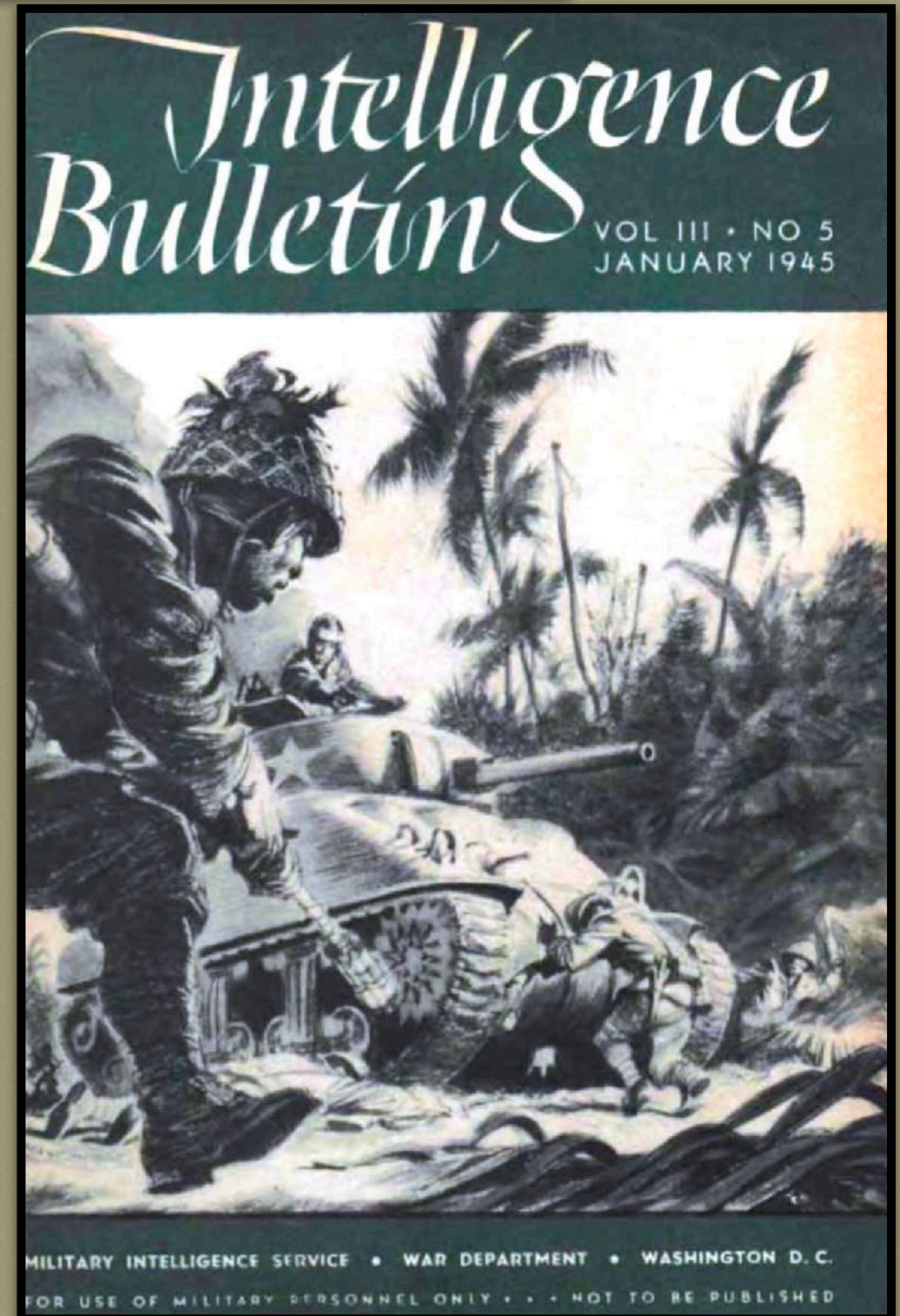
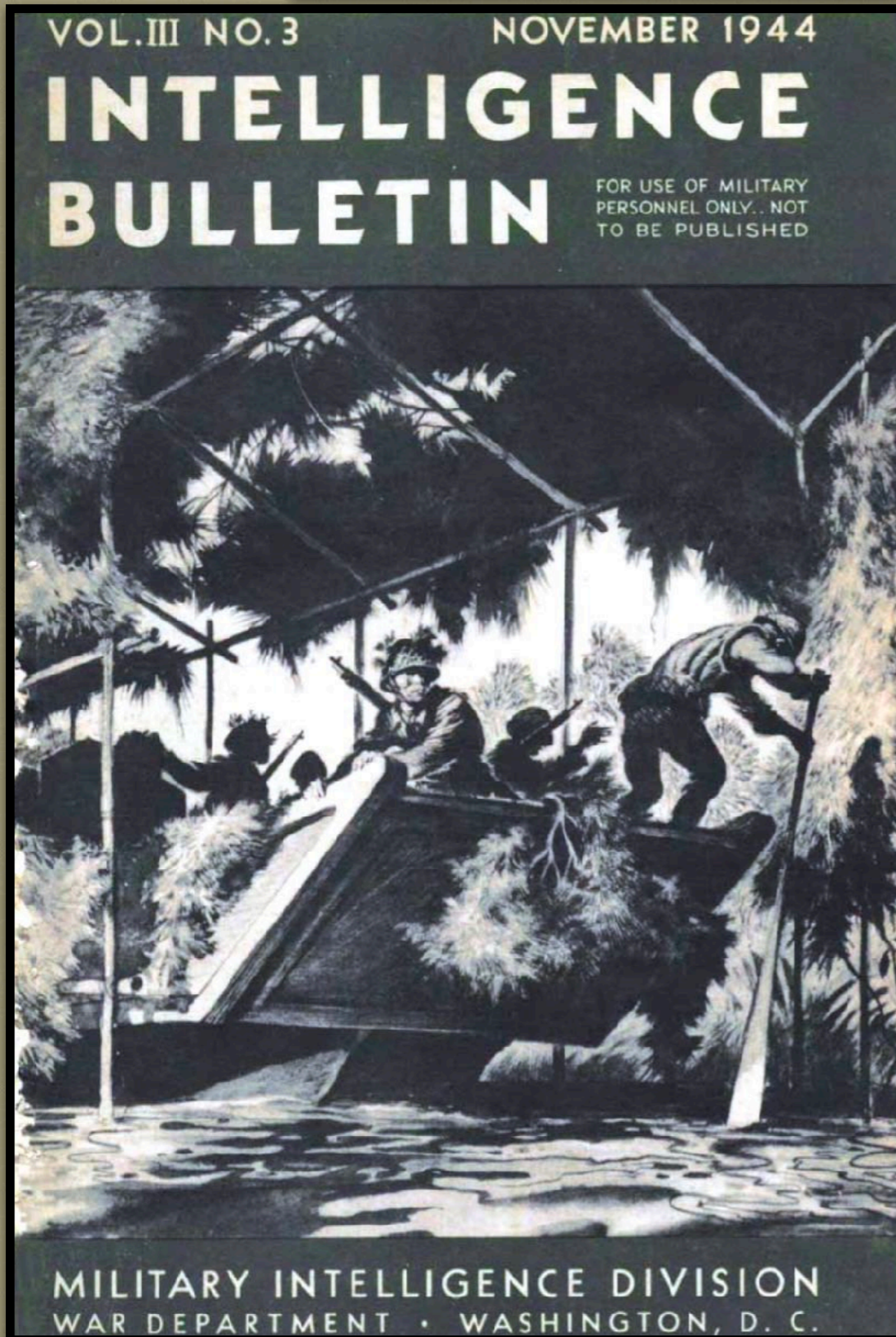




NEW GUINEA DOCUMENTS





Because the Japanese have been unable to stop American armor at a distance with effective aircraft, artillery, or antitank fire, they have been forced to devise means of fighting tanks in close combat.

