Combat LESSONS LEARNED *on* LUZON

PREPARED BY AC of S, G-3, 33d INFANTRY DIVISION

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"LEARN TO DO BY DOING"

The application of lessons learned in our battle for BAGUIO must be the guiding light in our training for the battle of JAPAN. The things you will read in this book are not new -- you have heard them before. But these are the things that actual combat has shown we must correct because they are still our faults. These lessons have been paid for in blood; let us learn them well.

P. W. Clarkson

P. W. CLARKSON,
Major General, U.S. Army
Commanding.

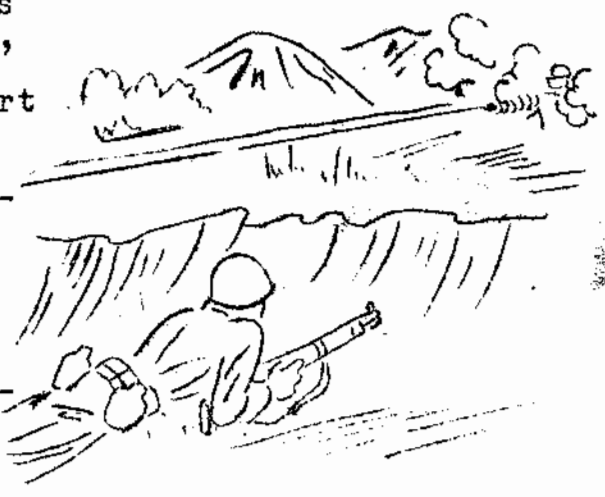
COMBAT LESSONS LEARNED ON LUZON

INFANTRY

LEADERSHIP:

Commanders should make every effort to keep the men posted on what is happening on their particular front. There is no platoon leader who does not have ample time during the day to sit down and talk to his men. Sometimes a little explanation does a lot of good.

After an outfit has been fighting steadily and hard for fifteen or more days, the men begin to get very haphazard and sluggish in everything they do. Holes are not dug as deep as they should be, sanitation drops off markedly, and the usual cautions such as taking cover, not bunching up, etc., are ignored. This is the time that calls for true leadership on the part of the officer and it is up to him, when the going is rough and the men are mentally and physically exhausted, to make them do the things they should in order to go on living.



A commander should always try to buck up the spirits of his men and must never dispair of the situation so he can be overheard by his men.

It is not always necessary for the leader to place himself at the head of his unit. When initiative and resourcefulness have been developed in the men and leaders the position of the leader becomes automatic. He places himself where he can direct and control. The leader who by his direction and control makes his presence felt will not find it necessary to lead a charge. Small unit maneuvers, with view to getting on a flank or above an enemy position, is the responsibility of the unit leader who must train himself to recognize situations where this can be accomplished. The small unit leader must never wait for his next superior to tell him how to handle his unit.

This designation of a second in command must be continuous. Training exercises should stress incidents which make this SOP.

Don't forget that the most vital element of good leadership is actual keen interest in every individual subordinate down to the buck private performing the most lowly task. Officers and men under you will put forth their very best effort if they are sure that the "Old Man" knows what they are doing and considers their job important.

The light tanks were not of much value in our operation. The medium tank is a better all around weapon for our purpose.

Many more bulldozers are needed than were available to us. In operations where we have to "bring the roads with us" as was necessary here, more dozers are essential. Generally the dozer must be the heavier type, and a large proportion should be armored.

Higher Headquarters must make available adequate quantities of 81mm mortar ammunition in the right type. Throughout the campaign we were handicapped by a restriction on ammunition expenditure. The type of open enemy entrenchments encountered called for the use of HE light and HE heavy with instantaneous fuze. However, we were short both these types and instead we had HE heavy with delayed fuze which was not as effective.

Generally, dropping supplies by air was not very effective. We could not rely on the drops, and often we did not know that an air drop had been postponed or cancelled until we ourselves made a check. Greater coordination is necessary for successful air drops, and the ground commander must have a measure of control over it.

The 57mm gun was worthless throughout the campaign because we did not have HE ammunition. As there was no serious threat of an armored attack on the part of the enemy, the armor piercing ammunition that was available was not used. We must have HE for the gun if it is to be of value to us.

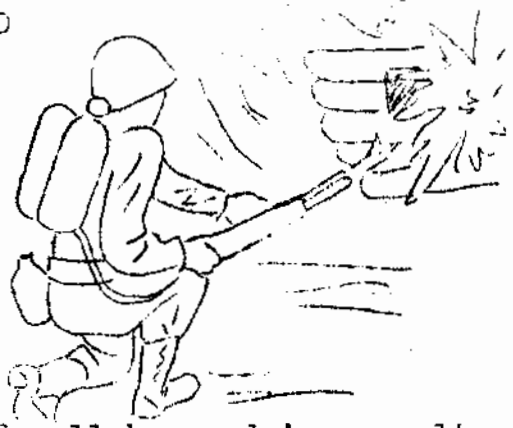
The A-T Co must be trained to operate as a Rifle Co. In terrain such as we encountered, there was no need for an A-T Co as such.

We must stress night operations and operations in rainy weather. More and more we will be operating under such conditions, and our training must point to it.

