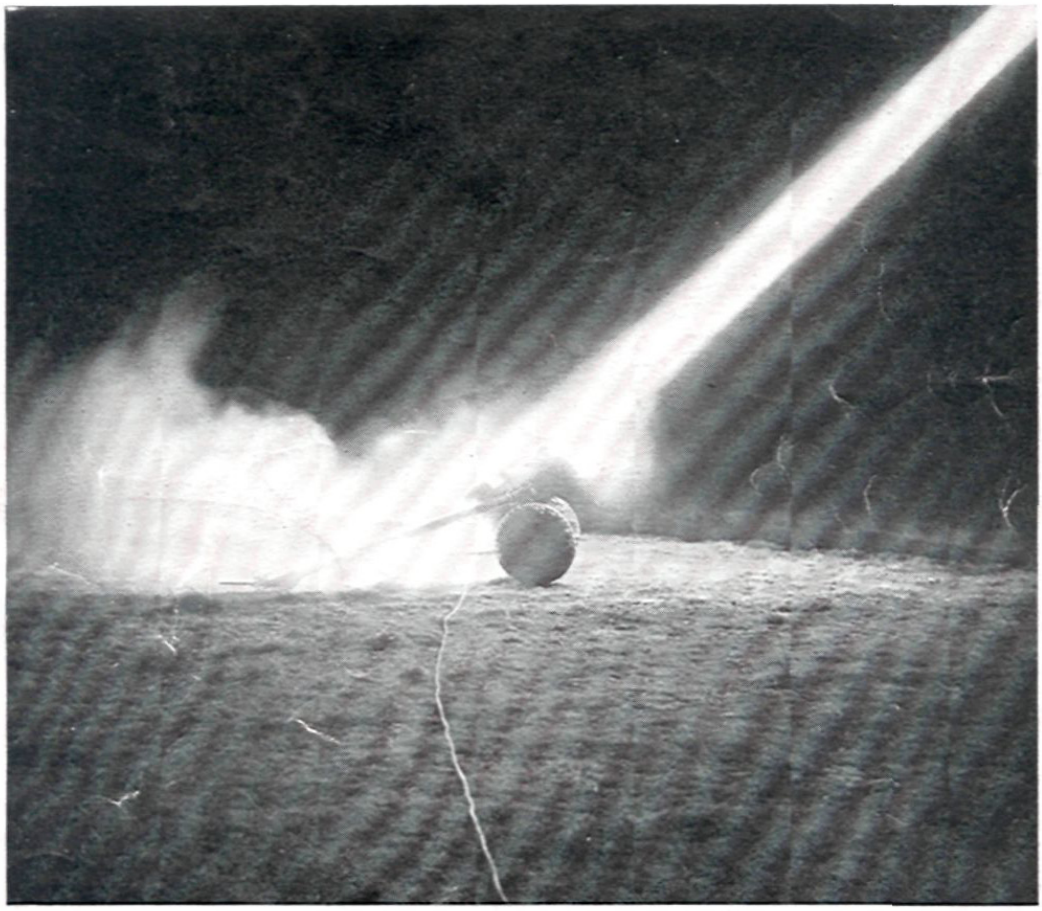
The FIELD ARTILLERY Journal



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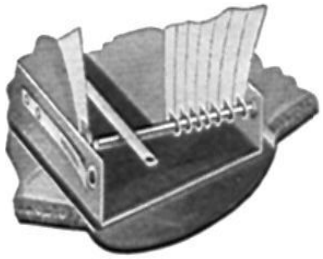

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PEACE HAS JUST COME, while this issue is being printed. Three years, eight months, and seven days after the infamy of December 7th, 1941, the Japanese empire surrenderd on our own terms. The fight was long and bitter, dismal and discouraging at times but studded with gallant service and sacrifice. Throughout, artillerymen played a part of which they may justly be proud.

Final victory came with a sudden rush unparalleled in history, speeded immeasurably by battle use of the atomic bomb and by entry of the Russians into the Pacific war. May we be as sure and as successful in handling the problems of peace as we have been in solving those of war, to the end that eternally there may be peace on earth, good will toward men.

THIS MONTH breaks a long public silence concerning rocket artillery. On our cover is a spectacular view of a T66 being fired at night. Capt. Schonenberg's description of these units and their equipment stems from his work with the Rocket Board.

While rocket launchers have their place, so too does super-heavy artillery with its accuracy and great range. Col. Porter ably describes one of Germany's behemoths; he took the accompanying photos himself, in Germany.

Col. Waterman brings us an excellent account of the Battle of Okinawa, with emphasis on the artillery aspects. Other phases of the war against the Nips are covered by Col. Sackton and by Majors Smyth and Steward.

NEXT MONTH we hope to resume greater coverage of artillery participation in the European battles. In addition, Lt. Col. Jarrett will describe Italian artillery in detail and with his customary wealth of illustrations.

OUR THANKS to those who set down for their fellow artillerymen, descriptions of their operations. These first-hand articles provide intimate and accurate source material of prime value to historians of the future. At the same time, they help give proper recognition to those units and individuals who have done so much to help defeat the enemy.

We look forward to continuation of the flow of this material. There can not be too much of it. A literary approach is quite unnecessary — all that is required is a straight-forward and accurate narrative of events, supplemented by whatever maps or sketches as will help make clear just what happened.

The Field Artillery Journal

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Commanding General

ARMY GROUND FORCES

General Jacob L. Devers, new Commanding General, Army Ground Forces, was commissioned a second lieutenant of Field Artillery on June 11, 1909. General Devers became a Colonel (temporary) on October 24, 1918, and on July 1, 1938, he again attained that rank, this time permanent. May 1, 1940, he was promoted to Brigadier General (permanent), on October 1, 1940, to Major General (temporary), on September 6, 1942, to Lieutenant General (temporary), and on March 8, 1945, to General (temporary).

General Devers wears the Distinguished Service Medal with two Oak Leaf Clusters, Bronze Star Medal, and the decorations of British Knight Commander of the Bath, Brazilian Order of Military Merit in the Degree of Grand Officer, Polish Order of Virtuti Militari, French Legion of Honor in the Degree of Grand Officer, and Croix de Guerre with Palm. On his European-African-Middle East Theater Ribbon are battle participation stars for the Naples-Foggia, Southern France, and Germany campaigns.

Some Major Assignments

1909-1912	4th Field Artillery: Vancouver Barracks, Fort D. A. Russell, San Antonio, and Fort D. A. Russell
1912-1916	United States Military Academy
1916-1917	9th Field Artillery: Schofield Barracks
1917-1919	Fort Sill: School of Fire, and Commanding Officer of 1st Field Artillery
1919	France and Germany
1919-1924	United States Military Academy
1924-1925	Command and General Staff School
1925-1929	Fort Sill: Field Artillery School, and Commanding Officer of 1st Field Artillery
1929-1932	Office, Chief of Field Artillery
1932-1933	Army War College
1933-1934	Fort Hoyle: 6th Field Artillery and 1st Field Artillery Brigade
1934-1936	16th Field Artillery: Fort Myer
1936-1939	United States Military Academy
1939-1940	Panama Canal Department
1940	Commanding General, Washington Provisional Brigade: Washington, D. C.
1940-1941	Commanding General, 9th Division: Fort Bragg
1941-1943	Chief of the Armored Force: Fort Knox
1943	Commanding General, United States Forces in the European Theater of Operations
1943-1944	Commander, North African Theater of Operations; Deputy Commander-in-Chief, Allied Force Headquarters; Deputy Supreme Allied Commander, Mediterranean Theater of Operations
1944-1945	Commanding General, Sixth Army Group
1945	Commanding General, Twelfth Army Group; Commanding General, Army Ground Forces

The Rocket Field Artillery Battalion

AUTHOR'S NOTE

With some slight modifications, the basic principles of field artillery tactics and techniques apply to rocket field artillery. Just consider the launcher as an artillery piece with more than one tube. The present T-66 launcher (Figs. 1 and 2) is an artillery piece with 24 tubes instead of the usual one. This launcher, fired electrically, can fire 24 rounds in 12 seconds. How long does it take to fire 24 rounds from one 105 howitzer, or 155 howitzer? Or, how many 105s are required to fire 24 rounds in 12 seconds? The answers to these questions will give you some idea of the fire power of a rocket unit.

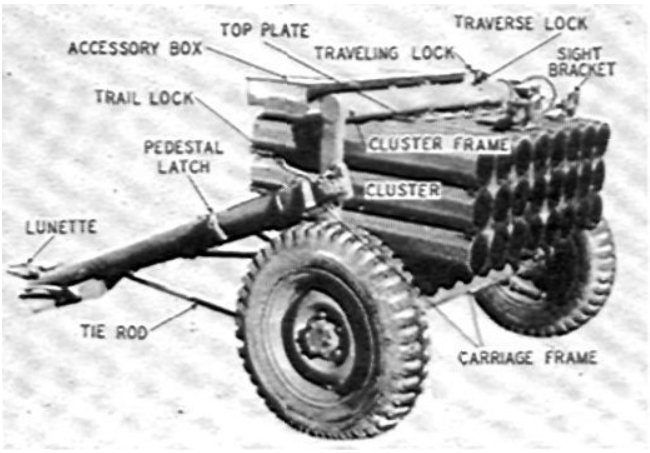


Figure 1

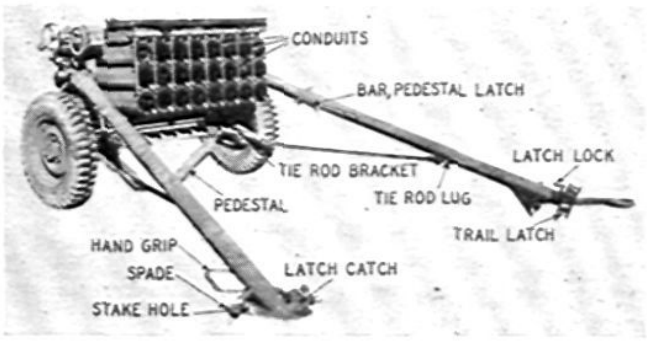


Figure 2

By Capt. John J. Schonenberg, Jr., FA

Organization and Units

The rocket field artillery battalion has a headquarters battery, three rocket batteries, service battery, and attached medical detachment.

Staff

The battalion commander's staff includes the Executive, S-1, S-2, Assistant S-2, S-3, Surgeon, and Liaison Officer. (Note the absence of an Assistant S-3.) Their duties are conventional staff duties as given in appropriate field manuals.

Headquarters Battery

In headquarters battery the battery commander (Communication Officer), Assistant Communication Officer, Motor Officer, and various sections of enlisted men (survey, headquarters, maintenance) have duties closely paralleling those of similar personnel in the 105 howitzer battalion headquarters battery. The FDC of the rocket battalion operates, however, like the FDC of a field artillery group or division artillery; this is discussed further below, under fire direction procedure.

The rocket battalion headquarters battery differs also by the inclusion of a pioneer platoon. The lieutenant platoon commander has thirteen men organized in a bulldozer squad and a pioneer squad. This platoon assists in road reconnaissance and preparation of position.

Rocket Battery

Frequently the rocket battery may be assigned as a separate unit. Then the battery commander will act as rocket adviser to the artillery commander in addition to his usual duties.

Accurately surveyed primary positions and continuous survey of alternate positions are essential. As battery survey officer the reconnaissance officer supervises the work of a seven-man survey crew.

Establishment of a battery observation post is not required since neither precision nor bracket adjustments are used. The battery executive becomes a gunnery officer and runs the battery fire-direction center.

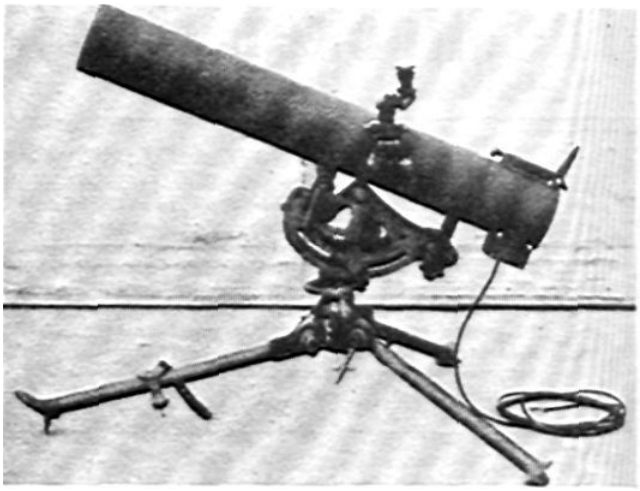
Firing personnel are organized into two six-launcher platoons, each under a lieutenant platoon commander and staff sergeant platoon leader. Each launcher of a platoon is served by a crew including the chief of section, gunner corporal, and three rocketeers. During firing the gunner loads, lays for direction and elevation, and fires the piece, while the rocketeers prepare ammunition. (A complete listing of the duties in drill, firing, etc., is beyond the scope of this article; it can be found in Training Circular No. 19, War Department, 25 April 1945, Appendix 1, Service of the Piece, T-66, Rocket Launcher.) If you have seen the back blast of a bazooka rocket, multiply it several hundred times and you will realize why it is impractical for the platoon commander to control his launchers from the rear as is done with howitzers and guns. Taking position to the flank, the platoon commander maintains control through the use of EE-8 telephones connected in series to each of his chiefs of section.

Each platoon has an ammunition squad with a 2½-ton 6×6 truck and a 1-ton trailer to assist in hauling ammunition.

Service Battery

The S-4 commands service battery, assisted by the battalion motor officer, battery motor officer, train commander,

The Army M-12 launcher. It fires the M-8 rocket. The plastic tube is expendable.



A Navy launcher: 5" tube on a 30-cal. MG mount.

assistant train commander, warrant officer supply, and warrant officer personnel. The ammunition train is divided into three sections; each has eight 2½-ton 6×6 trucks with 1-ton trailer. The battalion personnel section of a warrant officer and four enlisted men is assigned to service battery.

MATERIEL

The T-66 launcher (Figs. 1 and 2) has a cluster of 24 tubes (3 deep and 8 across) mounted on a split trail carriage. Weighing approximately 1,250 pounds, the launcher can be towed by any vehicle from the ¼-ton on up. Its organic prime mover is the 1½-ton 6×6 cargo truck. Elevation of the piece is from 0 to 800 mils, traverse 150 mils right and left of center. The firing mechanism is the ten-cap blasting machine, the small engineer's hand generator used in setting off dynamite. The firing mechanism is connected to the firing box on the launcher by means of a long cable. The firing box contains a dial which connects the electrical circuit to the various tubes in turn. When the dial shows No. 24, a twist of the handle on the firing mechanism will connect the circuit to No. 1 tube and fire the round in that tube; the next twist will connect the circuit to No. 2 tube and fire No. 2 round, and so on. Rate of fire is controlled only by the speed with which the gunner gets off successive twists of the firing mechanism. A trained gunner can fire the 24 rounds in 12 seconds.

Rocket M-16 (Fig. 3) is a spin-stabilized projectile 4.5 inches in diameter and approximately 31 inches long. Maximum range is about 5,200 yards. Fragmentation and blast are about the same as those of a 105-mm shell.

We do not speak of muzzle velocity with a rocket since the maximum velocity is reached after the propellant

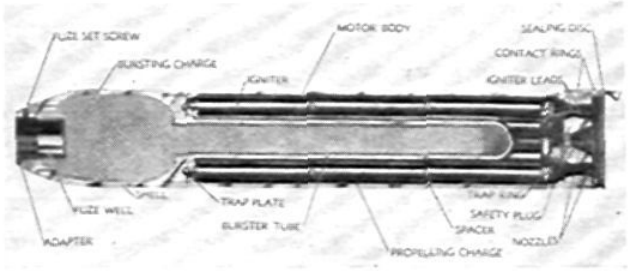


Figure 3. Cross-section of the 4.5" standard rocket M-16

M-16 spin-stabilized rocket on left and the M-8 fin-stabilized rocket on the right.

Another study of the two methods of stabilization as illustrated with the M-16 and M-8 rockets.

has burned. The burning distance varies with the type of propellant used. For the M-16 rocket this distance is 70 feet, at which point the rocket attains a velocity of 830 feet per second.

The old Fourth of July rocket is stabilized by the use of a long stick, the bazooka rocket by the use of fins. A conventional artillery projectile is stabilized by spin or rotation. Spin stabilization is superior to fin stabilization. The M-16 rocket is spin-stabilized but the spin is not activated by the use of lands and grooves in the bore. The gases generated by the burning propellant escape through nozzles or venturi in the base plate. These venturi are angled to the long axis of the projectile, causing the projectile to spin as it is propelled. It is the same principle as is used in a rotary lawn sprayer.

Normally the battalion will carry about 6 rounds per tube, distributed as follows:

Prime mover	(36)	48 rounds each	1,728
Ammunition squads	(6)	85 rounds each truck	510
		35 rounds each trailer	210
Ammunition train	(24)	85 rounds each truck	2,040
		35 rounds each trailer	840
		Total	5,328

TACTICAL EMPLOYMENT

Rocket field artillery battalions are War Department reserve to be assigned to army, task force, etc. Rocket units can be reattached to lower echelons as either battalion or battery. They will habitually be assigned to a field artillery headquarters. Target area survey and survey control are the responsibility of the artillery. The rocket unit is prepared to establish a flash base to determine the coordinates of its center of impact registration only in an emergency.

Rocket units can be used most efficiently when employed in attacking area targets, relieving the artillery of the necessity of massing numerous battalions. A 4.5-inch rocket battery can, in 12 seconds, fire 288 rounds with sufficient density to neutralize an area 300×400 yards. This is roughly equal to twelve battalions of light and medium artillery firing two volleys TOT. Because of its large probable errors, the rocket should not be used against pin point targets or in close support of ground troops. *The rocket is not to be used to replace field artillery but merely to supplement it*.

Experience in this war bears out this last statement. The Germans tried to replace artillery with the dive bomber, and against the French and Poles were successful. However, when they ran into the Russian army heavy with artillery, the principle of using planes as artillery proved a fallacy. The Germans then took the line of least resistance to build up some kind of artillery by producing rockets and rocket launchers. A launcher can be made quicker and more cheaply than can an artillery piece. The Russians too were producing rockets, but as a supplement and not as a substitute for artillery. Later the Germans had no time to correct their mistaken ideas that you can replace artillery with planes or rockets.

Measures must be taken to conceal the launcher position from enemy observation. The burning propellant and back blast create a dense cloud of smoke and dust over the position area. Defilade, smoke screening, smoke simulation in dummy positions, and selection of positions on ground giving little dust are a few of the measures that can be taken.

GUNNERY

Survey, direction, and laying are accomplished the same as for field artillery. The base launcher is surveyed in, an orienting line is staked, base angles are determined, and the pieces are laid reciprocally with an aiming circle.

We mentioned before that the probable errors are too large to permit a precision adjustment on a point target for the purpose of determining corrections. You can accomplish the same results, however, by firing a center of impact registration regardless of the size of the probable errors. We use an eight-round center of impact with the rocket. Eight rounds were selected to increase the probability that the combined center of impact is within 1 PE for both range and deflection of the true center of impact; for eight rounds that probability is .999985.

It is common belief that rocket fire is erratic and inaccurate. This is the normal reaction to the rockets' large probable errors. Mathematically, however, the rocket is as accurate as a howitzer. When the pattern of dispersion of any type projectile can be predicted in accordance with standard formulae for distribution, then the fire of that projectile is accurate. The dispersion pattern of rockets is geometrically the same as that for any artillery projectile. The size of the pattern is much larger for the rocket. An occasional wild round is observed when firing finned rockets: a loose, bent, or missing fin will cause such instability that it is impossible to predict where the round will land. Use of spin rather than fin stabilization has eliminated such cases. The action of a sharp cross wind on a finned rocket is also interesting to note. Since the flat surface of the fins offer more resistance to the air than does the curved surface of the shells, the finned tail is turned away from the wind and the nose into the wind.

With the exception of drift, fork, and probable errors, range table data for the M-16 rocket closely approximates

Multiple barrel launcher in a DUKW.

Navy automatic launcher on DUKW.

Navy Mark VII launcher on LVT.

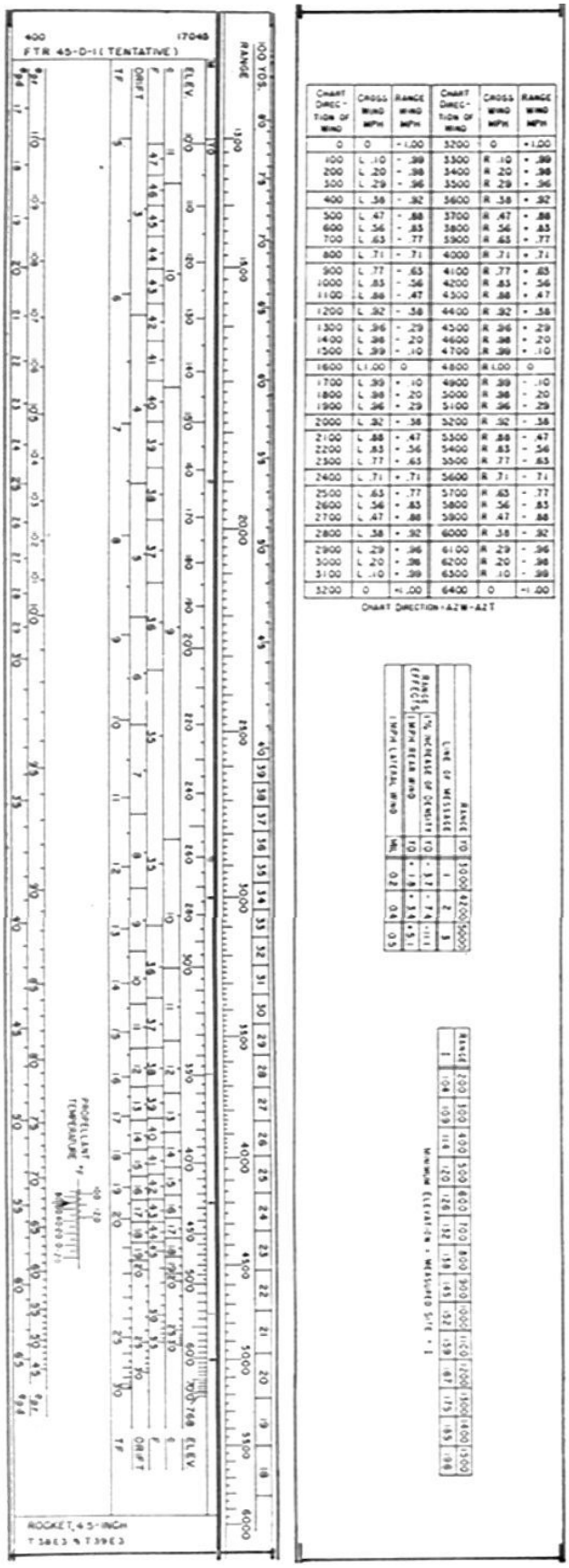


Figure 4

that for charge 3, 105 howitzer shell, HE, M1. For example, take the data at 3,500 yards:

	Elevation	*F*	*TF*	*PE,*	*PE,*	*Drift*
105 Howitzer	336‰	13‰	15.4 sec.	25 yds.	1 yd.	5‰
M-16 Rocket	331‰	37‰	15.1 sec.	82 yds.	45 yds.	11‰

Above was mentioned the difficulty of conducting a precision registration. The trouble is the relative inability to secure line shots sensible for range. An adjusted elevation could be determined the same as for an artillery piece (using fork as the unit of range change). Consider the probabilities of two consecutive line shots both sensible for range, using axial methods, comparing the 105 howitzer charge 3 against the M-16 rocket, at range 3,500. Let us define a line shot as one within 10 yards of the line, since smoke and dust sufficiently dense to give a sensing extends 10 yards right and left of the point of impact. The empirical probability that one line shot is followed by a second is .98-plus for the 105 howitzer and only .01 for the M-16 rocket. True, these probabilities would be increased by terrain sensings, but would be decreased when using lateral observation.

Fig. 4 shows the 4.5-inch rocket GFT. The method of placing a setting on the GFT varies from that given in TM 9-524. On all GFTs a common line through elevation, *c,* F, and drift is necessary, since the latter are functions of elevation. With two charges on one side of the rule, it is appropriate to use the hairline for range and place an elevation gauge line on the window. With the single charge rocket GFT, however, it is so much simpler to use the hairline for reading elevation, fork, drift, and probable errors and place a short range gauge line on the window over the range scale, that this latter method has been adopted. This range gauge line need only be about ¼-inch long.

Only four effect factors are considered in computing metro corrections: (1) temperature of propellant, (2) density, (3) wind, (4) drift. In computing range effects, those due to density and wind are computed by the usual method of "variation from standard times the unit effect." Propellant temperature is compensated for by an elevation correction, using the graphical scale on the face of the rule. Powder used for rocket propellant is so affected by temperature that one unit effect good for all temperatures cannot be used. As the temperatures increase from standard of 70° F. to 93° F., a range increase results. Above 93° F. the unit effect decreases until at 108° F. the range effect is again 0.

Example 1: Range effect (wind and density) at elevation 426 (range 4,200): —150 yards. Propellant temperature: 45° F. Place the hairline over temperature 45° F., draw range line over 4,050 (4,200-150). Setting: 4050/438.

Example 2: Range effect (wind and density) at elevation 274 (range 3,000): + 200 yards. Propellant temperature: 80° F. Place the hairline over temperature 80° F., draw a small line over the 4,200 gauge point. Now slide the indicator down until this small line appears over the 3,000-yard gauge point. Draw the range gauge line over 3,200 (3,000 + 200). Setting: 3200/271.

The sequence of fire commands is as defined in FM 6-40.

Certain methods of fire which have no application by rocket launchers, have been eliminated; only three are retained: volley, salvo, and by piece. The commands for these methods of fire are standard, with the exception that the number of rounds to be fired must always be announced. For example, the command "Platoon right 24 rounds" is interpreted to mean that No. 1 will fire 24 rounds as rapidly as possible, two seconds after No. 1 has completed its fire No. 2 will start, and so forth across the platoon.

If the rate of fire of the individual pieces in either volley or salvo is to be other than as rapidly as possible, the command "at so many seconds" is used. *Examples:* "Platoon 24 rounds at 5 seconds." "Platoon left 24 rounds at 5 seconds."

In salvo fire, if the time interval between pieces is to be other than 2 seconds, the command "pieces at so many seconds" is used. *Example:* "Platoon right, 24 rounds at 5 seconds, pieces at 5 seconds."

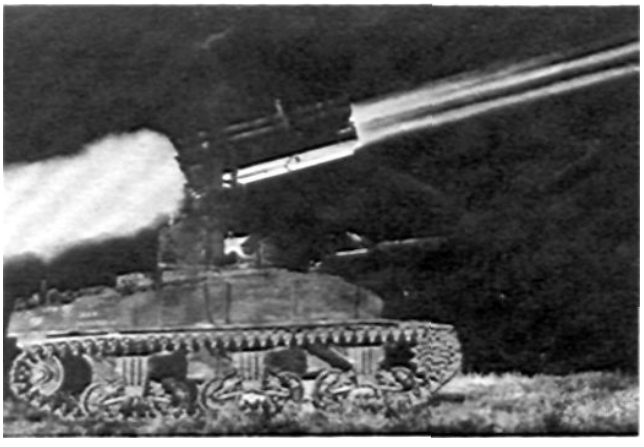
This allows flexibility in firing. In a situation where dense fire is to be followed by sustained fire we might have one platoon (battery) fire a 24-round volley, then another platoon (battery) take over this with 24-round salvo fire.

The term "ripple" has been used rather loosely in connection with rocket firing. Correctly used, it refers to a warning to launcher crews. If during the planning of fires it is determined that 96 rounds per launcher are to be used, the warning, "4 ripples HE (WP) with fuze Q (D, Time) ready." One ripple indicates one complete load of the launcher. The term does not, however, indicate a method of fire or a type of fire and has no place in the sequence of fire commands.

ATTACK OF TARGETS

Targets for rocket units should be *area* targets. Examples might be strong points, troops advancing in the open, troops in assembly areas, concentrations of lightly armored vehicles, groups of buildings.

In determining sheaf and range spread with howitzers and guns the effective width is considered to be the width of sheaf plus effective width of a burst, and the *c* is used as a unit of range spread. This works well since the PE in deflection is very small and four PEs in range closely approximate 100 yards for most artillery shells. With the rocket, however, the PE in deflection is too large to be disregarded and since 4 PE in range greatly exceed 100 yards, the Fork must be the unit of range spread.



Night firing of T-34.

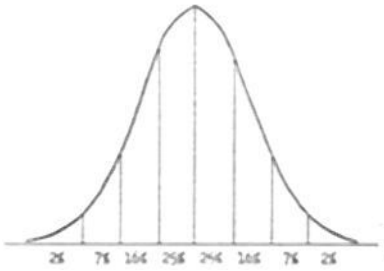


Fig. 5. Normal curve of distribution

In starting our discussion, let's go back to the normal curve of distribution familiar to all artillerymen (Fig. 5). Remembering that we must consider dispersion in deflection as well as in range, we secure the following dispersion pattern:

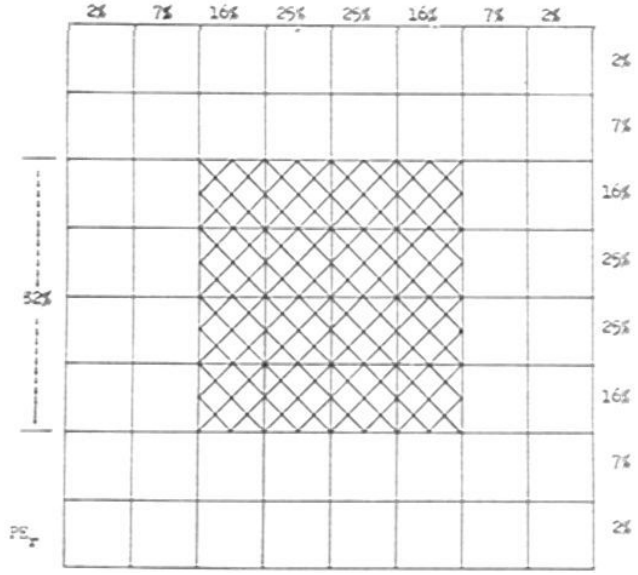
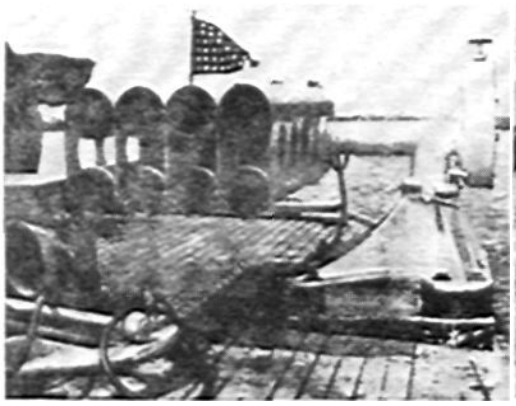


Figure 6. Dispersion diagram

Take as a basic premise that sufficient density of ammunition for neutralization falls only in the 25% and 16% zones. Roughly two-thirds of the ammunition falls in these areas (.82×.82). Our next premise is that 16 rounds are necessary to neutralize an area 100×100 yards (this is the same figure as is used for the 105 howitzer). As only two-thirds of all rounds fired fall in the shaded area, 24 rounds must be fired to secure the effective 16 (16×3/2).

Since the T-66 launcher has 24 tubes, our problem of determining the number of launchers required for an area target is relatively simple. Take the number of 100-yard squares in the area and you have the number of launchers required. An area 400×300 requires 12 launchers, an area 600×600 36 launchers, etc. The most efficient use of personnel and equipment is obtained when the launcher is fired with its full capacity of 24 rounds.

In determining the width of sheaf, we must understand that effective coverage is obtained in width of the sheaf plus four probable errors in deflection (25% and 16% zones right of No. 1 piece and left of No. 6 piece). To determine the width of sheaf, take the width of the target and subtract four probable errors in deflection (at elevation to target). This figure is then rounded off to the nearest 100 yards.



Navy launcher in PT boat.

Navy rocket support.

Navy crate launcher mounted on an LCSS.

Example:

Width of target	400 yards
Elevation to target	400 mils
Probable error in deflection	53 yards
400—(53×4)	188 yards
Sheaf to be used	200 yards

Distribution is handled in the usual manner of opening or closing on the base launcher.

By firing at one range we obtain effective coverage in depth of 4 probable errors in range. Any difference between this depth and the depth of the target must be handled by a range spread (½ fork or 1 fork). To determine range spread we subtract 4 probable errors in range from the depth of the target. The remainder is divided by one probable error in range. The result is rounded off to the nearest multiple of 2. If this figure is 0, center range is used; if 2, ½ fork apart is used; if 4, 1 fork apart. The range spread must not exceed 1 fork.

Example:

Depth of target	400 yards
Elevation to target	440 mils
4 probable errors in range	260 yards
400—260	140 yards
140 divided by 65	2
Range spread	½ fork

The total coverage in depth will be 6 probable errors in range or 390 yards.

Situation:

Target: woods used as assembly area.
Dimension: 600 wide, 400 deep.
Elevation to center: 370 mils.

Requirements:

Number of launchers required.
Sheaf.
Range spread.

"A solution":

Number of launchers required: 24 (two batteries) 6×4 equals 24.

Sheaf: 400 yards

600—4 PE_d equals 600—200 equals 400 yards.

Range spread: ½ fork

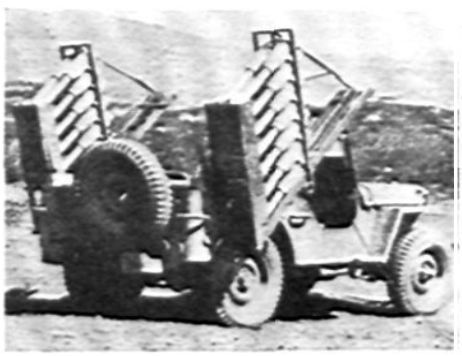
400—4 PE_r equals 400—300 equals 100 yards;
100 divided by 75 equals 1.3, rounded off to the nearest multiple of two equals 2.

Therefore range spread: ½ fork.

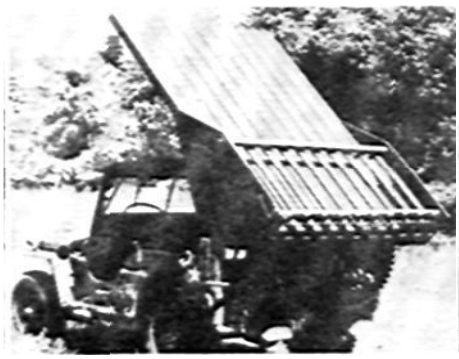
If either the depth or width of an area target is appreciably less than 4 PE, the target could be attacked more efficiently with howitzers or guns.