A comparatively new Japanese small unit—the antitank assault team—has come into use in the Pacific war during the past year.

Be on the watch for

TANK HUNTERS

The Japanese still have their antitank artillery units, whose basic weapon is the 47-mm antitank gun. However, the enemy heretofore has never met much armored opposition, and consequently has failed to develop either tanks or antitank weapons and thus keep pace with modern tank warfare. When the introduction of American armor in recent campaigns caught the enemy completely unprepared to cope with the Sherman tank, the Japanese were forced to turn again to the suicide squad as their last resort.

These antitank assault teams are organized and trained to attack tanks in battle at their vulnerable points, or to infiltrate by small raiding parties into tank parks, to destroy the vehicles

there. Each infantry platoon may have one of these units armed with demolition equipment, incendiaries, grenades, and small land mines. On Leyte Island many Japanese soldiers were found equipped with pottery mines.

The jungle terrain in which much of the Pacific war has been fought is ideal for the employment of these suicide units. Where tanks must move slowly through heavy vegetation, they may be more easily approached and attacked by antitank assault squads, particularly when supporting infantry troops fail to keep up with advancing tanks.

Because it is hard to assault a tank moving at more than 10 miles an hour, Japanese antitank assault teams are taught to select ambush points such as fords, steep inclines, or rough trails through dense jungle. They are alert to attack tanks that have outdistanced infantry support or have become immobilized through damage, obstacles, or other reasons.

Before other tanks are attacked, assault teams may try to concentrate on the command vehicle. If the situation permits, several tanks may be attacked simultaneously.

Because the Japanese consider tanks vulnerable to these tactics, assault teams are taught to attack the following points:

- (1) Treads.
- (2) Rear of the tank, including the air vents.
- (3) Front of the tank, particularly observation ports and periscopes.
- (4) The turret, particularly at the junction of the turret and the tank body.
- (5) Tank weapons and the points at which they are set in the tank.



In assaulting a tank, each member of the team has a specific mission. One man will try to place an antitank mine or other demolition charge under the tank tread, either by tossing it or by placing it there by hand or on the end of a pole. A second man may throw a Molotov cocktail or some other incendiary to force the crew from the tank. If these efforts fail, the assault team may try to mount the tank and force the ports with grenades and small-arms fire. During one of the battles on Biak Island, a tank momentarily lost the fire protection of its supporting tank. At that moment a Jap dressed in an American uniform climbed onto the tank and dropped a grenade inside it.

When attacking a light tank, the assault team may try to halt it by jamming a pole into the treads near the driving wheels, and then maul it with picks and crowbars.

Smoke grenades or candles may be used in an effort to blind the tank crew, to force them out with the fumes, or to hide the tank from its infantry support. Assault teams will not try to mount a tank, except as a last resort. When they mount a tank, they are extremely vulnerable to the fire of supporting ground



Assault teams are alert to attack tanks that have outdistanced infantry support troops.

troops. The teams may attack with their own support. Machine-gun and small-arms fire may be directed against the tank ports and periscopes to blind the tank while a team approaches it.

Individuals may be sacrificed in order to immobilize a tank. When a Biak Jap, who was lying in the road in front of tanks, was discovered and shot, an antitank mine tied to his body exploded. In the Central Pacific, a Japanese prisoner explained that his job was to climb on an advancing tank and hold a demolition charge against its side until it exploded. He said he did not approve of this particular tactic!

Unable to stop the American armor on Biak by using their own tanks and ordinary antitank methods, the Japanese employed a bold attempt at demolition. One evening at twilight, 8 or 10 Japanese, holding a conversation in English, strolled casually into the tank park. They stopped near some of the tanks while they talked about horse racing at Santa Anita. Then



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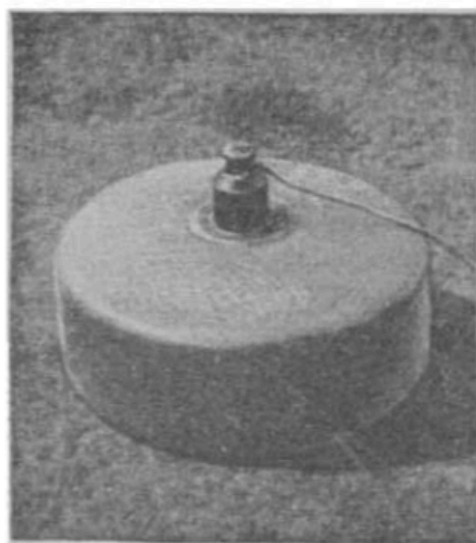
INTELLIGENCE BULLETIN

they continued through the bivouac area, arousing no suspicion until they tried to return later on. The Japs fled as soon as their deception was discovered, but not without leaving behind several shell cases filled with explosive and with detonators attached.

During one encounter in the Admiralties, a small Japanese party infiltrated behind forward U. S. troops and tanks, and planted some mines on the road over which the armored vehicles would have to return after the battle.

On the whole, the Japanese attempts to neutralize American tank tactics have been ineffective. The fact that the Japanese are employing antitank assault teams is an admission that they realize their weakness. So, when a Japanese soldier suddenly rushes an oncoming tank, he is not necessarily "a damn fool who is trying to die for his Emperor." He may be a specially trained soldier whose mission is to destroy the tank at any cost.

JAP MINE WATERPROOFED



The newly discovered Type 3 pottery land mine taken from the Japanese on Leyte Island (see INTELLIGENCE BULLETIN, Vol. III, No. 4, pp. 1-6) has an unusual waterproofing feature, it has been discovered. The explosive in the mine is encased in a rubber sack, and the fuze is set in a cork-like rubber stopper which seals the only opening in the mine. The mine appears to be wholly waterproof, and ideal for use in damp tropical areas, such as the Philippines.

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VOL. III NO. 5

JANUARY 1945

INTELLIGENCE BULLETIN



MILITARY INTELLIGENCE SERVICE
WAR DEPARTMENT • WASHINGTON, D. C.



Section II. NONCOM TELLS EXPERIENCES IN NEW GUINEA FIGHTING

1. INTRODUCTION

An infantry sergeant who took part in some of the toughest fighting in New Guinea early this year has written a story of his experiences for the Military Intelligence Service. Because his story will be both interesting and helpful to U. S. military personnel, it is reproduced below. The sergeant was wounded in action and has been returned to the United States.

2. THE STORY

On January 1 [1943], we were flown over the Owen Stanley range [New Guinea] to relieve an Australian combat unit, which was keeping open a trail over which natives were bringing up supplies.

The first day we had snipers firing into our perimeter [an area with all-around defense] with explosive bullets, which were very irritating and nerve-wracking. The next morning the same thing started. I got permission from my lieutenant to go out and see if I could find the sniper. I walked about 40 yards out of the perimeter, and I saw him in a large tree about 300 yards away. Since this was the first Jap I had seen, I was quite nervous.

I took my time and fired 5 shots. The Jap fell only partly out of the tree; he was tied in by his legs, and his rifle was strapped to a limb.

Our first general activity was to send out patrols under company noncoms, to be sure there were no Japs digging in.

One day about noon, our commander asked for volunteers to go into an area believed to be occupied by the Japs. I asked for two men to go with me into the area. We had gone about 300 yards when we thought we heard something moving in the undergrowth. I left the two men behind and crawled up to a place where the growth had been cut down to about knee height. There I could see fresh dirt, so I lay still and listened for about 30 minutes. Then I brought the other two men up with me and I left them in my position while I crawled forward to investigate. I found a freshly dug hole, with a banana-tree trunk forming a wall about waist high on two sides of it. I called the other men up, and we decided to go back and report what we had seen; however, just then a .25-caliber machine gun opened up, and we immediately dived into the hole. We thought that the enemy was covering the hole with this one gun, but another .25 caliber opened up from another direction. All during the afternoon we exchanged fire with them, using our Thompson submachine guns and the one Browning automatic rifle we had with us. At about 2000, after dark, we went back into the jungle and got away without a shot being fired at us. We stayed in the jungle that night because it is absolute suicide to go into your own perimeter after dark.