Long distance patrols must be of such strength to be able to evacuate and replace casualties and still continue the mission.

While the artillery should avoid routine scheduling of fires, it is frequently advisable to establish a pattern of artillery fires so as to effect surprise by a sudden variation from the pattern. The object in any case is to let the Jap think we are going to fire at one time and actually put surprise fire on him at another. Likewise, the duration of preparation fires must be varied so that the enemy is kept guessing as to the exact time length of an artillery preparation.

ASSAULT TEAMS:



In operations where the Jap is dug in it is necessary to use bazookas, flame throwers, and demolitions (satchel charges, shaped charges, etc.) Therefore, each Infantry platoon must be trained as an assault group and each squad must have at least two (preferably three) men trained in the use of flame throwers, bazookas, and demolition charges.

Recoilless weapons, if available, could well be used in assault teams. Perhaps one 57mm per rifle platoon could be substituted for the bazooka. Or, if new T/O's make additional personnel available for the recoilless weapons, the 57mm could be added without removing the bazooka.

The organization of an additional specially trained assault team in each battalion is highly desirable. It is an "ace in the hole" for the battalion commander and gives him the means to add "punch" at the critical time and place when a rifle platoon has been stopped and so reduced by losses that reorganization and reinforcement would be necessary before resuming the assault.

Battalion assault groups should be built around heavier weapons than those available in a rifle platoon; for example, a self-propelled 75mm, a 105mm on M-7 mount or two or three medium tanks.

Supply: Demolitions, fuel and assault weapons must be kept well forward so as to be available promptly when needed. It is unwise to require assault rifle companies to go to the rear to battalion ammunition dumps to obtain these supplies. But it is practicable to require Battalion S-4's to keep these supplies abreast of assault company CPs at all times.

ATTACK:

A decision to attack must be accompanied by a determination on the part of every leader and man to keep moving forward. Any reluctance on the part of even a squad leader to push his men forward endangers the entire attack. Men must not be allowed to bog down. Training during periods out of the line must stress this factor continuously.

Fire superiority appears to be overlooked as a part of fire and movement. Our ability to take a position and continue forward depends on fire superiority, and we have in each unit weapons to do the job.

We do not follow our supporting fires close enough. When we have followed it, we have usually reached the objective with a minimum of casualties and proceeded to mop up the Japs in their caves without too much trouble. When we have waited fifteen or twenty minutes after the supporting fires have lifted and then moved in, the Jap is out of his hole in position to hold us up.

When a company takes a piece of ground, it should immediately have patrols covering the general vicinity. In many cases we have occupied hills for two or three days, yet Japs from caves in the same hills have hit other units in the flank and rear as they passed these positions.

Commanders must learn to move the troops forward under their executive officers while they go forward to make reconnaissance. In some cases, the troops have come too far from the rear, delaying the continuance of the attack.

When the Jap is on the run keep pushing him for, if given time, he will take his automatic weapons and set them up farther back to wait for the attacking troops.

Men continue to bunch up after an area has been overrun and while mopping up is in progress.

The weapons within the battalion and company are not used enough. The base of fire will always help pin the enemy down and allow us to advance. Supporting weapons should be set up and registered before an attack.

PINNED DOWN:

It is difficult to visualize a situation in which a unit is pinned down. Always there is a man or a group of men who can be maneuvered to a position where they can, by their fire, release the pressure on those under fire or better maneuver into position to take out the enemy. All training in rear areas should stress the importance of dispersion in order that when the leading or flank elements come under enemy fire the remainder of the unit is free to maneuver.

SUPPORTING FIRES:

Closely connected with maneuver is fire support by weapons assigned an organization. The leader must be the one who decides that his fire power is insufficient. Calls for fire of supporting weapons by personnel not in the chain of command must be directed back to leaders. The squad, platoon and company must be trained to fight by fire and movement; furnish their own fire and depend on their own ability. In many instances the automatic rifle team has been located in such position that it was unable to have more than frontal fire over a small area and as a result was no more effective than a single rifleman. The failure to call for the use of weapons within the company and the failure to use the 60mm mortar and the light machine gun to assist the advance of squads or platoons has been very noticeable. All leaders must be imbued with the idea that these weapons are behind them and can, when called upon, place a great amount of cover fire.

The M-7, Self-Propelled, 105mm Howitzer and the 4.2" Mortar have proved themselves to be invaluable in direct, close-in support. To get the maximum effectiveness of the M-7, it is advisable to keep one platoon of M-7's up forward with the attacking echelon whenever the terrain permits. In the reduction of strongly built emplacements and fortifications, the M-7 cannot be matched for speed and precision. The effectiveness of its fire and its mobility make the 4.2" Mortar a highly desirable weapon for offensive and defensive support of the infantry.

Through our experiences we have learned that the effectiveness of artillery is in direct proportion to the speed with which infantry follows the last round fired. To give the full advantage of the pulverizing and shocking effect of artillery, attacking troops must continue moving forward during the fire for effect and assault the enemy positions immediately after the lifting of the fire. The last round may be designated by WP.

