and her two companions are unusual. After 20 years in Shansi province they took to the desert, with which they already had some acquaintance. For many years they travelled the Gobi as itinerant missionaries, living with and as the nomads and oasis dwellers. They had a keen and true interest in the people and places, and a sharp eye and splendid memory for detail.

This background results in not "just another travel book," but a comprehensive and enthralling account of an area that is of incalculable potential importance. Lying as it does between Russia and China, from time immemorial it has been a caravan route. This gained new meaning when the "Red Road" was pushed through to carry munitions into China. In spite of air route enthusiasts, such a

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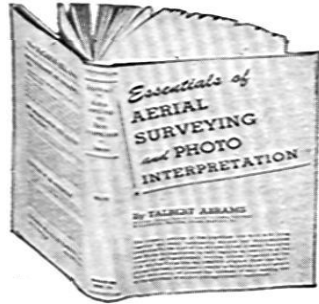
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*THE ST. LOUIS CARDINALS. By Frederick G. Lieb. 213 pp.;
photographs. G. P. Putnam's Sons. \$2.75.*

"Cardinals" has been its name only since 1899, but the St. Louis team's connection with the National League goes back to 1876, the year the National was born. In its ups and downs since then it has had a colorful and often turbulent history—never a dull moment. One year it had 6 managers and played its last games with none. From John McGraw through Bottomley to Stan Musial, St. Louis's roster has included baseball's greatest names.

This whole story is told by a man who has been a baseball writer since 1911, since 1935 for *Sporting News* of St. Louis. His tale is full of the anecdotes and sidelights that are the cream of baseball life and history. And in recounting the history of the Cardinals he of course includes so much about their contemporaries that any ball fan will enjoy this "biography" even if the Cards aren't his favorites.

*THIS DAY'S MADNESS. By Mercedes Roseberry. 262 pp. The
Macmillan Co. \$2.00.*

The home front in America at war is the theme of this book. The author became interested in the daily trend of affairs while working on her master's thesis at the University of Louisville. Priorities, USO and OCD, rationing, new uses of peanuts, milkweed, etc., sharing taxis, getting lost in the Pentagon, and loads more are all covered in this delightful book.

M. K. W.

*RUSSIA THEN AND ALWAYS. By Nina Verhovskoy Hyde and Fillmore
Hyde. 303 pp.; appendices; index: endpaper map. Coward-McCann,
Inc. \$3.00.*

This excellent book is a sympathetic but analytical history of Russia. The authors' contention, and they back it with a wealth of material, is that in over a thousand years of recorded history Russia "has twice risen to the position of the foremost power on the Eurasian continent. On neither of those occasions did she show any disposition toward conquest . . . she made certain of her continental outlets and the security of her borders, but that was all. Century after century . . . she has shown herself unequivocally opposed to the philosophy of race superiority . . . and . . . to the theory of economic colonies . . . she has denied that materialism or the standard of living can be accepted uncritically as a legitimate object of human effort, and has insisted that the benefits of progress must be weighed in the light of moral principles and its values judged in terms of its effect upon the individual soul. . . .

"If there is anything that can be prophesied about Russia it is that . . . she will fight in future as she has fought in the past for the continental outlets she requires . . . but . . . she has never looked upon war as a means of extending her influence . . . Russia is unequivocally on the side of peace. . . . Basically the traditional aims of Russia and America have been alike—the development of their own countries without interference from abroad. If America remains true to this tradition, then it appears certain that Russia will be her staunch friend, ready to work shoulder to shoulder with America to curb imperialism and conquest."

These advocates of Russia substantiate their thesis with a careful and very interesting account of Russia's past and the influence it has on the present; of its peoples, with their complex yet basically simple characteristics and emotions; of the Russian church, government and rulers; and of all the Slavic factors that have made and kept Russia a great and mysterious nation. However, the book is no whitewashing job. The Hydes give the worst side of Russia as well as the best, but they very carefully analyze the causes of the black marks and trace their influence on Russian history.

The Russian revolution, as might be expected in any book which covers a thousand years in three hundred pages, is treated only briefly. The Hydes call it "The Marxian Holocaust" (which may displease the more faithful Comrades), but they reasonably insist that "revolution is not an event, but a process, and the Russian process

is still young and as yet shows few signs of final crystallization." They feel, however, that the "blueprint of Russia's political organization . . . conceals much that is old" and that the revolution is really just another upheaval from a giant trying to find a comfortable resting place in the bed of nations.
R. G. M.

THE WAR OF 1812. By Henry Adams. 361 pp.; index; maps. *Infantry Journal*. \$3.00.

To fill a need for a short history of the War of 1812, the pertinent portions of Henry Adams's 1891 9-volume *History of the United States, 1801-1817* are presented here by courtesy of the original publisher, Charles Scribner's Sons.