The next morning we reported what we had seen.

At night you're not permitted to fire your rifle because it would reveal to the Japs exactly where you are—you use only hand grenades and the bayonet.

The Japs will go from tree to tree during the hours of darkness and make noises, or call familiar names of people, or call your medical personnel. When they have located your perimeter, they



NONCOM TELLS EXPERIENCES IN NEW GUINEA FIGHTING 61

fire their machine guns about waist high over your position; then they send a group of men crawling in under their own fire. They crawl very slowly until they feel the edge of your fox hole; then they will back away a bit and throw in hand grenades.

Another favorite Japanese trick is to capture a wounded man and place him near a trail or perimeter and then cover him with machine-gun fire. They will torture him until he screams and yells for help, but it is absolutely suicide to send in help for him.

One morning at 0845 we were told we were going to attack the Jap perimeter at 0900. The lieutenant in charge took with him two runners, who carried a telephone and the necessary wire. When we were at the right position, our artillery and machine guns laid down a barrage until the lieutenant telephoned back for them to stop. We moved on, on our bellies. The Japs were out of their pillboxes and seemed to be doing some sort of fatigue work. There were six of us who got within 20 yards of them without being seen. We had three Tommy guns, a Browning automatic rifle, a Springfield rifle, and a Garand rifle. The lieutenant motioned for us to start firing. One sergeant threw a grenade, and, as it hit, we opened up with all our guns. There wasn't a single Jap who escaped, but there were some left in pillboxes, and they pinned us down with fire from one .50-caliber machine gun and from several .30-caliber machine guns. One of our six men got hit near the hip with a .50-caliber bullet, which lodged in his left shoulder. The Japs also wounded three more of our men who were behind us. The lieutenant telephoned the commanding officer and told him of our situation, and we were ordered to retire. Later we made another attack on this perimeter and took it.

There was a lieutenant who had been shot down near a pillbox, and our commanding officer asked for volunteers to go in and get him. When he was last seen he was still alive, but when we got to him, after wading through swamp water waist deep, he was lying on his stomach—dead. While we were going toward him,

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the Japanese had killed the lieutenant by slashing his stomach, and had placed him on an "island." We put him on a litter and started back into our own perimeter, but the Japs opened fire on us, and we had to leave him and take cover in the trees. I thought the fire was coming from only one pillbox, so we all started firing in the direction from which the fire was coming. We soon learned, however, that there were two more pillboxes from which we also were receiving machine-gun fire. When they stopped firing, another boy and myself went out and got the lieutenant and took him into the perimeter. Later he was taken to battalian headquarters (command post) where he was buried in the regimental burial ground.

On January 15 our battalion moved into a position to make an attack on a large Japanese perimeter. All artillery and machine-gun fire was concentrated on this perimeter before the infantry started pushing forward. The heat was terrific. We moved in about 100 yards under Japanese fire, with two platoons forward and one in reserve (the squads also were two forward and one in reserve). My squad was in reserve when we started pushing forward.

The lieutenant sent back for me to bring my squad forward and relieve the right squad. Because so many of this squad had been killed and wounded or had passed out from heat exhaustion, I thought I might find a better place to put my men. So I crawled forward to find positions for them. I had found a few good shell holes, some logs, and depressions in the ground, when a .30-caliber machine gun opened fire on me. The first burst hit the front handle grip of my Tommy gun, and, of course, I got as low as possible; but the second burst hit my Tommy-gun drum, and two bullets hit me in the arm. Also, fragments of the drum hit me hard—on the hand and shoulder. These .30's were explosive bullets which broke up my arm and tore a great deal of flesh away from it. It felt as if an ax blade were shearing through the flesh of my arm.



NONCOM TELLS EXPERIENCES IN NEW GUINEA FIGHTING 63

I rolled over into a small depression of the ground, and took my knife out and tried to cut off the sleeve of my coveralls. While I was cutting, I saw the barrel of the .30 caliber sticking out of a small pillbox, so I rolled back and got my Tommy gun, thinking there might be a chance of knocking out this one machine gun, which was about 20 yards away. Just as I was getting in the right position to shoot, a .25-caliber machine gun opened up from the left. One bullet hit me in the elbow and one in the ribs—the latter went through my pipe and a can of tobacco and only broke my rib. I pulled out this bullet myself, burning my index finger on the hot lead. Another bullet went through my helmet and just grazed my scalp. I lay there for about 3 hours in the hot sun, bleeding profusely. Figuring that I would bleed to death if I remained there, I began to crawl back to my own men—only hoping and trusting to God that He would give me strength and protection to get back. I got back to my men, and the platoon medical personnel made a hasty cross splint and sling for my mangled left arm. One of my men helped me back to the command post where litter bearers took me back to a dispensary. Attendants gave me morphine and put me on a jeep, which carried me back—with several other casualties—to the 11th Portable Hospital. There medical officers operated and took out two bullets. I stayed there that night, and the next day I was sent to a small landing field where a plane was waiting to take casualties back to Port Moresby.

After staying a short time in Moresby at the 171st Station Hospital, I was flown to Australia, where a board of medical officers determined that I should be returned to the United States.

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VOLUME 1 * NUMBER 11

INTELLIGENCE BULLETIN

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July 1943

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Section III. NOTES BY U. S. OBSERVERS ON JAPANESE WARFARE .

1. INTRODUCTION

The information given in this section has been selected from numerous reports by U. S. observers in the Southwest Pacific theater of operations. The observations were made both by enlisted men and officers, some of whom were wounded in combat. The various reports have been paraphrased and edited to eliminate repetition. They are presented according to subject matter.

2. PERSONNEL

We found that the average Japanese soldier [on Guadalcanal] was about 5 feet 3 inches tall and weighed around 120 pounds. A few Japanese were 6-footers.

The morale of Jap prisoners was pretty low; they seemed to be pretty well fed up with the war and rather glad to be captured.

Japanese aviators seemed quite intelligent and capable; however they did not appear to measure up to our own airmen.

Mentally and physically, the Japanese labor battalions appeared to be far below the regular enemy soldiers. Some of the laborers were 50 years old. All appeared to be virtual slaves of the army. They had to bow every time a Jap soldier passed near them. This attitude existed even when representatives of both groups were prisoners in our camps.

Prisoners from the Japanese Army, Navy, and Air Force were kept in one stockade, and they didn't get along well together. Each group stayed away from the other, and there seemed to be a great deal of jealousy between services, with the navy and air force vying for supremacy.

3. TACTICS

a. General

Japanese troops on Guadalcanal usually worked in small groups, and generally two of them tried to gang up on one American, using bayonets if at close range.

Against us in New Guinea, the Japs never used automatic weapons as such, unless absolutely necessary. They fired only single shots, making it difficult for us to determine the location of their machine guns.

The enemy frequently moved reserves to threatened areas. These movements were made quickly and efficiently, suggesting that they had been rehearsed.

Inexperienced soldiers [Guadalcanal] had difficulty in distinguishing between the sound of the Japanese caliber .25 (6.5-mm) rifle and that of the U. S. caliber .45 Tommy gun or automatic pistol. However, after a little experience, they discovered that the Jap rifle has a slightly sharper crack.

In the jungle, the noise made by operation of the bolt on the Japanese caliber .25 rifle is usually not heard more than 15 feet away.