SMOKE GRENADES:

Colored smoke grenades, fired from grenade launchers, are extremely valuable for pointing out enemy positions to attacking troops and to supporting weapons.

ENEMY INFILTRATION:

The Jap attempts at infiltration have been foiled by alertness and the use of carefully placed booby traps and warning devices. The use of the single slit trench or the chevron style slit trench greatly lessened the casualties from hand-thrown satchel charges.

ENEMY SNIPERS:

A unit should never be halted or held up because of a few sniper rounds. A half squad from each platoon is sufficient to eliminate snipers as the platoon moves forward.

GUERRILLAS:

Do not attempt to train them in our method of attack. Teach them principles of fire and movement and make every effort to encourage their initiative. Train them to be maneuverable under their own leaders and let them apply principles by their own methods.

ARTILLERY

PERIMETER:

For initial occupation of position concertina wire laid loosely with noisemakers (a fuzefork in an empty 105 casing) proved effective and portable. A semi-stablized position should be improved by additional fixed and staked wire, as the Jap has proved himself adept at removing sections of wire not securely fastened and adequately protected.

Booby traps, trip flares and land mines on routes of approach are desirable and accounted for some Japs during the operation. However, great care in marking and placing of devices must be exercised, and accurate charts of location must be made. Devices should be disarmed during daylight.

No major pieces of equipment should be parked within 25 yards of wire. The Japs have a type of sling which enables them to throw a ten-pound charge up to 20 to 25 yards.

Lights, if available, can be used to advantage in case of attack by any sizable group of Japs. The use of illuminating devices must be closely controlled by officer in charge of perimeter to prevent undue disclosure of installations.

Sound power phones in machine gun and other key positions are extremely desirable and practical.

Caliber .30 machine guns are preferable to caliber .50 machine guns for ground defense and are easier to transport and set up. With the overwhelming air superiority we have been able to maintain, and the limitations on firing at aircraft due to identification, it is believed the artillery ratio of caliber .50 machine guns could be reduced in favor of caliber .30 machine guns without detriment to our defenses. The addition of two 60mm mortars per battery will supplement ground defenses and give the artillery a means of projecting illuminating shells beyond the perimeter.

Machine guns, insofar as possible, should be laid to fire along wire on final protective lines and traverse should be limited by stakes. Firing of machine guns must be under control of an officer and only fired in case of an attack in force. Grenades and small arms fire should be used against individuals and small groups. Firing of any kind or use of grenades within the perimeter must be prohibited or limited only to immediate close self defense.

Movement at night within the perimeter is a necessity but should be confined to certain areas, such as gun pits, FDC areas, etc.

recommended that present artillery T/E be changed to include two transits per Battalion Headquarters Battery.

An SCR-610 Radio for each battalion survey section with a battalion fire control channel and a channel common to Division Artillery and all battalion survey crews is highly recommended.

Liaison plane reconnaissance, to supplement map and photo study prior to ground occupation and survey, materially increased speed of survey and eliminated many unnecessary steps.

Radar survey utilizing liaison planes and any available AA gun battery with 584 radar is valuable and reasonably accurate for target survey and can be utilized to correct roads and streams inaccurately shown on maps.

It was found that Division Artillery survey must follow closely or precede (at least by line of sight) most forward infantry elements in mountainous terrain covered so inadequately by maps. The normal requests for close-in fires requires accurate survey, and the frequent necessity to fire batteries at right angles to each other make accurate survey an absolute must.

GUNNERY:

Fire control from a Division Artillery standpoint was limited in many cases by the wide front that the Division covered, nature of targets, and communication between units. Battalion invariably had normal and contigent zones combined, totalling 2000 to 3000 mils in width. Attacks were conducted over a series of semi-parallel, widely separated fronts; occasions for massing of Division Artillery fires were infrequent. Targets for the most part were seldom more than battery targets and only in preparations for attacks were fires of any great density required. High angle fire was found to be a necessity much of the time not only because of position areas, but also because the targets were frequently on steep reverse slopes. However, whenever possible low angle fire should be used to eliminate delays inherent in high angle fire. Replot coordinates from high angle fire were not found as accurate for massed fire as desired, and it was usually necessary to adjust each battery, and sometimes each howitzer, on such targets.

The system of using stripped replot coordinates worked well except in the case of high angle fire. All battalions stripped best available site, drift, and weather from coordinates before reporting them, thus allowing more accurate corrections to be applied by other batteries or battalions.

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Radial line restitution by Division Artillery was not satisfactory in the few instances where it was tried, due to two factors. (1) Frequent inadequacies of vertical air photos which had less than 50% overlay, (2) tremendous differences in altitude within same strip and even same photo. Adjustment was used almost entirely, although when observation permitted, surprise transfers were used in a few cases with reasonably good results. Prior adjustment on defiles, trail junctions, and logical routes of enemy movement gave excellent results for later surprise fires.