Fire Direction

The principles and procedure of fire direction as laid down in the field manuals apply for rockets with only a few minor changes. In the battery FDC there is a combination Horizontal and Vertical Control Operator. After the executive order is given, the computer can alert the platoon by giving pieces to adjust, shell, and fuze. After horizontal

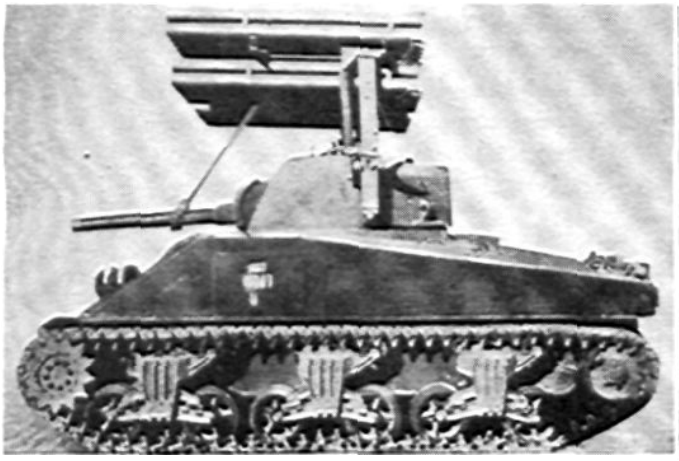


Navy automatic launcher.



Navy 10-rail launcher mounted on a jeep.

This T-32 launcher fires 7.2" rockets.



Launcher T-34 mounted on an M-4 tank. This job has 60 tubes. After firing, the entire launcher can be jettisoned so as not to hinder the tank in its primary mission.

Launcher M-17 mounted on an M-4 tank. This launcher fires 7.2" rockets.

control operator data is given, the base deflection shift, deflection difference, method of fire, and number of rounds are given. The pieces cannot be laid for elevation until all rounds are loaded. During this time necessary to load, the Horizontal and Vertical Control Operator has sufficient time to compute sites. We save one man in the fire-direction center but lose the advantage of duplicate charts.

Fire capabilities overlays are sent from battery to battalion. In view of the fire power of even a platoon, the fire capabilities of all platoons are entered on the battalion chart. To avoid confusion, the usual color scheme of red for "A," black "B," and blue "C" is used. Fire capabilities of platoons are differentiated by using solid lines for the first platoon and dotted lines for the second platoon.

ROCKET BATTALION S-3 TARGET DATA

DATE _____ BATTALION _____

TIME _____

FIRE ORDER FROM SUPPORTED UNIT*	S-3 ORDER TO BATTERIES *
1. COORDINATES _____	1. NATURE _____
2. DIMENSIONS WIDTH _____	_____
DEPTH _____	2. COORDINATES BY BATTERY
3. NATURE _____	A _____ ALT _____
_____	B _____ ALT _____
4. MISSION _____	C _____ ALT _____
_____	3. UNITS TO FIRE _____
5. TIME TO OPEN FIRE _____	4. NUMBER OF VOLLEYS _____
_____	5. AMMUNITION AND FUZE _____
6. DURATION OF FIRE _____	6. SHEAF _____
7. AMMUNITION AND FUZE _____	7. RANGE SPREAD _____
8. CONCENTRATION NO. _____	8. TIME TO OPEN FIRE _____
	9. CONCENTRATION NUMBER _____

* IF THE TARGET IS OF SUCH SIZE AND NATURE THAT IT CAN BE ATTACKED PROPERLY BY ONE BATTERY, THE FIRE ORDER FROM THE SUPPORTED UNIT IS MERELY REPEATED TO THAT BATTERY. IF MORE THAN ONE BATTERY IS REQUIRED, THE BATTALION S-3 WILL PREPARE AND SEND TO THE BATTERIES THE S-3 ORDER.

Figure 7

DATE _____ COMPUTER RECORD BATTERY _____

TIME _____ PLATOON _____

PLATOON FRONT _____

SUPPORTED UNIT ORDER

COORDINATES _____ ALTITUDE _____

DIMENSIONS-WIDTH _____ DEPTH _____

NATURE _____

MISSION _____

TIME TO FIRE _____

DURATION OF FIRE _____

AMMUNITION AND FUZE _____

CONCENTRATION NUMBER _____

BATTALION S-3 ORDER

NATURE _____

COORDINATES _____ ALT _____

UNITS TO FIRE _____

NUMBER OF VOLLEYS _____

AMMUNITION AND FUZE _____

SHEAF _____ RANGE SPREAD _____

TIME TO FIRE _____

CONCENTRATION NUMBER _____

EXEC. FIRE ORDER

CORRECTIONS TO USE _____

AMMUNITION AND FUZE _____ DEFL. CORR _____

CONCENTRATION NO. _____ SHIFT _____

UNITS TO FIRE _____ TOTAL _____ _____

METHOD OF FIRE AND NO. OF ROUNDS RANGE _____

ELEV FOR RS _____

_____ RANGE SPREAD _____

SITE _____

SHEAF _____ RANGE SPREAD _____ TOTAL _____ _____

TIME TO OPEN FIRE _____

COMMANDS

PLAT. ADJ. _____

SHELL _____

FUZE _____

RD _____

CH # _____

MT _____

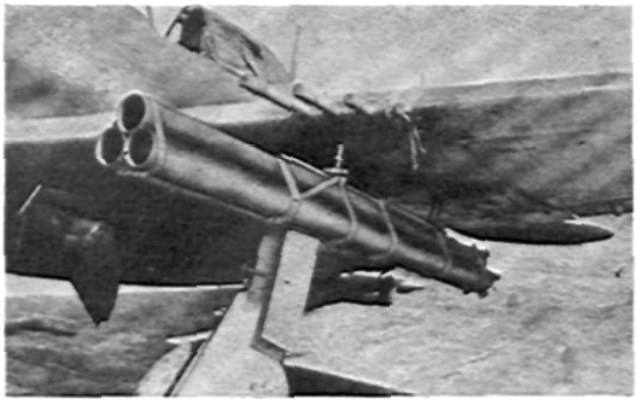
ELEV. _____

Figure 8

In assigning missions to rocket units the artillery headquarters must give location, dimensions, nature, time to open fire, and concentration number. If the mission, duration of fire, and ammunition are not obvious or are unusual, appropriate mention is given in the fire order. Fig. 7 is a suggested check list for the battalion S-3 to record fire orders and prepare his own fire order to the batteries. Much of the data in the S-3 order will be the result of decisions arrived at in accordance with the attack-of-targets discussion given above.

A suggestion computer record for platoon computers is shown in Fig. 8.

If the deflection correction scale were constructed with a



4.5" aircraft launcher M-10.

line indicating every change of drift, a rather profusely marked-up range deflection fan would result. Deflection corrections are therefore indicated at intervals of 500 yards above and below the check point range. Interpolations are made for deflection corrections at intermediate ranges.

PUBLICATIONS

Training Circular No. 19, War Department, 25 April 1945.

TB 9X-98 4.5-inch Rocket Launcher T-66.

TB ORD 236 4.5-inch Rocket T-38E3 and T-39E3. (These rounds have been standardized and are now known as M-16 service round and M-17 practice round.)

TM 9-393 4.5-inch Rockets, 4 October 1943.

AGF Tests, Rocket Battalion (Tentative).

FUTURE OF ROCKETS

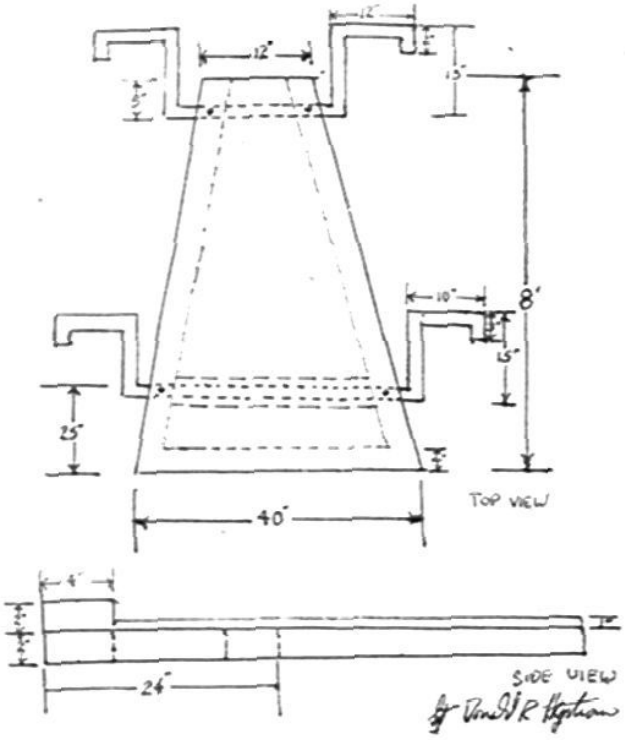
From the foregoing comments we can conclude that from the standpoint of ground forces, tactical usage of the rocket is limited by the large probable errors, short ranges, small caliber, and relative inability to conceal the position. Once the propellant has burned in a rocket projectile, the flight is similar to any artillery shell's. The large probable errors are the result of reactions during the burning distance of a propellant. A tube equal in length to the burning distance would help, but a 100- to 300-foot tube is absurd. A scientific study of the conditions causing the great dispersion and a means of correction is thus one problem for the future. Longer ranges and larger calibers are certainly in the offing. But not until these problems are solved will the rocket launcher come into the same class with guns or howitzers.

"TRAIL FLOOR" FOR 8″ HOWITZERS

Our battalion is equipped with 8″ howitzers and M4 tractors. We find our biggest problem is where to put the section equipment, and also the personnel and their belongings.

Pfc. Joseph Soldano has worked out the solution shown here. It takes advantage of a lot of space otherwise dead, and is very light.

LT. GORDON W. BRIGGS, FA



The Battle of Okinawa

An Artillery Angle

By Col. Bernard S. Waterman, FA

The battle of Okinawa began with the sort of preliminaries which have now become usual in the Pacific, with the U. S. Fleet sweeping through the Ryukyus during the last week in March and both Army and Navy air arms battering airfields on Formosa and Kyushu, from which the Japs might have been expected to mount formidable air resistance to our Okinawa landing. The pre-landing air and naval bombardments were then followed on March 26 by 77th Division landings in the Kerama Retto, a tiny group of islands facing the west coast of Okinawa, in order to secure the western approaches to the selected landing beaches on that coast. They also seized Keise Shima, a sandy little island about 9,000 yards northwest of Naha, the principal Okinawa city. This island was to be used for the emplacement of two battalions of 155-mm guns from the XXIV Corps Artillery. For orientation with respect to certain words which constantly recur in any narrative of operations in Jap waters, I had better explain that a retto is a very small group of shimas, a gunto is a large retto, and a shoto is a large gunto.

First Landings

Two battalions of 155-mm guns were placed ashore on Keise Shima on L—1 (31 March), from which vantage point they were able to cover the landing areas on Okinawa and the whole southern portion of that shima—the portion containing about four-fifths of the inhabitants of the island. As it later developed, this was the area in which the Nip had elected to make his stand. According to reports from the gun group, Keise was so small that if they had one more gun it would have been necessary to emplace it in the water. They dug in rapidly and not a moment too soon, for that night—Saturday night—they received the first foretaste of a type of Jap artillery combat which was totally unexpected, and unlike anything we had previously experienced—an appreciation of our own technique of massing fires. Each Saturday night thereafter, while the group remained at Keise, they received a similar serenade. Surprisingly little damage resulted from the hundreds of rounds the Japs poured into the little island. A direct hit in a gun pit damaged the bogie and recoil system of the gun, but despite the fact that the entire crew was in the pit at the time, only one man was scratched.

On L-day we watched the initial landings from the vantage point of the bridge of an LST. At 0800 landing craft loaded with doughboys began to circle in the transport area. Soon they turned shoreward, and as the first wave approached the beach an awesome display of fireworks rose from our rocket and mortar craft, pouring a deluge of

Leatherneck cannoneers use a variety of positions and expressions in cushioning the concussion of their 155-mm howitzer on Okinawa.

explosives onto the beaches. The uninterrupted swishing roar of rocket fire continued until the infantry landing craft merged with the shoreline. Astonishing reports then began to flow back to the ships that opposition was practically nil. By the middle of the morning both Kadena and Yontan airfields had been overrun, and shortly before 1500 DUKWs bearing light artillery were seen to launch from LSTs in the transport area.

Early on the morning of L + 1 the ships bearing my group of three 155-mm howitzer battalions started shoreward. Several of the ships beached immediately on the edge of the reef; the others hove to offshore. Group and battalion reconnaissance parties proceeded shoreward. We assembled on the beach and I dispatched the battalion commanders to reconnoiter position areas which had been selected from map and photo reconnaissance.

The Plan

Let us take a moment to summarize the corps plan of attack and the artillery plan as it affected my group, so as to understand more readily the pattern which dictated our tactics. The initial landing of the corps was made with two divisions abreast. The left division—the 7th—was to push directly eastward and cut the island in two, while the 96th Division on the right expanded the beachhead south and southeast, protecting the right flank of the army. The III Phib Corps, landing on the left of our XXIV Corps, secured our left flank. After the interior division of each corps had cut through to the east coast the XXIV Corps was to turn south and the III Phib Corps north to deal with the separated Jap forces.

The mission of the medium group of the XXIV Corps Artillery—my group—was general support of the corps, with the secondary mission of reinforcing the fires of the division artilleries. To accomplish this secondary mission

one battalion of the group was designated to establish liaison with and deliver reinforcing fires for each division; the remaining battalion, directly under group control, was to be prepared to provide further reinforcing fires to either division.

With this mission in mind we selected a position near Kadena airfield for the battalion reinforcing the 7th Division, with its field of fire generally southeast, and one near Fuenzan, facing south, for the battalion reinforcing the 96th Division. We planned originally to put the general support battalion in the area between Nozato and Sakugawa but by noon of L + 1 the 7th Division, meeting negligible resistance, had swept east so rapidly that the pivoting southward of the corps seemed imminent. Therefore we selected near Fuenzan a position from which we could shoot south. The group CP was established just north of Fuenzan.

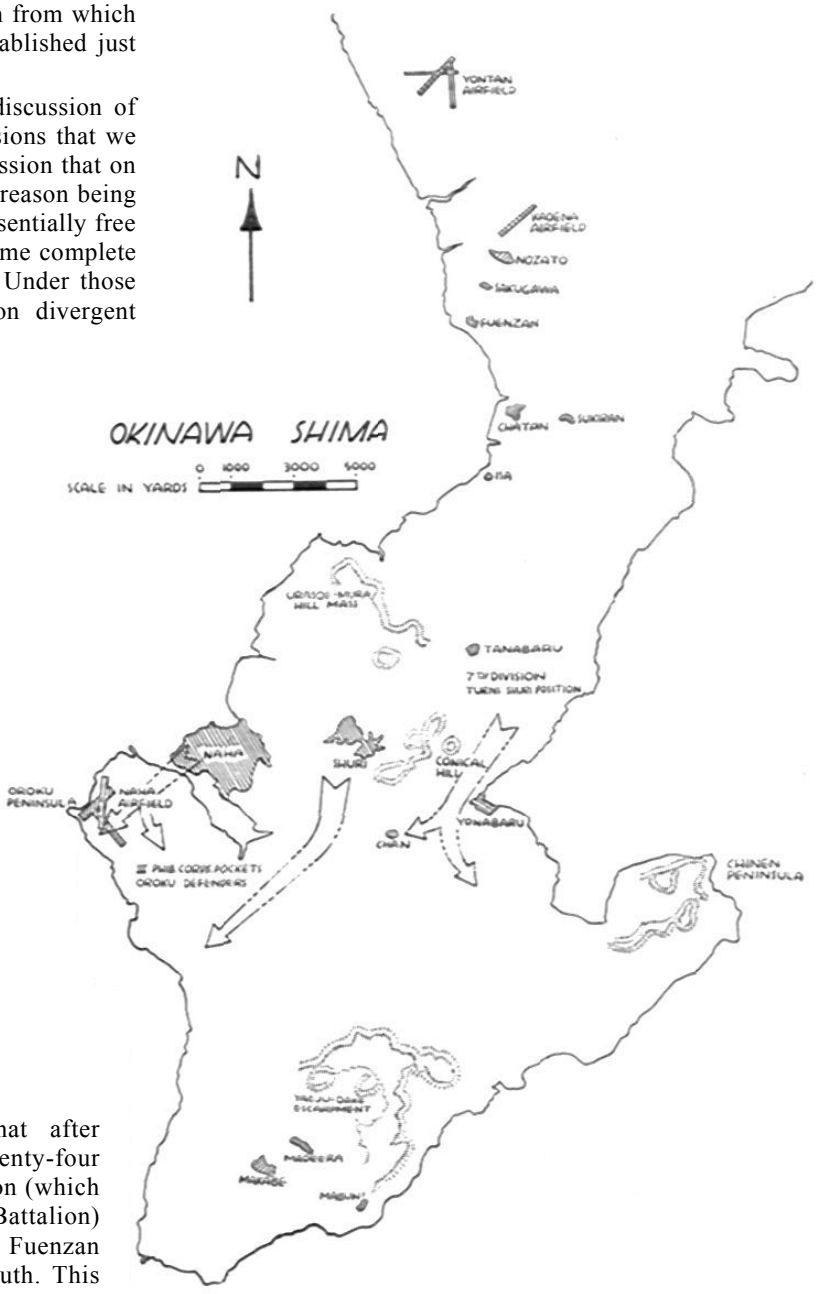
It may perhaps seem from the foregoing discussion of our plans for reinforcing the fires of the divisions that we were placing more stress on our secondary mission that on our primary one. In a sense this was true, the reason being that in the landing phase the divisions were essentially free agents, and the corps commander did not assume complete control until the island had been cut in two. Under those circumstances, with the divisions moving on divergent courses, direct reinforcement was the only means for lending effective support to the advance. An east-west line across the island was soon established, corps headquarters assumed control, and the direction of corps artillery was centralized in its commander.

MOVING SOUTHWARD

The Okinawa climate provided us with the most pleasant surprise of the operation. Coming ashore we noticed a crispness in the air reminiscent of New England. Orientation pamphlets issued to the troops on departure from Leyte painted a most unattractive picture of a hot, muggy, semitropical country abounding in poisonous snakes, flies, mosquitoes, and typhus-bearing mites. Instead, we found a bracing freshness in the air that filled everyone with vigor. It was a delightful sensation to our troops, many of whom had been three years in the tropics. The nights were bright and crisp, and often downright cold. During the month of April there was little rain. More ideal fighting weather could scarcely be imagined, since it was never so cold as to cause any discomfort.

So rapidly did the situation move that after occupying its initial position for less than twenty-four hours the battalion reinforcing the 7th Division (which will hereinafter be referred to as the Zth Battalion) moved south to a position one mile cast of Fuenzan and prepared to support the attack to the south. This placed all three battalions on the same east-west line.

Meanwhile the attack southward had met with little opposition. As soon as the 7th Division had drawn abreast of the 96th a coordinated attack by the corps was planned, with the high ground in the vicinity of Tanabaru and Urasoe Mura (*Mura* means township) as its objective. Due to the lack of serious opposition a feeling began to pervade the command that the Japs had been caught with their pants tightly entwined around their ankles; it was fully expected in higher circles that the objective would be quickly overrun. This objective was very nearly at the maximum range of our battalions from their positions around Fuenzan, and it was apparent that we could not bring effective fire on the area south of that objective in



the event of a counterattack. We were therefore ordered to displace forward.

Scarcely had the infantry cleared the town of Isa on 4 April, the day of the coordinated attack, than our general support battalion (hereafter called the Xth Battalion) moved in and went into position. During the afternoon the Yth Battalion, reinforcing the 96th Division Artillery, displaced forward to a position east of Chatan and group headquarters moved up adjacent to the Yth Battalion. On the following day the Zth Battalion, following the center of mass of the 7th Division, moved up to a position east of Sukiran. We were thus fully prepared, as of 5 April, to repel a counterattack on our troops holding the Urasoe Mura hill mass. It was not until exactly one month later that our troops clambered up onto the Urasoe Mura escarpment to stay. That wily Oriental, the commander of the Thirty-second Jap Army, had planned his defenses exceedingly well. It is not clear why he chose not to defend against the initial landing, where he might have inflicted heavy casualties on us while we were not vulnerable—but where he chose to defend he defended skillfully and desperately.

75-mm howitzer of the 1st Marine Division, emplaced just off the Okinawa beach on L-day.

JAP USE OF ARTILLERY

It was about at the beginning of the phase described in the preceding paragraph that it first became evident the Nip had learned some lessons about the use of artillery. We were taken by surprise when enemy shellfire began to fall in the artillery areas with alarming regularity. I do not mean to infer that we were not dug in or were otherwise physically unprepared for such an eventuality, but we were not mentally conditioned for it after two previous campaigns in which the Jap artillery had been a negligible factor.

We very quickly got mentally conditioned. Heavy concentrations of shellfire rained down nightly on our front line troops, artillery, and CPs. It was evident that the Japs were using some method of flash ranging. During April they also held all the high ground, and movements of our troops, particularly in the eastern sector which was under observation from the Chinen Peninsula and the high hills east of Shuri, evoked an immediate reaction from the enemy artillery. There were clearcut indications, however, that the Japs were still unable to mass the fires of a large number of guns on a single target, since the rate at which shellfire arrived seldom indicated more than a four-gun battery in action on an individual target. This may have been the result of lack of communications or inadequate technique, or both. We do know from PW statements that our own fires played hob with Jap communications. In this connection it is puzzling that the mole-like Nip, despite his penchant for digging, never seems able to install a network of buried wire communications which will be proof against artillery fire.

Jap artillery plans showed evidence of careful and intelligent preparation. There were an extremely large number of guns available for the defense—the 42nd FA Regiment, 7th Heavy Artillery Regiment, 100th Heavy Artillery Battalion, 1st Medium Artillery Regiment, and the 23d Medium Artillery Regiment, plus at least four battalions of 75-mm dual-purpose guns—numbering a total of perhaps two hundred guns, exclusive of the large numbers of infantry cannon and mortars of all types. Many of these guns were kept in caves and run out to one of several revetted emplacements for firing. Others fired directly from caves. Both artillery and mortars were registered on key terrain features for emergency barrages, and our infantry never failed to receive heavy fires immediately on seizing a hill. Some important hills were taken and lost again as many as seven or eight times before being permanently secured.

COUNTERBATTERY

Methods

With the beginning of the southward push and the increase of enemy artillery activity, corps artillery became increasingly occupied with counterbattery missions. Our liaison planes were used extensively for search of suspected enemy battery locations, spotted from photos or from sound or flash ranging. The observation battalion installed sound ranging bases first, and when some of the hilly terrain was secured they put in flash bases. Sound and flash ranging proved extremely valuable for the Japs soon learned to keep their guns hidden in caves until it was too dark for air observation.

That our counterbattery methods proved very effective was later borne out by PW statements. Our preferred method was always precision adjustment by single gun on each located enemy piece, until destruction was obtained. At night, however, we frequently massed the fires of several battalions on a troublesome gun picked up by sound or flash, usually placing a TOT of two or three battalions on the area. We did not expect to obtain destruction by such methods, except by sheer luck, but to cause casualties among gun crews and drive them to cover and thus silence the gun. It usually worked. We made it a habitual practice to have an air observer search the area the following morning to determine whether damage had been inflicted

and to adjust destruction fire. The observer would often find an empty gun emplacement at the location, indicating that our fire had driven the gun to cover.

Results

One very interesting counterbattery problem presented itself early in the game. The Japs repeatedly placed long range 150-mm fire on Yontan and Kadena airfields at night. Our tactical air force was using these fields extensively, and in addition the CPs of both corps and army were located close by. Each such shelling brought forth immediate demands upon corps artillery for action against Yontan Pete, as the gun came to be known. It was seldom possible to fix the location of the gun doing the firing, but the general area from which the fire was coming could usually be determined. Corps artillery therefore devised a series of plans to cover known enemy artillery positions in various sectors. Each plan was given a letter designation—practically from alpha to omega. The fires were allotted to groups and in turn suballotted to battalions, which prepared firing data in advance. When enemy fire was received in the Kadena area corps artillery ordered the execution of the plan covering the area from which the fire was coming. This usually succeeded in silencing the offending gun, which is proof of the pudding.

An interesting story has come to light dealing with the last ride of Yontan Pete. Both sides of this tale are now available, and it serves as an excellent illustration of the effectiveness of our methods. One night early in May we had laid the entire corps artillery on plan Peter Xray to lie in wait for Yontan Pete. About the middle of the evening the officer on duty in the corps artillery fire direction center was galvanized into action by the whistle of the Yontan express passing overhead. He leaped for the phone and yelled: "Plan Peter Xray," hearing, as he did so, the second section whistling for the crossing. As round number three screamed by and thudded into the airfield, the muffled roar of the entire corps artillery rolled back to the CP and Yontan Pete never rode again. At the end of the operation, when Yontan Pete had been well nigh forgotten, there came into our custody one yellow-skinned second lieutenant who had been a member of the staff of the Thirty-second Army Artillery Command. He had an interesting story to tell. It follows here, though these are not necessarily his exact words:

"We frequently used to shell the airfields at night, using two 150-mm guns and firing them alternately. When American artillery fire would come down on one it would cease firing and the other one would take it up. One night we had set up to shell the airfields. After we had fired only three rounds, all of a sudden the most *terrific* artillery barrage came down. It killed most of the crew and ruined the gun, and we never fired at the airfield again."

And so ends the tale of Yontan Pete.

The effectiveness of our counterbattery precision work can best be judged by the following excerpts from artillery intelligence reports:

A prisoner from an AAA unit, captured about 31 May, stated that his battalion had been equipped with eighteen dual-purpose 75-mm guns (all of which were destroyed), that another battalion still had three of its eighteen guns, and a third was said to have been annihilated. The interrogation report goes on to say: "The PW stated that telephone lines were so constantly severed by our shellings that much of the communication between units was maintained by runner. . . . Many of the men in rear areas were wounded by American shelling, of which artillery had the greatest effect on men and material. . . . The troops are all astounded at the amount of shells used by the Americans and refuse to move about during the day, since 'even the slightest indication of a movement in the Japanese area would bring down a rain of artillery shellings.'"

Another statement by the enemy attributed to the chief of staff of the Jap 62nd Division was as follows: "Once our weapons begin firing their continued existence is not permitted. Though cover may be 30-40 meters high, cooperating airplanes, naval gunfire, artillery, and tank guns destroy the weapons before they can participate in a fire fight."

ACTION IN THE NORTH

The III Phib Corps, swinging to the north after the initial landing, met negligible opposition: the Jap commander had forestalled the splitting of his forces by failing to defend at the beaches. Thus action in the north resolved itself into a mopping-up operation against a force of perhaps 3,000 Japs. Under the circumstances little artillery was needed.

ARTILLERY REGROUPING

Consequently the artillery regiment of the 1st Marine Division and the entire III Phib Corps Artillery (less one 155-mm gun battalion) were therefore attached to the XXIV Corps Artillery. (The artillery of a Marine division consists of a regiment containing three battalions of 105-mm howitzers and one battalion of 75-mm pack howitzers.) The divisional battalions were further suballotted to the division artilleries of the division then in the line. The three 155-mm howitzer battalions of the III Phib Corps Artillery were attached to my group, and the two 155-mm gun battalions were grouped with the 8-inch howitzer battalion of XXIV Corps Artillery under a Marine group headquarters. Within my group each Marine battalion was sub-grouped with an Army battalion, control of the sub-group being exercised by the FDC of the Army battalion. This set-up provided each division artillery with the reinforcing fires of two battalions and permitted the group FDC to mass the fires of six battalions very rapidly almost anywhere on the Corps front.

Later, when the 1st Marine Division was attached to the corps, the division artillery regiment was reassembled. One of our sub-groups was designated to reinforce their fires. Control of this sub-group was shifted to the Marine battalion FDC in the interest of smooth operation with the Marine artillery regiment.

One month after the attachment of the Marine battalions, III Phib Corps took over a sector of the southern front and the III Phib Corps Artillery was reassembled. Our association with the Marines had been pleasant in

every respect, and they proved themselves capable artillerymen.

Breaking the Shuri Bastion

The period between 5 April and 28 May was devoted to breaking through the defenses of the Shuri bastion and wearing down the core of the defense system. The Japanese had intensively fortified the hilly area some 6,000 yards deep before Shuri, and they bitterly contested every yard of the advance. After three weeks, when our forces had pushed about halfway through this belt, our battalions displaced forward an average of 5,000 yards to positions which enabled us to cover the Jap rear areas to a depth of 9,000 yards behind Shuri. On 22 May the 7th Division slipped down the cast coast to Yonabaru and began a drive westward to outflank Shuri. The Shuri position, already endangered by the 96th Division's capture of Conical Hill, immediately began to fold; on 28 May troops of both corps entered the town. Intelligence indicated that the Japs had begun an evacuation to the south on 20 May.

During the last week in May it rained every day; soon the roads were nearly impassable. With the collapse of Shuri the corps made a sudden push southward and by 3 June had moved 7,000-8,000 yards beyond Shuri—practically to the limit of our range. Unable to displace because of the condition of the roads, we found ourselves virtually out of the fight. Only the heavy group of the corps artillery, which had come over from Keise Shima at the end of April, was able to continue effective fire. The rains continued, but since the infantry was meeting only light resistance as it pushed southward our fire was not urgently needed. The Engineers labored unceasingly on the roads, so on 7 June we were able to displace the Zth Battalion forward to Shuri though it took an entire day to complete the movement of about five miles.

Yaeju Dake Escarpment

Meanwhile, the infantry had driven rapidly south until, on reaching the Yaeju Dake escarpment, they began to meet more determined resistance. In this push the Chinen Peninsula and five miles of the heart of the island south of the vital Naha-Yonabaru road were engulfed. During this period the III Phib Corps crossed the estuary at Naha and swept up the Naha airfield. The Japs put up stubborn resistance to this move. The left flank of that corps had moved south of the Naha-Yonabaru road, paralleling the XXIV Corps, and it now reached out to the west coast south of the center of Jap resistance on the Oroku Peninsula, effectively pocketing the Japs at the base of this peninsula.

As the corps began to develop an integrated Jap line of resistance in the Yaeju Dake area the need for corps artillery once again manifested itself. Orders were issued by the corps commander, directing that the rest of the group displace forward. The displacement was begun on 8 June over roads which were nothing but ribbons of mud. So difficult were the road conditions that it required until 11 June to complete the movement. I made my reconnaissance in an M-5 tractor—which, incidentally, makes quite a fine reconnaissance vehicle when the roads become impassable to wheeled traffic. After having located a group CP and two battalion areas I went back to drag the remaining vehicles of my party through the most impossible sections of the road near Shuri. During this transitional period fortune and the weather man continued to smile on us and there was no rain. Noon of 11 June found us in positions centered generally around the town of Chan, prepared to support the corps assault on the Yaeju Dake escarpment, which promised to be the scene of the enemy's last stand.

Tomb-and-cave positions plus coral-rock walls gave the Japs a high degree of protection. Army troops had to be just as cautious as this Marine, when approaching and cleaning them out.

As the assault on this last escarpment commenced it quickly became apparent that the Japs were hanging on the ropes. Though viciously defended, this line did not have the closely integrated barriers of fire which had made the Shuri position so nearly impregnable. Much of the Nip firepower had melted away, too, under the heat of our artillery, naval gunfire, and air bombardments. Tanks were able to deliver direct fire on caves in the face of the escarpment at point-blank range. Our artillery operated unmolested by counterbattery fire, our infantry met but little shellfire. Within four days our troops were firmly established on the plateau atop the escarpment. This table-top was rapidly swept clean, leaving the enemy only one terrain obstacle for a final suicide stand—the Makabe-Medeera-Mabuni area, a region of rugged and forbidding coral heads.

FINAL OPERATIONS

Again the Japs resisted desperately from their caves and crags, but without coordination or hope. The artillery heavily interdicted the Mabuni area, where the Thirty-second Army CP was thought to be located, and the Mabuni-Medeera road net. A twenty-two battalion TOT was placed on the town of Makabe. On 21 June the last organized resistance had been crushed; the island was declared secure.

As the battle drew to a close loud-speaker-equipped LCIs and tanks broadcast instructions to the Japanese military and civilians to take prescribed surrender routes into our lines. The first such broadcast netted only three bullet holes in the loud speaker, but soon the broadcasts began to take effect: people streamed out of the rocks. An interesting psychological factor now began to manifest itself. A generous portion of these voluntary capitulators were soldiers!

Supporting Army artillery on Okinawa, this Marine 105 howitzer crew used its paulin for protection from sun, wind, and rain.

The smashing of the last organized resistance did not end the struggle. As an intensive mop-up campaign was begun, the existence of an enemy plan for infiltratration to the north (and probable eventual guerrilla warfare in the mountains) soon evidenced itself. So heavy was the infiltration that the pattern of Japs killed began to display sharply defined lines of drift. To exaggerate only slightly, the flow of infiltrators began to take on the aspect of a traffic jam. The battalions of corps artillery were responsible for the patrol of areas within a thousand yards of their positions. Their aggressive patrolling netted a good many fish. In one day one battalion liquidated forty-four and another twenty-seven. Others not so close to the established lines of drift made smaller hauls. These Japs, for the most part, showed little fight. Most were armed only with grenades, which many preferred to use on themselves. Quite a few surrendered quite docilely when cornered. Conceivably more might have been induced to surrender had there been interpreters on hand to coax them.

IMPORTANCE OF THE GROUP

In this operation the group came to the fore as a definitely important part of the artillery structure. In previous operations within my experience the corps artillery headquarters had only a small number of battalions under its control and occupied itself solely with artillery fire direction, making the group seem an unnecessary link in the chain of command. During this campaign, however, the picture was entirely different. The corps artillery commander had under his control not only a very large number of artillery battalions, but also the direction and coordination of naval gunfire and tactical air support. It was thus impossible for him to exercise close supervision over fire direction, so the group, as an echelon concerned solely with the artillery, performed this function.