We found that the Japs sometimes fired their grenade dischargers and light machine guns from trees.



b. Defensive Positions

The Japanese on New Guinea have proved to be good defensive fighters. Their positions have been designed so the occupants can kill their attackers—protection has been a secondary consideration. Weapons have been very well sited. Machine guns, well protected by riflemen and snipers, often have been boldly sited well forward in our outer areas, in positions where they could place enfilade fire on our forward elements. Frequently the riflemen and snipers protecting machine guns have been located in trees or open pits on the front, flanks, and rear.

On Guadalcanal, Jap heavy machine guns were sometimes emplaced in pillboxes constructed of logs and dirt. These gun positions usually were in groups of five, four forming a square with the fifth in the center.

The machine guns fired through narrow lanes, which were close to the ground. It was better to stand up and move fast than to trust to concealment.

c. Scouting and Patrolling

Japanese scouting patrols [Guadalcanal] varied in number although they usually were small. Frequently they carried no weapons, or else concealed them in their uniforms.

Reconnaissance patrols generally consisted of 5 to 10 men, who usually moved about 5 yards apart. Some of these talked a lot, were not alert, and appeared to be stupid.

One combat patrol we sighted consisted of 25 men, none of whom stood out as a leader. When the patrol sighted us, it split into two groups. Another combat patrol that we encountered was smaller; it retreated immediately.

The Japanese on our front in New Guinea did not send out combat patrols until they were ready to make a general movement

forward. However, they apparently reconnoitered with small groups to secure information for later attacks.

When the Japs sent out combat patrols, these usually consisted of 30, 60, or 120 men. Their movements were similar to those of Jap units in jungle combat.

The use of small patrols purely in a reconnaissance role has often been reported. According to the terrain and their mission, these patrols either remained in one position for observation or reconnoitered while on a march of several days. Such patrols often consisted of three to six privates led by an officer or noncom.

If roads or trails were suitable, the Japanese frequently used bicycles for patrolling.

Because they made less noise, patrols often moved during the rain at night.

d. Use of Bayonets

In bayonet fighting, the Japanese apparently try to work in pairs. Their bayonets have a hook on the underside, at the hilt. One Jap tries to hook his opponent's rifle long enough for the other to use his bayonet. I never saw these tactics work successfully.

I don't believe that the Japs have had a great deal of training in the technique of using the bayonet. They did very little fencing but attempted direct jabs. They did not use the butt stroke, and were fooled by it in several instances (particularly by the vertical).

One Jap dropped the butt of his rifle to the ground and held the bayonet up at an angle against an oncoming U. S. soldier.

The Japanese bayonet was a little longer and a little more pointed than ours, but this did not seem to give the enemy any advantage.

Some officers carried sabers about 4 feet long with a hilt designed for both hands. These sabers were slightly curved.



e. Use of Grenades

Japanese fragmentation grenades are supposed to break into fragments when fired, but frequently they only split open, into two pieces, without much dispersion. The dispersal area was never greater than 20 feet.

The Jap grenade does not make a "pop" sound when the fuze ignites. The grenade usually shows smoke about 3 seconds before exploding and makes a hissing sound.

f. Ruses

In New Guinea, I noted that the enemy:

(1) Fired ballistic cartridges at night from rear positions to coincide with the Japanese throwing of grenades at close range, in an effort to deceive our troops.

(2) Fired mortars and artillery whenever our mortars opened up, to give the impression that our own mortars and artillery were shelling us.

(3) Prepared dummy posts in fairly obvious positions to draw our attackers into prepared lanes of fire.

g. Snipers

I believe that one reason the Japanese ordered their snipers to tie themselves in trees was to get us to waste our ammunition. When a sniper tied in a tree is killed, he does not fall. As other soldiers pass by later, they again spray the body with bullets. I cut down the body of one Jap who had been dead at least three days [Guadalcanal]. I counted 78 bullet holes, 60 percent of which were made by caliber .45 weapons.

I saw snipers buried in the ground [Guadalcanal] with slits just sufficient for peek holes and the muzzles of their rifles. These positions were dug to face the rear of our troops after they had passed by.

Many snipers were equipped with light climbing irons, which were made of heavy wire.

h. Communications

Although some of the enemy outposts [Guadalcanal] kept in contact with troops behind them by tapping on wood, whistling like birds, waving their arms, or shouting, the Japanese also used telephones and radios in the forward areas. Outposts and snipers are believed to have communicated with each other by jerking a wire strung between their posts.

The Japanese telephone wire was made of a good grade of copper. Containing only one strand, it was coated with some type of composition, lacquered, and painted yellow. The wire seemed to hold up well under damp conditions.

i. Recovering the Dead

The Japs go to great trouble in recovering their dead. They have been known to crawl to within a few yards of our positions in order to remove a wounded man or even a corpse. The dead are buried or cremated; this makes it difficult to estimate the number killed.



Section II. HOW JAPANESE DEFENDED HILLY JUNGLE COUNTRY

1. GENERAL

The following notes on Japanese warfare are based on the experiences of United States officers and enlisted men while fighting the enemy in the hilly and mountainous jungle terrain of New Guinea. While these notes should not necessarily be regarded as Japanese tactical doctrine, they should be helpful to United States forces who may meet the enemy on similar terrain in the future.

Generally speaking, in this campaign the Japanese were highly defense-minded except for a few local counterattacks, which were usually staged by a platoon or company. On one occasion the enemy dispatched a raiding party of 100 or more men to infiltrate through the United States lines and demolish artillery positions. The mission failed, with considerable loss to the enemy, after a night-long fight.

As a rule, the Japanese patrolled very little during the campaign, and seemed content to remain concealed

in defensive positions or to stick close to their supply trail.

Most of the Japanese troop movements, reliefs, and withdrawals were executed at night, usually about an hour before daybreak.

2. SECURITY

The Japanese, in this campaign, were frequently careless with regard to security measures. Along their rear trails, they tended to move freely, and with little or no security. United States patrols could often hear enemy groups talking and jabbering several hundred yards away.

Many instances were reported in which Japanese sentries were caught asleep or dozing. Many small outposts of four to eight men were discovered in huddles without lookouts, and groups of two or three walking unarmed along trails near their positions were often taken unaware by United States patrols. When caught off guard under such circumstances, the Japanese were slow to react; they frequently stood or sat for 10 to 15 seconds without moving.

3. POSITIONS

Observers agree that the Japanese did a tactically sound job of selecting and organizing defensive positions. They organized many high ridges, access to which could be gained only by single-file movements. Such ridges, or knolls, were organized with deep dug-



outs for the protection of personnel, and were connected with weapon emplacements by tunnels or trenches.

The emplacements, featuring a generous supply both of light and heavy machine guns, were so well camouflaged that often they were visible only at distances of from 5 to 10 yards. The weapons were sited for cross fire at short ranges along the knife-edge ridges which connected positions.

4. DEFENSE

As had been reported in other campaigns, the Japanese were tenacious in the defense of dug-in and protected positions.

In defending organized positions, the enemy primarily employed grenade dischargers, hand grenades, and machine guns. The latter were usually fired down prepared lanes, and rarely were used for traversing or searching fire. As a rule, the enemy withheld his fire until United States troops were within 10 to 30 yards of his position.

The Japanese usually employed their mountain guns singly, and more than two guns rarely engaged a target at the same time. In these exceptional cases, only a few rounds were fired at a time.

It is interesting to note that in the hilly and mountainous country most of the enemy snipers were found on the ground—comparatively few in trees.

5. WITHDRAWALS

To cover withdrawals from organized positions, the Japanese often fired a large number of mortar shells during the night or just before dawn. They also left the barrels of rifles and machine guns sticking out of emplacements to make it appear that the latter still were occupied.

6. COUNTERATTACKS

The Japanese almost invariably counterattacked when driven out of a position, and when forced to give up terrain vital for the protection of their rear or their supply lines. These attacks were usually made at dusk or shortly after darkness.