The light battalions tended too often to undertake destruction and counterbattery missions, leaving the mediums without suitable targets and often expending an excessive amount of 105 ammunition on a target which could be more effectively handled by the 155's. Precision adjustment by light battalions and report of coordinates to medium battalions for fire is recommended. Some units tried to give fires on targets which are definitely infantry targets or waste ammunition on small and unprofitable targets. All S-3's, Liaison Officers and Forward Observers should be thoroughly reoriented on what constitutes a proper artillery target. Policy has been to give all fires requested by infantry but the amount to be delivered must be qualified by the situation and controlled by battalion commander or S-3. It must be considered, in many cases, that Infantry may not have sufficient ammunition for their mortars due to transportation difficulties and artillery may have to assist on such targets. As the operation progressed, a definite improvement was noted, but it is recommended that this subject be stressed in future training.

90mm AA Batteries, if attached to Division Artillery, can render much valuable fire support and their radar may be used both as radar survey and to supplement the organic metro sections during overcast weather. Selection of positions is limited by the flat trajectory of these weapons, but in mountainous terrain many excellent positions for direct laying may be found. Such units require aid from artillery for transportation and a dozer to keep them dug in.

A metro schedule of 12 per day and an experience chart were found effective in certain circumstances. When weather changed materially, the chart was ineffective, and special requests had to be answered. Requests for special metros were occasionally found necessary when battalion was making initial registrations at odd hours from new positions. Weather in the central plains remained rather constant during the same hours each day, but mountainous terrain developed such radical changes that an experience table was of doubtful value.

FORWARD OBSERVATION AND LIAISON:

It is recommended that each forward observer party have one SMG, one carbine, and the remainder of the party carry pistols. A lighter, more compact radio than the current SCR-610 is needed. Guerrillas attached to FO parties proved valuable to assist in carrying equipment and, if carefully selected, supplemented personnel of parties.

Radios are prime targets for snipers and must be dug in at first opportunity and camouflaged at all times.

Relief from active sectors should not exceed four days to a week, followed by at least an equal period of rest before return to lines. In inactive areas, relief can be made less frequently. Various battalion SOP's provided from three to eight FO parties at one time, thus necessitating the use of enlisted men as FO's during relief. This worked out very satisfactorily in most cases.

It was found to be most practical for the relieving FO party to have the old FO party fire in key concentrations and check points before leaving area. This insures that the new FO has complete knowledge of the situation. Panoramic sketches marked with azimuths and ranges offer an excellent aid to the new FO.

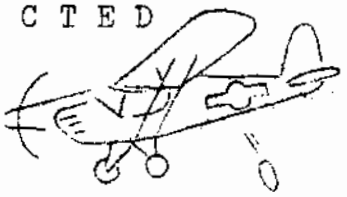
AIR LIAISON:

Central basing of planes at a rear area strip was found to be most effective from a supply and maintenance standpoint as well as for safety. Battalions developed forward strips near their headquarters for daylight operation.

An observer on a fire mission is of doubtful value unless he has been regularly flying with a pilot. Planes have more maneuverability without additional weight and a pilot has no difficulty in conducting fire alone. An air observer is, however, valuable on a reconnaissance flight.

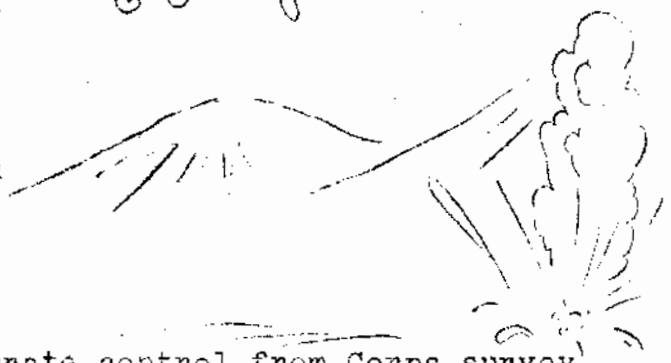
Current communications system is sound using one channel on battalion channel and a second channel on fire control.

Division Artillery Photo Section proved invaluable throughout the operation by rapid delivery of small oblique photos to FO's, infantry units and Field Artillery Battalions.



Cub planes with bazooka smoke rounds or WP grenades were found to be the best solution for marking targets for air strikes.

CORPS ARTILLERY:



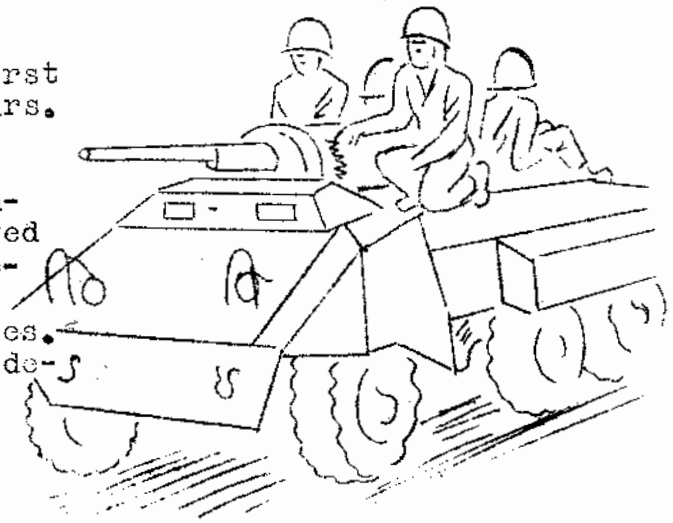
Light battalions, if used in support, should be attached to Division Artillery to simplify control and allow movement when desired.