RESULTS

Thousands of words will be written on the significance of the battle of Okinawa, and numerous correspondents will refer to it as "one of the bloodiest chapters in the annals of American history." To military minds, of course, the most immediate significance hinges on the tactical and technical lessons learned. Briefly, we learned that the Japs can dig themselves in. They learned that we can dig them out. We learned that they know a little about the value of massed artillery fire. They learned that we know a little more. Of course, so vital a subject cannot really be given such a facetious brushoff; the results of these lessons will be amply demonstrated in the near future.

The strategic significance of this struggle is obvious. We paid the necessary price for an extremely valuable piece of real estate from which our air force may well reduce the Japanese war machine to feudal stature. We facilitated the passage of some ninety thousand Japanese soldiers and sailors to the presence of their honorable (?) ancestors. And perhaps most significantly of all, we produced the first crack in the facade of Japanese military tradition—the voluntary surrender of thousands of Japanese soldiers.

"BIG EIGHT"

Officers of the 780th Field Artillery Battalion propose "Big Eight" as a nickname for the 8″ Gun, M1.

"'Long Tom' became widely known as a descriptive and popular identification for the 155mm Gun, M1. 'Big Eight' as a name for the longest-ranged mobile Field Artillery weapon would, if popularized, eliminate confusion with the 8″ howitzer, and provide a convenient term for conversation and non-technical discussion," say the proponents of this name.

Do other "Big Eight" outfits agree?

Fighting the Nips—With 105's

After more than two years of stateside training which included the deserts of Arizona, the swamps of Louisiana, and the mountains of West Virginia, the 902nd Field Artillery of the 77th Infantry Division landed on the beautiful island of Oahu to complete our training for operations against the Japs in the Pacific. We soon found out that we still had deficiencies despite the thought in every man's mind that we were "over-trained."

Amphibious Phases

Inasmuch as all combat in the Pacific has been characterized by numerous amphibious landings and since it is most probable that there will be more before the defeat of the Japanese Empire, I would like to pass along some observations and unit experiences that might in some way prove of help to those units destined for operations in this theater; and to those who have already done their part it may prove of some interest as a matter of comparison to their own experiences.

Each amphibious operation differs in so many respects that I will say a little about each one that this unit has participated in to date. All have been successful, and certainly speak well for the high development of coordination between the Army and Navy.

Guam

Our first landing was made on the Southern Beachhead of Guam with the First Provisional Marine Brigade. The loading for this operation was more or less standard, in that our Headquarters Battery minus the initial communications and fire direction equipment was embarked on the CT flagship. The initial communications equipment and fire direction personnel were loaded aboard three DUKWs on the LST with the three firing batteries. Our Service Echelon loaded on the CT AKA with all organization equipment not needed for the initial assault phase. Each firing battery had its equipment loaded on five DUKWs. A portion of the Ammunition Train was embarked on the LST to handle the three units of fire aboard. In addition, all supply and kitchen personnel of the headquarters and firing batteries were made ammo handlers to expedite the unloading of the ammunition and—believe it or not—we had the naval crew assisting before the ship was unloaded.

The principal obstacle encountered in getting ashore was the wide, treacherous coral reef that formed a barrier around the island. The first few loads had to leave the LST before it could be beached, necessitating long hauls from the transport area to the position area. Initially we had 50 rounds of ammo on each DUKW but upon arrival at the target and seeing the surf and reef conditions we wisely decided to cut down the load by 25 rounds. I say it was wise because in a later operation we found that 50 rounds of ammo, in addition to the howitzer and section equipment, along with personnel, can be too much of a load for a DUKW in deep water.

For the Guam operation we had our own DUKWs, driven by our own prime mover drivers and maintained by our own mechanics. Due to a shortage of transportation on the target we were soon relieved of them and not until after the island was secured were they returned to us. Then they were in a sad state of repair from rough usage and lack of proper maintenance.

For the next operation a different system was used. Not until the battle was over did we see any of our own DUKWs, and of course this time they were in such bad shape that we were able to make only three seaworthy ones out of the group. At the present time we still have those as a part of the organic transportation in the organization. Like all other newly developed vehicles, the DUKW has some "bugs," but it nevertheless proved to be a more than satisfactory piece of equipment for landing the battalion and its necessary ammo and equipment on a hostile shore.

DUKW bringing a 105-how ashore

It does require an enormous amount of maintenance and attention, though, so it is impractical to have them permanently assigned as organic transportation because under the present T/O you just don't have enough maintenance personnel to properly care for them in addition to the normal transportation.

The wheeled vehicles were brought ashore as soon as the LST was able to "beach" on the reef. They were either driven in under their own power or towed in at low tide.

By Maj. Eugene R. Smyth, FA

The conventional water-proofing is entirely satisfactory if properly and carefully applied. We had two vehicles drown out simply because the driver and mechanic had not been careful in their application of the deep fording materials.

Leyte

Our assault landing just below Ormoc differed from the Guam landing in that all equipment and supplies for two days' operations behind the Jap lines had to be unloaded from the naval vessels by H + 2 hours. Consequently everything to be taken had to be pre-loaded on some mobile vehicle. That made it necessary for us to take an absolute minimum of equipment, and therefore serious thought had to be given to the loading plan.

Our battalion was selected as the only artillery for the initial assault landing, and we faced the problem of supporting the entire division for two-days with a field of fire of 6400 mils. On several occasions we fired simultaneous missions at three opposite points of the compass. For this landing we had attached to us a platoon of DUKWs from a colored company, so that at least our worries were over insofar as the availability of the driver and maintenance personnel was concerned. Again the battalion was loaded on an LST, which incidentally was the largest size vessel in the task force.

Also attached to us for the purpose of making our ammo supply entirely mobile was a platoon of amtracks. We found that it was necessary to slightly overload all transportation in order to take with us the two units of fire we thought essential for such a daring operation. It was here that we learned the hard way that 50 rounds of ammo in addition to a howitzer and its section equipment was too much of a load for a DUKW in deep water. If prior to this experience someone had told me that an artillery battalion could successfully operate with such a minimum of equipment I would have thought the individual was at least slightly "wacky."

Due credit should be given to the colored DUKW drivers. They proved an invaluable addition to the battalion. We used the vehicles for prime movers and supply vehicles, and in their spare time these drivers evacuated wounded from the forward aid stations.

Okinawa Gunto

Our battalion didn't debark for the Keramo Retto phase of this operation, but for the second phase (which was the island of Ie Shima off the northeast coast of Okinawa) we landed on a small island some 8,000 yards offshore from Ie on D—1 so that we could support the assault on D-day. DUKWs were the only transportation brought ashore because we had no need for any other. From the lesson learned on previous landings we again had a platoon of colored drivers attached to us. This landing proved to be a new combat experience for us as the island was unoccupied by the enemy, and therefore it seemed more like a service practice to the cannoneers. As soon as Ie Shima was secured the battalion rebarked on the LST and soon unloaded over a secured beach and moved into the lines on Okinawa.

LOCAL SECURITY AND CAMOUFLAGE

In this theater local security is very important to any field artillery battalion because of the fanatical enemy that we face. Almost all artillery units have at some time or other proven that they can protect themselves from enemy infantry, infiltrators, suicide demolition squads, and air attacks.

On Guam we were very fortunate in having absolutely no air opposition and practically no artillery opposition, due no doubt to the excellent naval preparation and air support. Due to the lack of enemy opposition in the air and also the wonderful natural camouflage available in the jungle no use was made of artificial camouflage. Because of the marshy nature of the ground it was almost impossible to dig in any installation larger than individual foxholes. I am sure, though, that if we had encountered any artillery opposition we would have managed some sort of protection other than the bunkers we had scraped around each major installation with a bulldozer. All personnel were dug in to the extent that they were afforded protection from small arms and light mortar fire, and every man occupied these holes even though it meant spending almost every night in a muddy bathtub.

Because of the limited size of clearings in the jungle a relatively small battalion position was occupied, enabling us to establish a "tight" battalion outer defense rather than a group of battery defenses. All personnel that didn't have essential jobs within the defenses were placed at night in the circle of outpost foxholes, and fields of fire were cleared insofar as the jungle growth permitted. All machetes and axes were put to good use; occasionally we were able to borrow power saws from the engineers to clear heavier growths, especially in front of the howitzers.

Beyond the outer circle of foxholes various warning devices were employed, and as many different ones were used as time and materials allowed. We used tin cans with stones strung on trip wires, trip flares, and most of the time hand grenade booby traps. It might be well to add here that the flare is the least desirable unless under a fair sized attack because it discloses the location of your own installations.

Of course all the automatic weapons were used in the defense. For antipersonnel uses the T/E .50-cal. MG is unsatisfactory due to its size and greater tendency for jamming. We were fortunate to obtain several light 30s, from the Marines on Guam, which proved to be ideal for the purpose; these have accounted for several Nips who dared venture up to our defense. In addition to the light .30-cal. MG I would recommend that each battery have a minimum of four BARs and several M1s in lieu of some of the carbines. The M1 not only can be used on the perimeter but is valuable to the forward observer and liaison parties. We have made battlefield recovery of sufficient M1s for this purpose.

Against the Japs a defense of booby traps and automatic weapons properly manned is not complete without a dusk and dawn "termite" patrol. This patrol was found necessary to clear the immediate vicinity of snipers, armed not only with rifles but with knee mortars and grenade dischargers

as well. The Nip is very proficient with a knee mortar and has cunning ability for infiltration and hiding out in small holes and caves. We made it a practice to blow in all holes and caves around our defense that afforded any possible hiding place; for that reason artillery personnel should be well trained in the use of demolitions. It proved to be a weakness in our pre-combat training; another was the lack of infantry squad tactics in patrolling. We realized these deficiencies in the Guam campaign and as soon as the island was secure we immediately instituted a training program, with many practical exercises because there were still small isolated groups of Japs remaining to practice on.

Even with all the precautions of a "tight defense" the crafty Nip still manages to sneak in on you and all individuals must be prepared to meet such a suitation. The so called "rough and tumble" fight training that we had has saved many lives. For protection of friendly personnel all hand grenades of the fragmentation type should be on the defense line.

Another lesson that we learned is that the pistol is an excellent defensive weapon for fighting the Nip that manages to get up to your foxhole at night. The most powerful close defense weapon is the 105 howitzer; on one occasion one of our firing batteries used a howitzer with good effect firing HE at a range of 100 yards. Since then we have been issued canister but so far have not had to use it.

The matter of air defense did not present itself until we reached Leyte, where we were dive bombed, strafed, and attacked by paratroopers. We have credit for assisting in shooting down two low-flying bombers that strafed our position. The only damage that we have suffered so far from these attacks was a near bomb hit on our fire direction center that caused a few personnel and material casualties. For air defense we have found that the fire power of the .50-cal. MG is most effective if the pieces are employed in pairs.

Some ridges on Okinawa have as sharp spines as are found in the Blue Ridge section of Virginia, or the Rockies of our West.

Here on Okinawa we have an added security problem in that we receive intense artillery fire and the enemy has generously emplaced many and various types of mines. All batteries are well echeloned with all installations in the battery well scattered, which necessitates individual battery defenses. The defense is more easily stretched here because of the open terrain. Of course all installations are well dug in and overhead cover is provided wherever possible, with full use made of all natural and artificial camouflage means at our disposal. The Jap has shown us here that he knows almost all of the tricks of good artillery warfare because he fires counterbattery, interdiction, and harassing fires, using all types of weapons from a 37 AT gun up to the 320-mm spigot mortar. Extensive use is made of mines and booby traps, and aside from the conventional types of mines he uses antiboat mines and many large aerial bombs buried in roads and trails. Due to this fanatical employment of mine warfare we had to dust off the mine detectors and make full use of them.

Okinawa's terrain is quite typical of the scenes of our future fighting. Open and gently rolling, this bit of countryside is much like a great deal of our own.

One last word of caution in regard to local security: *do not* use flares unless you are actually under attack, because whenever a flare goes up the Nip zeroes in his artillery and mortars on that point. We have had instances of infiltrators coming in close to our position and shooting up flares for the express purpose of marking our position for the enemy artillery. We also had a case of two Japanese women setting fire to a house in our position after dark. No sooner had the blaze reached a good height than we became the recipients of some Nip artillery. These latter two instances are again excellent reasons for the "termite" patrol.

COMMUNICATIONS

In jungle warfare a very great dependence was placed on the radio as a method of communication from the position area to the front lines. This was due largely to the fact that wire laid in the jungle was soon cut by infiltrators and by-passed groups. On Guam and Leyte it was difficult for our wire teams to keep up with the rapid advance of the infantry especially since almost all wire had to be laid by hand across difficult terrain.

This Jap mortar of about 12-inch bore was captured in the hills near Rosario, Luzon.

Maintenance of our SCR-609 radios in the tropics became a major problem due to the continually wet weather encountered. We were fortunate in having especially good radio technicians. Batteries were short lived due to the continued use of the sets, but re-supply of batteries was efficiently accomplished by air drop from our liaison planes.

In the jungle it was mandatory that all wire be laid overhead because of the heavy tank traffic on all communications routes. Here on Okinawa the lines must be laid on the ground and cross-country wherever possible because of the artillery opposition. We have found that the vital communication link lies with the command liaison officer at the Regimental CP. We habitually maintain a forward switching central at Regiment with enough wire personnel so that breaks can be promptly traced from both ends. For a radio vehicle we use a ¾-ton WC equipped with SCR-608 and SCR-284. This vehicle also carries an SCR-609 and crew for the command liaison officer, and in addition spare batteries and radios for the liaison and FO officers.

Communication to the front is so vital to the success of artillery support that no set-up is too elaborate for its maintenance and we feel that our efforts have been profitably expended in what may seem to be an abnormally large amount of equipment and personnel. After almost a year in the combat zone we find that it is still necessary to keep after all radio operators on the matter of radio discipline. Spare radios are a must and additional operators are too, because of casualties sustained in combat. On Leyte a near bomb hit destroyed all the radio equipment at the fire direction center and wounded all but one of the personnel, yet another FDC resumed full scale operations within ten minutes because we had the spare radios and had previously trained many additional operators.

Liaison and Forward Observation

Forward observers have directed 95% of our fires. To accomplish this most effectively they must not get involved in fire fights by trying to stay with the leading elements of the infantry company. They can give the best fire support by remaining with the company commander and by selecting the vantage points of observation. But occasionally it is necessary to go with an assault platoon to obtain the essential observation and at times the company commander has sent riflemen with the observer party for protection when it has been necessary to move into an isolated sector for observation. Our infantry has the highest respect for our artillery and demands many close-in fires.

In our jungle fighting at least 75% of the fire was adjusted by sound and our observers soon became very proficient in this method of directing fire. This experience has since proven valuable in the open terrain of Okinawa, especially for adjustment of night countermortar and counterbattery fire. The FO party should have a minimum of five men and if a situation arises where it is necessary to hand-carry all supplies for two or three days it should be further augmented. Both the FO and liaison teams should be armed with some M1 rifles and one or two automatic weapons because all of our liaison and FO parties have at some time or other been caught in counterattacks or have had to help fight off infiltrators. At least two enlisted men in each party must be trained to conduct fire in case of loss of the officer, until a replacement can be brought forward. Forward observers and liaison officers must work together and coordinate their fires in this fluid warfare that the Nip fights. For that reason each observer has a communication channel on his SCR-609 for inter-communication among themselves and with the liaison plane.

Liaison officers must be good shots because they frequently fire missions of all types. The author as command liaison officer has even fired many targets including tanks, personnel, and counterbattery. Forward observers are under direct control of the infantry battalion liaison officer. Frequent visits to the forward observers by the liaison officers and visits to liaison officers by the command liaison are of great value in that problems of each sector can better be coped with when higher echelons are familiar with them.

All liaison and forward observer officers must be advisors to their respective commanders and not "yes men." Target evaluation has been a weakness in earlier training. To obtain the maximum use from the firepower of a CT this evaluation must be stressed. Many targets are better suited for mortars than for artillery, and vice versa. If at all possible we try to let all our observers and liaison officers get a look from the air at the ground they have to fight over. Such a flight in conjunction with a detailed study of aerial photos makes a much better use of artillery fires. I would highly recommend more pre-combat training of target evaluation, with both infantry and artillery officers present on the maneuver area actually using all types of

heavy weapons that are now employed in the CT. It would not only make far better use of artillery and mortar ammo but would make a better fighting team. Medium artillery should also be included in this training.

All artillery personnel forward should be periodically relieved to obtain maximum efficiency. We have made it a practice to use all officers (including the battery commanders) as forward observers and all staff officers as liaison officers. The enlisted men are likewise rotated, even including mess personnel. This system has proved to be very valuable in more ways than one. In addition to keeping fresh personnel up front all the time it makes every man and officer a well trained field artilleryman, and it has increased the efficiency of every individual because it makes each one aware from first-hand experience what our doughboys have to go through. All personnel upon returning from the front have vowed to put forth every bit of effort because they realize more fully that an artilleryman's existence is strictly to assist the doughboy in every possible way. It has also increased the morale of the artilleryman by emphasizing to him the full importance of his job.

Last but not least, our liaison planes have proven invaluable to us. In addition to making almost all of our BP and CP registrations and firing on many targets, they have supplied our forward artillery elements with all types of supplies and supplied the infantry with such things as blood plasma and on one occasion demolitions. They have also saved many lives by evacuation of seriously wounded men from immediately behind the front lines.

Fire Direction

Two fully trained fire direction centers must be available at all times, in case one of them should be knocked out. We accomplish this by having the S-2 keep a complete firing chart and alternate communications in a separate installation. The personnel problem has been solved by using survey and other CP personnel as computers. This proved to be a valuable system on Leyte when the main fire direction center was knocked out; with only a short delay the alternate fire direction was in full operation. One member of the fire direction center must be detailed to keep a running account of ammo and a record of all missions fired. We change the bell tone on each phone in the FDC so that the appropriate one can be picked up promptly.

As mentioned before, practically all fires have been observed by FO and by plane. It is interesting to know that it has taken experience to get the most out of your ammunition by application of proper type of fuze. In the jungle time fire was useless except for HB registration, and in a few spots where the foliage was soft (such as banana groves). We did get time effect with PD fuze using tree bursts. In some instances WP was used with the HE for good effect. Most WP was used to destroy grass huts which the Japs like to use as sniper posts. We had no BE smoke shell on Guam or Leyte, so the few smoke missions fired were WP.

On Leyte where we encountered some open terrain, time fire was the only fire effective in the marshy rice paddies. I personally had two rounds of 105-mm HE with PD fuze land within 5 yards of me in a rice paddy and suffered no ill effects whatsoever. In the assault of Ormoc, which had several buildings of stone and cement construction, we used large amounts of delay fuze. At that time we did not have the new concrete piercing fuze. We have used it here on Okinawa against coral and rock caves reinforced with concrete, but with only fair results. We have run into many strong points where the maximum effect was obtained by using a combination of time, PD, and delay fuze along with WP, because the Jap was established in covered holes, open holes, and pill boxes, all in the same area.

It is logical to conclude from our experiences that many times the observer should designate the proper fuze to be used rather than to leave the choice up to the S-3.

Reconnaissance and Survey

Reconnaissance over here presents some new problems because of jungle terrain and poor maps. The air observer and command liaison officer can make efficient continual reconnaissance, not only for targets but for position areas

Jap cave positions failed to halt landing of troops and supplies on Okinawa.

and points of observation. Any reconnaissance party venturing between artillery areas and the front lines must have security groups when operating in jungle terrain because of the snipers and by-passed enemy. Reconnaissance on Okinawa follows the straight Sill procedure, except that again it is well to have some additional security present.

Survey in the jungles was limited to the position area because all fires were observed, whereas on Okinawa target area survey is possible most of the time. We have always had excellent control from DivArty and Corps.

MAINTENANCE

First echelon maintenance cannot be over-stressed. In the Pacific spare parts and replacements have been difficult to obtain due to the small amount of materials shipped to this theater. The terrain, amphibious landings, and the high humidity in the tropics plus the high salt content of the atmosphere—all are destructive of equipment. Good first echelon maintenance is only obtained through daily inspection by all officers. Incidentally, excellent replacement mufflers can be made from the new metal ammunition container.

HEALTH AND SANITATION

Health and sanitation in the Pacific present an added heavy responsibility on all commanders. All types of diseases are prevalent in this theater. They present such a problem because of the ignorance and poor sanitation facilities at the disposal of the natives. Unless the highest standards are maintained, combat efficiency can be seriously impaired in a very short time. We have spent many profitable hours in training anti-malarial squads and in teaching individuals personal sanitation. Fly-proof box latrines should be constructed as soon as possible, and fly-proof kitchens should be established just as soon as the tactical situation permits. We have learned to take to each new target pre-fabricated sectional kitchens as a part of our organizational equipment. Fly-proof latrine boxes can quickly be constructed from ammunition boxes and oil drums.

Fortunately the Army has made great strides in fly and mosquito control. The aerosol bomb and DDT powder are as important as fire arms, and are powerful weapons when properly applied in insect control. Rigid supervision in administration of atabrine and the anti-malarial precautions that we have taken has resulted in a perfect malarial record for the battalion. We have spent fourteen months in the combat zone and have not had a single case of malaria. We have had some cases of dengue fever, which is very prevalent on some islands. Occasionally we have had a case of diarrhea, generally in an individual who has been away from the immediate vicinity of his battery for some time. Although amoebic dysentry and liverflukes are prevalent over here we have had only one or two cases, occurring in FO parties that had been in the swamps for several days.

Skin diseases are especially hard to control, but they are 99% preventable when all commanders put forth special efforts to see that facilities are available for their men to have water for bathing, and boiling of their soiled clothing. Each battalion supply echelon should carry extra dry socks and foot powder to be issued in combat as the individuals need them. With the excellent medical supplies and facilities available, any undue outbreak of disease is almost always traceable to the failure of command. Here on Okinawa we have been fortunate enough to have C-47s spray the entire area with DDT powder. Due to the large number of rats and the prevalence of rat-borne diseases all personnel should be acquainted with the best methods of rat control; each battery should keep a supply of rat traps and use them.

Just a couple of other general tips. Tin cans should not be allowed to be any place except buried. They hold water and serve as a breeding place for mosquitoes. Several instances have occurred where men have been badly cut when they had to dive for cover and have collided with tin cans that some careless individual had left there. This has led our division commander to have signs posted in the area bearing the slogan "Bury Tin Cans, Not For Looks But For Safety." Another good health hint advertised in our division area is "Wear Your Steel Helmet, Not For Looks But For Safety."

ISLANDS SOUTH AND SOUTHEAST OF JAPAN

By Col. Conrad H. Lanza

Extending slightly east of south from Tokyo Bay is a chain of volcanic islands nearly 750 miles long. The majority have only slight military importance, but a few have considerable value, especially for air and sea operations. The chain has a shallow are form, with the ends curved inward toward the Asiatic mainland. This shape is the same as that of Japan proper, the Kurile Islands, the Ryukyu Islands, and the large islands of the Philippines and Borneo opposite southeast Asia.

The Japanese islands form three groups, which (from north to south) are the Izu Islands, Ogasawara (or Bonin) Islands, and Iwo (or Volcano) Islands. Each group has at least one island militarily important. All three groups have signs of continuous volcanic activity. They are supposed to be a continuation of the volcanic mountains along the transverse lowland, known to geologists as the Fossa Magna, which splits Japan on a NNW—SSE line just west of Tokyo. This lowland is lined with great volcanoes, of which Fuji-yama is widely renowned.

The north end of the Izu islands is just off the entrance to the bay of Tokyo, in about latitude 34 —about the same as Los Angeles and Wilmington, N. C. The southernmost

of the Iwo islands is just north of the Tropic of Cancer, in the same latitude as Key West, Florida.

From their location, their climate varies from mild to subtropical. Freezing temperatures occasionally occur in the north, but the lowest temperature ever recorded is 30° F. The mildness of the climate is due not only to the latitude, but in great part to the fact that the islands lie either in or close to the warm Japan current, which is equivalent to our *Gulf* Stream.

Besides the island chain mentioned there are two detached non-volcanic islands 700 miles off to the east. Opposite the south Iwo island is Marcus, a noted enemy post. The other, opposite the north Izu island, has not been located by our reconnaissance. It appears in Japanese reports with descriptions, but the fact that it has not been identified points to a possibility that it may have ceased to exist since last available report. This entire area is volcanic and subject to earthquakes. Appearance and disappearance of islands are not unusual.

IZU ISLANDS

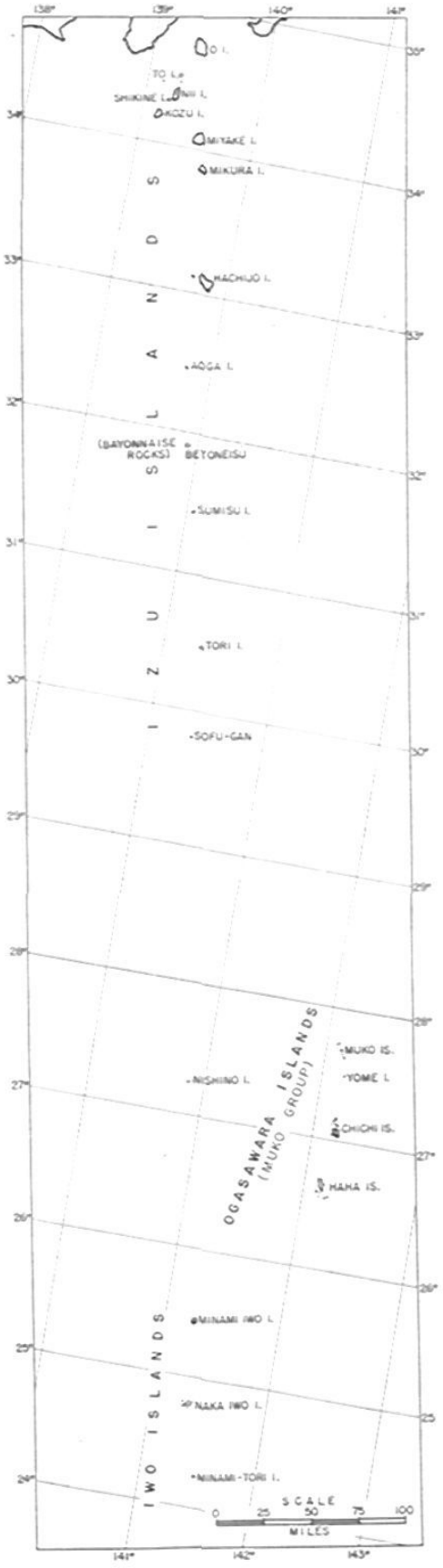
Nine groups of small islands compose the Izus. The most important is the northerly one, known as *O Island* (O-shima or O-jima). It lies just off Tokyo Bay's entrance and forms part of its fortifications. It is 10½ miles long from north to south and 6 miles wide, being nearly egg-shaped, with the point toward the north. In the south center is Mt. Mihara, nearly 2,500 feet high. This is an active volcano, last reported in eruption in 1938. The crater is normally filled with molten lava, the reflection of which on clouds enables the islands to be identified from far at sea. There are sand beaches on the south and west sides; the remainder of the coast is precipitous, especially on the east side. Earthquakes are frequent.

A road runs all around the island, with short branches extending to all settlements. The population is about 8,000 (excluding the garrison), all Japanese. The port is Habu on the southeast coast, 50 miles from Yokohama, with which there is normally frequent boat communication. Other harbors are Okado on the north and Motomura on the west coast. Harbors are suitable for small vessels only. The island's population is mainly agricultural—cherries, oranges, milk, silk. Fishing is considerable. There is a power plant.

O-shima would be a good base for air forces engaged in an invasion of Japan, provided control of the air was in Allied hands. The configuration of the islands points to landings at the beaches. The Japanese have these covered by batteries. It is assumed, but not known, that cave and tunnel positions have been prepared for defense. The central mountain cone permits a perimeter position. As the crater is usually very much alive, it ordinarily could not be used for operations. The passages into Tokyo Bay around the west and east sides of the island are respectively 20 and 25 miles wide.

Twenty miles southeast of O-shima is *Nii-jima,* 7 miles long from north to south and 2 miles wide. There is a 1,400-foot volcano at the north end and a 1,000-foot one at the south end, with low level ground in between. Both east and west sides have sand beaches along parts of the center. The island's ends are cliffs. Population of Nii is about 5,000, engaged in farming and fishing. Houses are largely of stone. There is a power plant. Short railroads run to quarries; roads and trails connect all points.

There are a number of islets off Nii. None are of importance, but they might temporarily become so as islands of departure for amphibious expeditions attacking either O or Nii Islands. Of these *To Island* (6 miles to the north) has a 1,650-foot volcano 1½ miles in diameter and one village. *Shikine* is 2 miles to the southwest and 2 miles long and



1 wide; its population is about 5,000. Neither of these islands is known to have beaches, but landings are practicable.

A larger island is *Kozu*, which is 7½ miles southwest of Nii. It is 4 miles long and 3 wide. Nearly at the center is the usual volcano, now inactive, over 1,800 feet high. There are a number of sand beaches, all small. Most of the coast is cliffs and rocks. Population is about 2,000 farmers and fishermen. Best landing is on the southwest.

Miyake is a round island 6 miles in diameter, located 33 miles south of O-shima. Miyake is a 2,700-foot volcano, active, having had an eruption of some severity in 1940. At the same time a subsidiary volcano appeared out in the sea off the northeast shore. The coast line is mostly cliffs and rocks, but there are beaches near the towns. Population is about 5,000, who occupy seven towns. Largest is on the southeast coast and is on top of a cliff, with a trail down to a beach. There is a coastal road; all towns are on the road or connected with it. Trails are numerous, and are generally hard paved. Japanese trails are usually narrow—suitable for foot or pack transportation but not for vehicles. The administrative center is Kamitsuki, situated on a high cape on the north side. Just west of it is a bay which forms the port of Okubo. To the east a second bay was filled in by the above-mentioned volcanic eruption in 1940. There is a third bay on the south side. Miyake is well wooded. Agriculture and fishing are the main industries. While not certainly known, reconnaissances indicate that Miyake is defended.

Mikura is a 3-mile-diameter volcano 2,800 feet high, 11 miles SSE of Miyake. Most of the coast is bordered by cliffs up to 1,600 feet high. There is a beach on the northwest. On the cliff over the beach and connected by a trail is a town. A trail connects with a second town in the southeast. Total population is only 370, engaged in taking out lumber and in farming.

Hachijo is 42 miles SSE of Mikura. It is 9 miles long from north to south and just half that width. At the northwest and southeast corners are the usual volcanoes, respectively 2,800 and 2,300 feet high. Between these is lowland averaging about 90 feet above sea level, upon which are the main settlements and cultivation. On both sides of the lowland are beaches. There is a coastal road, but that part around the north end is reported as poor. The lowland has crossroads. Although it is not known that the Japanese have so used it, Hachijo is suitable as an air base. Population is about 8,400. Main villages (each with a small harbor suitable for fishing boats and similar small craft) are Okago and Mitsune on the west and east sides.

Aoga (or Aogo) is a 1,400-foot volcano 2½ miles long and but 1 mile wide. It is inhabited by some 400 persons engaged in farming and fishing. Only one beach is reported on the northeast shore. This island seems to have but little military value.

South of Aoga the remainder of the Izu group consists of islets. First in order from the north are *Betoneisu* (Bayonnaise). These are volcanoes whose craters are awash, or just above water level. They are just an obstacle to navigation, 37 miles SE of Aoga. Going southeast another 34 miles is *Sumisu* (Smith Island), similar to Betoneisu. Fifty miles further south is *Tori,* a volcano 1½ miles in diameter. It had a violent eruption in 1939 which drove out the few inhabitants. There is no evidence that they returned. The coast is all cliffs—the one beach that used to be there was destroyed by the eruption. Another 40 miles south is *Sofu Gan* (Lot's Wife), which is only a pinnacle rock.

GENERAL REMARKS: The Izu Islands are particularly windy, the strength of the winds increasing from south to north. Calms are rare, the average being but seven days a year. Gales occur commonly all the year around; storms, including typhoons, range from July through November. May and June are the best invasion months from a weather standpoint.

Inhabitants are practically exclusively Japanese. Dysentery and hookworm disease, beri-beri, and venereal diseases are present. No malaria is reported; conditions are good for this, but the anopheles mosquito never has been introduced. There is a similar situation concerning the plague, which is found in nearby Japan; the rat flea which spreads this disease has so far been kept out of the Izus.

For military purposes, the islands of O, Miyake, and Hachijo are promising as affording sites for advanced bases.

OGASAWARA (OR BONIN) ISLANDS

These islands have come under Japanese rule only in recent times. They were first occupied in 1830 by a mixed detachment of British and Americans who settled on Chichi. Their descendants were still there when war broke in December, 1941. The settlers elected an American to be their leader. In 1853 Commodore Perry visited Chichi during his historic voyage. He purchased a "naval base" from the American settler for $50 cash, and officially recommended annexation of the Bonins. In 1870 the Japanese came. Upon a request for instructions from the American Minister at Tokyo submitted in 1873, our State Department ruled that the American settlement on Chichi never had been authorized, and that in view of the fact that the settlers had been continuously absent from American jurisdiction without authority for over 40 years they were deemed as having expatriated themselves. Thereafter the Japanese occupied all islands in the group and proceeded to develop them.

Three groups of islands form the Bonins. The northerly is the *Muko* (or Parry) group, which are all islets with a combined population of only 60 extending 21 miles from north to south and about 7 miles wide. There are small beaches and some shelter for small craft on three of the islets—*Muko, Nakodo,* and *Yome*. These islets have a military value only as observation posts.

The central group is *Chichi* (or Beechey). The main island is Chichi, which has the best harbor south of O-shima. The O-shima harbor is so close to Yokohama that it is not a naval base, but Chichi is slightly over 500 miles from Tokyo Bay and is an enemy naval and air base. The sheltered harbor can handle an estimated eight large ships, besides small vessels. This harbor is known as Port Lloyd or Futami Bay. It is the site of the original American settlement, and is where their descendants lived up to the outbreak

of the current war.

Besides Chichi (Japanese for "Father"), which also is known as Peel Island, there are six other small islands which together with the main one cover an area approximately twelve miles from north to south and six from west to east. All islands are volcanic, all reported as inactive at this time. Earthquakes average seven or eight per annum.

Chichi is five miles long from north to south and half that width. It is about the size of Iwo, but is more hilly and more suitable for a cave and tunnel defense. The terrain is rugged, with little flat ground. Valleys are wooded. The coast is much indented, and has beaches at heads of bays. The north side is the lowest, the west side is the next best landing area, while the south and east sides are bordered with cliffs. There are several villages, the principal one being Okumura, at the head of the harbor and identical with the former Port Lloyd. There are power and water plants. Roads and trails connect all points. Highest elevation is 1,050. Civilian population totals about 3,500.