As a rule, the Japanese counterattacks were accompanied by wild firing of machine guns and rifles, and by howls, screams, and other noises. The apparent purpose of such tactics was to frighten United States troops, draw rifle and machine-gun fire in order to locate our positions, and to cover the main attack. The latter usually was made by stealth from another direction, with the Japanese crawling as quietly as possible with fixed bayonets to our emplacements or foxholes. Sometimes the enemy tossed grenades at our positions before assaulting with the bayonet, and on other occasions they stormed the positions in waves, led by sword-brandishing officers giving commands. Also, in a few instances, 30 to 40 Japanese made daylight bayonet attacks by simply rushing our posi-



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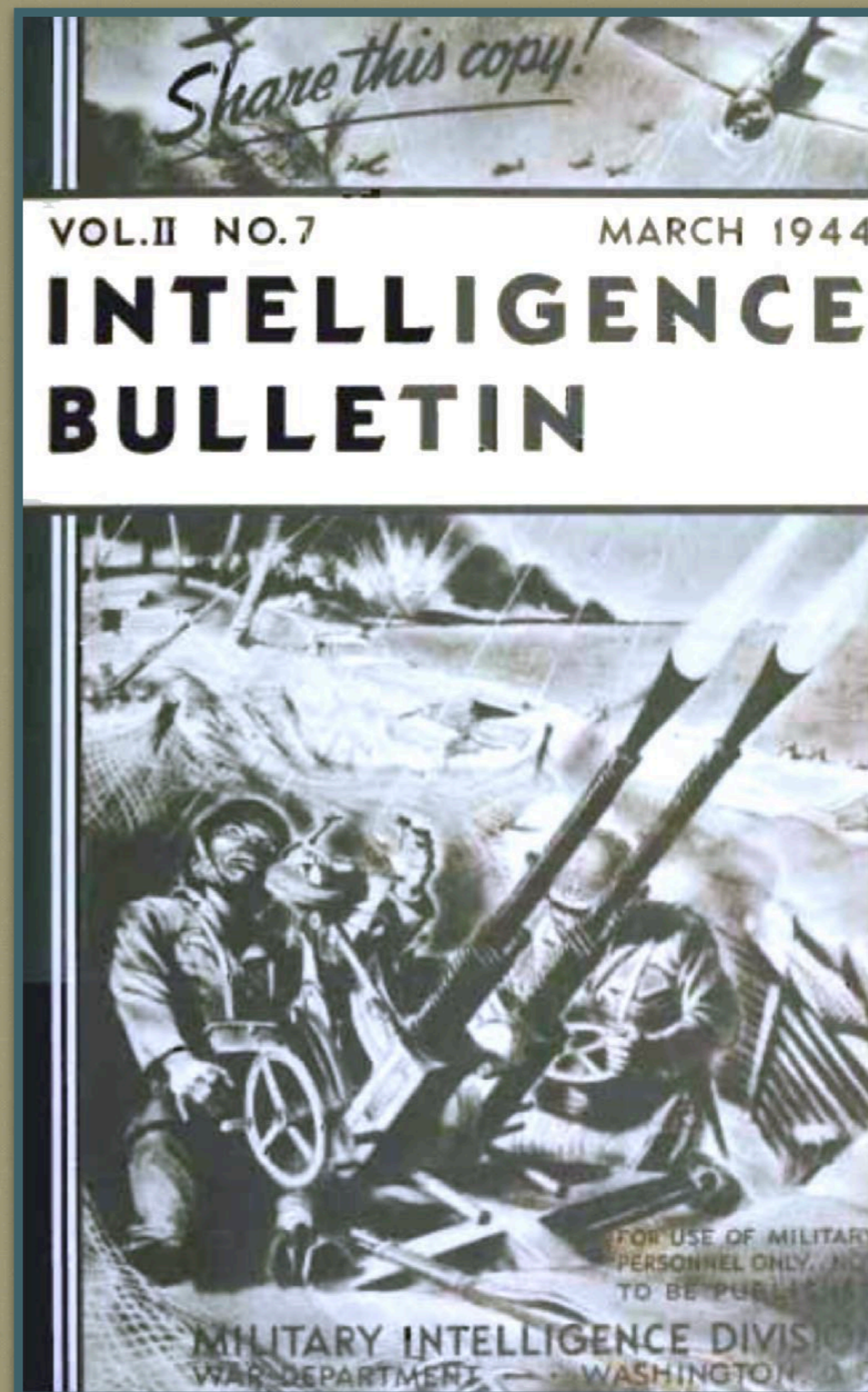
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tions. The number of attacks at night varied from one to nine. Intervals between each attack varied from 30 minutes to 1 hour.

7. BOOBY TRAPS

The Japanese left very few booby traps, and these were crudely constructed.

A few grenades, with their fuzes adapted for instantaneous activation, were found buried in emplacements and tunnels. These grenades projected about $\frac{1}{2}$ inch above the ground. The door of one captured truck was wired on the inside to a grenade.





JAPANESE CAVE DEFENSES ON BIAK ISLAND

Japanese cave defenses on Biak Island, off northwestern New Guinea, which were made possible by a number of unusual volcanic and coral formations, have been described by an Allied military observer as "one of the most amazing defensive installations observed in the Southwest Pacific." These fortified caves permitted the enemy to conduct a type of warfare which, in the future, may be encountered elsewhere—although probably with certain variations. While the Biak caves are in some respects peculiar to Biak Island, the lessons learned there are adaptable to other lava-and-coral terrain found in the Southwest Pacific.

Biak Island, one of a group that the Dutch call the Schouten Islands, lies in the mouth of Geelvink Bay. After a volcanic eruption had created the initial land mass, a fringing coral reef was formed around this eruption. Evidently successive eruptions raised the mass from time to time, and, in the intervals between these thrusts, additional coral reefs were formed at sea level. These must have been raised with the land mass in later upheavals, forming, above sea level, an irregular series of broken cliffs, rises, and ridges, each from 8 to 200 feet high. Erosion, faults, fissures, and the action of sea water during the "submarine life" of these formations resulted in a network of caves and underground passages.

No two caves on Biak Island are exactly alike. However, each cave may be classified as being of a certain type.