An initial or early and accurate control from Corps survey would materially simplify matters for subordinate battalions. Frequent changes of coordinates places an unnecessary burden of Fire Direction Center.

CAVALRY RECONNAISSANCE TROOP

OPERATIONS WITH OTHER UNITS:

When a patrol in force is composed of different units, the closest coordination is necessary. On some occasions an over-all commander was not designated. As a result efforts were not coordinated, action was indecisive, and operations were not exploited fully. An over-all commander should be designated at the earliest practicable time and such appointments should be announced to all participating units. In operating a reconnaissance in force using both tanks and armored cars, the best results were obtained by placing an armored car behind the lead tank. In such a formation the free-swinging .50 cal. MG on the armored car accounted for Japs that the tanks could not have taken under fire without delay. On some occasions four riflemen were placed on the back of the first four or five tanks and armored cars. Their mission was to conduct, in conjunction with the dismounted party, any necessary ground reconnaissance. In addition they proved effective in disrupting enemy grenade, pole charge, and satchel charge attacks against the vehicles. Such a use of riflemen is highly desirable.



VEHICLE MAINTENANCE:

Probably the most important lesson learned in the past operation is that more emphasis must be placed on 1st echelon maintenance. Although the majority of our drivers had attended a 1st echelon maintenance school, the new drivers had not, and they lacked considerable knowledge in the proper maintenance of their vehicles.

The maintenance problems for general purpose vehicles were not as great as those for special purpose vehicles inasmuch as spare parts were usually available for the former. No spare parts were available for armored cars and half tracks. It is recommended the Troop be allowed to carry more spare parts for armored cars and half tracks than now authorized.

In light of past experiences it is highly recommended that prior to our next operation changes in motor maintenance equipment be made as follows:

Second Echelon Set No. 2. be authorized in place of Set No. 1.

A welding set (No. 5) be issued the Troop.

Air compressor 66-C-1380 is not large enough to service the Troop's 43 vehicles. It takes more time to inflate an armored car tire than it does to change it. Air Compressor 66-C-1370 should be issued in addition to 66-C-1380.

The Troop is authorized only one 2½-ton 6 x 6, and this is for use as a kitchen vehicle. At times we operate at a considerable distance from other divisional units and the two half-tracks authorized our maintenance section are not well suited for long hauls. An additional 2½-ton 6 x 6 would be invaluable.

COMMUNICATION:

The radio operators in the combat platoons must have more practice. In the past radio operators have gone as long as three months without practicing code. More time must be alloted in the training schedule for this purpose.

Radio procedure and brushing up on "Q" signals must be stressed.

Reports should be sent to higher headquarters more frequently and should contain more exact information as to the location of the troop and the progress of patrols.

If at all possible higher headquarters should get any information it deems necessary to the Troop Commander prior to darkness.

Radio communication between tanks and armored cars greatly increases the effectiveness of a patrol. Although both units are equipped with SCR 508 radios, neither was assigned a common frequency channel and intercommunication was impossible. It is strongly recommended at least one common channel be assigned by the Division Signal Officer prior to an operation.

The following changes in radio equipment would prove invaluable in future operations:

The exchange of throat mikes in the armored car for hand mikes. Because of the difficulty of adjustment and lack of clarity over ranges greater than 500 yards the throat mike is not suited for the operation of the 506 or the 508 radio, but is satisfactory for interphone communication.

Personnel in armored cars should be equipped with "Crash Helmets" similar to those used in tanks.

LESSONS IN GENERAL:

The following excellent comments based on the last operation were contributed by enlisted men:

The lack of aggressiveness on the part of men in my platoon was the biggest problem. The tendency to sit and wait for something to happen must be overcome. Somehow men must be taught the aggressive spirit for which the Cavalry is famous.

Camouflage must be stressed to a greater extent. The idea that advancing troops have little use for camouflage must be corrected.

After the Japs had thrown many of our 5-second grenades back at us we learned to hold them for about two seconds after they were armed. None of them came back.

In a perimeter, automatic weapons should be placed on a final protective line and be able to bring fire on any part of the perimeter, and not just the likely avenues of approach.

Know your weapon! Nothing gives a man more confidence than to know the abilities and limitations of his own and other weapons.

After a mission the men must be assembled and the mission reviewed for both good and bad points. I learned more in these critiques than I did before I entered combat. It is advisable to hold these critiques as soon after a mission as possible.

An officer or non-commissioned officer should never give a radio operator an oral message. Write it out in message book form for him.

Never depend on other units when forming a perimeter defense. Dig in well and keep spread out although other units may be near your position.

Don't employ your 60-mm mortars too close to the front of your perimeter. They make excellent targets for enemy snipers.