THE LOOM OF LANGUAGE. By Frederick Bodmer; edited by Lancelot Hogben. 682 pp.; index. W. W. Norton & Co. \$3.75.

Experts on languages have been arguing the merits of this book, pro and con. As far as this reviewer is concerned they can have their wrangles, but *The Loom of Language* remains in my opinion one of the most fascinating books I've seen. Its theme, as its title suggests, is language—its origins in the distant past, its growth and development through the ages of history, and its present use for communication. At the same time this is a history of language, a guide to foreign tongues, and a method of learning them.

In these last two aspects it is uniquely valuable. The author sensibly points out that one's approach to a language should be radically different according to the purpose: to speak, to read, to write. If the aim is to speak, to be able to make oneself understood and in turn to be able to comprehend conversations, many of the frills and details of formal methodology can be discarded. An understanding of the make-up of languages speeds the process, and a knowledge of one tongue of a group (as, say, of the Teutonic or Romance groups) makes the related languages easy to grasp.

This essential simplicity and the relationship of families of languages are shown through basic vocabularies, translation tricks, key combinations of roots, and phonetic patterns. Vocabularies are condensed and grammar simplified.

The Loom of Language is not "just" a guide to tongues, however. As it explores the history of speech it goes deep into history and fires the imagination as it develops the growth of human expression. Stimulating to the mind in many ways, it is also a distinct aid to tomorrow's citizenship, when world-wide intercommunication will have unprecedented importance.

DEAR SIR. By Juliet Lowell. 75 pp. Duell, Sloan & Pearce. \$1.00.

Files of war plants, draft boards, and federal and state agencies are full of correspondence from a baffled and frustrated citizenry. From them has been culled a crop of hilarious—and sometimes ribald—letters, here printed in a handy little tome that will fit 'most any pocket except a watch pocket.

One of the best was sent to Consolidated Aircraft: "Gentlemen: I have just finished a wonderful brake to be put on airplanes. This brake I invented can stop a plane that is doing 400 miles an hour in less than 10 feet. Now I am working on an invention to stop the pilot from going through the windshield." That gives you an idea.

You'll be glad too to see the 1937 War Department correspondence resulting from a sergeant's being ordered to proceed by transport from San Francisco to Fort Bliss!

A SHORT HISTORY OF THE ARMY AND NAVY. By Fletcher Pratt. 262 pp.; maps.

THE WAR IN OUTLINE: 1939-1944. 185 pp.; maps; index.

GERMAN DICTIONARY FOR THE SOLDIER. By Frank Henius. 239 pp.

Infantry Journal. 25c each.

Fletcher Pratt has a good background for preparing this excellent and concise history. Most of it is devoted to the Civil War only 22 pages cover the period from the Spanish-American War through World War I, where the book ends.

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BY SEA AND BY LAND: The Story of Our Amphibious Forces. By Lt. Earl Burton, USNR. 218 pp.; illustrated. Whittlesey House. \$2.75.

When I first started to glance at this book I thought it would prove to be "just another" of those "I dunnit" or perhaps "this-is-how-you-should-do-it" books. I was mighty badly mistaken, for Lt. Burton has written a fascinating account of the creation and work of our amphibious forces.

Actually, he starts 'way back before the beginning, 'way back when Brig. Gen. Frank A. Keating—an officer as likeable as he is able and hard-working—made the first (and literal!) "dry runs" with 3d Division troops at Fort Lewis in 1939. He takes you through the dark days of 1942, when the program first actually got under way, so that you truly ache over the shortages and difficulties. Everything had to be developed: vessels, crews, organization, tactics. "Impossible" jobs were done and done well, 'way inside "impossible" time limits.

How competently the whole was handled is written in the history of our invasions—Guadalcanal, New Georgia, Bougainville, Attu. . . Not many of us, though, realize all that is involved, from the training of small-boat operators to the tedious spadework of the PIs. All have the sole job of helping the landed troops, be these amphibious infantry or NGLOs (Naval Gunfire Liaison Officers). The "beauty" of Lt. Burton's book is not that he describes all these things, but that he includes the excitement, the vital and human sidelights that make his account ring true as well as *be* true. In short, this is a "honey."

PHYSICAL FITNESS FOR BOYS. By Ben W. Miller, Ph.D., Karl W. Bookwalter, Ed.D., George E. Schlafer, M.S. 450 pp.; illustrated; index. A. S. Barnes Co. \$3.00.

Every phase of physical fitness is covered completely here. Too much can't be said about the authors for compiling this extremely valuable material. While it offers little to the average reader's enjoyment, it should prove invaluable to all leaders in the field of physical education as a text for classwork or for guidance in local curricular study. B. H. W.