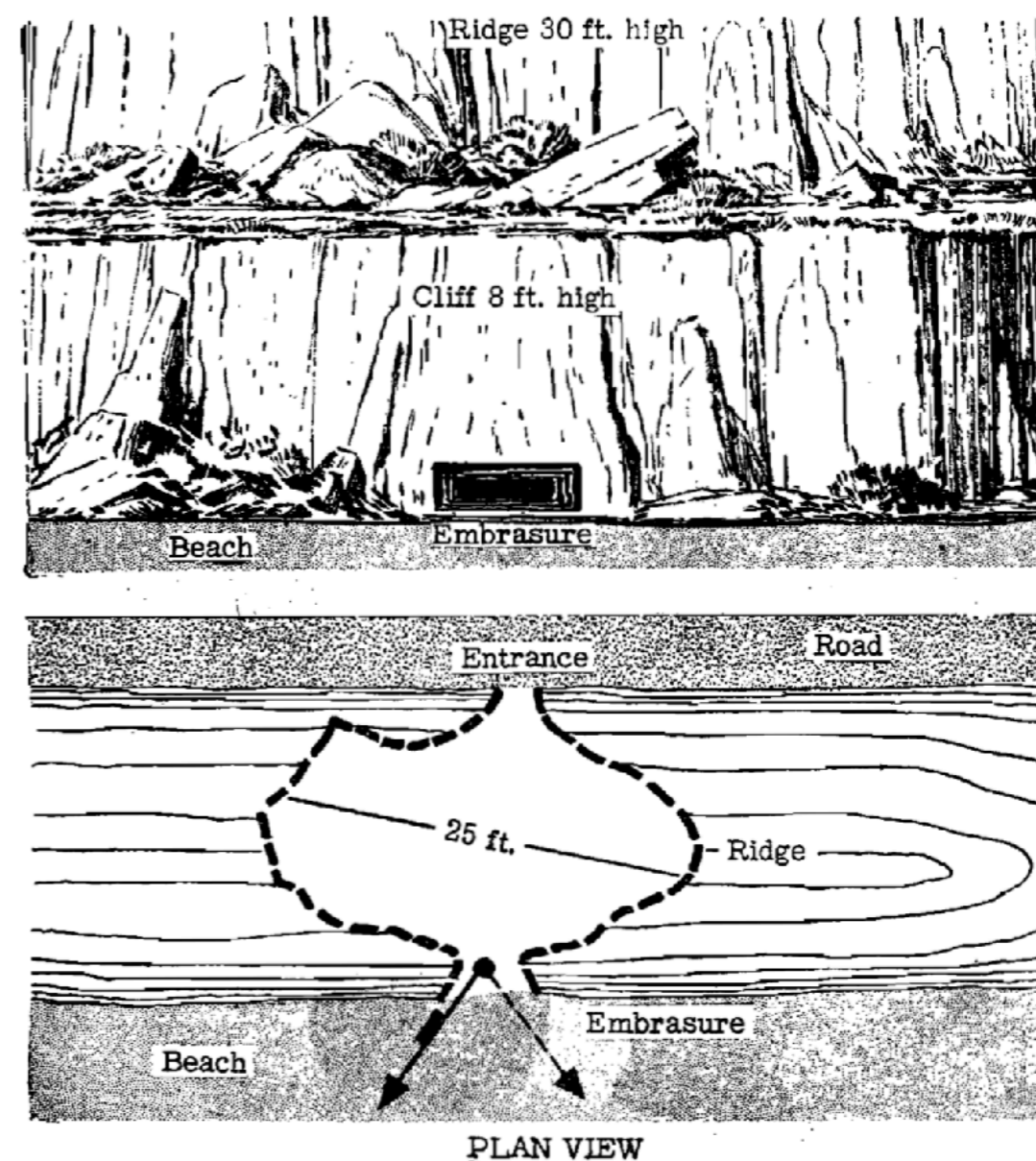
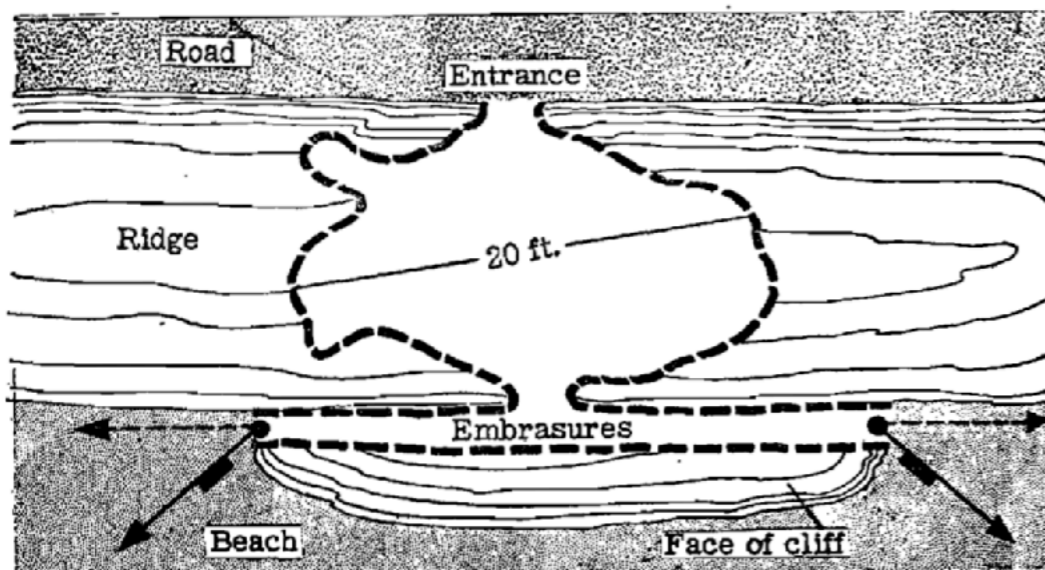
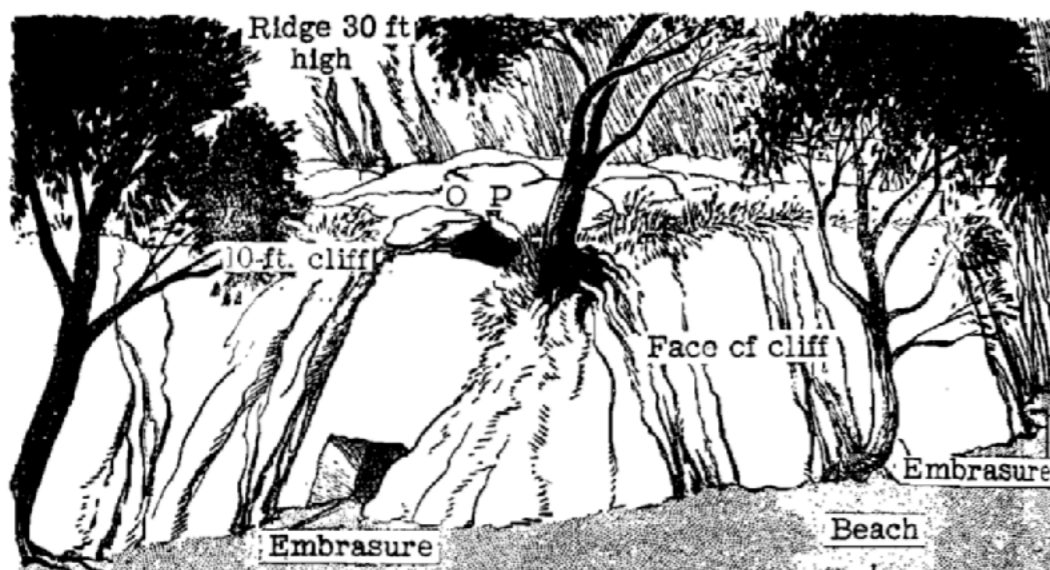


Figure 5. Tunnel-type Cave with an Embrasure Added.

BEACH CAVES

Fortified caves facing the beaches were of two varieties: the cavity type and the tunnel type.



PLAN VIEW

Figure 6. Terrain Variation—a Natural Alley, Fortified by the Japanese.

The cavity type usually is a cavern from 3 to 50 feet deep. Occasionally a transverse tunnel, 10 to 50 yards long and running parallel with the face of the cliff, gives access to another

cavern. The Japanese used beach caves of this type as machine-gun positions and as food and ammunition dumps.

Caves of the tunnel type traverse the base of a narrow coastal ridge 20 to 30 feet high, and have a forward opening, 6 to 12 feet high, commanding the sea. Usually the Japanese improved an opening of this kind by preparing a concrete machine-gun embrasure and by knocking out an opening at the landward end of the tunnel, near a road suitable for motor transport (see fig. 5). The dimensions of tunnel-type caves are of course irregular; as a rule, such caves are 15 to 25 feet long, 8 to 15 feet wide, and 3 to 6 feet high. The Japanese used the rear opening only when bringing in personnel, ammunition, and food. (Containers attached to coral teats in the roofs of the caves caught a ample supply of fresh, cool water, which dripped down slowly from the earth overhead.) Although the field of fire from each embrasure generally was more or less frontal, a terrain variation like the one illustrated in Figure 6 permitted effective oblique fire. Such a variation occurs when the seaward opening is masked by an apron consisting of a portion of cliff broken away from the main face or separated from it by the action of the sea. This results in a narrow alley between the apron and the face of the cliff. The Japanese sealed the ends of at least one such alley with concrete, but provided embrasures for observation and firing.