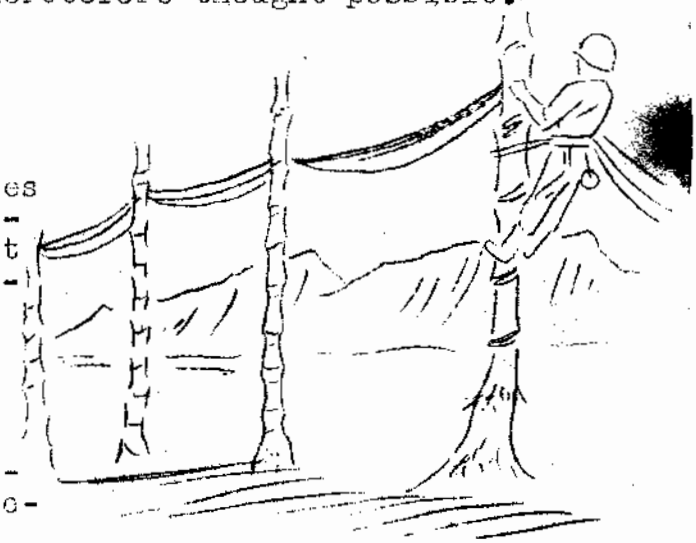
The biggest lesson I learned was <u>not</u> to be <u>trigger happy</u>. Keep the Japs guessing as to where your exact perimeter is. Use hand grenades as much as possible.

Prior to any mission the men should be briefed thoroughly. The more information they can be given the better will be their performance.

SIGNAL COMMUNICATIONS

WIRE:

The principal lesson learned in the wire operations during the campaign was that it is possible to work field wire over much greater distances than was heretofore thought possible. Talking circuits were sometimes as much as thirty-two miles long using field wire alone with one Repeater, EE-89, installed in the center of the line. A forty mile circuit worked when a pair of wires was used for each side of the circuit. Long wire lines must be put up on poles and care must be exercised to assure that splices are made carefully. All possible points of friction on the insulation must be protected with tape.



Trouble shooting was a definite problem because of the extremely long lines. Difficulties were minimized to a great extent by proper tagging and placing test points at frequent intervals. Terminal strips were used at test points. These eliminated the necessity for actually cutting the wire when making tests and speeded up trouble-shooting. Test sets, EE-65, were used extensively to locate the type of trouble. These sets give good results when the wire is installed overhead. An improvised buzzer when attached to one end of the line, kept a constant signal on the line up to the point of trouble. Trouble shooting crews had merely to tap in on the line with test clips every mile. As long as they heard the buzzer they were sure the line back to the buzzer was good. As soon as they stopped hearing the buzzer they knew they had passed the point of trouble.

With the great amount of work for construction teams it was found that at least one more and preferably two more teams were necessary. Two extra teams were organized by cutting down on the strength of all teams. Two crews of Igorots, each under the supervision of one man from the Construction Platoon, were formed. The work accomplished by these two teams was of great value, and it is contemplated a similar use will be made of Igorot teams in the future.

Although telegraph is one of our fastest and most reliable means of communication the traffic available for telegraph was almost nil. This was due principally to the fact that we still have not learned to write out messages instead of using the telephone. Telephone lines were often jammed and persons would wait

several hours trying to get a call through. In many cases a short message would have taken care of the problem, and the message could have been handled in a matter of a few minutes over telegraph or other available means.

Teletypewriter service, at all times available between Division and I Corps and between Division Forward and Rear, was never used to full advantage. This again was due to reluctance of staffs and commanders to send written messages in preference to telephone calls.

MESSAGE CENTER:

Increased use was made of motor messengers because other means of communication were often so over extended as to be unreliable. The use of airplane messengers reached a new high. The Division Artillery was most cooperative in this respect, and made liaison planes available every day for scheduled messenger runs. Airplane messengers were so indispensable that consideration should be given to attaching one plane and pilot to the Division Message Center Section permanently.

Again it was apparent that all message center personnel must be able to use the Converter, M-209.

Message Center was never over-burdened in the amount of traffic it had to handle, and it could have handled a great deal more. Although it is adequately equipped and designed to handle combat and tactical messages with great speed, the failure of all personnel to use written messages in place of telephone calls reduced the combat traffic to almost nothing.

PIGEONS:

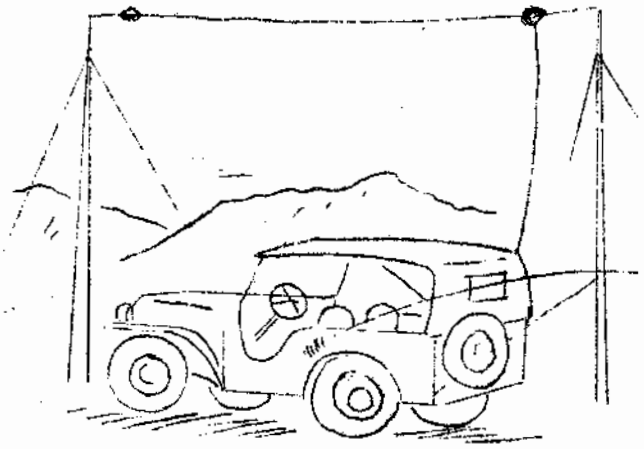
Pigeons again proved their worth by carrying over 500 messages of all types without a single failure. This merely reemphasizes our conviction that pigeons are essential and must be readily available to all commanders.