A HORSEMAN'S HANDBOOK ON PRACTICAL BREEDING. By Lt. Col. John F. Wall. 324 pp.; index; illustrated. American Remount Assn. \$4.00.

Laymen and amateurs will find this handbook as interesting as will anyone connected with horses, for it is full of fascinating general information as well as plenty that is distinctly technical. A hundred or so pages are devoted to the history of the horse, the light and heavy breeds of today, and the current situation of the horse in this country. Every aspiring horseman should note most carefully the chapter on the principles of mating. Some 150 pages go thoroughly into the details of horse farm management and the breeding and raising of horses; these chapters cover such matters as buildings; forage, pastures, and paddocks; the selection, care, and handling of stallions and broodmares; care and handling of foals; abortion, sterility, parasites, and other griefs of the farm; and routine management and farm records. In ready-reference fashion, grouped in appendices, is a collection of highly useful information on such varied subjects as care of the feet, judging, shipping by water, rail, and van, etc.

A wealth of illustrations throughout the book shows types of horses by breed and strain, farm buildings and paddocks, etc., thoroughly rounding out the text. They also are a delight to the eye, for their content and their clarity.

FIGHTING WORDS: Stories and Cartoons by Members of the Armed Forces of America. Edited by Warfield Lewis. 317 pp.; biographical notes. J. B. Lippincott Co. \$3.00.

The winning stories and cartoons from the Armed Forces Service League contest have achieved recognition and a measure of permanence by their appearance in book form. But *Fighting Words* is more than a collection of stories and cartoons. It is a record of youthful aspirations and a reflection of experiences or observations in the forms of fiction and cartoons.

Most of the stories as well as the cartoons have an armed service background or tie-up, but there are some exceptions. As a whole they have a notable quality of serious realism, and the reader who likes a touch of lightness in fiction may be disappointed. Wherever

humor enters it is rather restrained and a little on the grim side. The sustained note of hard realities might be relieved somewhat by more sprightly titles. Somehow most of the individual story titles seem rather inept and unexciting.

The cartoons are not particularly subtle but in this respect they do not differ greatly from the majority of the more professional ones. Their fairly broad expression differs sharply from the fiction technique but it supports what, in a very general way, might be called the G.I. mood of the story section.

Both the stories and cartoons, aside from their inherent qualities, have an added interest as a collection of winning entries in a contest. The panting eagerness of the competitors breaks through the collection and, in the mind of the reader, becomes a sort of story or cartoon in itself.

F. E. J.

PACIFIC VICTORY: 1945. By Joseph Driscoll. 297 pp. J. B. Lippincott Co. \$3.00.

This chatty and discursive book is amusing reading if you are interested in the personalities and gossip of the Pacific war—and who isn't? Driscoll wanders from Nimitz to MacArthur to Halsey and produces a new one, MacNimsey, before he shoots along sideways to lesser but no less interesting personalities, treating some kindly, some with a pointed pen. He talks about famous ships, officers' clubs, pidgin English, current songs, battles, and a score of other things. This is a grab-bag of Pacific life, and when you dip into it you generally come up with a good yarn.

R. G. M.

KEEP THE PEACE THROUGH AIR POWER. By Allan A. Michie. 192 pp.; bibliography. Henry Holt & Co. \$2.00.

I have been waiting for Major de Seversky to rock the readers of the *Ladies' Home Journal* with this title but Allan Michie beat him to the punch. The rest of the book is an anti-climax.

Mr. Michie is a war correspondent turned expert by association. He has been exposed to some thoughts on air power, and has come away amazed that the "best" minds among the Allied air commanders (he never mentions "ground" commanders) agree with *his* ideas. By his own admission he is always in a rush to share his opinions with the untutored public. From the drubbing that his first brainchild (*The Air Offensive Against Germany*) took from critics, even in aeronautical journals (which usually treat the subject like a sacred cow), he is fortunate that some publishers will still agree with him.

In this book he blithely continues to give us the benefits of his ideas on air power. (A typical thought is the title to Chapter One, "Air Power: The Sword of Justice.") Incidentally he has also become an "expert" on Germany. At least two-thirds of the book is devoted to this subject although it has nothing to do with the title. His professed desire to arouse us to the dangers of a post-war Germany may be sincere, but the shallowness of his presentation adds little to our knowledge.

Michie's comparatively few chapters on air power and peace do not contain much of importance. An international air police force is not a new thought (as he admits) and the novelty of his suggestions is apparently confined to advocating certain tactics used by the RAF to subdue tribal rebellions in pre-war days. Mr. Michie has the ability of a good reporter to pick a timely topic, but on this point alone rests any claim of this writing to the attention of a reader.