GALLERIES

Galleries may occur at any elevation. One series was about 200 yards back from a beach and 80 feet above the coastal road (see fig. 7). These galleries, which were reached by a 75-degree

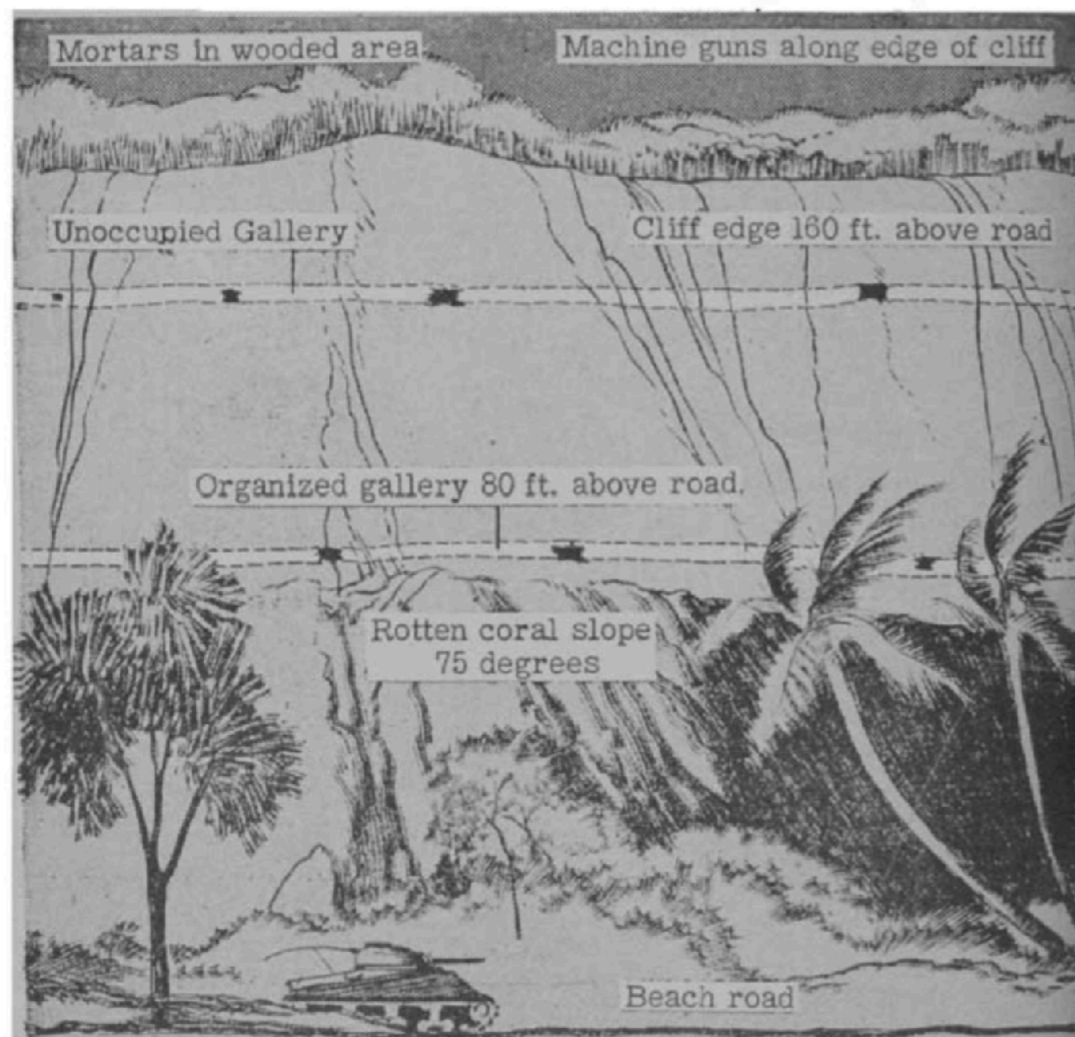


Figure 7. Cliff Galleries on Biak Island.

slope of crumbled coral, consisted of a level series of irregularly connected cavities, 4 to 8 feet high and 3 to 6 feet deep. Merging stalactites and stalagmites and hard limestone formations sometimes prevented continuous passage; in several instances, tunnels arched over, or bypassed, these obstructions. Wood flooring, blankets, and food were found in some of the inner "rooms."

The face of the cliff rose another 80 feet above the galleries, and was pockmarked with additional caves at one or more levels, depending on the locality. The Japanese did not utilize these higher caves. Instead, they placed machine guns along the cliff's edge, and sited mortars in the wooded area which extended back from the top of the cliff.

SUMPS

On the ridges north of the coastal plain, holes or faults are found. (Possibly they were formed when the roofs of subterranean chambers collapsed.) They are more or less circular, and have sheer or abruptly sloping sides. In general, the holes