There are three islets due north of Chichi, and one on the northeast. All are separated by straits 500 to 1,000 yards wide. They were uninhabited, but presumably now contain minor enemy forces. Two other islets are close to and south of Chichi. There is a detached islet 80 miles due west—*Nishini-no*. This is under a half mile in length and an eighth of a mile in width. It also is uninhabited. Being low and not over 80 feet in elevation in any place, this island is unsuitable for defense as it can be swept by naval gun fire. The other islets are rocky and vary in elevation from 200 to 770 feet.

Just 18 miles south of the Chichi isles are the *Haha* ("Mother" in Japanese) *Islands,* the main island bearing that name. Haha is 9 miles from north to south and averages but 1½ miles in width. It consists of a ridge with volcanoes in the north, center, and south, respectively 1,000, 1,500, and 500 feet in elevation. In the southwest is Okimura Bay, which is a fair harbor, with the town of Okimura (with about 1,300 people) on the north side. All remaining settlements have a combined population of 500. These figures exclude the garrison. There is a net of roads and trails.

The coast is indented and there are a number of small beaches, the best being on the west side. There are five islets off to the south of Haha, whose Japanese names correspond to uncle, aunt, niece, etc. They could be used for batteries and detached posts connecting with Haha. The latter island is strongly fortified.

GENERAL REMARKS: The Bonins have a sub-tropical climate and vegetation, including palms and bananas. Summers are hot but winters are cool. Lowest recorded temperature has been 45° F. The islands are in the belt of typhoons, which occur not infrequently through July to include November. Destructive typhoons come about twice in a 3-year period. Diseases are the same as in the Izu Islands, except that typhus is reported prevalent in the Bonins.

Chichi, with Haha as a subsidiary station, is a main enemy outpost within the Pacific area. The air distance to Tokyo from Chichi is 600 miles; to Guam, 800; to Formosa, 1,250. Both Chichi and Haha have been frequently and heavily bombed for a prolonged period; there is no definite information as to the results. They have both been occasionally shelled by large naval forces. In spite of these attacks, shipping continues to arrive and depart and planes to fly to and fro. Both islands are fortified, presumably for a cave and tunnel defense. Both are more suitable for this purpose than Iwo, as they are more rugged and have considerable vegetation.

IWO ISLANDS

These were annexed by Japan in 1891, but settlement did not commence until 1897.

There are only three islands in this group, from north to south Kita-Iwo, Naka-Iwo, and Minami-Iwo. The central island—Naka-Iwo—is commonly referred to as just Iwo.

Kita is 82 miles SSW of the southernmost Haha islet. It is a 1,700-foot volcano about 2 miles long by 1½ wide. The population is only 100, engaged in raising sugar. Slopes are steep and generally treeless, and coasts are cliff-bound with gravel beaches. This island seems to have little military importance. To the west is an active submarine volcano, nearly awash two miles away.

Iwo, or *Naka-Iwo,* is in American possession. It is 50 miles south of Kita and about 40 NNW of *Minami*. The latter is a 3,100-foot volcano, round, and only a mile in diameter. Slopes are very steep. The island is believed to be uninhabited. An active submarine volcano is just off the northwest coast.

GENERAL REMARKS: The United States has occupied, and holds, the most important of the Iwo Islands. None of the three islands in the group has harbors. Their value lies as air stations and observation posts.

DETACHED ISLANDS

Minami-tori, better known as Marcus, is a small island 650 miles east of Iwo. It is triangular in shape—about two miles on a side. It is low and of coral formation, being lined with sand beaches. Reefs prevent access to the beaches. There are only two passages through the reef, one on the south side and one on the northwest—none on the east.

Marcus is an enemy air station and observation post. There are no civilian establishments. Heavy woods conceal enemy dispositions.

The island was discovered by Japan in 1896. How it escaped detection until that late date is unexplained.

About 450 miles almost due north of Marcus is *Naha-no-tori*. According to Japanese accounts this island is about two miles long and one wide. It is assigned to Chichi for administrative purposes, and is listed in their reports. As previously stated, our reconnaissance has failed to locate this island, and it is uncertain whether the island has sunk or its location was erroneously given.

JAP 120

versus

JAPS

By Maj. Harold D. Steward

Turning captured Jap guns against the Japs has become a favorite practice with artillerymen of the 40th Infantry Division in the Philippines. It all started when five 120-mm Jap dual purpose guns fell into the hands of the 40th Division Artillerymen in the Cabusilan mountains, overlooking Clark Field, during the Luzon campaign. The Japs had to pull out toward prepared positions in the high country before they could either dismantle or destroy the 120-mm guns.

Brig. Gen. Harcourt Hervey, commanding general of the 40th Division Artillery, suggested the enemy's own "Long Toms" be turned against the men that built them. A special artillery crew of volunteers was selected. Col. R. E. Merritt, executive officer of the 40th Division Artillery, took personal command. Lt. Col. William A. King, 40th Division ordnance officer, made a technical study of the guns to assist the artillerymen.

Tests showed that the Jap 120-mm gun failed to measure up to either the American 4.7-inch or 90-mm guns of similar type on at least four points: dependability, durability, accuracy, and functioning. Summarizing his comparison between Japanese and similar American guns, Col. Merritt appraised the Nipponese as being "about ten years behind." Whether the Japanese have installed better guns in other parts of the empire cannot be determined for sure. It is reasonable to assume, however, the Japanese imported the best to Luzon because of the island's strategic and moral importance in the Pacific war.

Each of the Jap guns broke down in the test. Poor quality tubes caused premature muzzle bursts. Between 60 and 70 shells exploded in this manner. One of the shells burst only five yards from the muzzle but luckily, none of the crewmen was injured. Fragments from the shell were carried forward.

Breech blocks also gave trouble. In one instance a tiny particle of dirt caused a breech block to stick. Artillerymen worked for an hour to pry it open. Under actual combat conditions, when artillery fire would have been needed badly, such an impairment would have proved disastrous.

Of approximately 1,300 rounds fired from the five guns the artillerymen were unable to lay with the same setting twice. Further, it was impossible to narrow the settings down to the fineness of which our guns are capable.

To obtain range data the artillerymen fired high burst adjustments. Range of these Japanese guns was found to be somewhere between 17,000 and 18,000 yards horizontally, as compared with a vertical range of 20,000 yards for an American 90-mm gun.

The Jap gun is difficult to handle. It is hand loaded, whereas our 4.7 is automatic. The Japanese, therefore, are able to fire considerably fewer rounds than American gun crews within a given period. Operation of the Jap gun requires a large crew. Most of them must be husky soldiers to handle the projectiles, which are much heavier than the American ones.

Some characteristics of the Japanese gun, however, compare more favorably with American weapons. Their 55-second time fuze is well made. The Japs have mechanical fuze setters whereas we set them by hand, striving for accuracy. Only 100 fuzes captured from the Japanese were of the impact type; all other were time fuzes only. Fragmentation from the Japanese shells is good. This was determined by investigating terrain where muzzle bursts had landed. Fragments which were found on the ground were small.

One other point in favor of the Japanese 120-mm gun is that it doesn't give off too much smoke and flash. This makes it hard for American observers to spot the piece in action.

This study of the Japanese piece was worth the effort, but more was accomplished than just acquiring information. The 1,300 rounds poured into enemy positions undoubtedly destroyed several Jap installations, closed several caves, and accounted for an undetermined number of enemy dead. Morale of the Japs must have been affected tremendously. Enemy gunners retaliated in futile efforts to knock out their own weapons.

Friendly positions are at base of this spiny hill (*left*), *enemy ones on military crest** (*right*).

Battle Notes of Division Artillery on Luzon

By Col. Frank J. Sackton, GSC

To the infantry on Luzon an artillery liaison plane in the air meant immediate help, and to the Japs in their holes, trouble. Jap shelling was a most unusual occurrence with a plane overhead. Flying from daybreak until after dark over mountainous enemy terrain of Northern Luzon the liaison pilots of the Division Artillery found targets, adjusted fires, hovered over friendly patrols reporting their location and condition, gave warning of enemy movements, and dropped supplies to isolated units. No one in the Division was busier than the pilots of the Division Artillery.

Everyone here has become air-minded. Cub planes are used by commanders to reconnoiter terrain and by engineers to make route reconnaissances. Cubs even provided courier service twice daily to Corps Headquarters, forty miles to the south. During seventy-five days of the Baguio campaign Division Artillery pilots flew over 3,000 hours, almost entirely over enemy terrain and occasionally under intense anti-aircraft fire. One pilot was wounded and practically all planes had patched-over bullet holes. During this operation twelve separate airstrips were used, some hardly justifying the name even for helicopters.

* * *

The Division Artillery overcame many difficulties in order to render close support to the infantry. On occasion deception was gained by displacing forward at night with the substitution of trucks for slow and noisy tractors, and by camouflaging gun sections as trailers and filtering them into normal road traffic in daylight. With the strongest concentration of Jap artillery yet encountered in Northern Luzon facing our troops nightly shelling became SOP, and enemy snipers and infiltrators were a constant menace. By changing positions during the night and by digging in and camouflaging positions these threats were minimized.

For the battalions, constant displacement meant new check points for the survey crews. Survey control was constantly up with the infantry forward elements and the sight of a transit outlined against the sky, often forward of our patrols, was not uncommon. The Japs, masters of concealment, had their foxholes on the narrow ridge lines and their caves and tunnels on the crests or on reverse slopes. Many of their artillery positions were in tunnels with entrances from the reverse slope and only a small aperture for the tube on the forward slope. Normally only "flash" observation was available to our ground and air observers. Yet precision adjustment on these targets was required, and a change of elevation of one mil wasted a round over the ridge or dropped it dangerously close to our own troops. In many situations precision firing was the rule instead of the exception.

That the Division Artillery accomplished its mission is evidenced by the statement of a Japanese prisoner of war:

"Your artillery falls upon us like the rain."

* *

You may never have heard of a "J" Battery, but we have. In fact we have a "J" Battery—and the "J" stands for Jap.

This unique organization consists of four captured Japanese 105-mm howitzers, and is manned by officers and key noncoms from element sof the 33d Division Artillery plus a complement of officers and enlisted men from the Philippine Army. Captured German sights, shipped from the States, were substituted for those in the guns. Captured Jap machine guns, rifles, and pistols furnish local protection for the guns, and captured radios provide communication with higher echelon. Ammunition abandoned by the Nips was plentiful, and was fired back at them with no restriction placed on its expenditure. "J" battery has truly given the Japs a taste of their own medicine by firing

A platoon of "J" Battery in position.

approximately 3,500 rounds in general support missions in the 75-day Battle for Baguio.

* * *

Like the "J" Battery, the Division Artillery Photo Section is over and above T/O & E. However, this section filled a long-felt need not only for Division Artillery but for the entire Division. Equipped with obsolete, rebuilt K-20 cameras and improvised developing equipment, this section of one officer and two enlisted men has proved invaluable. It took low and high obliques and vertical photographs for projected road routes (for the engineers) and terrain studies preceding operations (for the infantry commanders and the general staff), in addition to handling missions for the artillery. Manned, trained, and equipped within the artillery, this section is able to take, develop,

and air-drop to friendly troops requested photos within three hours.

During the Baguio operation forty photographic missions were flown, over 1,000 shots were taken, and some 7,400 prints were distributed. All missions were over enemy terrain and often at altitudes as low as 300 feet.

RESTITUTION WITH PARALLEL RULE

By Lt. Col. Alexander S. Bennet, FA

A parallel rule is a device for drawing lines having the same direction or azimuth anywhere on the drawing or plotting board. There are a number of such devices in use, perhaps the oldest and most familiar one being the draftsman's T-square, which is a straightedge with a T-shaped head which slides along one side of the drawing board. Another parallel rule maintains its parallelism by means of a cord fastened to the ends of the rule by pulleys which change the direction of the cord, or fastened to the rule rigidly with the continuous cord passing around pulleys at the corners of the drawing board so as to change direction of movement at opposite ends of the rule. The ship's navigator uses a parallel rule in the form of a hinged parallelogram which can be traveled across a chart carrying a given direction or bearing.

The Field Artillery Observation Battery employs a plotting table for flash ranging having a universal drafting machine for drawing parallel lines, this device being a straightedge connected to the table by jointed arms in the form of parallelograms. In this plotting table a grid is carried on a circular turntable having mil graduations on the perimeter. When the table is rotated to any desired azimuth setting and locked, the parallel rule can carry to any part of the grid a line having this azimuth.

The purpose of this article is to discuss the use of a parallel rule for restitution in lieu of the older and more cumbersome method of using a transparency. A simple example would be the restitution of a target from a single vertical photo to the firing chart. Referring to Figure 1, *A* and *B* are restitution points on the photo which have been identified on the ground and located on the firing chart at *a* and *b* by survey. The firing chart being fastened to the turntable by scotch tape, the chart is rotated with the turntable until the parallel rule coincides with the line *ab* on the chart. The turntable is then locked. The parallel rule is slid to any convenient part of the turntable where the air

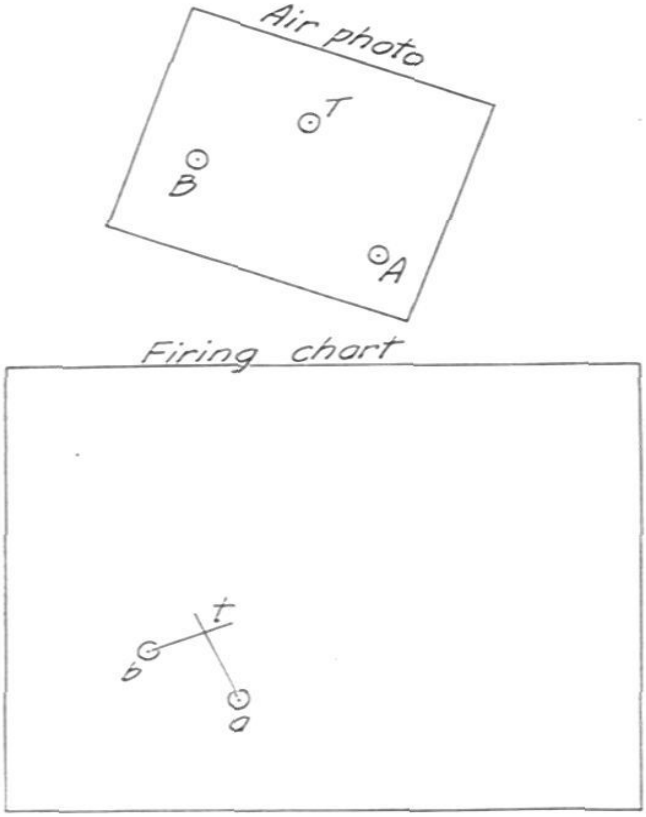


Figure 1. Restitution from single photo.

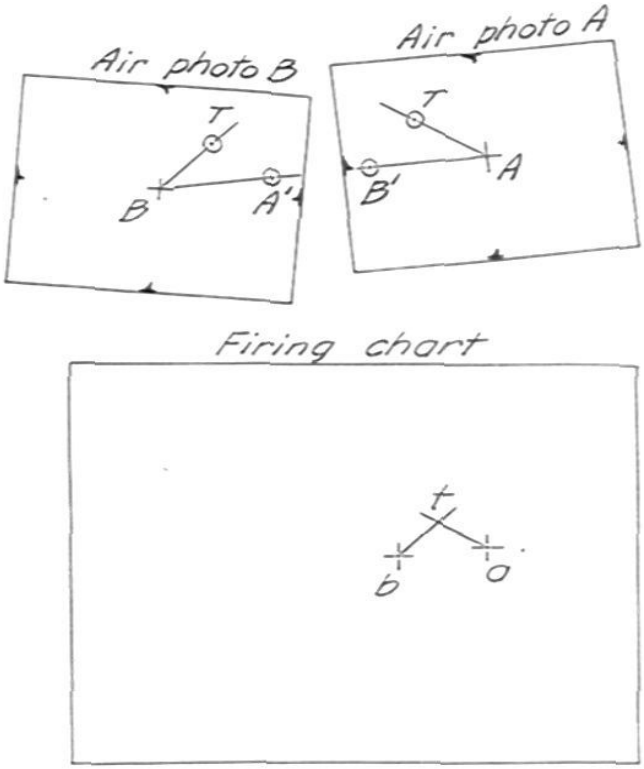


Figure 2. Restitution from stereo pair.

photo may be mounted. The air photo is slid under the parallel rule and adjusted so that the line *AB* on the photo coincides with the edge of the rule. The photo is then fastened to the turntable with scotch tape. To restitute point *T* on the photo unlock the table and rotate it until the rule coincides with the line *BT* on the photo. (NOTE: This line need *not* be ruled on the photo.) Lock the table and slide the rule until it passes through point *b* on the chart; draw the ray *bt*. Unlock the table and repeat this procedure for the line *AT* on the photo, thus drawing the ray *at* on the chart. The intersection of the two rays *bt* and *at* will be the restituted location on the chart of point *T* of the photo.

Now a certain amount of distortion occurs in restituting from a single photo because of differences in altitudes of the points used, thus causing displacement errors horizontally in a radial direction from the center or "principal point" of the photo. To eliminate this distortion the radial line method is used with a stereo pair of vertical air photos. Three points common to the two photos must be identified on the ground and their surveyed locations plotted on the chart. Radial lines are drawn on each photo from its center or principal point passing through the three common points appearing on the photo. The principal point of each photo may then be pricked on the chart by three point resection using each photo (or a tracing of its three rays) as a resector. (NOTE: Course lines, which are the lines joining the principal points on photos, should coincide.)

Referring to Figure 2, *a* and *b* are the plotted locations of the principal points of the two photos pricked on the chart, and *ab* constitutes the course line. The chart being fastened to the table, rotate the table until the rule coincides with the line *ab* on the chart. Lock the table and slide the rule to any convenient part of the table where the stereo pair may be mounted. Slide one photo (say the right one) under the rule and adjust it so that the course line *AB*' coincides with the edge of the rule. Fasten this photo to the table with scotch tape. Without disturbing the rule slide the other (left) photo under the rule and adjust it so that the course line *A'B* coincides with the edge of the rule. Now slide this photo right or left, maintaining coincidence of *A'B* with the edge of the rule until adjusted to the proper position for viewing the pair through the stereoscope. Then fasten the left photo to the table with scotch tape. Any point common to both photos (such as *T*) may now be restituted to the firing chart as follows, without distortion due to differences in altitude.

Unlock table and rotate it until rule coincides with the line *BT* on left photo. Lock table and slide rule to pass through point *b* on chart and draw the ray *bt*. Unlock table and rotate it until rule coincides with the line *AT* on the right photo. Lock the table and slide the rule until it passes through point *a* on the chart; draw the ray *at*. The intersection of the two rays *bt* and *at* determines the restituted location on the firing chart of point *T* of the stereo pair.

Probably the most complex restitution process used by

artillery is the assembly of a mosaic by the radial line method. It is possible to prepare this mosaic or "flip flop" without the use of a transparent base sheet. The first two photos of the strip are mounted for stereo vision as in Figure 2, their principal points being resected to the chart as previously described. The first pair is shown as A and B in Figure 3, with principal points appearing as *a* and *b* on the chart. Now unlock the table and rotate it until the rule coincides with course line *BC′* on photo B. Lock the table and without disturbing the rule slide photo C under the rule and adjust it for coincidence of its course line *CB″* and for stereo vision with photo B. Fasten photo C to the table with scotch tape. Slide the rule to pass through point *b* on the chart and draw the ray *bc* (course line corresponding to *BC* on photos B and C). Unlock table.

Next restitute wing points of photo B to the chart (using for this purpose photos A and B) by the method previously described for restituting point *T* in Figure 2. Finally, rotate table until the rule coincides with the radial line from principal point of photo C to either wing point of photo B appearing on photo C. Lock the table and slide the rule until it passes through the corresponding wing point plotted on the chart. Draw a ray through this wing point on the chart, thus resecting the location of principal point *c* on course line *bc*. Resect similarly from the other wing point of photo B appearing on photo C. Resected points should be the same, but if not then take the mean.

Proceed similarly for subsequent photos. Stereo pairs of the completed mosaic may now be studied through the stereoscope, and targets and base pieces restituted from the mosaic to the firing chart by the method previously described for Figure 2. The stereoscopic mounting of pairs of the mosaic enables the VCO to determine the altitudes of targets by comparison with other points appearing in the photos whose altitudes have been determined by survey or other means.

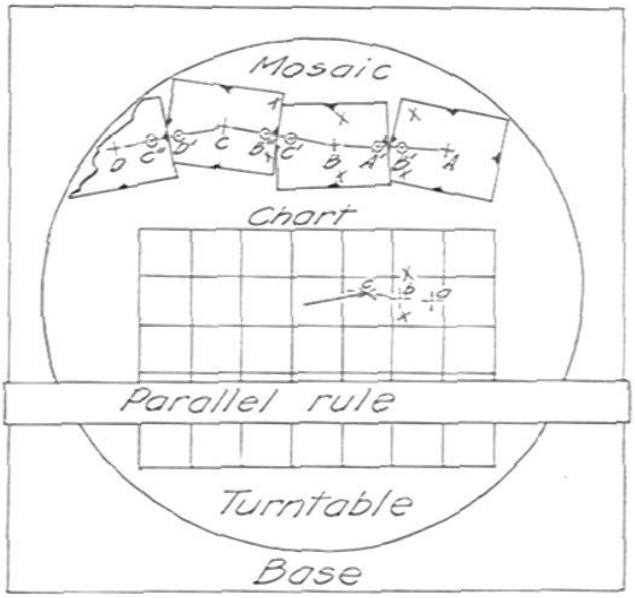


Figure 3. Restitution from mosaic.

CORPS ARTILLERY LIAISON OFFICERS

By Capt. Allen J. Smith, FA

Technical Manual 12-407, "Officer Classification," states that a Combat Liaison Officer:

"Represents Commanding Officer at headquarters of other units for the purpose of promoting coordination and cooperation between supporting and supported units; clarifies existing situations and orders; receives and transmits requests for assistance and support; coordinates plans with adjacent and supported combat units; familiarizes himself with the activities of Staff members; visits other units to acquaint them with conditions which cannot be explained in orders, and informs them of situation and mission of own unit; arranges for necessary communication between units; makes reports and recommendations to commanding officer; performs other duties as assigned, or assists other staff members in training and administration of organization. Must be able to promote cooperation between units. Must have knowledge of Army organization and be well versed in techniques, tactics, and logistics of combat unit to which attached. Military experience, or training in arm or service to which assigned, is essential."

The above-listed duties require a fairly high degree of technical knowledge as well as a great deal of personality, tact, and spirit of cooperation. It will be found that in a large number of cases the liaison officer is considered a necessary evil that should be dealt with as little as possible; the fact that he might be of any value to the attached unit is often scoffed at. Actually, liaison work is a craft of its own, important enough that the best available man should be put on that duty and given considerable latitude to operate in his own way.

A liaison officer must go through the process of selling first himself and secondly his services to each new organization to which he is attached. He must do certain things before reporting to an attached division:

1. Be prepared to present the entire tactical situation as it relates to Corps and adjacent divisions and corps. Being from a higher headquarters he is expected to be well versed in current operations, and must be particularly sure that he knows the artillery situation; number and caliber of battalions with the Corps; their disposition and organization for combat, direction of fire, availability for division support; and current policy on use.
2. Go to the division prepared to live there. Whether on an initial landing or on attachment during a campaign, he must carry with him enough clothing to dress properly, his own bedroll and cot, jungle hammock, and such tools of the profession as maps, map board, paper, pencils, field glasses, radio (if issued). Remember, each outfit sets up its

own rules for living under combat conditions; one must live according to them.

3. Find out all he can about the unit he is reporting to—not only their situation, but the type of division, the major components, type of transportation, and historical background if possible, enabling one to talk intelligently in their language.

The first thing to do when reporting to a new outfit is to make the best possible impression. Take all the care with your appearance and manner that you would if you were assigned and just reporting in for the first time—or the same care you would take in applying for a position in civilian life. The fact that you are in combat and wearing fatigues does not hinder your being neat and clean. Ordinarily you will be introduced to the staff soon after arriving. At the earliest opportunity you should write in your notebook the names and jobs of each man on the staff, including the enlisted men, and then learn them so that you can always call them by name. It is an excellent habit, as one meets so many people in this job that memory will not retain all the names that should be on tap. Next, find the Headquarters Battery Commander and find out where he wants you, your driver, and your jeep to be located in the area; also the arrangements for messing, and servicing of the vehicle.

Your chief job is to obtain information to return to your own headquarters. Some of this should be delivered immediately, while the rest can be given in a daily report. The daily report should include all information, including that given in fragmentary form during the previous twenty-four hours. To do this you should know exactly each bit of information needed. Ordinarily you will be shown where the information can be obtained, and the enlisted men can furnish you with most of the routine information you need as well as supply you with copies of the daily S-3 and S-2 reports.

After you have obtained all the information you think you need, check it over for completeness and clarity. Be sure you know the complete situation in your own mind, ask yourself all the questions you can think of that might be asked of you when you return. Your headquarters can and probably will think of some that had not occurred to you, and convince you that your whole day's work has been a wasted effort—but try to keep the unanswered questions to a minimum. In case you do not know the answer to a question, admit it rather than making a bad guess at the answer: no information is better than incorrect information. Before returning to Corps, consult one of the DivArty staff members to be sure you have the correct picture, and also for their information so that they will know what you are reporting.

Prior to leaving find out if there is anything you can do for the attached unit and go out of your way to do it; the more you can do for the unit to which you are attached the more they will do for you. Your own unit may not appreciate your efforts along these lines but the results obtained are well worth the "hell" you catch at home.

After submitting your report to Corps Artillery and answering all questions, obtain all the latest information concerning other units under Corps control; the same type of information you bring "home" is appreciated by the unit with which you are working. This of course means that you must spend four or five hours at the FOC, unless they will prepare such information for you in advance.

There are many people around the Division who are well worth knowing, in addition to the Division Artillery Staff. Among these are:

1. The Division Engineer, who can give you much valuable information concerning the road net in the division zone, as well as bridge capacities for handling the heavy Corps Artillery. Such information should then be checked with the artillery battalions, the communications

DAILY OPERATIONS SUMMARY

Period From:
To:
Place:

MAPS:

1. Enemy situation.
   - *a*. Artillery.
     - (1) New locations fired by Division Artillery:
       Coords *Conc No.* *Effect*
     - (2) Old locations fired by Division Artillery:
       Coords *Conc No.* *Effect*
     - (3) Hostile firing.
       (Who reports, where, how many rds, estimated caliber, coords of enemy guns. Support with Shelling Reports from units.)
   - *b*. Infantry and other units.
     - (1) Location and contact.
     - (2) Capabilities.
2. Friendly Situation.
   - *a*. Location of units and forward elements.
     - (1) Infantry.
     - (2) Artillery (include direction of fire).
   - *b*. Operation for the period.
     - (1) Artillery.
       Units Missions Rds Nature of target Effect
     - (2) Supported units.
       Brief summary of each regt or separate unit.
     - (3) Casualties (FA only).
   - *c*. Proposed operation.
     - (1) Artillery.
     - (2) Supported units.
3. Ammunition Report.

Unit	*Ammo on hand in Bn positions*	*Ammo in other dumps*

4. Survey.
   - *a*. Corps control being used.
   - *b*. Corps control desired.
   - *c*. Extent of target area survey.
   - *d*. Location of OPs.
5. Reconnaissance.
   - *a*. Possible artillery positions.
   - *b*. Roads—condition.
   - *c*. MSR.
   - *d*. Other routes open.
6. Photo Interpretation and map requirements.
7. Communications.
8. Air.
   - *a*. *Cub activity*.
     - (1) Location of strips.
     - (2) Mission.
   - *b*. Air strikes.
9. Miscellaneous.

officer, and the survey officer, and followed up by a personal reconnaissance if time permits.

2. The Division PI Team, who can give you much information concerning photographic coverage and located enemy installations, particularly as pertains to counterbattery.

3. Division G-2 and G-3, who can and often will include you on their distribution lists for Operating Memos, Field Orders, and Periodic Reports. These reports are valuable supplements to your daily reports, and there is a wealth of information therein which is available to Corps Artillery in no other way.

4. The field artillery battalion staffs of the Division Artillery. These people are generally in close contact with the infantry. Frequent visits to their fire direction centers will result in a much clearer picture of what is actually happening out where the war is being fought. I have made it a practice of calling on the various battalions every other day whenever possible and find it well worth the time spent. Often a patrol or guide will be furnished to one of the observation posts where you can actually see what is happening on the ground. Do not attempt to find these OPs by yourself, as it is very easy to end up in enemy territory.

5. The DivArty Communications Officer, who can tell you available means of communications. The best means of communications, though, is usually personal messenger service between the two headquarters. Use of the telephone and radio should be restricted to short messages, and existing security regulations adhered to at all times. All coded messages should be written and checked, rewritten, and checked against the original to be sure they are correct. Make a check with CP on first trip for accuracy of transmission and decoding. Written coordinates are more accurate than overlays and should always supplement overlays when used.

Above were mentioned fragmentary reports. There are a number of things which should be reported as they happen, or on which a negative report is desirable at certain times during the day both as a matter of information and to aid in the correctness and completeness of the reports originating in Corps Artillery Headquarters.

1. *Shelling reports*. All enemy shelling should be reported to Corps Artillery immediately. If in your visits to the various battalions you explain just what you want in the way of shelling reports, they are generally more than glad to keep their Division Artillery informed on enemy shelling whenever and wherever it occurs. Also they will send their people out to make crater analysis whenever possible. Along with shelling reports any enemy artillery fired upon by Division Artillery units should be reported at once with adjusted coordinates and altitude, nature of target, caliber, and activity and effect.

2. *Request for Corps Artillery support*. Although this is basically an S-3 function, often the Liaison Officer is requested to carry these requests to Corps Artillery. Before bringing requests to Corps, secure the following information: *a*. Nature of Corps fires wanted. *b*. Exact location of target or area. *c*. Nature of target or enemy installations in area: (1) Reinforcing or supporting, (2) Preparation or harassing. *d*. Infantry's intention: is an attack to follow; if so, at what time, what units, objective, amount of Division Artillery fire to be delivered, where, and on what targets?

3. *Planned displacements* of artillery and major changes of infantry positions. Army requires a daily report of artillery positions as of a certain time each day, and this should be verified at a time specified by the operations section of Corps Artillery.

4. *Specialized enemy activity,* including: *a*. Tanks and mechanized and motorized forces. *b*. Paratroops and other airborne troops. *c*. Naval combat units. *d*. Amphibious and other landing craft, in force. *e*. Combat aviation, excluding minor harassing raids. *f*. First contact with enemy. *g*. Use of chemical agents.

Cautions:

1. Know your job thoroughly.

2. Do not get in the way—find a time when everyone is not too busy to give needed information. You cannot spoil your welcome in any faster way than by getting under foot when the staff is busy.

3. Take back as much information as you bring in.

4. Don't tell tales out of school; you too gripe behind the "Old Man's" back.

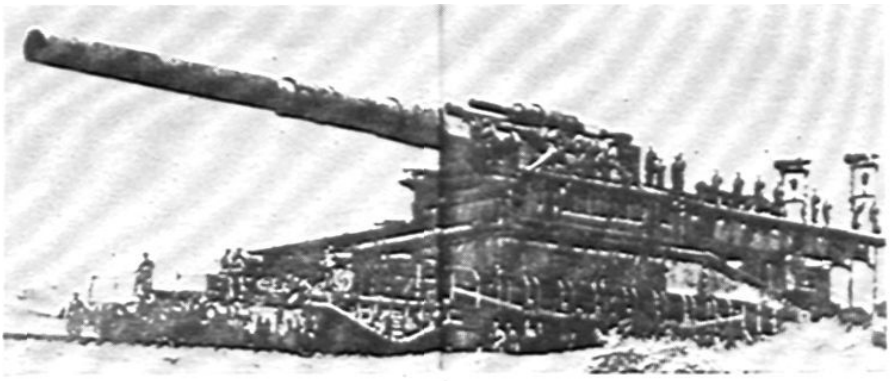
5. Let the division know you are working *for* them as well as *with* them.

Brother, you have a twenty-four-hour-a-day job!

AN ARMORED GLIMPSE—3D FA BN

One thing we learned for sure—field artillery of the direct support type, and especially armored artillery, is no stranger to a brisk fire fight and should always remember that in training. Artillery should receive basic infantry training. We've done everything nearly every arm does (especially during the Ardennes affair): used my FO tanks as a tank platoon to save some doughboys, held a town for 24 hours as infantry, put out patrols and bazooka ambush parties, even made minor coordinated ground attacks, and particularly sent out combat patrols (which is what the BnCO and BC parties turn into in an armored outfit). Our most successful destruction and killing has been done with direct fire at 300 yards, as you can well imagine. But people ought to think of light artillery, especially armored, as doing a lot more than just firing guns.

Had quite an interesting war. Held up a Jerry division with 800 men and one battalion of artillery for a week until XII Corps could come up from the south in the Ardennes business. Then we went into Bastogne with the 4th Armored, next grabbed a bridge across the Rhine, and ran over Germany (with *rough* going through the Leipzig AA defenses). Finally we were attached to the 1st Division and went into Czechoslovakia where just after the surrender we (three batteries of the battalion alone, I mean) had on our hands 17,000 PWs, half of them armed.



Gustav Geschutz, emplaced.

WORLD'S BIGGEST GUNS

By Col. F. B. Porter, FA

Diameter of this tremendous bore is well shown here. At left is the 6' 1" author, at the muzzle of tube No. 1.

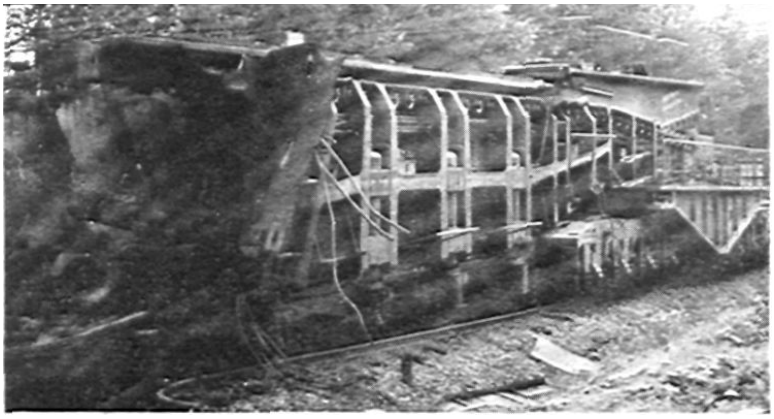
War Department publications have given us some information on the German super guns, but the story has not been generally available. With the war over and Germany in an occupied state, many of us who have been interested in the heavier calibers of artillery have wondered what happened to these guns.