RADIO:

Radio security, especially over voice circuits, was poor at the beginning of the campaign, but steady progress was made during the entire campaign. The most glaring errors in radio security were made by officers who used the radio like a telephone. This is perfectly permissible in a fast-moving situation when a commander has only radio to use for direct control. But whenever the situation is such that time can be spared to exercise normal security methods or when the message is such that it reveals plans for future operations, locations of friendly forces, or information on friendly casualties, it is imperative the message be handled through Message Center for enciphering.

In general, the radio operators in the Division are excellent, but communications and radio officers must exercise close supervision to see they do not lapse into "ham" or other unauthorized practices. The most practical method for keeping this check is to make the operator at the NCS of each net directly responsible for all that occurs in his net during his tour of duty. When a station in the net violates correct procedure the NCS should correct the station by the fastest practicable means. The NCS should keep a complete log of everything that happens on his net, and at the end of a specified period the responsible officer must study this log to determine what corrective measures need be taken.

In radio, as in wire, we have found that the ranges of nearly all of our sets can be greatly exceeded by taking proper precautions in siting the sets and employing high flat-top antennae. Relays were quite often necessary but in a well-operated net this does not hinder or slow operations noticeably.



SUPPLY AND REPAIR:

This campaign again emphasized the necessity for the Division Signal Supply Officer to keep on hand a stock of those supplies most frequently needed. It is only in this way that the combat units can be served quickly and efficiently. The organization of the Signal Supply Section contemplates there will be no stocks kept on hand, but that it will only be a transfer point in the issuance of supplies. This plan is not practical. Our Signal Supply Section has been augmented so it has sufficient personnel to run a small depot.

The Signal Repair Section learned the only way it can give real service is to keep on hand a fairly large stock of replacement items. When an item is brought in for repair the Section simply exchanges the item for a replacement. The item is then repaired and placed on the shelf to replace the next like item brought in for repair. In order to operate this system it was necessary for the Repair Section to carry on hand a large stock of items above T/E. The value of the system has been proved, however, and the improved service we are able to render more than compensates for the additional bulk of supply to be carried. The Repair Section still does not have enough items to carry out its system to the fullest degree, but constant effort is being made to get the needed items.

GENERAL:

All sections of the Division Signal Company were handicapped during a forward displacement by the lack of personnel. This was

due primarily to the fact that the T/O under which we are now operating does not contemplate the Division will ever operate in two echelons. Actually, in a displacement, there must be at least two forward echelons operating. This occurs when the Advance (new) C.P. is operating and the old C.P. is not yet closed. During the most recent move there were actually four echelons in operation at one time. This presented almost insurmountable obstacles to Signal personnel. In order to avoid such occurrences the Rear Echelon must never begin its move until the Forward Echelon has completed its move. The Rear Echelon must close at the old location and open at the new location at the same time, and this time must be decided upon in advance and the information disseminated to the Signal people.

Certain specific cases arose where more or different types of equipment were necessary in the Signal Company and in the communications platoons of lower units. The recommendations of all communications officers on needed changes to T/O & E have been compiled and submitted to higher headquarters. However, emergency needs of equipment will continue to arise, and the Signal Company will attempt to make temporary loans of equipment as needed. It is important that equipment given out for such temporary needs be immediately returned as soon as the need is past. In this way we can continue to have on hand those extra items needed in an emergency.

CHEMICAL WARFARE

FLAME THROWER:

The chief organic chemical weapon of the Division is the portable flame thrower. This weapon was not used extensively, but was employed on occasions. The weight of the weapon made its use in the mountainous terrain of Northern Luzon very difficult. There were no reported misfires of the M1A1 type flame thrower. However, the chemical section was able to replace the M1A1 flame thrower with the M2-2 type - which will insure against misfires. In the mountainous terrain there is a definite need for a lighter flame thrower.

GRENADES:

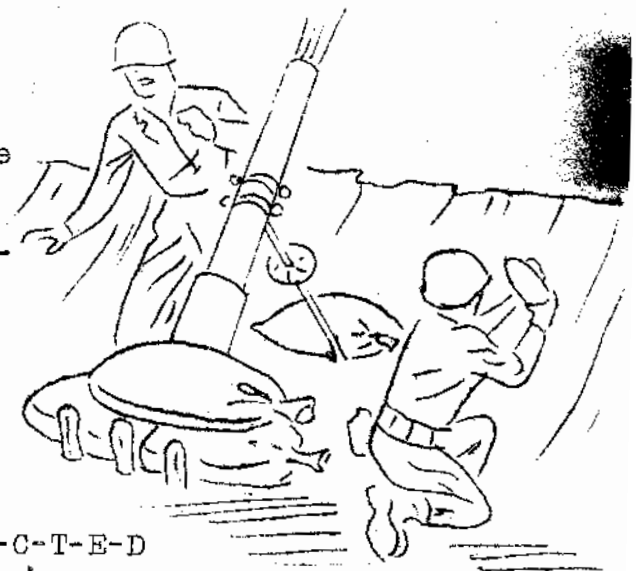
The WP grenade has been employed extensively by the Division not only to smoke the Jap out of his cave or foxhole, but also to burn him -- causing casualties. The arc formed by flying particles of white phosphorus enables it to penetrate into positions which cannot be reached by the fragmentation grenade. We have learned it is a good munition for getting the Jap out of his hole, for making him a casualty, and also for its blinding smoke effect.