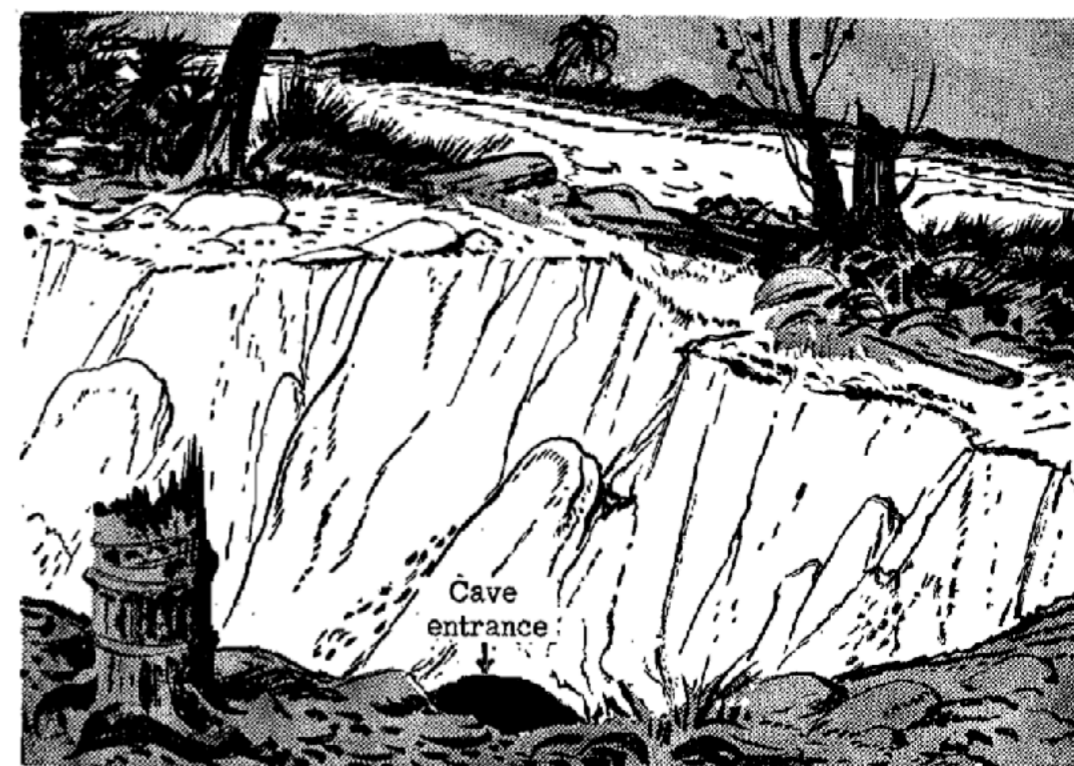
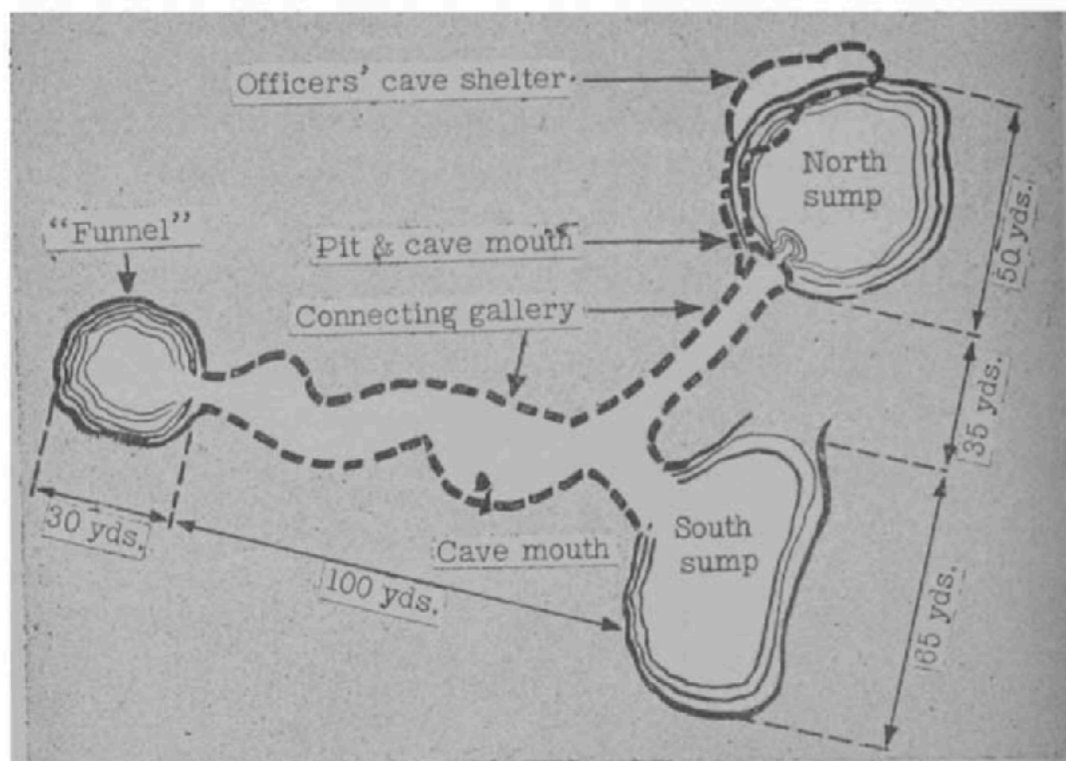
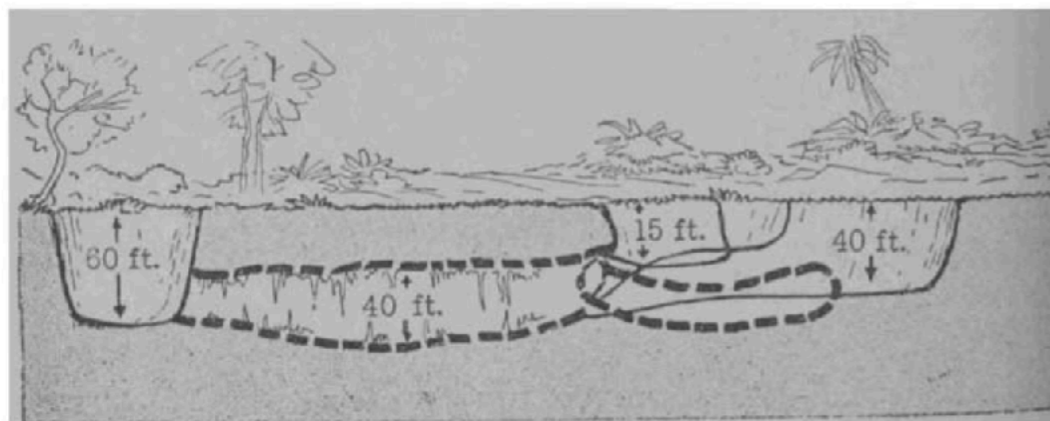


Figure 8. "One or more caves open at the base of the sides, or from small pits in the bottom of the 'sump.'"



PLAN VIEW



PROFILE VIEW

Figure 9. "A series of chambers and connecting galleries."

are from 30 to 75 yards in diameter, and from 15 to 75 feet deep. One or more caves open at the base of the sides (see fig. 8), or from small pits in the bottom of the sump. The caves may be nothing more than cavities from 5 to 30 feet deep. On the other hand, they may be entrances to a series of chambers and connecting galleries, some as high as 40 feet (see fig. 9). Three different sumps, 35 to 100 yards apart, may have entrances to such a network. The "West Caves" on Biak Island could have accommodated about 900 men, were lighted by electricity, and were equipped for radio communication.

VARIATIONS

While most of the caves on Biak Island fall within one of the classifications already discussed, it has been observed that some caves combine the outstanding features of two or more types. An important characteristic of many caves is a screen of natural foliage which makes the entrances or embrasures very hard to detect, even when the observer is standing only a few feet away. In "sump" caves, the screening sometimes consists of stalactites and stalagmites, which do not conceal the mouth of the cave, but which stop or deflect a considerable portion of the attacker's fire, regardless of caliber. Further screening may be afforded by coral formations in front of the mouth. When a cave opens from a pit in the sump floor, still further natural concealment is provided, because of the angle of observation from the rim of the sump.

An example of the screening coral wall occurred in the main sump employed by the Japanese. The sump was about 75 feet deep. In the landward or north wall, and level with the sump



floor, was a cave. A natural coral wall ran directly across the entrance. Mortars placed in the cave had a limited but effective field of fire seaward. The trajectory barely cleared the forward edge of the cave's roof, the top of the coral wall, and the rim of the sump. The emplacement was virtually bomb-proof and shellproof.

FORTIFICATION OF THE MOKMER POCKET

The fall of the so-called "Mokmer pocket" area on Biak Island permitted examination of a Japanese position which had withstood two aerial bombings and strafings, naval gun fire, heavy mortar and artillery concentrations, and almost daily poundings by tank guns.

The coral reef which parallels the coast rises to a height of more than 240 feet behind the village of Mokmer. The cliff at this point is not so sheer as in the vicinity of Parai, but it is very steep and cannot be ascended without the use of hands. About three-fourths of the way to the top, there is a relatively flat ledge with two large, perpendicular depressions like those of the "West Caves." Caves in these depressions lead to a honeycomb of tunnels and passages, at least one of which leads to an opening in the face of the cliff. Forward of the caves, Japanese had built two observation shelters on the ledge. Behind the caves, and on the steep slope that led to the top of the reef, the enemy had constructed five pillboxes. In the caves were a total of five 81-mm mortars in position, an extra mortar tube, five 20-mm antiaircraft guns, two heavy machine guns, and about 1400 rounds of 81-mm mortar ammunition. Excellent cover and concealment for snipers and automatic weapons

was available in the area surrounding the caves. The observation posts permitted unobstructed observation of the whole coastal plain, from the Parai jetty to the east end of the Mokmer airdrome. Machine-gun and mortar fire could be placed on most of this vital area. The cave in the face of the cliff originally had only a small opening, but this had been considerably "enlarged" by naval and tank gun-fire.

A destroyed heavy machine gun in the entrance indicated that an emplacement had existed there. Ingenious, but gruesome, was the Japanese use of one of their dead as a decoy to draw hostile fire. A body was lashed to a pole and placed upright on the ledge, its back resting against the face of the cliff. Tents had been erected on wooden platforms in the two larger caves, and quantities of food and clothing had been hidden in the tunnels.

It is believed that the position was manned by fewer than 100 men, although it probably provided shelter for a great many more.