Recently while on a mission which took me along a little-used road between the towns of Auerbach and Eshenbaum in Bavaria, I came to a small dirt road which led through the forest to a village called Metzendorf. There I met an American soldier who said that there were some big guns back in the woods. Being interested in weapons I followed the indicated route for about half a mile. On approaching a single-track railroad I saw a gun tube so huge that I stopped and gasped for breath. Upon further inspection I found the remnants of fourteen (14) railroad cars, intermingled along the track with special cars carrying two huge gun tubes, one cradle and carriage for these tubes, and the parts and accessories for one gun and carriage. Before abandoning them the Germans had performed as much demolition as was possible. One huge tube was intact, however, and the carriage, though badly damaged, can probably be repaired. The necessary parts of other weapons (if such still exist) could be used, making one weapon available for study.

This gun, the biggest of all

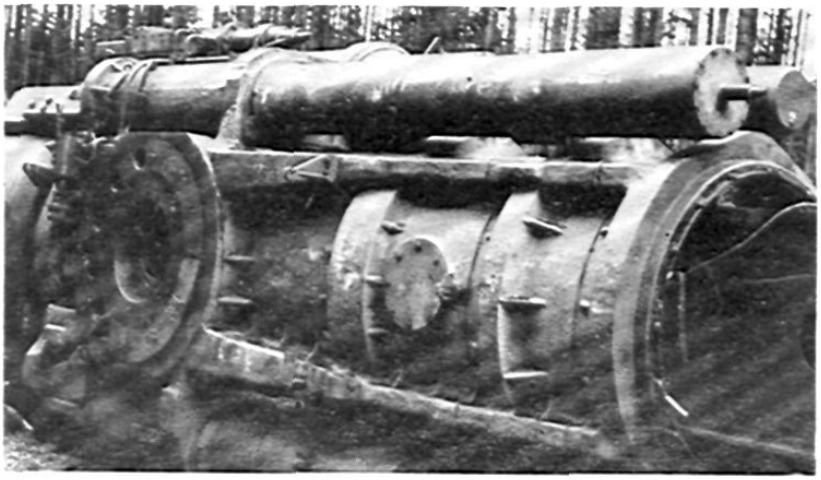
Tube No. 1 as viewed from gondola carrying cradle. Note burned-out framework of gondola that carried accessories.

Spare tube No. 2. So much room is required for pivoting on curves that the center of the tube is unsupported; the rear of the train is "towed" through the tube, its braces, and its supports.



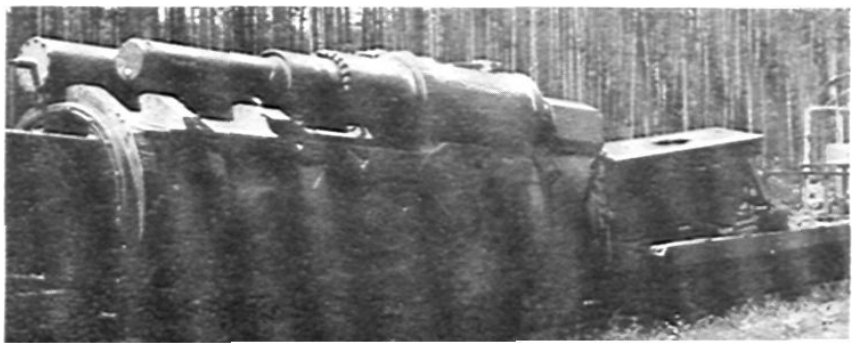
Damaged section of bottom carriage.

Trunnion bearings.



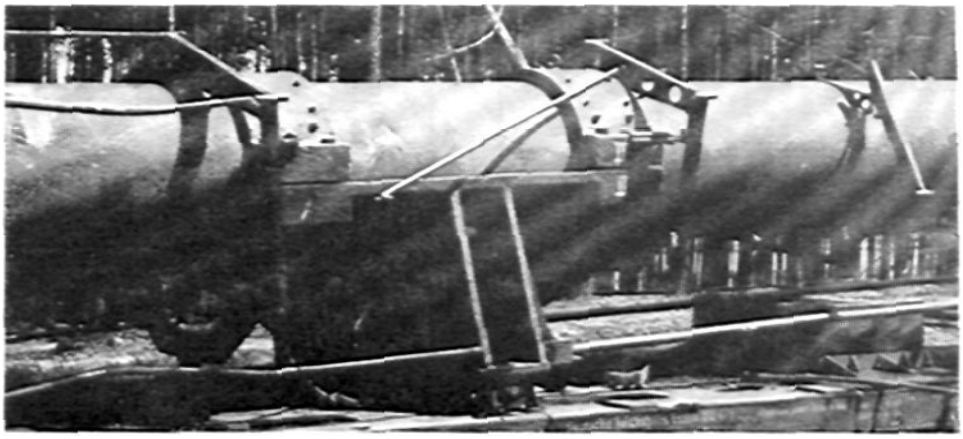
Cradle, showing recoil, counter-recoil, and buffer cylinders.

Damaged cradle. Its size is indicated by the 6-foot man standing in the breech recess. A huge 1-beam passes through the cradle to support it; this one has been blasted into two sections.

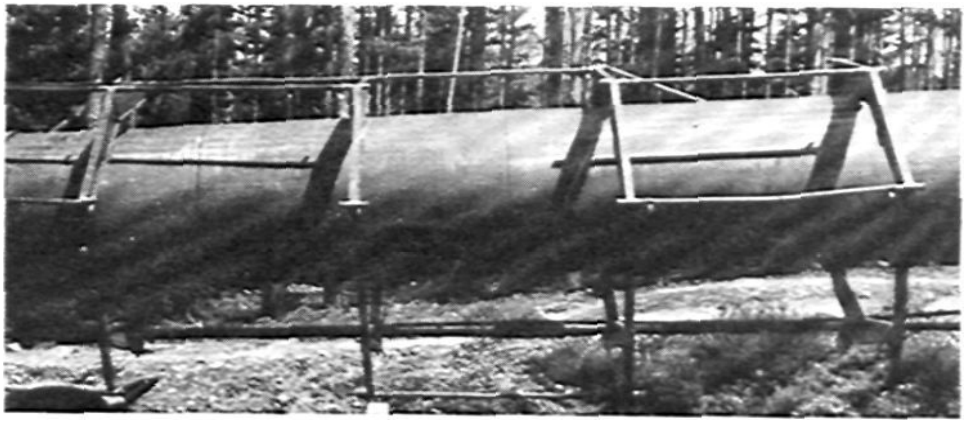


time, known as the *Gustav Geshutz* and also called the *Dora*, was manufactured in the Krupp Works at Essen. Designed for use against fortifications of the Maginot Line in France, it saw little use. Later it was moved to the Russian front, where it was effectively used against the defenses of Sevastopol in the Crimea. How many of these huge weapons were made and their present locations is a matter of conjecture. It is known, however, that some were used along the channel coast for delivering harassing fire on the English coast. After the battle of France two tubes, cradle, and carriage, were moved into Germany. When the U. S. Third Army moved into Bavaria the retreating Germans were forced to abandon their heavy equipment in their haste, after damaging it as much as possible.

I took a number of photographs from different angles to show details of this weapon, and made some measurements. From these and other sources were compiled the following information and data:

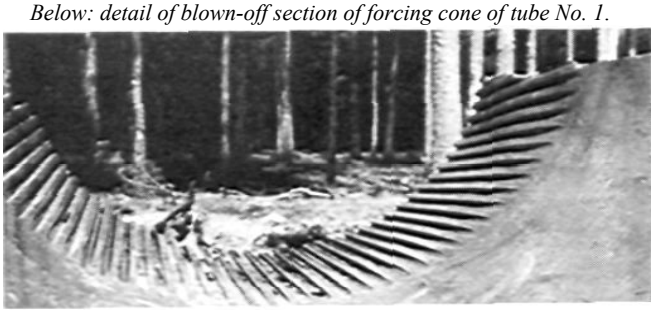


Detail of supporting brackets; this is tube No. 1.



Tubes are in two pieces, locked together by a center brass sleeve (tube No. 1)

Breech ring, showing forward section. Note interrupted thread. Below: detail of blown-off section of forcing cone of tube No. 1.



STATISTICS

Weight of gun and carriage complete ..... 1,344 tons
Weight of projectile ..... 16,540 pounds
Diameter of bore ..... (800 mm) 31.5 inches
Diameter of powder chamber ..... 36 inches
Estimated powder charge ..... 1,000 pounds
Length of tube (paced) ..... 35 yards
Muzzle velocity (estimated) ..... 3,000 f/s
Length of powder chamber (rear of tube to forcing cone) ..... 156 inches
Twist uniform to left, 1½ turns for length of tube of approximately ..... 36 calibers
Number of lands 96
Width of land ..... 7/16 inch
Number of grooves 96
Width of groove ..... 9/16 inch
Depth of groove ..... 7/16 inch
Length of cradle ..... 9 yards
Breech block: interrupted screw type
Recoil Mechanism: hydro-pneumatic, variable
Control of all mechanism: electric
Means of transport: rail
Emplacement: carriage mounted on parallel railroad tracks
Time of emplacements: 3 weeks (estimated)
Range ..... 51,000 yards

GRAPHICAL SITE TABLE

A series of slide rules, called the Graphical Site Tables for the calculation of site, with or without complementary site, has been developed at the Field Artillery School. The rule is usable with the vertical interval expressed either in yards or in meters. Mechanically the Graphical Site Table is a Mannheimtype slide rule 14½ inches long with one slide and an indicator.

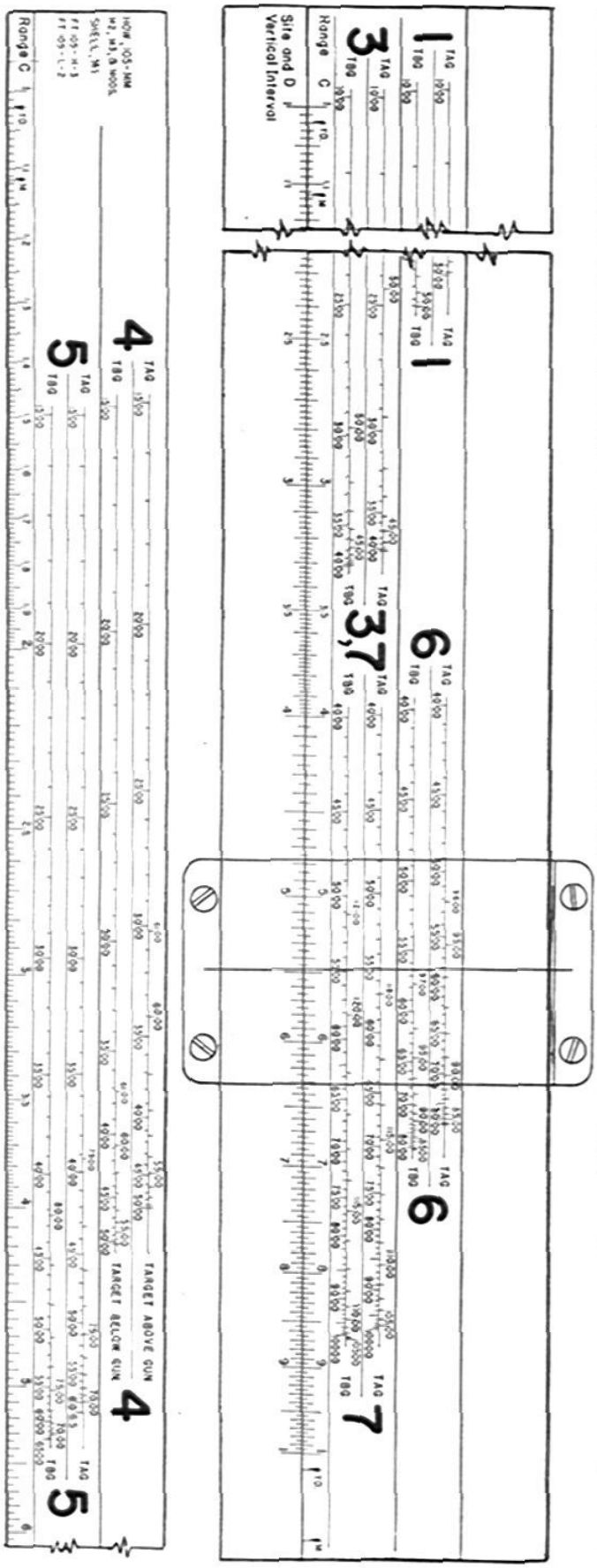
Graphical Site Tables have been designed for:

75-mm How, M1, M2, M3
105-mm How, M2, M3, and Mods
155-mm How, M1
240-mm How, M1
8-inch How, M1

Design of Graphical Site Tables for guns is not contemplated at this time.

These Graphical Site Tables are on sale in the Book Department, Field Artillery School, Fort Sill, Oklahoma, for one dollar and fifty cents ($1.50) each.

The simplicity of operation of the site table is illustrated by the complete instructions for the operation of the 105-mm howitzer table, illustrated in the accompanying figure. A type problem for each of the major uses of this rule is included in these instructions. Similar instructions appear on the back of the rules for other weapons.



GRAPHICAL SITE TABLE

1. GENERAL. *a.* The graphical site table is used to determine either true site or site modified by the addition of complementary site. Range is in yards. Vertical interval (difference in altitude between piece and target) is in either yards or meters. If the vertical interval is in yards, the YD gage point is used; if in meters, the M gage point is used.

b. The gage points are placed to use the mil relation $\text{mils} = 1.02\ W/R$, which is more exact than the relation $\text{mils} = W/R$.

c. The decimal point is located by dividing the approximate vertical interval by the approximate range in thousands of yards.

d. The graphical site table is for use with low angle fire only.

2. DETERMINATION OF TRUE SITE. The true site is determined in the following manner.

a. Move the hairline to the vertical interval (in either yards or meters) on the Vertical Interval (D) scale.

b. Set the range (in yards) on the Range (C) scale under the hairline.

c. Opposite the appropriate gage point (YD or M), read the site on the Site (D) scale.

3. DETERMINATION OF SITE PLUS COMPLEMENTARY SITE. Site plus complementary site is determined in the following manner.

a. Move the hairline to the vertical interval (in either yards or meters) on the D scale.

b. Set the range (in yards) on the appropriate TAG or TBG scale for the selected charge under the hairline.

c. Opposite the appropriate gage point (YD or M), read site plus complementary site on the D scale.

4. ILLUSTRATIVE EXAMPLES. *a. Situation.* Vertical interval, target 137 yards above piece; range, 3240 yards; charge, 4.

(1) Move the hairline to 137 on D.
(2) Set 3240 on C under the hairline.
(3) Opposite the YD gage point, read the true site, +43.1 mils, on D.
(4) Set 3240 on the TAG scale for charge 4 under the hairline.
(5) Opposite the YD gage point, read site plus complementary site, +46.2 mils, on D.

b. Situation. Vertical interval, target 76 meters below piece; range, 2460 yards; charge, 1.

(1) Move the hairline to 76 on D.
(2) Set 2460 on C under the hairline.
(3) Opposite the M gage point, read the true site, −34.5 mils, on D.
(4) Set 2460 on the TBG scale for charge 1 under the hairline.
(5) Opposite the M gage point, read site plus complementary site, −38.5 mils, on D.

5. VERTICAL INTERVAL. The vertical interval, when the range and site (from firing) are known, is determined in the following manner.

a. Set the appropriate gage point opposite the site on D.

b. Move the hairline to the range on the appropriate TAG or TBG scale for the charge fired.

c. Under the hairline, read the vertical interval on D.

6. ILLUSTRATIVE EXAMPLE. *Situation.* Range, 5230 yards; charge, 5; site (complementary site included), +38 mils.

a. Set the right YD gage point opposite 38 on D.

b. Move the hairline to 5230 on the TAG scale for charge 5.

c. Under the hairline, read +178 yards on D.

How., 105-mm, M2, M3, and Mods.
FT 105-H-3
FT 105-L-2

991st Field Artillery Battalion

M12s helped solve their ammunition supply problem by using captured shells made by the French for their G.P.F., an identical piece, and later taken over by the Germans.

First American artillery outfit to fire on German soil, the 991st Field Artillery Battalion (155-mm gun, self-propelled) was in almost uninterrupted action in France, Belgium, and Germany from July 11, 1944, to April 25, 1945. Notable achievements during that time included street fighting in the siege of Aachen, placing the first artillery fire on Cologne, and close support of three penetrations of the Siegfried Line at widely separated points.

The 991st, a former New York National Guard outfit from the Bronx, New York City, opened the assault of the ground forces on Germany proper on the late afternoon of September 10, 1944. Attached to the 3d Armored ("Spearhead") Division at the time, the 991st, shooting from positions just north of Verviers, Belgium, interdicted the road junction at Bildchen, a small town southwest of Aachen.

One month later, during the siege of Aachen by the 1st Infantry Division, Battery "C" of the 991st rolled its M12s into the city's streets to blast the Nazi defenders out of their pillboxes, air raid shelters, and other fortifications. For its work in this action the battery was officially commended by Maj. Gen. Clarence R. Huebner, commander of the 1st Division, and Maj. Gen. J. Lawton Collins, commander of VII Corps.

EDITOR'S NOTE

Although heavy, self-propelled artillery was envisioned in the first World War, and studies were made of it in the 'tween-war period, our first battle-tested equipment of this type was the M12 motor carriage. The 991st Field Artillery Battalion's record with this piece in Europe is outstanding. It is fitting that the first summary of a unit's entire combat performance in this war's first phase to be published here should describe one of the newest members of the Field Artillery family. For a more detailed account of some of the action summarized here, readers are referred to *An M12 Battalion in Combat* and *Short-Range Firing Against the Siegfried Line* in this JOURNAL for last January and February.

On February 27, 1945, during the drive of the First Army on Cologne the battalion, again supporting the 3d Armored Division, opened the assault on the city. In the early morning of that day the battalion, firing from extreme range of 26,000 yards, placed harassing fire on the Rhineland's largest city.

Three times in a period of six months the 991st lent close support to infantry and armor breaching the Siegfried Line in widely separated sectors. In the last two weeks of September its batteries worked with the 1st and 9th Infantry and the 3d Armored Divisions as these units of VII Corps broke through the line south and southeast of Aachen. Early in February, 1945, its Battery "B" teamed up with 1st Division infantry to get through the line at Ramscheid, southeast of Monschau, Germany. In mid-March all of its batteries, working under control of Seventh Army, blasted pillboxes of the Siegfried Line at many points between Saarbruecken and Pirmasens on the frontier between Lorraine and the Rhennish Palatinate.

The fortunes of war led the 991st from the beaches of Normandy to the plains of Saxony less than 60 miles from Berlin. The battalion landed on Omaha beach at Colleville-sur-Mer on July 11th and went into action just north of St. Jean-de-Daye. With the exception of one week at the end of January for refitting, the battalion was continuously engaged until it was withdrawn from action at Dessau, on the Elbe River, on April 25th.

The 991st was inducted into federal service on February 3, 1941. At that time it was the 2nd Battalion, 258th Field Artillery, which had its home armory at 29 West Kingsbridge Road, the Bronx, New York City. Its first station was at Fort Ethan Allen, Vt.

Before leaving the United States in January, 1944, the battalion was also stationed at Madison Barracks, N. Y.; Pine Camp, N. Y.; A. P. Hill Military Reservation, Bowling Green, Va.; Indiantown Gap Military Reservation, Indiantown, Pa.; and Fort Dix, N. J. It maneuvered at Fort Devens, Mass., Fort Bragg, N. C., and West Virginia Mountain Maneuver Area, and in Tennessee. During its six months in England the battalion was stationed in South Wales and in the West Midlands. In pre-invasion training

it engaged in field exercises at Salisbury Plains and Dartmoor Forest, both in southern England.

At its induction in 1941 the 991st was equipped with the 155-mm gun, M1917-18. This World War gun was tractor-drawn. It could not make better than 6 miles an hour on the road and required anywhere from one to twelve hours to emplace. A year later the battalion was equipped with the 155-mm gun, M1A1, the much-publicized "Long Tom." In the spring of 1943 it was re-equipped again, this time with the M12—the World War 155-mm gun mounted on a medium tank chassis. The M12, which could average 20 miles an hour on the road, proved itself to be one of the most striking artillery developments of the campaign in Europe. Capable of being emplaced within five or ten minutes, its speed and mobility enabled the 991st to function as both corps and division artillery.

Between its entrance into action on July 11 and its attachment to the 3d Armored Division on August 12 the 991st functioned as corps artillery, backing up the lighter guns of division artillery. As such, at the time of the St. Lo breakout on July 25 it fired many missions to help silence the German flak trying to break up the tremendous American bombardment that featured the preparation for the breakout.

Joining the 3d Armored at Mayenne, France, on August 12, the 991st remained with the division for the next three and one-half months. The division had one of the most important sectors on the southern flank of the Falaise Gap. From positions near Rames on August 17 the battalion fired 1,073 rounds on the German Panzers trying to extricate themselves from the pocket. It was to emerge eventually as the heaviest day's shooting of the battalion's combat experience.

With the conclusion of the action in the Falaise Gap the division, spearheading the attack of the VII Corps and the United States First Army, turned east and crossed the Seine south of Paris. Swinging northeast, the division crossed the Marne between Meaux and Chateau Thierry, and the Aisne east of Soissons.

During the fighting south of Mons, Belgium, between September 2 and 4, the 991st took more than 500 prisoners in thirty-six hours. At one time during this engagement, which cut off the retreat of the German Fifteenth Army from the Pas-de-Calais area, the 3d Armored was virtually isolated from the rest of the corps and army for one whole day.

As soon as the infantry could catch up to take the situation in hand, the 3d Armored took off to the east and drove straight toward Germany via Charleroi, Namur, Huy, Liege, Verviers, and Eupen. It was during this swift lunge toward Aachen and the Rhineland that the 991st initiated the assault of Allied ground forces on Germany proper.

As the VII Corps, led by the 3d Armored, encountered the Siegfried Line south and southeast of Aachen, batteries of the 991st were detailed to destroy the concrete pillboxes of the Line by direct laying to help the armor and infantry penetrate the defense zone. Battery "A" worked extensively with the 3d Armored near Busbach and Stolberg. Battery "B" worked in and around the Huertgen Forest for a month with the 9th Division in the preliminary assaults on the Schmidt dams controlling the Roer River. Battery "C" helped the 1st Division isolate Aachen from the east by taking Eilendorf and Verlautenheide and then fought in the streets of the city.

During the bitter fighting of December and January in the Ardennes counter-offensive, the 991st participated in both the defensive and offensive operations of the First Army.

When the battalion was finally withdrawn from the line in the last week of January to refit, it was the first respite the organization had had from uninterrupted combat since starting more than six months earlier. Within one week, however, the battalion returned to the line—just in time to help the 1st Division push through the Siegfried Line southeast of Monschau. Shortly after this operation the battalion shifted north and got into position to support the crossings of the Roer River which opened the successful drive to the Rhine above and below Cologne.

No sooner had Cologne fallen than the battalion was transferred temporarily to Lorraine to work with divisions of the Seventh Army in their drive through the Siegfried Line protecting the Saar region and the Palatinate. Jumping off from the old Maginot Line, the battalion went through the Siegfried Line for the third and last time.

By the time German resistance in the Palatinate had been eliminated and the Seventh Army had made good its crossings of the Rhine at Worms, the First Army and the 3d Armored were again on the move. Breaking out of the Remagen Bridgehead, the division led the army in the swift thrust through the Westerwald district which closed the Ruhr Pocket at Lippstadt, southwest of Paderborn.

Released to First Army as this break-out started, the 991st marched 400 miles over the road to rejoin the 3d Armored in time to assist in the crossings of the Weser River. It was with the division on its rapid thrust to the east which ended at Dessau. There all units of First Army desisted, by orders from higher headquarters, from further attempts to cross the Elbe and continue eastward toward the approaching Russians.

Members of the battalion received one Distinguished Service Cross (posthumously), two Silver Stars, 85 Bronze Stars, seven Air Medals, and 14 Bronze Oak Leaf Clusters to the Air Medal. Casualties amounted to 13 killed in action and 43 wounded. All told, the battalion fired 48,937 rounds at the enemy.

Besides the VII Corps, the battalion also worked with VI, XV, XVIII (Airborne), XIX, and XXI Corps. In addition to the divisions already mentioned, the battalion or components of it were attached to the 3d, 8th, 30th, 45th, 63d, 83d, 100th, 103d, and 104th Infantry and 6th Armored Divisions.

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 OKINAWA CAMPAIGN (19 to 26 June 45)

On the morning of 19 June remnants of what had been a strong Japanese force were defending the south tip of Okinawa. They held the line

Nagusuku—Makabe—Aragachi—Medeera—Mabuni,

all inclusive. They were under attack by five American divisions along their six-mile front, in order from west (right) to east (left):

2nd Marine Div
1st Marine Div } **III Marine Amphibious Corps**
6th Marine Div

96th Inf Div
7th Inf Div } **XXIV Corps**

} **Tenth Army**

The American attack was strong. It was supported by artillery and air forces; warships shelled from the rear and from both flanks the enemy's restricted position, which was nowhere over 2½ miles from the sea. The enemy had little artillery left. He defended his positions, based upon caves, mostly by infantry fire, including machine guns and mortars.

The Marine Corps made considerable advances. It swung its right down and around the coast so that it faced cast opposite the line Makabe—Komesu. The XXIV Corps met stubborn resistance; in general its advances did not exceed a quarter of a mile.

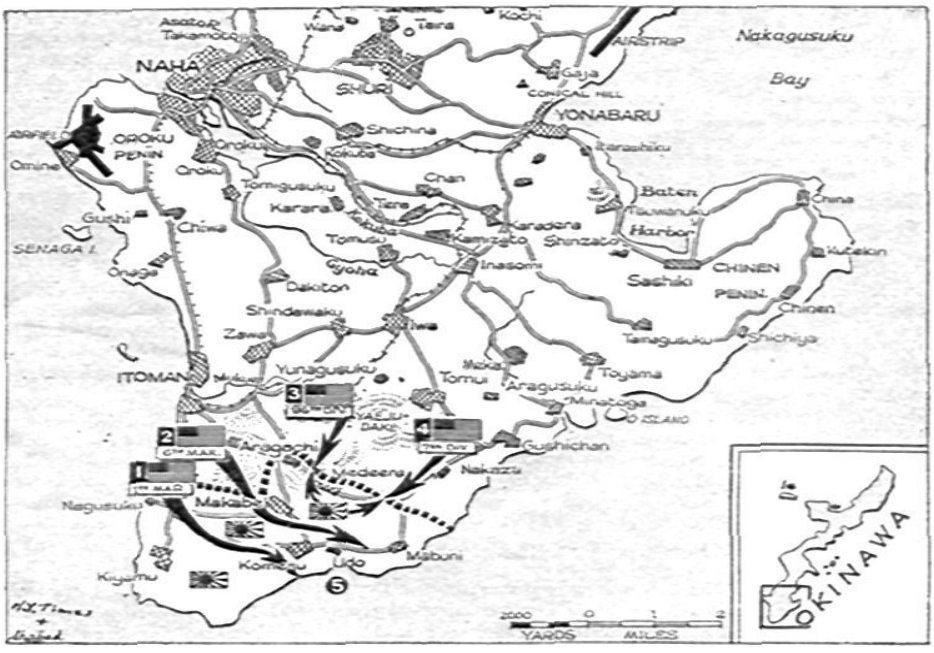
On the 20th the battle continued with bitter combats which did not materially affect the line. It was evident that the enemy, now cooped within an area about two miles square and subject to continuous bombing and shelling, could not hold out much longer.

21 June brought the first enemy surrenders. About 1,700 men came into our lines. During the preceding night the Marine Corps repulsed what appeared to be the usual final assault. The XXIV Corps met day attacks on the line Medeera and Mabuni. When these were over by 1000 hours, enemy resistance collapsed, except for two centers of resistance. These were caves near the villages mentioned. With those exceptions, Okinawa was cleared. The two cave systems were attacked at once by flame-throwing tanks, which burned out the entrances. Demolition squads then blew in the entrances, sealing the caves.

On the 22nd the 96th and 7th Inf Divs completed the destruction of the enemy centers of resistance. There still were a number of isolated fanatical Japanese who sniped away from concealed positions. These were eliminated within the next few days by a general and complete mopping of the entire battle area.

COMMENTS

The campaign on Okinawa commenced on 1 April; it was practically completed by 22 June, or in 83 days. For the entire period the enemy's total losses were reported to have been 101,853 killed and 9,498 prisoners, for a total of 111,351. Of the prisoners just about a third (2,854) were labor troops. The population of Okinawa within American lines numbered in May 114,000, among



As the campaign neared its close Marines crossed the Nagusuku-Komesu Road and slashed their way to the southern coast below Komesu (1). Other units on their left were nearing the shore in the Mabuni sector (2). Two Army divisions ran into stiff resistance from isolated enemy contingents in the neighborhood of Aragachi (3) and nearer the coast (4). South of Udo (5) Japanese were jumping off cliffs rather than surrender to the American "barbarians."

whom were few men of military age. All young men were reported as having been conscripted by the local Japanese commander. The size of the population points to about 30,000 having joined the combat forces. The latter then amounted approximately to 80,000 men of all arms and services.

American forces consisted of 7 divisions, plus usual corps and army troops and the services. The divisions were those already mentioned, plus the 27th and 77th Inf Div. With supporting troops, their total was around 140,000 men. Total casualties on land to include 19 June (no report available for the last few days) were 6,960 killed and missing and 25,598 wounded, for a total of 36,588, which is equal to slightly over 25% of the aggregate strength. It is, however, only a third of the enemy's losses.

Greatest American losses were during the first major attack between 19 and 27 April, when they averaged 981 a day at a time—when the troops were new to cave warfare and may not have sufficiently evaluated the possibilities of the enemy's defenses. The lightest loss was during the final period from 25 May to 19 June, when they averaged 381 a day. This relatively low loss, with very high enemy casualty lists, indicates that the American troops had developed a good technique for suppressing cave defenses.

The distance advanced from the initial major attack on 19 April opposite Shuri to Cape Ada at the south tip of Okinawa was about 12 miles. It took 66 days to accomplish this. This gives an average of 320 yards a day. Unfavorable conditions were that both the enemy's flanks rested on the sea and could not be turned by a land movement, nor by an amphibious movement due to reefs' and cliffs' limiting possible landing areas. Favorable conditions were that the enemy was surrounded and could receive neither supplies nor reinforcements. The entire enemy area was within short or medium range of naval gun fire. The Americans had overwhelming air forces and could bomb at will.

Mission of the attack on Okinawa was to secure sites for numerous air fields from which large air forces could take off to attack the Japanese home islands. Before the campaign ended large forces of labor troops were put on shore, and work started on constructing air fields and necessary depots and accessories. This mission can be considered as having been fully accomplished.

Perhaps a more valuable gain, and one which was not part of the original plan, was that our troops learned a lot about cave warfare. This is an ancient form of fighting, it being supposed to have been the usual method of prehistoric man. After nearly disappearing it was revived between 1915 and 1917 by the Austro-Hungarian Armies in the battles of the Carso on the northeast Italian frontier. The considerable success which they had, failed to induce other countries to study these operations. It was generally believed that this was an isolated and exceptional case, due to local conditions which were not likely to occur again.

The extensive revival of cave warfare by Japan, not only at Okinawa but in the Philippines and on Iwo, points to a further development in the future. It is Japan's answer to our superior air force: everything is to go underground. The final possibilities of cave warfare are not yet known. The experiences of Okinawa, against the best cave defenses encountered to date, may well turn out to be a most valuable lesson to be applied to future campaigns.

THE PHILIPPINES (19 June to 18 July 45)

The campaign for the recapture of the Philippine Islands was officially declared completed in a communique dated 0630 28 June, and issued at Manila. Since then official advices as to military operations have practically ceased. Part I below covers military operations up to that date.

Part II considers further information available.

PART I (19-28 JUNE)

On 19 June, the Sixth Army was operating in Luzon, with main forces disposed:

I Corps attacking hostile forces in the Cagayan valley, and the mountains on both sides.

XI Corps attacking hostile forces in mountains NE and ENE of Manila.

The Eighth Army had the

X Corps operating in the cast half of Luzon.

Operations of the I Corps

On 19 June troops were disposed as follows:

33d Inf Div was northeast of Baguio on the line Caponga—Bokod.
6th Inf Div was 7 miles south of Kiangan.
37th Inf Div was just south of Naguilian in the Cagayan valley.

All divisions were confronted by strong enemy forces, considered to be the remnant of the main body. Opposite the 33d and 6th Divs the enemy stoutly defended prepared mountain positions, and showed every intention of resisting to the utmost. The 25th Inf Div was consequently brought into line from corps reserve in the interval between the 33d and 6th Divs, with the immediate mission of reducing Kiangan, which was an enemy strong point. Opposite the 37th Div the enemy had been giving way rapidly for some days, and showed no inclination of making a determined stand. The mission of this division was to clear the Cagayan valley; that of the 33d Div was to advance toward Bontoc, and thereby turn the enemy's right. The total enemy strength was estimated as 3 divisions, having about 20,000 men in all.

On the 19th, the 37th Div advanced 10 miles to the vicinity of Ilagan. The enemy offered no special resistance, and had only combat patrols in the field. 103 of these were captured, and found to be mostly Formosans, who had originally been service troops, but had recently been assigned to combat duty. The 37th was generally provided with motor transportation. Notwithstanding this it was difficult to keep up supplies along the one axial road. Strong enemy forces appeared to have been by-passed as they withdrew to the mountains on both sides of the valley. After dark, enemy patrols some with tanks attacked trucks and isolated parties in what were supposed to be rear areas. This enemy was identified as the 2nd Armd Div and was repulsed, losing 8 tanks.

The 6th and 25th Divs attacked toward Kiangan all day. At sunset, the left of the line was the closer to the objective and 5 miles from it. The sector where this fighting occurred consisted of steep hills and mountains, having only one road—Route 4—which extends from Bagabag to Bontoc. Kiangan is west of this road on a spur about 5 miles long. The hills are generally waterless, and at this season intensely hot during the day. The enemy had numerous centers of resistance. The plan was to capture these one at a time, in such manner as to break the enemy's position into isolated groups.