J. R. C.

ONE DAMN THING AFTER ANOTHER. By Tom Treanor. 294 pages; illustrated. Doubleday, Doran & Co. \$2.50.

"The Adventures of an Innocent Man Trapped Between Public Relations and the Axis" is the sub-title summary by the author. Tom Treanor, a young correspondent of the *Los Angeles Times*. Departing by Clipper June 13, 1942, he visited the Middle East, India, China, Burma, North Africa, Sicily, and Italy. With adequate ingenuity to keep himself in places where other correspondents wished they were, Treanor tells what he sees, hears, and sometimes thinks. "Nobody goes into war more innocently than the American, reared in reverence of the great twin beliefs: that Cleanliness is Next to Godliness, and that Human Life is Valuable."

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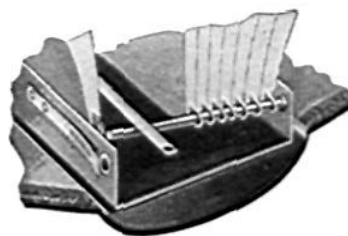
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up the Italian peninsula with the Allies' forward lines are simply and vividly described by a young man whose sense of humor survives. While his experiences in the author's words were *One Damn Thing After Another*, they were never-the-less thrilling and cherished experiences ready now for any reader to share. Even the dedication is appealing: To My Wife who had to stay home with the children. F.B.

BEN HUNT'S WHITTLING BOOK. 111 pp. Illustrated. Bruce Publishing Co. \$2.50.

There can be a lot more to whittling than making fire-starting "shavings" or "fuzzies" from a split of hemlock. Whittling can be one of the most pleasant of hobbies, as Ben Hunt delightfully shows. Although a jig-saw is handy for roughing out the blocks, your pocketknife is the only tool really required.

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STATE OF THE NATION. By John Dos Passos. 333 pp. Houghton Mifflin Co. \$3.00.

In the last few years more than just the surface of our country has changed. The building of camps and war plants has altered the lives and habits of a vast number of people. Multitudes have jammed into communities geared to the tempo and facilities of merely a small town. They have affected the permanent homesteaders as much as they have themselves.

For about a year John Dos Passos has roamed throughout these United States. He has ranged from the Maine coast, through the Dakotas to the Far Northwest, down through Texas and the Gulf country, along the Atlantic seaboard. Everywhere he peered with searching eyes and talked with all manner of people, trying to learn what this country is like in wartime.

His account of these travels, these conversations, these views and reviews, is direct—wholly in the Dos Passos tradition. It puts into terms of human life many words which to many of us have only been symbols—absenteeism, turn-over, labor-management committees, rehabilitation, directives, and the like. The net result is an awesome picture of this country today, and of its forces and cross-currents.

PEOPLE ON OUR SIDE. By Edgar Snow. 318 pp. index; endpaper map; photographs. Random House. \$3.50.

Edgar Snow has a way of relating strange, alien factors to the unified sum of world events. He has the objective, cosmopolitan outlook of a serious student backed up by an ability to convey his ideas in clean-cut readable style.

This book has to do chiefly with India, Russia, and China, and their reactions to a world at war. The differences between the peoples of these countries are sharply drawn, but common to all is the fact that each is a natural product of its own particular time and place. It is in this light that the author interprets them. He measures them by their own standards, and takes account of the tangled forces that influence their lives.

The interaction of these countries with each other and with the rest of the world enters significantly into considerations of postwar adjustments. Knowledge and appreciation of their historical backgrounds, and a realistic attitude toward their cultural and political peculiarities, are necessary to an understanding of the parts they are to play in the years ahead. In this respect *People on Our Side* is a creditable contribution to popular knowledge. It is an enlightening, informative book on a subject of international concern.

F. E. J.

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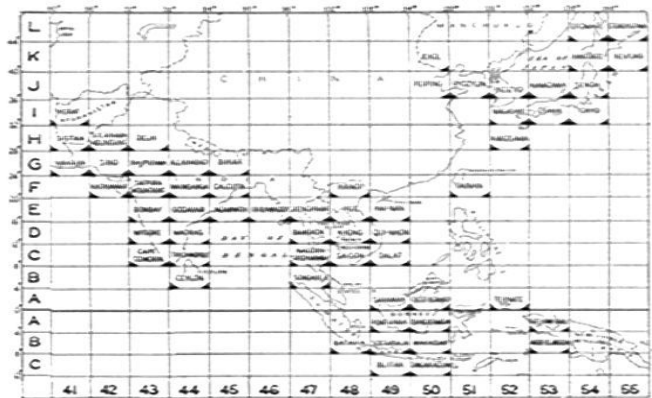
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