With a view to landing an amphibious expedition near Aparri, and thus in rear of the enemy, the Navy's light forces shelled Aparri and vicinity. To further the plan, Filipino guerrillas entered Tuguegarao, 34 miles north of Ilagan. They were supported by planes from the 5th Air Force, which maintained liaison between the guerrillas, the 37th Div to the south, and the Navy to the north.

On 20 June the 37th Div passed northward beyond Ilagan, meeting resistance at the river crossing at the start of the advance. The 6th and 25th Divs continued to meet the same strong resistance as the day before, the 6th being severely shelled by enemy 155-mm howitzers. Against strong opposition the 33d Div made a minor advance near Bokod.

A second force of guerrillas which had been brought to the north coast west of Aparri, crossed the Cagayan River during the night 20/21 June and entered Aparri in the morning. During the day they advanced south 8 miles to Dugo. Small enemy forces withdrew to the south and east. The first force of guerrillas was still at Tuguegarao and was attacked, but managed to hold its position. Having completed the river crossing at Ilagan the 37th Div started for Tuguegarao, but meeting resistance gained only 5 miles, arriving at San Juan. Enemy armor attacked the right of this advance but was repulsed with the loss of 7 enemy tanks.

On, the 22nd the 37th Div renewed the advance along Route 5, spearheaded by light and medium tanks, half tracks on which machine guns were mounted, and tank destroyers. Infantry plodded along in rear in a broiling heat and enveloped in dust. No enemy other than small patrols were noted at first, and the leading elements gained 5 miles from San Juan. They passed the small village of Balasig, which is on the east bank of the Cagayan. Just beyond to the north is a small stream. While the leading elements were astride the stream, Japanese artillery suddenly opened fire from both upstream and downstream. The troops withdrew. The 37th Division Artillery, with 105-mm howitzers and 155-mm guns, was brought forward. After a two-hour artillery preparation the infantry attacked. The enemy was driven out. From identifications it was discovered that he was a new division not previously known of as in this sector. It was believed, but not established, that the enemy was based on Divilacan Bay and Palanan Bay, 30 miles east across what were supposed to be roadless mountains. Enemy prisoners were in good physical condition, showed no signs of malnutrition.

At about 0900 hours on the 23d the 11th Airborne Division dropped at Aparri a force of men who relieved the guerrillas. For the first time in the Philippines, gliders were employed to land pack howitzers, jeeps, and other vehicles. As the enemy had withdrawn two days before there was no resistance. The airborne troops proceeded south. Light naval forces shelled supposed positions near Gonzaga, 20 miles to the east; the 5th Air Force furnished overhead cover.

During the day the 37th Div advanced about 9 miles to within 10 miles of Tuguegarao, where the guerrillas were still resisting. The 6th and 33d Divs were heavily engaged. They reported killing respectively nearly 350 and 1,000 Japs, without making other than minor gains.

During the night 23/24 June enemy artillery at about 0200 hours unexpectedly started to shell the 37th Div's right with 75-mm and 105-mm guns. The personnel took advantage of adjacent cover, as it was impracticable to locate the enemy although the division artillery had a Cub plane in the air within a few minutes. On a second flight after daylight the Cub plane located the enemy's guns in the hills to the flank; they were soon silenced by the division artillery. The division advanced during the day to within 4 miles of Tuguegarao. The 11th Airborne Division joined the north detachment of guerrillas and advanced south.

The Japanese made no resistance in the Cagayan valley, having moved the major part of their troops to the mountains on each flank. The 37th Div had no difficulty on the 25th entering Tuguegarao, where they relieved the south guerrilla detachment. They then pushed on to Iguig, a total gain of 14 miles for the day. The 11th Airborne Division advanced south to beyond Gattaran, where they were approximately 20 miles from Iguig. The 6th, 25th, and 33d Divs continued to fight against strenuous opposition in the mountains, amid steep hills, sharp slopes, and woods.

At about 0130 hours on the 26th Japanese artillery heavily shelled the CP of the 37th Div. This was supposed to be so far back of the front that it had been pitched in a field and had operated all night with lights blazing. It was necessary to abandon the headquarters.

On 26 June the 37th and 11th Airborne Divs, meeting no enemy, advancing north and south joined near Alcala, a small burning village. Thereby the Cagayan valley was cleared. The 6th, 25th, and 33d Divs continued to fight in the hills.

On 28 June the campaign was officially announced as closed not only for north Luzon but for all of the Philippines. To include 27 June, losses were reported as follows for the period since the original landing on Leyte (20 October, 1944):

Americans—3,793 killed; 34 missing; 11,351 wounded; 15,178 total.

Japanese—113,093 killed; several thousand prisoners; 117,000 approximate total.

In north Luzon the enemy was believed to be grouped into three detachments. Main force was around the area Buguias—Kiangan. Two forces were in the Sierra Madre Mountains, about opposite Ilagan and Tuguegarao.

Operations of the XI Corps

At the beginning of this period this corps with the 43d and 38th Inf Divs in line from north to south was engaged in mopping the Mariquina water shed along the line Ipo—Wawa—Pinugay, all inclusive. The Mariquina River and its tributaries furnish water for the city of Manila. Although within 25 miles of Manila, the enemy had held the sources of water supply until June, so there had been no running water in the city. This constituted a first class nuisance, which the XI Corps had just about removed by capturing the enemy-held dams and reservoirs at the end of May. The enemy was believed to be based on the east coast of Luzon. Our 1st Cav Div, dismounted, reinforced by the 112th Combat Team and guerrillas, was on that coast between Infanta and Port Lampon. This force had road communication to Manila, but there was no road beyond Infanta nor any across the mountains toward the enemy.

Around 25 June a six-mile gain put American troops four miles from Tuguegarao (1), which apparently was being precariously held by Filipino guerrilla forces against Japanese attacks. From the north airborne troops and guerrillas were moving down from Aparri (2). Between the north and south forces 20,000 Japanese were officially reported trapped. Inland from Lingayen Gulf one three columns driving northward was six miles from Kiangan (3).

The Japanese were between the two infantry and the cavalry divisions which were advancing toward one another over rugged mountains. The enemy defended himself from cave positions. He was supposed to number about 5,000 men.

Between 19 and 21 June the enemy was reported to have lost 500 killed, but no information as to the nature of the operations was released. In an engagement on the 23d by the 38th Div near Mt. Payacin the enemy lost another 200 men, while the 1st Cav Div reported 150 enemy killed and 58 prisoners taken. The latter were Formosans.

No further fighting was reported during the remainder of June.

Operations of the X Corps

The 24th Inf Div held Davao and the shore along the west side of Davao Gulf. It was in touch with the enemy, who were a few miles inland on high, jungle-covered ground. The mission of this division was to advance westward. The 31st Inf Div was along the Pulangi River, based on Macajalar Bay, with the mission of advancing east and southeast.

In addition to holding the difficult and generally roadless country between the 31st and 24th Divs, the enemy also had forces in the Agusan valley. In that area American guerrillas were operating.

On 20 June the 41st Inf Div, having arrived in the Davao area, attacked along the road Davao—Guianga—Baguio. A stiff fight resulted in a small advance. The air force daily aided the ground troops by heavily bombing enemy positions. On the 23d the 24th Div made a further advance in the same area. Marine planes went to the aid of the guerrillas in the Agusan valley. On the 26th the 24th Div continued following the Tamogan River, and arrived against moderate opposition to within 26 miles of the 31st Div. The Marine Air Force continued to strike in the Agusan valley.

PART II (29 JUNE—18 JULY 45)

In north Luzon the 37th Inf Div has been mopping east of the Cagayan River. At the close of the period it was in the west foothills of that range.

The 33d, 25th, and 6th Inf Divs continued their attack in the Cordillera Central Mountains. The left made the greatest advance. It arrived at Mankayan on 1 July for a 22-mile gain since 19 June. It continued its advance and reached Bontoc on 14 July; this was another 20-mile advance. Also on 14 July, the right captured Kiangan, having made 7 miles in 26 days.

On 18 July, when this account closes, the enemy held the mountain area north of the line Bontoc—Kiangan; also the mountainous Sierra Madre along the east coast of Luzon.

From miscellaneous sources the following appears to the situation as of 18 July.

Filipinos released from Japanese territory in north Luzon report that the Japanese C-in-C, Gen. Tomoyuki Yamashita, flew away to Formosa during May. This is denied by the Tokyo radio, which on 14 July stated he was present for duty in north Luzon on that date.

At Manila about 400 sunken wrecks have been removed from the harbor, which is now open and handling more inbound cargo than ever in its history. About as many other wrecks remain to be removed. It is estimated that it will be November before the contemplated work is completed. In the meantime Manila has become the base for large and increasing forces and for enormous dumps of supplies.

COMMENTS

The main Japanese force in the north is estimated at 15,000 men. It has air and sea communication (at least at intervals) with the homeland.

Detached and isolated enemy forces are holding out:

(1) A force of all arms, estimated as 4,000 men, is in the Zambales Mountains just west of Fort Stotsenburg and Clark Field. It raises its own food. It may have occasional plane contact with Japan.

(2) A force estimated at 5,000 men is opposing the XI Corps in the area bounded on the west by the Mariquina valley and on the east by the Pacific Ocean. The Japs may have sea communication by submarines.

(3) A very small force remains on Corregidor and engages in sniping. It is believed to be completely isolated.

(4) A force of undetermined strength is in Legaspi Province. It probably has sea communication.

(5) The enemy holds southeast Negros—strength unknown but probably under 1,000.

(6) The enemy holds a position in mountains north and northeast of Cebu—probably several thousand and probably with access to the sea.

(7) An enemy detachment believed not to exceed 1,000 men is in northwest Leyte.

(8) About 3 divisions (estimated as some 20,000 men) are in eastern Mindanao. The main body holds the mountain area from Mt. Apo (inclusive) northward for perhaps 80 miles. A small detached force is near the headwaters of the Agusan River. With this force are some 15,000 Japanese civilians evacuated from the Davao area. These Japs may have communication with submarines. The X Corps is attacking.

(9) A force estimated at not over 1,000 is in the hills 50 miles north of Zamboanga. It has access to the sea.

(10) The Japs hold most of Palawan.

The above list is partial. There may be other enemy detachments.

SOUTHWEST PACIFIC COMMAND (less Philippines) (19 June to 18 July 45)

BORNEO

Three operations have been in progress, all in the northern half of the island. One each at Tarakan, Brunei Bay, and Balikpapan (pronounced "Balipapan"—*k* at end of Malay syllables not pronounced). All missions have been to secure oil fields.

Tarakan

The Australian 9th Div (reinforced by a Dutch detachment) and the US 7th Fleet and 13th Air Force attacked this place, which is a small island off the east coast, on 1 May. By the beginning of the period all of the island had been reduced, less one center of resistance in rugged, jungle-covered territory in the interior. Located near Djuata, this was taken on 23 June, ending organized resistance.

By the end of June oil was being supplied for Allied use. The Tarakan wells are reported as not deep. They produce oil which is improved by refining, but which is of a quality enabling it to be used "as is" for ordinary ship fuel. For this purpose it becomes the nearest available source for the vast fleets assembling for the assault on Japan. There is no information as to the quantity of oil being produced.

Brunei Bay

The Australian 9th Div (under Lt.-Gen. Sir Leslie J. Morshead, corps commander) less a detachment at Tarakan and reinforced by American and Australian naval and air forces, had attacked on 10 June. By the morning of the 19th it had occupied Brunei Bay, including Labuan Island at the entrance, and Brunei, capital of a native state of the same name. There had been no opposition except for contact patrols. Whatever forces the enemy may have had disappeared, presumably into the interior. On the north side of the bay Weston had been occupied. This is the terminus of the only railroad in Borneo.

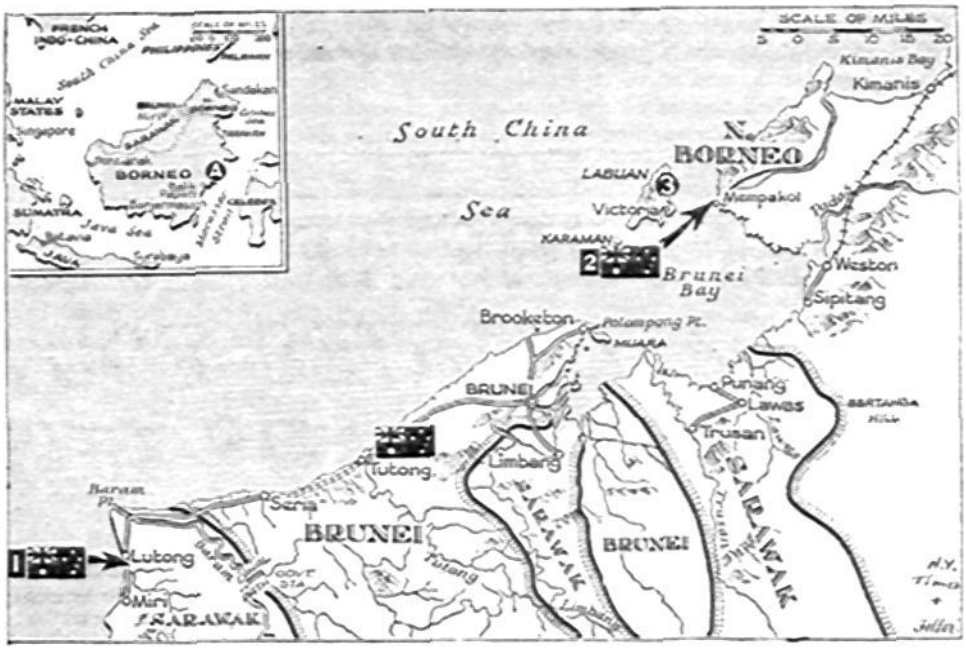
Amphibious patrols scouted all around the bay, moving by water or road as necessary. No enemy was discovered.

On 20 June an artillery preparation was fired from Labuan across an intervening strait against Mempakul, which was then

seized. The minimum range is about 12,000 yards. No enemy was reported.

On the 21st an amphibious expedition landed at Lutong, about 80 miles southwest of Brunei Bay, where there was an oil refinery. This place is 7 miles from the Miri oil fields. There was no opposition, but the refinery had been destroyed. The oil fields were secured next day. A road from Miri follows the coast back to Brunei-Troops worked backward and opened a land line of communications.

Troops on the north side of Brunei Bay had in the meantime been advancing northeastwardly, following the railroad from Weston. On the 27th Beaufort was reached. This is a junction. The main railroad line continues on along the coast to Jesselton while a branch goes eastward into the mountains. From Beaufort roads extend north for 125 miles to the north tip of Borneo, and generally for a distance of 50 miles back of the northwest shore.



An unopposed landing in the vicinity of Lutong (1) put the Australians in position to control the refinery center for the Scria and Miri oil fields. It also obviated the necessity for a ground advance over swampy terrain from Tutong, to the northeast. This landing followed by a day another one at Mempakol (2), at the top of Brunei Bay. Fighter bombers began using the air strip on Labuan Island (3). Balik Papan (A on inset) was again blasted from the air by heavy bombers.

Some enemy resistance now developed; the advance was slowed. By 12 July the gain amounted to 16 miles from Beaufort. It was decided to by-pass the enemy. On the 13th an amphibious expedition moved northeast along the coast, and landed at Andus, 5 miles beyond the front. There was no opposition; the troops advanced 5 more miles on land, for a net advance of 10 miles for the day. The enemy retired toward Jesselton.

An advance inland up the Tingar valley reached Marudi on 18 July, without finding any enemy.

NOTE: the oil fields in the Brunei area produce good oil. They are reported as partially exhausted and relatively deep. The enemy is reported as having blown in the walls; it may take some time to recondition them.

Balikpapan

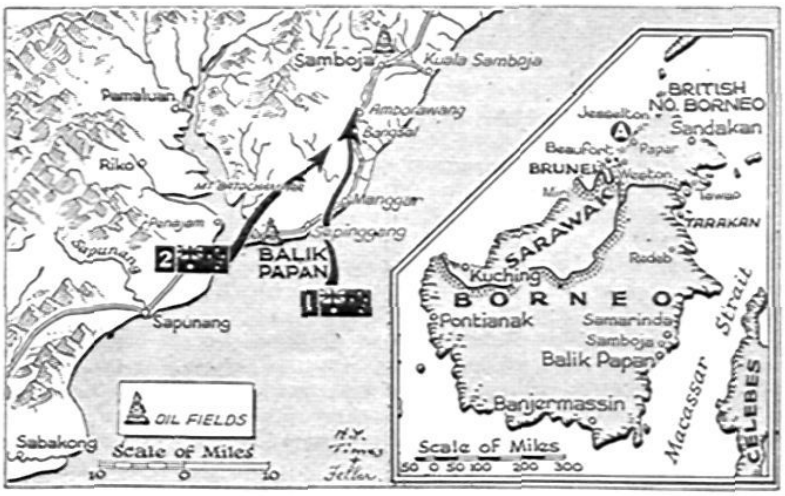
On 27 June, following extensive air reconnaissance and a 40-day daily bombing by the 13th Air Force of the Balikpapan area, the 7th Fleet with 3 cruisers and 19 destroyers commenced to shell the Balikpapan defenses. At the same time minesweepers started to clear the adjacent seas of mines. From the air it appeared that the Japanese defenses had been broken. Nevertheless the naval and air attack was continued through the 30th, on which date the mine sweeping was completed.

On 1 July the Australian 7th Div landed following an intensive air and naval preparation. Balikpapan is triangular in shape with a base nearly 4 miles long extending east and west along the shore. On the northwest side is Balikpapan Bay; on the northweast is the land connection. The main road follows the shore to Sepinggang airfield, 5 miles from center of town, and thence on to Sembodjalama (Samboja) (31 miles out) and the Samarinda oil field (53 miles away).

Two landings were made over beaches near the southeast corner of Balikpapan, and one was made near Sembodjalama. The Australians were put ashore by American transportation units using amphibious equipment. Enemy resistance was moderate; none was near shore. The residential part of the city was entered on the left, while the right was 2 miles from Sepinggang air field. These initial gains were extended next day, when the air field and about half of the town were occupied. Progress in this direction was stopped at a streamline: the enemy released oil along the water surface, then set it on fire. This made a first class obstacle not crossed this day.

As the supply of oil continued to flow down the stream and the flaming barrier kept burning, the Australians worked around inland along the northwest side of the city and on the 3d had it enveloped. They then swept down into the town and captured it. The enemy withdrew into the interior. The beachhead so far won was 8 miles across.

On 4 July reconnaissance led to an estimate that the enemy's



In the middle of July one Australian column pushed on toward the Samboja oil fields (1) from Amborawang. Other forces captured Mount Batochampar, after surrounding it, and moved northward farther inland. In north Borneo the Australians were patrolling south of Jesselton (A on inset).

main force was along the coast beyond the airfield of Sepinggang, covering the approaches to the main oil fields. A secondary enemy force was located north of Balikpapan. The 7th Fleet shelled the supposed position of the Japanese main body. Next day a small amphibious expedition moved from Balikpapan about 3 miles across the bay to Penadjam Point with a view of opening the harbor to Allied shipping. Only small enemy patrols were found; they withdrew promptly. Losses so far amounted to

Allies—214 killed—22 missing—420 wounded—656 total.

Japanese—3,031 killed—274 prisoners—3,305 total.

On 6 and 7 July minor operations were conducted about Balikpapan Bay with a view of occupying main features along its shore. Dutch colonial troops took part, the Americans continuing to operate the amphibious equipment and furnish air and naval support. An advance was started up the coast road, with the mission of capturing the Samarinda fields. The road was found to be mined; opposition developed. On the 8th this advance passed Manggar, where there was another air field 8 miles beyond Sepinggang. The enemy was showing considerable strength; he was using coast artillery guns, infantry mortars, and machine guns from suitable sites within the jungle and hills on the west side of the road.

On the 9th the Japanese counterattacked at Manggar, using 105-mm howitzers in support. With the aid of the Air Force he was repulsed.

In the meantime another detachment of Australians had been fighting to advance up another road following the shore of Balikpapan Bay. Alongside the latter road was an oil pipe line coming from the Wain River, about 8 miles north of Balikpapan. On 10 July the Australians captured the burned-out remains of the Pandansari refinery. The enemy was located in a strong point on Mt. Batochampar, 200 feet high and 6 miles north of the city, which covered a bridge over a small stream—the Soember River—5 miles from town. On this day, at the opposite end of the bridgehead along the coast, an advance of a mile was made beyond Manggar, through several defended road blocks.

On 11 July the US 13th Air Force aided the Australians by bombing Mt. Batochampar. This enabled the Australian infantry to advance to the foot of the mountain. At the other end of the bridgehead the 7th Fleet shelled the enemy just beyond Manggar. On the 13th a strong attack was delivered against Mt. Batochampar. The surrounding jungle had deep mud, making the advance extremely difficult.

Next day Dutch troops were ferried across an inlet of Balikpapan Bay and landed on Kariangau peninsula without opposition. They advanced inland to a position on the left rear of the enemy on Mt. Batochampar. Along the coast Australian troops advanced a mile on their way to Sembodjalama.

A combined encircling attack was started against Mt. Batochampar. It met constant severe resistance. The Mount was stony, but the ground in the foreground was deep mud and hard to advance over. The troops on the road to Sembodjalama used flame-throwing tanks to aid their advance. By the 15th they were 5 miles from their objective, having advanced 4 miles in three days of steady fighting, through the midst of tidal swamp area. On 18 July both Mt. Batochampar and Sembodjalama were taken.

NOTE: The Balikpapan oil field has been the second largest in the East Indies, surpassed only by the Sumatra Palambang field. The Balikpapan fields are scattered to the north and east of the city. Most of them are on water lines, enabling oil to be shipped by barge as well as by pipe lines. Furthest fields are 50 miles away.

The quality of oil is excellent for fuel purposes. Although improved by refining, the oil can be used for ship fuel "as is." There was a refinery at Balikpapan capable of producing about 7,500 barrels of gasoline per day.

Balikpapan harbor has a sand bar across the entrance. Maximum draft over it is 23 feet. Ships coming in had 7 wharves equipped with oil-loading pipes. Ships with too great draft to enter could be loaded by oil barges.

Oil lies in two levels down about 600 and 1,200 feet, respectively. This compares with only 300 feet at Tarakan, and new shafts (if necessary) will require correspondingly more time to construct.

NORTH NEW GUINEA

The Australian 6th Div, which captured Wewak last May 25th, has been engaged in operations against the remnants of the Japanese Eighteenth Army, which originally had 3 divisions. As long as the enemy held Wewak (which he did since the spring of 1942) he had received occasional supplies by submarine barges. It was believed that this line of supply had now been permanently cut. The enemy had retreated south to the adjacent Prince Alexander Mountains. South of the mountains and 125 miles from Wewak is the Sepik River. The Australians had a flank guard in this valley, coming from the west, which had arrived in the vicinity of Maprik. The Prince Alexander Mountains are rugged and jungle-covered but their height does not exceed 4,000 feet.

On 19 June the enemy was attacking advance elements of the Australians on the north slope of the mountains. This only delayed the advance, but it made it necessary to bring forward the division artillery. With that help and the constant support of the air force a strong attack was delivered on 25 June against the main enemy position on Mt. Tazaki. In an all-day battle, which turned out to be the severest in the entire Wewak campaign to date, the mount was captured. Mt. Tazaki dominates the surrounding country and so was an excellent OP overlooking the coast area.

Thereafter operations proceeded to force a way southward, with a view of taking in flank the enemy about Maprik. Strenuous opposition was encountered. When this account closes the Australian advance had reached the crest of the Prince Alexander Mountains and was at Hambrauri, about one third of the distance from the ??ast to the Sepik valley.

The remaining enemy strength in this sector is estimated at 11,000 men. They are probably self-supporting as to food, which can be raised locally. The Sepik valley affords an opportunity for air service to Japanese-held territory to the west. It is not known whether the enemy has communication with the sea.

BOUGAINVILLE

The Australian II Corps, with the Australian 11th Div in the north and the 3d in the south, has been driving the enemy out of Bougainville. The enemy holds both ends and the entire east coast of the island.

No active operations have been reported for the north end, other than minor attacks by air forces and shelling of the coast by naval forces. The line appears to be about 6 miles south of the north tip of Bougainville.

The Australian 3d Div has been engaged in an active campaign toward Kahili and Buin. It has been aided by the New Zealand Air Force and the Australian Navy. The enemy is reported as a weak division not exceeding 5,000 men for combat purposes.

The II Corps has abandoned jungle warfare as being too slow and generally unsatisfactory. Roads are being built and bridges constructed with a view of opening the territory to heavy artillery and armor. This has delayed the advance on account of the time required for the necessary work to bring the artillery into range of the enemy, establishing OPs, lay communications, etc. At the beginning of the period the line was approximately 12 miles from the enemy's air strip at Kara.

In the latter part of June the enemy assumed the offensive. He had established a line of strong points, varying in size to hold garrisons of from 50 to 500 men, to cover his front. After making this arrangement he launched flank attacks through the jungle. The roads which had been constructed enabled the Australian artillery to be used to good effect, and with the help of the New Zealand Air Force the enemy was held.

On 30 June the Australians attacked, covered by artillery barrages

and with strong aid from the air. A 3-day battle ended on 2 July with an Australian gain forward of 1½ miles. On 10 July the Japanese started a new attack around the flanks and through the jungle. It reached the Australian rear areas, where it was held and then repulsed. On 19 July the line was between the Mobiai and Miwo Rivers, 10½ miles from Kara air strip.

MISCELLANEOUS

In connection with the Borneo operations, an extensive neutralizing campaign against enemy air fields in Celebes, Java, and Borneo has been conducted by the 13th Air Force, reinforced by the Australian Air Force.

According to Japanese reports a force was landed on 26 June on Ternate. This is an island about 7 miles long from north to south and half as wide, at about the center of the west coast of Halmahera. It is the headquarters of a Sultan who claims jurisdiction over part of Halmahera and part of Celebes, and is the most important center of trade for that area.

On 27 June our naval reports indicate 2 Japanese motor torpedo boats were sunk in this vicinity, but nothing was said about a landing. Further Japanese reports state that the landing parties were fighting on shore as late as 16 July. There is no substantiation of this operation from Allied sources, and no identifications have been given by Japan as to the attackers.

THE WAR IN JAPAN (19 June to 18 July 45)

THE AMERICAN PLAN

The war has been brought home to Japan by a most active and intensive campaign of bombing. The large cities of Tokyo, Nagoya, Osaka, and Kobe have been burned down and a number of medium cities are suffering a like fate. Before considering the tactical events connected with those operations, the strategical principles involved will be discussed briefly.

On 1 June President Truman, in his speech before the Congress announced that the military policy of the United States was:

(1) Pinning down the Japanese forces where they now are and keeping them divided so that they can be destroyed piece by piece.

(2) Concentrating overwhelming power on each segment which we attack.

(3) Using ships, aircraft, armor, artillery, and all other materiel in massive concentration to gain victory with the smallest possible loss of life.

(4) Applying relentless and increasing pressure to the enemy by sea, air, and land so that he can not rest, reorganize, or regroup his battered forces or dwindling supplies to meet our next attack.

Of the foregoing principles, upon which military operations are required, (1) is already nearly attained. Japanese forces are widely divided from Burma, the Netherland Indies, Indo-China, and China up to Manchukuo. Excepting the last two countries, the Japanese forces are pinned down through Allied naval and air superiority which prevents enemy concentrations and his maintenance of supplies.

Paragraph (2) indicates an intent of attacking segments held by Japan in turn; the order of intended attack is naturally secret. Paragraph (3) explains that this attack will be by maximum use of ships, planes, artillery, and materiel, in order to save lives. Areas selected for attack are to be bombed and shelled rather than attacked by invasions. The last paragraph (4) is a repetition of (1) in a varied form.

On 14 June Rep. Cannon, chairman of the Appropriations Committee, stated that "American military authorities" had advised him that Japan might surrender within 90 days, but that if she did not the United States might choose to wage a long war of attrition and starvation rather than launch an immediate invasion.

On June 18 Gen. H. H. Arnold, commander of the Air Forces, stated in Manila that the bombing of Japan was planned to continue to the end of 1946, by which date "there will be nothing left of Japan." All cities would have been destroyed; no industries would remain; no fuel [gasoline?] would be available. He explained that the bombing then under way was by super-bombers. Soon these would be supplemented by medium, light, and fighter bombers, with a constantly increasing quantity of bombs falling day and night. He understood that enemy forces were in Korea and Manchukuo and his remarks did not apply to those areas, but when the time came they would be taken care of.

The authoritative announcements as to the plan to be used by the American forces was undoubtedly given publicity with the intent that the enemy should know about it. As to what the enemy would do, opinions were divided. As Rep. Cannon stated, some "military authorities" thought that Japan would surrender within three months; he was not himself certain about this, and consequently asked appropriations for two more years of war. He got the money.

JAPANESE REACTION

The American plan was duly noted in Japan. On 9 June Premier Kantaro Suzuki replied in a speech to the Japanese Parliament. This was extended by a radio address on the 18th.

Suzuki announced that there would be no surrender. He then expressed thanks to Manchukuo and China for "contributing a great deal" to the Japanese war effort. He did not explain of what the help consisted. He admitted that Japan might be invaded, that there would be a shortage of food and difficulties in transportation. The situation was critical but he believed it would be overcome. This would be accomplished by fighting.

Japan was aware that the Americans after having won at Okinawa were preparing a new campaign. Due to the narrowness of the American bases and the long distances involved, it was believed that the Americans would for a considerable time limit their attacks to bombings. Invasions would follow afterward, when the Americans were convinced that bombing alone would not win the war for them. These might well be by air, rather than by amphibious expeditions. On account of this possibility a new Training Regulation on *How to Combat Airborne Troops* was being distributed.

It was stated that this new TR contained a description of American airborne technique, followed by instructions on a *sure to kill* method of attack to be used against invaders. Announcement was made that three more industrial plants had been ordered converted to airplane construction, the work to be performed by the Mitsui Company in addition to other assigned duties.

JAPANESE PREPARATIONS

Only a limited amount of information is available. Japanese broadcasts are frequent and contain ample "hand-outs" as to alleged defense measures. These are naturally suspect as to their accuracy. A conservative examination of available evidences indicats that the situation within Japan is somewhat as follows.

There is a food shortage. How much is due to lack of food and how much to disrupted transportation and distribution services, is not known.

In normal times Japan raised about 85% of its required food. Missionaries' reports (now over a year old) indicate that by reducing the ration, and provided there is proper distribution, Japan could get by on food, notwithstanding air or sea blockade. It seems now that this is not quite so.

One of the main food items is fish. Japan has been the great fishing nation of the world. American planes have been sinking fishing boats on sight, and seem to have nearly stopped off-shore ocean fishing. In-shore fishing, usually conducted by small boats at night, probably still continues.

Rice is the main food. There is no more vacant land in Japan suitable for rice cultivation, and this crop can not be increased. Japan claims that burned-out cities are being placed under cultivation.

Japanese houses are largely of timber, thatch, and paper, except that in cities roofs are usually of tile. A burned-out city would not leave a mass of debris similar to what has occurred in German cities after burning. In some cases the ground is burned clean, with almost no debris. In residential districts the tiles from roofs are about all that is left. It would be possible to convert a burned-out city site in Japan into farms, but it would seem that it would be 1946 before crops would be ready for harvest. In the meantime the sites are unproductive.

A better source is in ground not heretofore cultivated for food. First there are the mulberry tree areas. When Japan was selling silk to the entire world, silk was a great export and mulberry trees were valuable economic assets. In the current war they have ceased to be of use and the area they occupied can profitably be devoted to fruit trees. Provided a beginning had been made in this direction in 1940, when the Japanese silk industry began to decline, some returns may now be available.

Japanese lowlands cover 15% of her territory. Nearly all her food crops are raised on this restricted area. The lowlands are not by any means so very low. Much is elevated terrace space. Some is ancient flood land, which has never been cultivated as it is mostly gravel and sand. It amounts in sectors to about 25% of the lowland. Such land is not now subject to flood, and lies at elevations from 10 to 200 or more feet above the adjacent water systems, and has a correspondingly low water table.

Japanese reports state that these uncultivated lands, heretofore unsuitable for rice, have been found capable of raising potatoes. For 1945, they state the new potato crop will equal 15% of the rice crop and just about make up the rice deficit. For 1946, the potato production is expected to be 25% of the rice equivalent.

All this is possible, although there are no means of verifying it. It is presumed the potatoes are sweet potatoes. The rainfall is sufficient in ordinary years to water the lowlands areas without requiring irrigation schemes.

Lowland areas for cultivation are restricted to isolated sections scattered along the coasts on both sides of the Japanese islands and within a few valleys. Transportation normally having been largely by water, a great number of boats and ships have been available for that purpose. The railroads were mainly devoted to passenger transportation and can not carry the freight previously shipped by sea.

The Allied Air Forces have about broken up the sea transportation business. This is certain to materially affect Japanese distribution problems. There are roads in Japan, but while they are hard surfaced they are not suitable for motor transportation. Japanese roads are narrow, intended originally for rickshas or man-pulled vehicles. They have sharp corners; many bridges are miniature. To enable motor vehicles to use roads extensively a complete rebuilding would be required. Besides, it is doubtful whether Japan has trucks or gasoline for a large truck traffic.

Whatever Japan has done or proposes to do, the numerous reported conferences on food point to a decided crisis at this time.

Another Japanese crisis has been caused by the destruction of cities. Due to their generally inflammable nature they have gone much faster than cities of comparable size in Germany. The number of refugees has consequently increased rapidly.

According to a Japanese report of 4 July, the number of homeless at that date was 4,900,000. Photographs taken by American planes indicate that the burned areas fully accounted for this number, which is probably not exaggerated. On the contrary, it may be an understatement. But at its face value the number given is large. It must have certainly disrupted industrial production.

As to the disposition of the refugees, only two Japanese reports are available. One is the transfer of 200,000 people to Hokkaido; the other, the assignment of another 200,000 to work amid the ruins of Tokyo. This leaves 4,500,000 unaccounted for.

Outside of Japan, the Japanese report that most of the cities of Formosa have been reduced to cinders by systematic American air attacks. These started on a large and continuous scale earlier than those against the main Japanese islands. The latter are a larger target and require more bombing. The ultimate aim of the Americans is clear, and their ability to produce complete devastation has been amply demonstrated. Japan has no illusions on this. On 26 June Premier Suzuki in a broadcast informed his people that American air raids over Japan were likely to grow both in intensity and in frequency.

Numerous Japanese reports have enlarged on an extensive program of cave defenses under construction.

Cave warfare is ancient. It is supposed to have been the common method of fighting in pre-historic ages. In modern times it had all but disappeared. It is now being revived on a large and increasing scale by Japan as an answer to attacks by air and by naval gunfire.

The earliest reports of Japanese cave defenses on a large scale were from Mindanao, where work started in September, 1944, or about a month before General MacArthur returned to the Philippines. Since that date cave defenses have been encountered generally wherever our troops have come into contact with the enemy.

Defense of cave positions has so far been limited to the defensive. This did not exclude occasional counterattacks by the defenders. Caves have not yet been used as a base from where a major offensive has been launched. Theoretically it would be possible to do so, provided caves were large enough to shelter major military units.

There is some evidence that Japan in her home islands is doing just this. She is placing major elements underground.

A Japanese newspaper account dated 12 July complained that numerous Japanese were deserting their assigned labors of digging shelters. Other accounts reported that shelter was being provided for animals, for essential war industries, for food and munitions dumps. One airplane factory was claimed to have 562 acres of floor space, or ⅞ of a square mile, underground.

The construction of underground war plants probably commenced in 1943, due to reports of Japanese military attaches in Germany. There is no means of knowing how far this has progressed but in two years something has been accomplished. It would appear that whatever the progress made it has been below what Japan had hoped for, for in 1943 the home plants were to produce for Japan only and were to be all underground. Separate war plants on the mainland were to provide for Japanese troops in China. For supply purposes Japan and China were each to be completely independent of the other.

On 29 June the Tokyo radio station reported that in view of the American bombing Japan's war industries were to be transferred to Manchukuo and China, although how this was to be accomplished in view of the American air and sea blockade had not been determined. This solution was stated to be preferable to the suggested alternative of dispersing plants through Japan. This shows that Japan has not been able either to place the home industries underground or to disperse them into numerous small plants. Whatever has been planned on this line, has failed to be carried out completely.

How much industry is now underground and how much dispersed to out-of-the-way places is unknown. Dispersal is not difficult for many plants if it is possible to provide the necessary increased transportation for distributing raw materials to a multiplicity of centers and for gathering and distributing the finished articles. The trouble in Japan is the lack of transportation.

Undoubtedly cave defenses are under way throughout Japan. The terrain is almost ideal for this type of fortification. Only 15% of the total area of the home islands is reasonably level, while another 12% are slopes not exceeding 15%. The remaining 73% has steeper slopes and is largely covered by forests or by woods. The latter are reforested areas, with trees in rows clearly distinguishable from the air.

Outside of Japan where cave defenses have been encountered they have been absent from beaches or their vicinity. Beaches have not been defended. The main line of resistance has been

inland, wherever possible, beyond the range of attacking warships. On small islands (such as Iwo and Okinawa, all parts of which were within range of naval vessels) cave defenses did not face toward the sea and were hard to bring under effective naval gunfire.

Japanese broadcasts describe their new caves as a net of subterranean communication and combat posts, permitting interlocking fire over the foreground. This is about what was found in the Philippines. Caves may be very large—one in the Philippines could have held 1,500 men. Entrances are in zigzag shape, limiting the effect of shells or bombs at entrances. Cave defenses in organized sets on Iwo (small size), on Okinawa (medium size), and in the Philippines (larger size) have taken respectively one, three, and four months to overcome.

A year has passed since Japan started its cave defense system on a large scale. The nature of cave construction and the climate are such that work can continue all the year.

75-mm recoilless gun in position on Okinawa. 9 June 45.

Japan seems to be fairly well informed as to American dispositions. Its estimate of the situation for 7 July 45, presumably based upon aerial photographs, reports that on Okinawa there were approximately 900 planes distributed over 13 airfields, with 100 additional planes shortly expected. In the Marianas they had located nearly 1,000 super-bombers with about 250 fighters and an unstated number of ordinary heavy bombers. They had not located any large bodies of troops, and claimed these had been withdrawn from Okinawa for regrouping, reorganization, and rest. The Japanese G-2 thought that the available information confirmed earlier statements that the United States contemplated no immediate invasion, but did intend to go on with, and to increase, the bombing program.

THE AMERICAN AIR AND NAVAL ATTACKS

On 11 July the War Department regrouped air forces in the Pacific. The 7th Air Force, previously with the Pacific Fleet, was transferred to the Far East Air Force (Gen. George C. Kenney), to which had already been assigned the 5th and 13th Air Forces. This Air Force belongs to the Southwest Pacific Command of Gen. MacArthur, and the planes are now mainly based on Okinawa.

The 14th Air Force in China has been reinforced by the 10th Air Force, transferred from India.

The Pacific Fleet (Adm. Nimitz) retains the 11th Air Force in the North Pacific, and has large aircraft carrier air forces and the Marine Corps Air Force with the assigned mission of "tightening the naval blockade of Japan and destroying Japanese forces and shipping wherever found, preparatory to further amphibious assaults."

The 8th and 9th Air Forces are en route from the European and Mediterranean Areas to the Far East. The 20th Air Force superbombers remain in the Marianas, under Gen. Carl Spaatz.

The typhoon season is on, and will continue through November. During this period from 1 to 3 typhoons per month may be expected in the seas south of Japan. On 5 June an unusually early typhoon—they rarely come before mid-July—struck the Fleet and damaged over 20 warships. Most severe damage was the loss of 100 feet of the bow end of the cruiser *Pittsburgh*. Typhoons do not stop naval operations, but they do have an effect.

Honshu is the main island of Japan, containing 2/3 (or 48,000,000) of the 72,000,000 people. It contains large industries and the largest cities. It has been the main objective of air and naval attacks.

A blockade of that side of Japan facing the Pacific Ocean has been maintained for some time by ships and planes. This has been supplemented by a blockade of the Sea of Japan side, largely by use of submarines. This has not entirely stopped traffic to the mainland, but it has reduced it.

Between 19 June and 9 July, both inclusive, attacks were made by the 20th Air Force's 21st Bomber Command, based on Iwo, Saipan, Tinian, and Guam. Attacks were against cities, taken generally in the order of their importance. These included:

June	20	Toyohashi, Shizuoka	ports and industries
	25	Nagoya Osaka, Ahashi, Gifu	cities and industrial centers
	26	Yokkaichi	port for Nagoya
	29	Okayama	city
	30	Tokuyama	oil field, just north of Kyushu
July	2	Shimonoseki, Ube, Kure	cities and terminals
	3	Maruzu	oil plant (vicinity Osaka)
	4	Himeji	city
	7	Hofu, Akashi, Shimizu, Chiba	cities and oil plants

The raids of 2 and 7 July employed about 600 super-bombers which dropped on each occasion about 4,000 tons of bombs. Enemy air opposition was negligible, but antiaircraft fire was considerable at some places. In no case reported were American losses due to enemy action in excess of 5 super-bombers, and usually they were less than this.

On 5, 8, and 9 July the 7th Air Force fighters, in preparation for a forthcoming naval assault, attacked air fields in and around Tokyo, using about 150 planes each day.

On 10 July the 3d Fleet arrived off Tokyo. It included 4 battleships, 4 aircraft carriers, 4 cruisers, and 14 destroyers. Planes present exceeded 1,000. The air component was under command of Vice Adm. J. F. McCain, with Adm. W. S. Halsey in command of the entire force. First task was to neutralize enemy airfields. About 800 planes attacked in waves from daylight to 1300 hours, and report having destroyed 72 enemy planes on the ground. At the same time 550 superbombers from the 20th Air Force based on Iwo attacked Tokyo and Sendai. The latter place involved a flight of nearly 4,000 miles for the round trip. Enemy planes observed the 3d Fleet and kept it under track. Two of these planes were downed by local air cover. There was no air opposition, and only minor antiaircraft fire. Air incendiary attacks by night had preceded these attacks. These were against Gifu and Sakaichi in the Nagoya area, and against Sakai and Wakayama in the Osaka area. All were reported as having caused extensive conflagrations.

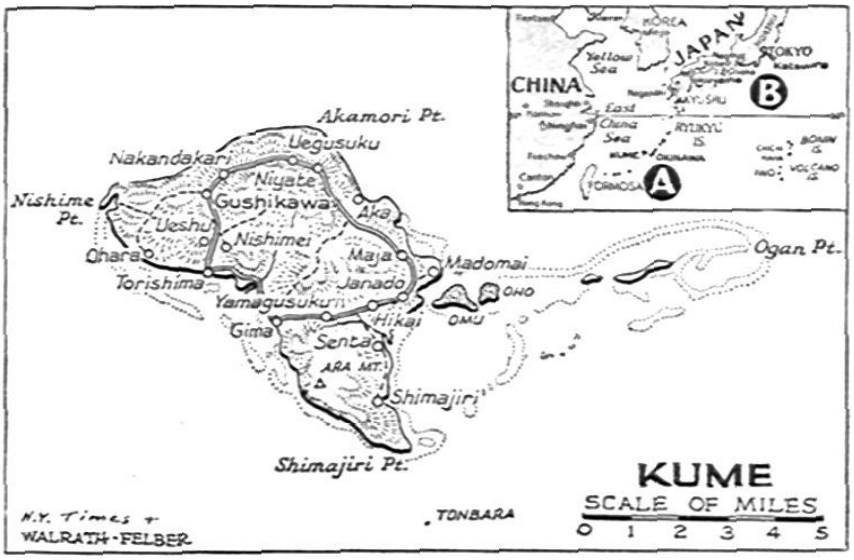
No special operations occurred on the next two days. They were renewed on the 13th, notwithstanding that fog seriously interfered. By this time the 3d Fleet had moved north 800 miles to positions east of Hokkaido. Due to the weather a contemplated air attack against that island and north Honshu was postponed. The 20th Air Force sent out 500 superbombers, which despite adverse weather bombed an oil plant on Tokyo Bay and the cities

of Ichinomiya (south of Gifu), Utsonomiya (65 miles north of Tokyo), and Tsuruga (on the Sea of Japan side, the town which is the normal port of entry for ships from Vladivostok).

On 14 July the 3d Fleet sent out about 1,000 planes to attack air bases and to burn cities. On Hokkaido, Hakodate was left in flames and Muroran, Obihiro, and Kushiro were bombed. A detachment of 3 battleships and 2 heavy cruisers plus a number of destroyers attacked Kamishi in north Honshu, the site of a steel plant. At a range of 8,500 yards the ships shelled for two hours commencing at noon and left the plant in ruins. There was no opposition.

On the 15th the 3d Fleet continued its offensive. 3 battleships and 4 destroyers shelled Muroran; other battleships shelled Hakodate at a range of 30,000 yards.

The operations of the 14th and 15th were the first in which American war vessels attacked the coast of Jajan. The fleet claims that during these two days the loss inflicted on the enemy included 6 out of 7 railroad ferries between Honshu and Hokkaido; the important steel plant at Kamaishi; 140 ships sunk averaging about 500 tons each and including 1 old destroyer; 234 other ships averaging about 400 tons each, damaged; and 37 planes. American losses were 24 planes, but all of the crews (less 16 men) were saved. The Japanese acknowledged the damage at Kamaishi and Hakodate but claimed that elsewhere their losses were not serious.



At the end of June our troops occupied Kume (*A on inset*), *300 miles from Formosa and 345 from the Chinese coast, without encountering Japanese forces. The island may serve as another base from which to launch air attacks. In a continuation of their assault on Honshu B-29s blasted an oil refinery near Tokuyama, while Liberators attacked shipping and other targets around Katsuura* (*B*).

The 3d Fleet now sailed south. It was joined by a British Fleet which included a battleship, an aircraft carrier, 2 cruisers, and 4 destroyers, one of which was Australian. The combined fleets were off Tokyo and on the 17th sent their planes from dawn on to attack the Tokyo area. After dark, ships moved in and shelled Hitachi. As there was fog and rain no observation of results was obtainable.

During the afternoon of 18 July about 250 planes attacked Yokosuka, which used to be an enemy main naval base on Tokyo Bay. The weather was bad and visibility poor; results were not immediately ascertained.[1] At about 2300 hours 6 cruisers and destroyers closed in around Cape Nojima, at the southeast entrance to Tokyo Bay, and shelled the shore for an hour.

During the entire period daily attacks were made on Formosa by army bombers. According to Japanese reports practically all towns on that island have been burned out. The enemy's air and sea base at Mako in the Pescadores has been frequently bombed. The results are not yet known.

Air forces from Okinawa, supplemented by submarines, have been operating in Tsushima Strait and surrounding waters. The sea and air blockade against Japan is not complete on this side, but it is becoming closer and more effective. According to Chinese reports no Japanese troops are now moving between Japan and the mainland in either direction.

MISCELLANEOUS

The 11th Air Force has continued to keep the north Pacific under surveillance. Raids were made against Shumushu, Paramushiru, and Matsuwa Islands. On 25 June a detachment of the Pacific Fleet passed through the Kurile Islands and raided within the Sea of Okhotsk, sinking 3 and damaging 2 small ships.

In the Central Pacific almost daily air raids have been made against that part of the Palau Group held by the enemy. Next most frequently visited target has been Yap, which was raided about 7 days out of 10. The enemy-held Marshall Islands are a practicing ground for our planes. Marcus is raided once or twice a week, Truk and Wake occasionally.

In the Ryukyu Islands the 2nd Marine Air Wing has been active in bombing islands to the north of Okinawa. Less frequent bombings have been made against the Sakishima group to the south. In the meantime Okinawa has been developed as an American air base where the 5th and 7th Air Forces have been largely concentrated. According to a Japanese estimate as of 7 July, 900 American planes were based on Okinawa, distributed among 13 air fields. Their secret service reported that 100 additional planes were expected shortly.

A Japanese estimate based on reconnaissance of Iwo, reported 1,000 superbombers and 250 fighters based on that island, exclusive of an unstated number of miscellaneous planes.

The islands of Ihiya, Aguni, and Kume (all near Okinawa) were occupied respectively on 3, 9, and 26 June, without opposition.

PROPAGANDA

Strong American propaganda is being directed toward Japan, with a view of inducing unconditional surrender. This is being broadcast daily in the Japanese language. Leaflets are also being dropped, as many as a million being distributed in one day. The substance of the leaflets, as well as of the radio talks, is to point out the futility and hopelessness of further contesting the power of the Allies. If the war is continued, it will go on with utter destruction of Japan and of the Japanese in view. If Japan surtenders, destruction of property and persons will cease. No mention has been made as to what will happen to Japanese possessions and to the home islands, other than the official statement issued after the Teheran and Cairo conferences, which provided for independence to Korea and cession of Manchukuo, Formosa, and the Pacific Islands.

No reaction to the propaganda has been noted.

[1]Later reports indicate that at Yokosuka the enemy had the battleship *Nagato* damaged, while 1 destroyer was sunk and 2 were damaged.

THE SOUTHEAST ASIA COMMAND (19 June to 18 July 45)

The British Fourteenth Army has concentrated on clearing the enemy out of the territory astride the Irrawaddy and Sittang valleys in the general area Prome—Toungoo—Pegu—Rangoon, all of which were held by the British. The enemy included remnants which had been in Arakan and which were attempting to move from that province east toward Thailand. Between the Irrawaddy and Sittang other remnants driven out of the coast cities to the south and the Mandalay area to the north were in the Pegu Mountains. These had liaison with their own troops west of the Irrawaddy and others east of the Sittang. The mission of this Japanese force appears to have been to assure the withdrawal of their troops to the west, and of themselves to east of the Sittang.

East of the Sittang were the enemy's main forces. What was believed to be the main body was astride the Mawchi Road, about 24 miles east from Toungoo and covering the entrance to Thailand. A flank guard was in the vicinity of Lake Inle (90 miles to the north), protecting the right flank. The left flank was guarded by another Japanese force on the lower Sittang opposite Pegu.

During the entire period the wet season prevailed. Rains were continuous and heavy. Off roads, ground in the low lands was deep mud, impracticable for wheeled vehicles and often for tractor vehicles. Country in the valleys was densely populated. The people showed indifference to military events. Air operations were limited. Observation was usually poor. Due to previous military operations during the past three years, nearly all bridges had been destroyed. Railroads were not operating, roads were difficult. Water transportation on rivers was reduced to canoes, dug-outs, and similar small craft, as the larger boats had been sunk or destroyed by earlier air attacks. Air supply was standard.

The British Twelfth Army, recently organized, was assembling in the vicinity of Rangoon. It did not take part in local operations, being in GHQ Reserve, intended for other missions.

At the beginning of the period enemy patrols were active in the lower Irrawaddy valley astride the main road from Rangoon to Prome. As air supply was normal, this interruption of road traffic was unimportant. British patrols were active astride the road around the north end of Lake Inle (in the vicinity of Heho (Japanese)) and astride the Mawchi Road. There was considerable enemy artillery activity in the Sittang valley from positions east of the river and south of Toungoo.

On 20 June a British expedition from Prome, having captured a dominating ridge south of Paukkaung, took that town after a 2-day attack. The enemy withdrew into the Pegu Mountains. This gain advanced the British front to 22 miles from Prome by road.

On 26 June fighting developed in the Pegu area near Waw and to the north thereof. Against heavy opposition the British made a slight advance. Next day enemy patrols appeared in the Pegu Mountains as far north as the vicinity of Taungdwingyi.

On the 28th the enemy appeared south of Pegu, with advance troops across the Pegu and Rangoon Road. Reconnaissances to the north of this road failed to discover any enemy. On the Mawchi, where the enemy's main body had been supposed to be, reconnaissance developed that the line which was about 24 miles east from Toungoo was apparently an advanced position. Main enemy line of resistance appeared to be 24 miles further cast, in the vicinity of Mawchi. On account of rains streams were flooded and troop movements difficult.

The British at Pegu undertook energetic measures against the enemy. On the 30th an expedition advanced 26 miles to the northeast without meeting any serious resistance.

Following a strong artillery preparation on 5 July the Japanese attacked westward along the Mawchi Road. After making some progress this attack was checked. On the same day the Japanese attacked around Pegu in the vicinity of Waw. This attack was developed on succeeding days, and on the 8th it was extended toward the north, where it encountered the British force which on 30 June had advanced 26 miles to the northeast. The Japanese captured the advance line, including two villages.

Thereupon the Japanese started a 3-day artillery preparation against the British main line of resistance, which they attacked on the 8th. Very severe fighting developed. On the 10th the Japs captured Nyaungkushe (29 miles northeast of Pegu), notwithstanding the resistance and counterattacks of Gurkha infantry. It was raining almost constantly, but the Air Force came out and aided in stopping the enemy. Further south along the Sittang River near Pegu, without making a regular attack Japanese patrols constantly endeavored to infiltrate into the British lines. Air reconnaissance disclosed a strong enemy force constructing a defensive position about Myitkyo, which is at the junction of the Sittang River and the canal leading therefrom toward Pegu, 25 miles away.

On the 14th the British attacked the new Myitkyo enemy. As the attack made little progress, the Air Force heavily bombed the enemy next day. This failed to advance the line. On the 16th an unusual cessation of the monsoon rains enabled considerable observation to be undertaken. This developed that the enemy at Myitkyo was firmly established and had not been seriously damaged by the recent attack. Several enemy strong points were located west of the Sittang River, in the general area between Daik-u and Nyaunglebin. The total strength of this force was estimated as 6,000 men, supposed to be the enemy remnants trying to withdraw from the west across the Sittang River to the east.

There was no change during the next two days. On the 18th the enemy had a well-defined bridgehead west of the Sittang which included Nyaungkushe (2 miles west of the Sittang), Myitkyo (at junction of Sittang River with the canal to Pegu) and Laya (on RR from Pegu to Moulmein, and west of the Sittang).

North of this bridgehead the enemy held the high ground east of the Sittang River as far north as Lake Inle and Taunggyi, inclusive. He was becoming aggressive east of Toungoo and south of the road extending west from Heho. A detached enemy force was in the Pegu Mountains, and was believed to be remnants seeking to cross over to the east side of the Sittang. This hostile force was dispersed over a 150-mile area from north to south, from opposite Thayetmyo to near Pegu. Small enemy detachments were west of the Irrawaddy in the vicinity of Prome.

A combined air and naval operation has been undertaken in the Andaman Sea.

On 5 July mine-sweepers commenced to clear certain areas leading toward selected Nicobar Islands and the north tip of Sumatra. There being no enemy naval or air forces to interfere, this task was completed on 10 July.

The British 5th Cruiser Squadron, to which were attached the American-built aircraft carriers *Emperor* and *Aseer*, thereupon attacked airfields, batteries, radar posts, and radio stations in the Nicobar Islands, and airfields in north Sumatra. The only resistance was from antiaircraft batteries, but Japanese observation planes were noted. One British plane was lost.

The Southeast Asia Command C-in-C (Admiral Lord Louis Mountbatten) flew to Manila for a conference with Gen. MacArthur on 12-15 July. He then returned to his own headquarters at Calcutta.

North Burma is clear of the enemy. The Stilwell (formerly Ledo) Road is open to a connection with the Burma Road into China, and is being used. Paralleling the road is an oil line which pumps gasoline as far as Kunming, China. For forwarding supplies into China, the Air Transport Command and the road for bulky articles is the combination.

CHINA (19 June to 18 July 45)

Kuomintang China of Chungking held at the beginning of the period the area west of the line

Laohokow (Jap) — Ichang (J) — Lake Tung Ting — Paoking (J) — Sinning (?) — Ining (J) — Liuchow (J) — Tsinkong (China) — Nanning (Ch) — Pingsian (J).

An independent force of guerrillas and irregular troops, partially supplied by American planes, held south China coastal areas east of the line

Siangshan Bay (south of Shanghai) — Lienteh (?) — Pai Chi Mountains — Nanchang (Jap) — Kiu Lin Mountains — Liling (J) — Leiyang (J) — Jucheng (?) — Kanhsien (J) — Tingnan (J) — Hoyun (?) — Bias Bay.

Within this area the Japanese held two detached posts, one each around Amoy and Swatow. The guerrillas held a section of the coast from Macau (exc) to Fort Bayard (exc).

Withdrawal of the Japanese troops from south Chekiang has been completed. With the exception of Amoy and Swatow, the entire coast between Shanghai and Hong Kong is free of the enemy. This is a 600-mile front. The excepted ports are the best in this region. From them the Japanese garrisons make occasional raids to destroy shipping and goods smuggled in outside of their control posts.

From Shanghai (inclusive) south to the Indo-China border, and throughout the length of Indo-China, the Far East Air Force (based on the Philippines and latterly on Okinawa) has maintained an air blockade of the Asia Coast. It has bombed Japanese air fields and industries under Jap control, particularly in the vicinity of Shanghai, Hong Kong, and Canton. There has been no Japanese resistance other than antiaircraft fire.

From Shanghai (inclusive) south to the Indo-China border daily series of raids against the enemy. Main targets have been the railroads, and the water transportation along the China rivers. The planes go as far north as Peiping. They have done a great deal of bombing against railroads north of the Yellow River, particularly the Peiping—Hankow RR. Much of the area in which these activities occur is in Communist China sectors. In the opposite direction air raids extend as far south as Tonkin Province in Indo-China.

The Communist Government has issued a report of activities for the 11 months ending with May 1945. In this period they claim to have intlicted a loss upon the Japanese of 337,275 men, as against their own loss of 48,068 (or about 1/7 of that of the enemy). An analysis of the report indicates that these casualties were incurred by their 4th and 8th Armies in 30,342 engagements. This gives an average of 92 engagements a day, in each one of which the average loss was about 1.6 men for the Communists and for the enemy 11.2 men.

Changes in the location of the fronts have been limited to the south, where the Japanese have continued certain readjustments. The new line in the south is

Liuchow (China)—Lung River—Pak River—Siang (or Yu) River—Nanning (Ch)—Li River.

On the south coast of Kwantung the Japanese have occupied the Deep Bay area. It is not known whether this is a temporary or a permanent change. The Japanese are reported as having evacuated Kanhsien, due to a reduction in the number of troops assigned to this sector. The front in this area appears to have been withdrawn to Tayu. Troops withdrawn from Kanhsien are moving north toward Nanchang.

According to Chinese Kuomintang reports, about 100,000 Japanese troops have been withdrawn from the areas south of the Yang Tze River. They are stated to have been sent to Shantung Province, while previous Chinese reports claimed that the movement had been to Manchukuo. There is no confirmation of either report.

The French troops in IndoChina appear to have been overcome. Some escaped units are reorganizing as guerrillas and aligning themselves for an "Independence for IndoChina" movement. This seems to be led by Annam, which is ruled by a king with European training. According to an American correspondent China has made a demand for assignment of IndoChina. The Annamites have made a counter-claim demanding absolute independence. They have declared their intention to fight Japan, but do not want any Allied troops in their country.

As the period closed Chinese troops retook Tinpak (*1*), *cutting communications behind Japanese forces who advanced thirty-four miles to the area of Yanping* (*2*). *In a new invasion of IndoChina Chungking units, aided by a mutiny of puppet troops, occupied Tunghing and the port of Moncay* (*3*), *on Japan's direct shipping route to her isolated garrisons in southeast Asia. The enemy pushed across the border from Trung Khanh Phu* (*4*), *but was driven back. Pressing the assault on Kweilin, the Chinese drove into its suburbs, cut the escape railroad to the northeast near Chaihsu, seized a point north of Ining, and were less than ten miles from Yungfu* (*5*). *American bombings indicated the Chinese might have lost Suichwan* (*6*) *to the enemy fleeing from Kanhsien. The fronts southwest of Amoy* (*7*) *and below Shanghai* (*8*) *were static*.

F. A. S. EVENTS

DEPARTMENT OF AIR TRAINING

On 16 June, Field Artillery Pilot Course Class No. 94 started the first 14-week pilot training program. The new pilot course is designed to teach many new features which have been found necessary from combat experiences. Now included are periods of seaplane flying from Lake Lawtonka and familiarization instruction on a special land device.

In addition to the flight curriculum included in previous courses, the extended course includes training in night flying from fields lighted by flare paths and "blitz" lights and in dark field landings and takeoffs. With the addition of a night flight training the Technique of Employment Division has included several periods of night adjustment of artillery fire.

The course also includes operational training in both L-4 and L-5 type airplanes. Training in the use of the L-5 type airplane covers short field procedure and night flying. It is contemplated to replace L-5 type airplanes with L-14 airplanes as soon as the latter become available in quantity.

Two YL-14 type aircraft were received recently. This new liaison plane, manufactured by the Piper Aircraft Corporation, is powered by a 125-hp horizontally-opposed Lycoming engine. It is designed to carry a pilot and two men, plus provisions for a third man on a jump seat located to the pilot's right. The L-14 is also designed to carry a litter patient, in which case the seating capacity will accommodate only a pilot, litter patient, and one other man. Included as standard equipment are a complete set of basic flight instruments and all provisions necessary for night flight.

The YL-14 is currently undergoing service tests. Additional production models are expected shortly.

DEPARTMENT OF MATERIEL NOTES

Instruction in the use of the 75-mm recoilless rifle will begin at the Field Artillery School in the near future. The weapon has been delivered to the Department of Materiel and is now being studied in preparation for active use in instructing field artillery personnel in its use.

The weapon is the same type as that used in the late stages of the invasion of Germany and in rooting the Japanese out of their cave defenses on Okinawa. It fires a 14-pound projectile, and is declared by those who have tested it in actual combat to have the accuracy of a sniper's rifle.

The gun is one of two recoilless weapons recently unveiled by the Army. The other is the 57-mm rifle, which is so light (only 45 pounds) that it can be used as a shoulder weapon; it can be operated by one man, although two men are normally required for both this and the 75-mm weapon. Either rifle may be mounted on a machine gun tripod or in a motor vehicle. The absence of recoil makes it possible to mount the guns on even the ¼-ton truck.

DEPARTMENT OF COMMUNICATION NOTES

Major activity of the Department of Communication during the month of June was a study and test of a preventive maintenance check list for use by all personnel using communication equipment. The check list was designed to be used with all types of communication equipment.

Receipt of a sufficient number of Radio Sets SCR-619 has required the revision of all courses. Instruction in this item of equipment will include operation, first echelon maintenance, repair, and presetting of channels.

* * *

Gen. Jacob L. Devers, recently named Commanding General of the Army Ground Forces, is no stranger at the Field Artillery School. Following his graduation from the Command and General Staff School at Fort Leavenworth in 1925, he was assigned to the Field Artillery School and became director of the Department of Gunnery. During World War I, Gen. Devers was assigned to the Field Artillery School in 1917; he served as an instructor and Assistant Director until October 1918 and as Executive Officer until March 1919.

* * *

Class No. 12 of the Army and Navy Staff College visited the Field Artillery School July 5-6, to study Field Artillery organization and techniques. The program here included classes on Field Artillery weapons and techniques and also an artillery firing demonstration.

Maj. Gen. Gilbert R. Cook, Chief of Grounds Plans Section, Army Ground Forces, visited the Field Artillery School on July 6th to confer with Maj. Gen. Ralph McT. Pennell, Field Artillery School Commandant, and witness the firing demonstration held in connection with the Army and Navy Staff College program.

Gen. Cook, a former Commanding General of the 104th Infantry Division, commanded the XII Corps in the Third

Army in France during the Normandy and Northern France campaigns.

* * *

Col. William H. Bartlett, who was an instructor in gunnery and tactics at the Field Artillery School from 1938 to 1942, had the unique experience as Commanding Officer of the 183d Field Artillery Group of capturing the Field Artillery School at Grafenwohr, Germany, during the closing days of the drive on the Elbe River. As a result, the Nazi flag which formerly flew over that school is now a prized possession of the Field Artillery School museum.

In forwarding the captured Nazi flag to Maj. Gen. Ralph McT. Pennell, Commandant of the Field Artillery School, Col. Bartlett wrote:

"In the rapid advance across Germany, the 183d FA Group, assigned to United States Third Army, attached to XII Corps, participated in the capture of the Artillery and Panzer School at Grafenwohr, Germany.

"The firing ranges and school organization were very similar to those of the Field Artillery School at Fort Sill, Oklahoma. Signal Mountain, however, was noticeably absent.

"The 183d FA Group captured the School Flag and several maps of the Post Area.

"It is only proper that the flag of this school be placed with the Battle Trophies of the Field Artillery School of the United States Army, and it is being forwarded herewith."

Transmitting the flag from Germany to the Field Artillery School, Lt. James H. Wilson, adjutant of the XII Corps Artillery, said, "The capture of this trophy is appropriately symbolic of the superiority of the doctrines and teachings of the Field Artillery School, Fort Sill, Oklahoma."

The captured Nazi flag is now on display in the new Field Artillery School Museum Annex.

* * *

Among recent visitors at the Field Artillery School was Col. Samuel Portilla, Commandant of the Peruvian Field Artillery School at Lima, Peru. A veteran of 26 years in the Peruvian Army, Colonel Portilla is a graduate of the Peruvian Military Academy and was formerly instructor in Field Artillery at the Peruvian War College. He visited Fort Sill to observe training and training methods of the United States Field Artillery following a course at the Command and General Staff School at Fort Leavenworth, Kansas.

* * *

Colonel Wendell L. Bevan, who returned recently from India, has been named S-4 of the Field Artillery School.

* * *

PERSONNEL CHANGES, 16 JUNE-14 JULY

Arrivals

Name	*New Duty*
Col. Wendell L. Bevan	S-4, FAS
Col. Robert F. Hallock	
Lt. Col. Karl Conner	Department of Combined Arms
Maj. William T. Brian	Department of Gunnery
Maj. Howard D. Evans	Department of Combined Arms
Maj. Charles B. Huntley	Department of Gunnery
Maj. John M. McCormick	Department of Observation
Maj. Alton G. Neelley	Department of Gunnery
Maj. Arthur J. Peterson	Department of Combined Arms
Capt. James D. Baldridge	Department of Gunnery
Capt. James M. Bates	Department of Gunnery
Capt. M. B. Birdseye, Jr.	Department of Observation
Capt. John R. Boosa	Department of Gunnery
Capt. Arthur L. Bruelback	Department of Gunnery
Capt. Clark E. Burton	Department of Communication
Capt. Norman V. Cable	
Capt. Oscar M. Fetters	
Capt. Harry E. Fridrich (MC)	Department of Air Training
Capt. Louis L. Haas	Department of Gunnery
Capt. Mahlon B. Huffman	
Capt. F. M. Johnson	Department of Combined Arms
Capt. George L. Lovett	Department of Air Training
Capt. Francis L. McKee	Department of Observation
Capt. Donald L. Mushik	Department of Gunnery
Capt. Ralph L. Nuttall	Department of Communication
Capt. Lawrence N. Owen	Department of Gunnery
Capt. Vernon E. Rottstedt	Department of Combined Arms
Capt. Harmon G. Shively	Department of Observation
Capt. Howard W. Tejan	Department of Gunnery
Capt. Charles W. Thorne	
Capt. Earl E. Turner	
Capt. Samuel P. Woolford	Department of Observation
1st Lt. Robert Abbey	Department of Observation
1st Lt. Thurman H. Allred	Department of Air Training
1st Lt. Ventura M. Barata	Office of Assistant Commandant
1st Lt. Wlibur E. Bassler	
1st Lt. Bernard T. Calhoun	Department of Observation
1st Lt. Joseph A. Clark	Department of Communication
1st Lt. Martin M. Cynkar	FAS Detachment
1st Lt. James E. Dick	Department of Gunnery
1st Lt. Robert K. Elliott	Department of Air Training
1st Lt. Harlen D. Fulmer	Department of Air Training
1st Lt. Martin J. Harris	Department of Air Training
1st Lt. William J. Henretty	FAS Detachment
1st Lt. George S. Horsley	Department of Air Training
1st Lt. Harley Hungerford	Department of Air Training
1st Lt. Perry E. Lindley	Department of Observation
1st Lt. James R. Major	Department of Gunnery
1st Lt. Billy B. McPhail	Department of Air Training
1st Lt. Leslie W. Michel	Department of Air Training
1st Lt. R. A. Michelson	Department of Air Training
1st Lt. Francis R. Moore	Department of Air Training
1st Lt. William T. Morton	
1st Lt. Russell A. Nason	Department of Communication
1st Lt. Carl V. Nebel	Department of Observation
1st Lt. Donald E. Neff	Department of Air Training
1st Lt. Leland B. Pyle	Department of Air Training
1st Lt. Louis E. Ramsey	Department of Air Training
1st Lt. Jack G. Robbins	Department of Air Training
1st Lt. Hermann F. Schnell	Department of Communication
1st Lt. Merlyn H. Smith	Department of Gunnery
1st Lt. Osborne K. Walls	Department of Observation
1st Lt. Ralph J. Walsh	
1st Lt. A. W. W. Wulfert	Department of Observation
2d Lt. Richard J. Farber	Department of Observation
2d Lt. John E. Hoffman	Department of Observation
2d Lt. Ernest E. Kowalik	Department of Air Training
2d Lt. Robert L. Lobdell	Department of Air Training
2d Lt. R. W. Pemberton	FAS Detachment
2d Lt. Jack R. Ridge	Department of Air Training
2d Lt. James L. Rilea	Department of Air Training
2d Lt. Theodore E. Starr	Department of Observation
2d Lt. James B. Tingley	Department of Observation
2d Lt. James V. Weinman	Department of Air Training

Departures

Col. Jess Larson	WDGS, Washington, D. C.
Lt. Col. H. V. Logsdon	AGF Repl Depot #2, Ft. Ord, Calif.
Capt. Paul E. Bailey	AGF Repl Depot #4, Cp. Adair, Ore.
Capt. James D. Copeland	AGF Repl Depot #4, Cp. Adair, Ore.
Capt. Paul A. Deckard	AGF Repl Depot #4, Cp. Adair, Ore.
Capt. Frank C. Eppner	CWS Replacement Pool, Edgewood Arsenal, Md.
Capt. Edward L. Glynn	552nd AAFBU, New Castle, Del.
Capt. Byron B. Jones	AGF Repl Depot #4, Cp. Adair, Ore.
Capt. Joseph F. Murphy	AGF Repl Depot #2, Ft. Ord, Calif.
Capt. Max D. Strawn	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Charles L. Arnold	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. F. M. Barnes III	ASF Personnel Repl Depot, Cp. Beale, Calif.
1st Lt. Donovan M. Beadle	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Joseph R. Bourne	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Arthur L. Connery	ASF Personnel Repl Depot, Cp. Beale, Calif.
1st Lt. E. W. Cunningham	ASF Personnel Repl Depot, Cp. Beale, Calif.
1st Lt. Robert K. Davidson	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Augusto Dionizio	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Sydney N. Driver	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. George S. Egger	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Hyman I. Garment	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. J. W. Gorham, Jr.	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. E. R. Hinkle, Jr.	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Oliver J. Hunt	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Jack E. Israel	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. John D. Kalmbach	AGF Repl Depot #2, Ft. Ord, Calif.
1st Lt. John E. Kraus	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Ralph J. Kucker	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Schubert I. Luke	FARTC, Ft. Sill, Okla.
1st Lt. W. J. McPherson	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Gerald E. Michael	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Rene E. Nelson	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Albert Rabinowitz	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. John C. Reiff	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Wilmot G. Rhodes	Chinese Combat Command
1st Lt. E. H. Rosenberry	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. William P. Slichter	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Frank B. Smith	FA Pilot Training
1st Lt. Robert V. Smith	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Joseph O. Stites	AGF Repl Depot #4, Cp. Adair, Ore.
1st Lt. Walter E. Swigart	AGF Repl Depot #4, Cp. Adair, Ore.
2d Lt. Donald J. Bales	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Clente A. Bevitori	FA Pilot Training
2d Lt. K. R. Bjorkman	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Warren L. Booth	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. G. M. Brooke, Jr.	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Ernest H. Brothers	ASF Personnel Repl Depot, Cp. Beale, Calif.
2d Lt. C. H. Cunningham	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Francisco de Larios	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Robert J. Fleming	FA Pilot Training
2d Lt. Harold B. Gardner	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. John H. Hale	ASF Personnel Repl Depot, Cp. Beale, Calif.
2d Lt. W. G. Herbruck	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Charles J. Hoffman	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Roger L. Johnson	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. R. A. Nelson, Jr.	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Charles Olson	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Olaf W. Olson	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. George W. Petrie	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Ben E. Sergeant	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Irwin E. Spalding	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Everett L. Stephens	FA Pilot Training
2d Lt. Arthur P. Sullivan	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Robert B. Taylor	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. G. T. Weinstein	AGF Repl Depot #2, Ft. Ord, Calif.
2d Lt. Robert M. Wilson	AGF Repl Depot #2, Ft. Ord, Calif.

TRENDS in Field Artillery Organization and Equipment

Although this column announces only approved changes, it does not constitute authority to requisition personnel or equipment listed herein.

By Maj. Shirley B. Metzger, FA

Flash Ranging Set AN/GTC-1-( ) has been standardized to replaced the GR-4.( ). The new set functions in a manner similar to the old GR-4-( ) but is lighter and provides greater range and more reliable operation.

Bag, drop message, has been declared an expendable-recoverable item. Allowances will be carried in T/O & E with the notation in the remarks column "Expendable item. For issue use Stores Charge, AAF Form No. 81."

The companion vehicle and ammunition carrier for the 155-mm gun, self-propelled, M40 and the 8-inch howitzer self-propelled gun motor carriages, is a Tractor, high-speed, 18-ton, M4A1C. The M4A1 tractor is modified by removing the two (2) rear seats and replacing them with ammunition frames. The tractor in each gun or howitzer section will tow the 8-ton ammunition trailer, M23.

In airborne units the qualified parachutists are to be armed with a pistol in addition to their present weapon. As there are situations where a parachutist is required to defend himself while still in the harness, an accessible weapon is required. Individuals already armed with a pistol will not be authorized a second pistol.

Concurrently with the inclusion of the Chest CY-250/U in T/O & Es, the Maintenance Equipment ME-34 will be deleted.

Shovel, intrenching, M1943 is now authorized on the basis of one (1) per individual. Ax, intrenching and Pickmattock, intrenching, with their carriers, will be deleted from allowance tables. Pending availability of the Shovel, M1943, appropriate carriers and seven (7) Shovels, M1910 per ten (10) individuals; two (2) Pickmattocks, intrenching, M1910 per ten (10) individuals; and one (1) Axe, intrenching, M1910 per ten (10) individuals, will be issued.

There have been requirements from time to time for a public address set in higher Field Artillery headquarters. In order to fill this need the Public Address Set AN/TIQ-2-( ) has been approved on the basis of one (1) per headquarters battery, division artillery and group.

A self-propelled 155-mm howitzer motor carriage has been standardized as the Carriage, motor, 155-mm howitzer, M41.

The Trailer, ammunition, M8 (the old armored trailer) has been declared obsolete.

Diary of War Events

(As reported in the American Press—Edited by B. H. W.)

JULY, 1945

1st Australian 7th Div invades Borneo at oil center of Balikpapan.

600 B-29s bomb Kure, Shimonoseki, and Ube on Honshu, and Kumamoto on Kyushu.

Chinese troops capture island of Weichow in Gulf of Tongking.

2nd Gen. MacArthur names Lt. Gen. Robert C. Richardson, Jr., commanding general of middle Pacific.

President Truman presents the Charter of the United Nations to the Senate.

3d 500 B-29s bomb Tokushima on Shikoku.

Australian troops capture major airport and town of Sepinggang on Borneo.

4th Gen. MacArthur reports that the Philippines have been liberated and the campaign virtually closed.

5th U.S. flyers continue to pound the Japs.

6th 600 B-29s bomb Jap war centers.

Australian troops capture Penajam and seize control of Balikpapan Bay in Borneo.

7th U.S. fliers sink or damage 9 Jap ships in the Yellow Sea and off Honshu. Mustang fighters raid Kyushu for the 3d straight day.

8th U.S. planes sink or damage 16 Jap ships, destroy 51 aircraft.

9th U.S. 3d Fleet advances close to Jap shores, launches 1,000 planes against Tokyo area.

550 B-29s bomb 5 cities on Honshu.

10th U.S. 3d Fleet carrier planes continue the battle on airfields in Tokyo area.

11th U.S. and British occupation forces assume full control of their section of Berlin.

12th 550 B-29s bomb 4 strategic targets on Honshu, 1 on Shikoku.

Gen. Eisenhower to dissolve SHAEF at midnight.

British Empire losses in the war to May 31 reached 1,427,634, of whom 532,233 were dead or missing.

13th U.S. 3d Fleet penetrates deep into Japanese waters, strikes Hokkaido for the first time.

Navy Dept. reports that typhoon struck the 3d Fleet between Okinawa and the Philippines on June 5 and damaged 21 ships.

14th Allied air might continues to pound Japan.

Pacific Fleet sails into Jap waters without opposition; shells industrial targets.

15th 50 B-29s bomb the Nippon Oil Company at Kudamatsu on Honshu.

Chinese troops recapture a former U.S. airfield at Kanhsien in southern Kiangsi province.

16th Units of British Pacific Fleet join U.S. 3d Fleet to strike the Tokyo area in great strength.

17th Big Three hold their first meeting at Potsdam. President Truman selected to preside.

U.S. and British warships sail close to Japan's shores, bombard a long stretch north of Tokyo.

3d Fleet sinks 140 ships, damages 234. 129 locomotives, factories, bridges, and other targets were smashed in a 2-day attack on Hokkaido and northern Honshu.

18th U.S. planes bomb airfields and industries on Jap home island of Kyushu.

Big Three hold a 2nd meeting behind a complete news blackout.

19th 600 B-29s bomb ports of Choshi and Hitachi in Japan.

Australians capture the rich Samboja oil field on Borneo.

Senate passes the Bretton Woods international monetary plan.

20th Mustang fighters from Iwo pound the Osaka-Nagoya area of Honshu.

Chinese troops seize Yiyang, a key point in China's "Rice Bowl," south of Tungting Lake.

21st U.S. warns Japan she must surrender unconditionally soon or miss the opportunity forever.

Congress approves U.S. membership in the United Nations Food and Agriculture Organization.

22nd U.S. destroyer force sails into Tokyo waters 5 miles beyond Nojima Cape, sinks or damages an entire Jap convoy of 4 ships. B-29s knock out 11th Jap oil plant on Honshu.

First troops from the German front arrive in Philippines.

23d 1,000 carrier planes of U.S. 3d Fleet hit Japan's Navy at Kure. 600 B-29s bomb the Osaka-Nagoya area.

Chinese troops recapture 3 towns in the Kweilin area.

U.S. troops search nearly every house and vehicle in our occupation zone for contraband and fugitives. Arrest 80,000 out of 15,000,000 Germans involved.

24th Combined U.S. and British Fleets pound Japan. U.S. ships sail into Cape Shiono at the southern tip of Honshu, shell the airfield and radio station.

25th B-29s bomb Japan's oil supplies at Kawasaki, 10 miles south of Tokyo.

26th Labor party wins England's election; Clement Richard Atlee is the new Prime Minister.

B-29s bomb Honshu, Shikoku, and Kyushu. Chinese troops capture the 7th of 11 former U.S. air bases lost to the Japs when they seized Namyung.

27th Allied planes sink 6 Jap ships, damage 7, along the Asiatic coast.

Chinese troops capture Yangso.

28th Senate ratifies United Nations Security Charter 89 to 2.

B-29s bomb Jap cities. Chinese forces capture Kweilin.

29th Carrier planes from U.S. 3d Fleet again smash the Tokyo area.

Chinese troops advance 23 miles beyond Kweilin toward Lingling.

30th U.S. destroyers advance deep into Japanese waters to shell Shimizu, 80 miles southwest of Tokyo.

Bombers of the Far East Air Force sink 100 ships during a 3-day attack on Kure and the Inland Sea.

Premier Soong resigns as Foreign Minister of China and is succeeded by Dr. Shih-Chieh.

31st Carrier planes bomb airfields around Nagoya and the naval base at Maizuru; destroy 89 planes and sink 8 ships.

Pierre Laval surrenders to U.S. officers at Linz, Austria.

Field Marshal Sir Harold R. L. G. Alexander to succeed the Earl of Athlone as the Governor General of Canada.

for Heroism and Service

DISTINGUISHED UNIT BADGE

The following units distinguished themselves in combat against powerful enemy forces composed of elements of eight German divisions during the period from 18 to 27 Dec 44:

73d Armored Field Artillery Battalion
420th Armored Field Artillery Battalion
463d Parachute Field Artillery Battalion
755th Field Artillery Battalion
969th Field Artillery Battalion

FRENCH DECORATION

Croix de Guerre avec Palme

Col. WILBUR S. NYE, 5166 Tilden St., NW, Washington, D. C.

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ROLL OF HONOR

Lt. Col. JOSEPH H. BARNARD, USA, Ret., died 21 Feb 45; Santa Barbara, Calif.

Pvt. WILLIAM H. BARTLETT, killed in action, 6 Feb 45; Belgium.

Lt. Col. ARTHUR W. BLAIR, killed in action, 25 Dec 44; Germany.

Lt. Col. BARRY D. BROWNE, died of wounds, 25 Dec 44; Belgium.

Lt. LLOYD CHURCH, JR., killed in action, 19 Apr 45; Italy.

Col. WILLIAM CLARKE, O-4857, died 1 Jan 45; European Theater.

Gen. MALIN CRAIG, died 25 July 45; Washington, D. C.

Lt. FEARN FIELD, killed in action, 6 Mar 45; Germany.

Capt. GEORGE T. FIELDING, killed in action, 30 Apr 45; Luzon.

Lt. ALEXANDER D. FRASER, O-1169112, killed in action, 27 Dec 44; Belgium.

Lt. EUGENE H. GREEN, O-1172879, killed in action, 29 Dec 44; Belgium.

Lt. Col. ELMER J. KOEHELER, O-19752, killed in action, 16 Apr 45; Germany.

Lt. Col. M. A. LANGLEY, O-342129, killed in action 26 Mar 45; Germany.

Lt. JAMES W. McWILLIAMS, O-1175235, killed in action, 3 Dec 44; Germany.

Lt. CHARLES MacCLINTOCK, O-1173362, died of wounds, 18 Jan 45; Belgium.

Lt. WILLIAM W. MARSHALL, killed in action, 17 Dec 44; Luxembourg.

Col. CHURCH M. MATTHEWS, killed in action, 17 Dec 44; Belgium.

Lt. JOE E. NEWMAN, killed in action, 3 Apr 45; Germany.

Lt. FRANK B. POOLE, killed in action, 28 Jun 44; France.

Lt. WALTER H. PORTER, O-1174685, killed in action, 1 Dec 44; France.

Lt. WILLIAM N. ROWE, O-1176182, killed in action, 27 Jan 45; Luzon.

Col. IRVIN SCHIMMELPFENNIG, killed in action, 4 Feb 45; Luzon.

Capt. JEFFERSON SHERMAN, JR., O-1296921, killed in action, 16 Dec 44; Germany.

Lt. HERBERT E. TALMADGE, O-1169763, killed in action, 12 Dec 44; Germany.

Maj. Gen. EDWIN M. WATSON, USA, Ret., died 20 Feb 45; aboard a U. S. Cruiser.

Lt. MORRIS W. WHITE, O-1174912, killed in action, 31 Dec 44; Belgium.

BOOK REVIEWS

THE ARGENTINE REPUBLIC. By Ysabel F. Rennie. 404 pp.; bibliography; index; illustrated. The Macmillan Co. $4.00.

The publicity that Argentina's questionable politics have received in the last couple of years has inspired the usual spate of quickie books, running from inside stories of inside politics to learning the tango in ten easy lessons. The two best recent books (in fact, almost the only good ones) have been Felix Weil's *Argentine Riddle,* reviewed favorably in your JOURNAL last January, and this new history by Mrs. Rennie.

With any interest at all in Argentina, you can read this book with enjoyment and profit. It is a sound, scholarly work and yet eminently readable. Its failings and omissions are noted by the author in the preface (depriving this reviewer of a chance to show off) and she is very careful to distinguish between what she can substantiate and what she has to take second hand.

Her character sketches of Argentine statesmen and politicos are clean and vivid, and her path through the tortuous history of revolutions, rebellions, wars, and fascist politics is easily followed. You may not love the Argentines when you finish the book, but what is more important you'll be apt to understand them—and not understanding them is at the moment the biggest failure of our Good Neighbor Policy. R. G. M.

READER'S COMPANION. An anthology selected by Louis Kronenberger. 731 pp. The Viking Press. $2.00.

Viking's idea of a "portable library" has much to commend it, especially for men in the armed forces. These books are compact, yet easily read. A great deal of material is packed into them. And that material is of top grade quality. Further, its variety keeps casual readers from becoming bored by having too much of the same thing.

This latest addition to the series is no exception. Mr. Kronenberger based his selections on what pleased him. He claims to have had no thought that his book should be "representative." Certainly, there is a minimum of pieces that seem to have been included because they "ought" to have been.

What is here? In point of time, selections range from Plato's to the present day. In form there are poetry and prose, letters, light verse, and odds and ends. Boswell, Hans Christian Andersen, Mark Twain, William Blake, Tacitus, Sir John Suckling—these names give a slight idea of the range of authors. The combination is a fine one for your musette bag. And day rooms permanent or temporary should have copies, too—the men will like them.

EUROPE NOW. By H. V. Kaltenborn. 182 pp.; index. Didier Publishing Co. $2.50.

With the European surrender an accomplished fact the eyes of the world turn to the Road to Peace. H. V. Kaltenborn, noted news and radio commentator, gives first-hand data on the prospects for a peaceful Continental era in *Europe Now*, a penetrating report of his trip through the war-torn countries in late '44 and early '45.

Mr. Kaltenborn is not optimistic. He sees pent-up antagonisms bursting forth with the surrender of arms. In all countries the chief problem is the black market, and the government that conquers that will be the government to be backed by the common people.

He is pessimistic too over the functioning of normal democratic processes in the liberated countries and wonders if individual Communist members will ever be able to act for themselves in parliamentary assemblies or will they always be motivated by Party directives. A case in point is the Pierlot Cabinet in Belgium where the Communist members were sincere, well-intentioned men who tried hard to secure radical measures but gave away or yielded to modification when they found they could not be carried by a coalition government. Not many weeks after that the Communist Party put pressure on the men themselves and prohibited them from consenting to anything not previously approved by the Party.

Throughout *Europe Now* are interesting and penetrating observations on the problems of life and government in the liberated countries. Mr. Kaltenborn feels that France has made the quickest and best recovery of the ravaged lands, and that Italy's disappointment with UNRRA has been due to the complete disruption of her transportation system and the prevalence of a too well organized black market. C. P.

THREE FAMOUS MURDER NOVELS. Selected and with an introduction by Bennett A. Cerf. 660 pp. The Modern Library. $1.45.

Shocking plots, tense suspicion, people resourceful in crime—these are the ingredients. The stories themselves, presented here complete and unabridged, have won permanent places in the hall of infamy. They're made of stuff that makes blood run cold.

What are they? You know their names, even if you haven't read them before. *Trent's Last Case* (E. C. Bentley) is perhaps best known in this country. It is the favorite of "whodunit" writers, as well as of murder story fans. *Before the Fact* (Francis Iles) starts out with a bang and never lets up once. *The House of the Arrow* (A. E. Mason) has a startling but entirely logical conclusion, an honest piece of sleight-of-hand.

One caution: don't try to read all three the same night!

PASTIMES FOR THE PATIENT. By Marguerite Ickis. 285 pp.; illustrated. A. S. Barnes & Co. $3.00.

For once a book's scope goes far beyond its title. This volume is actually as much for the healthy as for the bedridden, for the impatient

as for the patient. Each of its nineteen chapters describes a hobby, craft, or entertainment, ranging from leather work to tricks and puzzles. Weaving, fly making, ship carving, clay modelling. and other activities are well covered. Ample information is given to help anyone get started; for those who want to pursue a subject further, other more advanced books are suggested, subject by subject.

If time is heavy on your hands, this book is for you. So it is, too, if you are in charge of recreational or other activities programs. It contains plenty of "meat."

UNCONDITIONAL SURRENDER. By Everett Holles. 366 pp.; endpaper map. Howell, Soskin. $2.50.

Just a few days after V-E Day this account of Allied conquest from African invasion to final victory, came off the press. From Casablanca and Stalingrad to surrender in Berlin covered a fair span in time, much territory, and a great deal of blood and suffering. Here that story is told by a news director and broadcaster of the Columbia Broadcasting System who paints an authentic and dramatic immediate picture. It is not a technical account, but rather a popular over-all narrative that succeeds in viewing events in perspective despite the speed of production. It is complete, even to the texts of the May 8th statements of President Truman and Prime Minister Churchill.

ORDNANCE FIELD GUIDE. Edited by Lt. Col. William C. Farmer. In 3 volumes (949 pp., 867 pp., & 775 pp.); indexes; illustrated. Military Service Publishing Co. Restricted. $3 per volume, $7.50 per set.

Production of this *Ordnance Field Guide* was a mammoth undertaking, but well worth all the effort required. The three volumes are encyclopedic in scope, and cover the entire Ordnance field. A thumb-nail description is given by the Chief of Ordnance in his foreword:

". . . Many have felt the need of a supplement to the hundreds of Technical Manuals and Training Courses, each of which treats exhaustively of a single subject. Not only is it desirable to have the outlines of many manuals, course texts, and training aids in one book but this book should incorporate the military knowledge and experience which could be compiled only from all available sources. To prepare this compendium of modern ordnance a large group of ordnance officers and enlisted men volunteered. Their material was drawn from many sources: textbooks, manuals, service magazines, directives, dispatches, reports of observers from every battlefront and throughout the world, and last, but not least, their own vast store of experience."

Volume I has chapters on military organization, administration, law, maps and aerial photos, troop training, staffs, and troop and materiel movements, plus a master alphabetical index for all three volumes. Volume II covers small arms, artillery and ballistics, fire control, aviation ordnance, and automotive matters. Volume III deals with bomb reconnaissance and disposal, shop theory and practice, ammunition and terminal ballistics, ammunition supply, ordnance general supply, recovery, evacuation, and field rigging, and the organization and equipment of ordnance troops. At pertinent places throughout the text are references to fuller descriptions in official publications, and most chapters end with an exhaustive bibliography.

As these volumes are restritced, they are generally available only to officers and enlisted men, through service school book stores and authorized service magazines. In ordering from your JOURNAL, officers' orders must be countersigned by their commanding officer or the adjutant, those of enlisted men by the immediate commanding officer; all countersignatures must show the name, grade, and organization of the officer countersigning.

All royalties, incidentally, will be donated to the Army Emergency Relief Society.

CONTEMPORARY AMERICA. By Harvey Wish. 618 pp.; bibliography; index; illustrated. Harper & Bros. $4.00.

Dr. Wish has prepared a fascinating panorama of these United States from the turn of the century through the last presidential

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election. Although not so exhaustive (nor nearly so voluminous) as Mark Sullivan's famed series *Our Times,* it does rather remind a reader of that work. This one, though, is more integrated; it is interpretative as well as factual. It points out the successive patterns (the popular "fads," as it were) and helps relate them to the larger forces of social and economic change. This is not to call *Contemporary America* a book in the debunking tradition. It is too sound and well balanced for that. At the same time, it is not a glossing-over or white-washing volume designed to delight the ultra-reactionary.

NO PASSPORT FOR PARIS. By Alice-Leone Moats. 275 pp. G. P. Putnam's Sons. $2.50.

Miss Moats is the only correspondent who has deliberately walked into Nazi-occupied territory during this war. She knew she would be treated as a spy if caught, but she was determined to see for herself conditions in France under the occupation, learn which of conflicting rumors were true.

So in April, 1944, a full six weeks before D-day, she crossed the Pyrenees and spent three weeks in France. She penetrated as far as Paris, where she spent a week, dined with collaborationists and members of the Underground, and thoroughly explored the life of the French. The rest of her time she was in the southwest section of the country. This entire venture was of course solely on her own responsibility. According to press reports even at the time, our diplomatic coterie was annoyed no end, and reacted in a peculiarly circuitous way; this phase too is well described here.

Perhaps most interesting and important is the first two-thirds of the book, which gives an excellent picture of life and conditions in Spain. Miss Moats spent a year there before her French venture. She does not try to "interpret" Spain. Instead, she gives a straightforward account of what she did, where she went, what prices and living conditions were, how the Spanish reacted in manifold situations. This is by far the best and most complete portrayal of this little-understood country that has yet emerged from the fog of ignorance, censorship, and general neglect.

IF THE PROSPECT PLEASES. By Ladd Haystead. 208 pp. University of Oklahoma Press. $2.50.

Written by the farm editor of *Fortune* magazine and subtitled *The West the Guidebooks Never Mention*, this book gives an insight into the practical, down-to-earth West as a place to live and make a living. The great days are here, but so are those of transition and an appraising view of what lumbering, oil, ranching, fishing, and other businesses are apt to offer in the post-war years. The West has grown up. It still offers more opportunity than do most sections, but the get-rich-quick, happy-go-lucky days are over. Mr. Haystead grew up in the West and still lives there much of the year. He offers sound suggestions to those interested in a fresh start in life.

THESE ARE THE RUSSIANS. By Richard E. Lauterbach. 359 pp.; index: endpaper maps. Harper & Bros. $3.00.

A good many books about the Russians are appearing these days. Many of them are political studies. This one, however, is more of the Russian people. It is an attempt to give from an American's point of view an idea of the Russian people during this war, what they have done toward reconstruction, what they plan for themselves and expect from the world in the future.

Richard Lauterbach is an associate editor of *Life* magazine. In 1935 he travelled widely in the Soviet Union, and he spent 1943-44 in Moscow for *Time* and *Life*. He got around quite a bit. Perhaps he will be criticized for attempting such a description without the background of years of living in the country. On the other hand, few who have remained in Russia over long periods have seen as much of the country as has he, and some of those long-termers have almost become mental expatriates if not physical ones. This reviewer found this an honest book, written sympathetically yet with good balance of observation, judgment, and expression.

MAMMALS OF THE PACIFIC WORLD. By T. D. Carter, J. E. Hill, and H. H. Tate. 184 pp.; glossary; index-checklist; illustrated. The Macmillan Co. $3.00.

Three members of the Department of Mammals at the American Museum of Natural History have teamed to prepare this first book of the mammals of the islands of the southern Pacific. It is also, incidentally, the first of a new series dealing with the various aspects of the Pacific world.

Following a brief discussion of the characteristics and classification of mammals comes the real meat of the book, a detailed and illustrated description in both technical and popular terms of each variety of mammal found in the Pacific area. Appearance, habits, etc., are brought out. The chapter on distribution is especially interesting, as it goes into the origin and evolution of mammals and their environments. After a useful glossary, in alphabetical order are listed the islands and island groups, each with a list of the mammals found there and cross-referenced to the text pages where these are described.

METEOROLOGY WORKBOOK WITH PROBLEMS. By Peter E. Kraght. 144 pp.; index; illustrated. Cornell Maritime Press. $2.25.

Many potential students of meteorology are not deeply grounded in physics and mathematics, on which this science is based. It is for them that this workbook was designed. Most of the first fourteen chapters are comprised of illustrated facts, with but limited explanation of the "whys." For those needing to know how weather reports are assembled and transmitted there is a fifteenth chapter dealing with weather observations and symbols.

Throughout, topics have been selected with a view of caring for the needs of the greatest number who might need to use this text. Problems were planned to stimulate interest especially in the phases related to ship and plane operation. Some problems test a student's skill in thinking his way through a situation. Only a few are strictly academic. Answers are grouped in the back of the book.

HUNTING. FISHING, AND CAMPING. By L. A. Anderson. 212 pp.; index; photographs. The Macmillan Co. $1.95.

Here are a world of tips and helpful suggestions for both the novice and the experienced hunter and fisherman. Mr. Anderson grew up in the Northwoods section of Michigan; he has always been an ardent fisher and hunter; and he has contributed to such magazines as *Outdoor Life, Outdoors,* and *Fur-Fish-Game*. His ideas are the result of experience. He discusses deer hunting and wing shooting, fly- and bait-casting, how to go after various kinds of game fish (and how to cook them), packs and packing, shelters, clothing for various kinds of outdoor life, and many other topics. Some of his remarks may seem elementary to the experienced person but even they are valuable as reminders. It's a good book.

MEXICO. By Fritz Henle. 77 pp. Ziff-Davis Publishing Co. $4.00.

In 62 lovely and magnificent large photographs (reproduced 9½ × 12 inches), Fritz Henle portrays the old and the new Mexico, her people, her atmosphere and feeling. Spanish and Indian cultures are side by side with the modern. People and places, mountain and shore, city and *ejido*, artisan and fisherman, poverty and plenty—the country's panorama is presented in pictures that give the true spirit of the land. Captions and other commentary are separated from the photographs, and are in both English and Spanish in adjoining columns. A fine gift volume, this is, and equally appealing for one's own library.

PRINCIPLES OF FIREARMS. By Charles E. Balleisen. 140 pp.; index; illustrated. John Wiley & Sons. $2.50.

Major Balleisen is to be congratulated on writing what I believe is the first American book to analyze and urge the belief that an

automatic weapon is a "piece of machinery operating in accordance with well known laws of physics and hence capable of being designed in accordance with common engineering practice." The war has proved that weapons can be produced by any factory, but the idea that weapons and improvements can be designed by any intelligent engineer has not yet been fully accepted by either our industry or our military experts. Major Balleisen's effort to prove this as yet unaccepted theory is sound and interesting, and deserves further study.

It is too bad that the book is written in the involved and frequently obscure style known as "engineer's" or "army regulation" language. This jargon has ruined many a promising book, and only Major Balleisen's thesis and excellent exposition overcome this unnecessary handicap. The book covers the various assemblies of automatic weapons from a functional viewpoint, sights, exterior ballistics and gun mounts (both too brief to be of much use), testing, and design problems.

There is great need for a book of this type in the military and engineer library. I strongly urge that the author plan a revised and enlarged edition. His beginning is excellent, but there is a lot of work to do before the book is all it should be.

R. G. M.

A. WOOLLCOTT: His Life and His World. By Samuel Hopkins Adams. 375 pp.; index. Reynal & Hitchcock. $3.50.

Some years ago Alexander Woollcott achieved nation-wide fame through his *Town Crier* radio program, which was full of nostalgia, anecdotes, and (to a fair extent) friendly *schmalz*. Long before that, however, he had a solid reputation as drama critic and journalist. First with the New York *Times*, later with *Stars and Stripes* and the New York *Herald,* he fast rose to great stature while still quite young. A positive character with a vitriolic tongue and pen, he was either greatly liked or intensely despised by those who knew him well, or thought they did.

In writing the life story of such a person it is difficult to strike a proper balance, to avoid being partial. Mr. Adams has overcome this difficulty. True enough, to Woollcott's friends he probably seems harsh at time, and to his enemies appears unduly kind. At all times, however, he seems to have done a scrupulously honest job of portraying the man as he actually was, without bias. A colorful account it is, thanks to the character who is the central theme.

PRACTICAL MARKSMANSHIP: The Technique of Field Firing. By M. M. Johnson, Jr., Capt. USMCR (Inactive). 153 pp.; appendixes; illustrated. Wm. Morrow & Co. $2.50.

Capt. Johnson is not only an inventor and designer of automatic weapons. He's a full-fledged user too. So here he supplements both his own earlier works and the government publications. As Maj. Gen. Julian C. Smith, USMC, says in his introduction,

". . . *Practical Marksmanship* begins where the military manuals leave off. It takes the reader through that period of confusion which comes when he leaves the rifle range, qualified in known distance marksmanship, and begins firing on field targets at unknown ranges. . . . The chapters on ballistics, sighting-in and adjusting for range give information not usually included in standard manuals. They describe methods that should prove valuable . . . in the ever-changing situations of modern battle."

This practical, specific, direct advice on marksmanship and how to improve it is not excelled in anything in print, if indeed it is equalled. It will help get hits. And hits pay off.

HOME OWNERSHIP: Is It Sound? By John P. Dean. 171 pp.; appendices; index. Harper & Bros. $2.50.

During the war very few private, individually-owned dwelling units have been built. The dammed-up demand for housing will be augmented by the great number of returning service men wanting places of their own. It is therefore timely that Dr. Dean's study be published now.

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MALE CALL. By Milton Caniff. 112 comic strips. Simon & Schuster. $1.00.

In 1912 Miss Lace was born, full-bloom. Her creator and constant guide is Milton Caniff, whose *Terry and the Pirates* has long been a favorite. The *Male Call* strip, however, has appeared only in papers aided by the Camp Newspaper Service. So, while you've long known Miss Lace yourself, your friends at home haven't. Here's a good chance to get them acquainted, as well as to re-chuckle over a batch of the best of these strips.

THE WAR POETS: An Anthology of the War Poetry of the Twentieth Century. Edited by Oscar Williams. 445 pp.; biographical notes; illustrated. The John Day Co. $5.00.

It is amazing to note the amount of excellent poetry that this war has produced. This war had apparently resulted in as few good lines as songs, which have been notably scarce. That impression was obviously wrong, as the second section of this anthology indicates: it is devoted to work by men of the armed forces of England and America, contains outstanding work, and constitutes the largest part of the book. This material obviously was selected not merly because the authors were serving their countries, but because they had the poetic spirit, chanced to be in uniform, and wrote of things that arose because of the combination.

War poems by such civilian poets as Auden, Frost, Cummings, et al., form the third section; some of this work even precedes the rumblings of Ethiopia and Spain. In the first section are the finest selections produced in World War One. Mr. Williams contributes an outstanding introduction, following which a good many of the poets represented make very sensible prose comments upon poetry and the war.

Altogether this is an outstanding volume.

SMALL BUSINESS AND VENTURE CAPITAL: An Economic Program. By Rudolph L. Weissman. 164 pp.; bibliography; index. Harper & Bros. $2.00.

When the army and navy contract after the war, thousands of small businesses will blossom. Many will wither on the vine and one of the reasons will be lack of sufficient capital for the venture entered upon. This is not to say that ample capital assures success. Far from it. But it is one important element in determining success or failure.

Mr. Weissman, of the staff of the Securities and Exchange Commission, here describes the position of small and medium-sized businesses, analyzes some of the major problems affecting them, and outlines some suggestions for keeping them going and in good health. The bulk of the book is a proposal for economically providing equity capital. This entire discussion has not only a place so far as the individual owner is concerned, but also a bearing on post-war progress in general, regardless of the size of the part the government ultimately plays in promoting our national economy.

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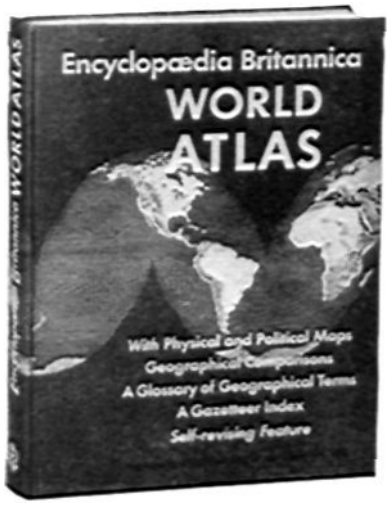

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