We have found the Australian WP grenade is practical for marking targets for air strikes. This grenade does not have a time fuze, but is detonated upon impact. By dropping several grenades from a liaison plane the target is effectively marked. Such practice obviates the necessity for registering artillery or mortars on the target previous to the strike -- which in the past has warned the Jap.

Colored smoke grenades have proved successful for marking front lines, indicating areas for air drops, and for signalling location of adjacent troops. We have learned that in marking our front lines by such methods, we must know the position of all troops, especially reconnaissance elements -- and inform them of the signal to be used.

4.2" CHEMICAL MORTAR COMPANY:

We have learned the 4.2" mortar platoon can be displaced forward of a road net by pack train and supplied effectively by the same means. Thus, in difficult terrain the 4.2" mortar may be employed to furnish support where artillery cannot be used.



A relatively small number of smoke screen missions was given the mortars. It is believed smoke was not used to its fullest extent,

consistent with the tactical situation, to blind the enemy, to deny him observation of our movements, to screen the advance of our patrols, and to minimize friendly casualties.

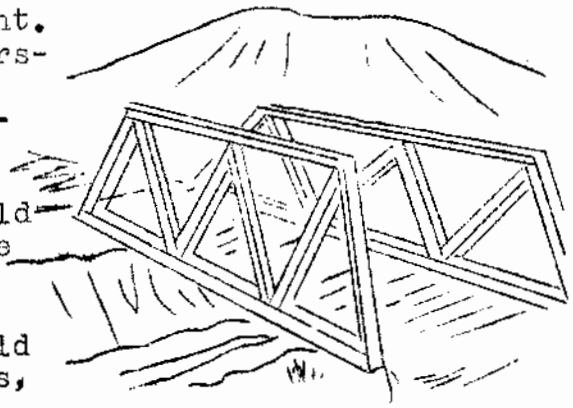
We have learned that once the 4.2" mortar was "sold" to infantry commanders, it was impossible to provide ammunition in desired quantities.

NAPALM:

The Division has employed Napalm bombs in its air strikes. This weapon possesses more than a burning effect. It exhausts the oxygen in the area - it terrorizes - it generates great heat. The best results are achieved when the bombs are employed with special consideration to the principal of mass.

ENGINEERS

Working in the moonlight without lights was accomplished successfully on several occasions. One man was killed in a night operation but presumably many more would have been lost performing the same task in daylight. Adequate, careful and detailed planning must be the keynote in night operations. Any task that lends itself to a drill - Bailey bridge, mine-removal or mine-laying - can be accomplished at night. Other tasks must be carefully rehearsed and every man must thoroughly understand what he is to do. Provisions should be made for contingencies. In preparation, for example, all parts of the Bailey bridge should be greased and oiled, nuts should be on bolts by only one or two turns, mauls should be wrapped in sandbags to deaden noise, the work site should be carefully laid out so that panels, chess, stringers, etc., are stacked in piles where they are readily accessible to speed the operations. The time taken to make detailed plans and rehearsing, cuts minutes and hours from the task. Careful organization of a night operation for Engineer troops pays dividends in reducing casualties and speeding the work.



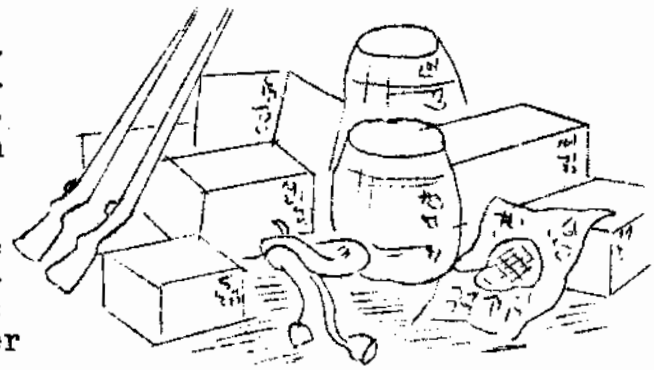
With the large number of mine fields encountered, and which presumably will be encountered in future operations, and the tendency of the Japs to use friendly and enemy artillery shells and bombs as AT mines, more training must be given to Engineer soldier in defuzing these bombs and shells. Fuze wrenches should be issued to each Line Company. At least two mine detectors per platoon are necessary in removing a mine field.

The stocking, in Division dumps, of one-hundred feet of timber trestle bridge expedited operations. The Battalion salvaged all I-beams, located and bolted nailing strips to them in spare time so that they, too, were available for longer span when needed. Lifting these I-beams, heavy timbers, Bailey bridge parts, Engineer supplies and tractors was a problem.

Portable kitchens, latrines and showers should be issued to all units of the Division. This would result in a voluminous saving of material, labor and time in erecting these installations. During the present operation, all such facilities that the Engineers have built have been portable. These construction details are functions of the Division Engineer Battalion and by reduction of duplication of effort in building these buildings, much waste of effort can be eliminated.

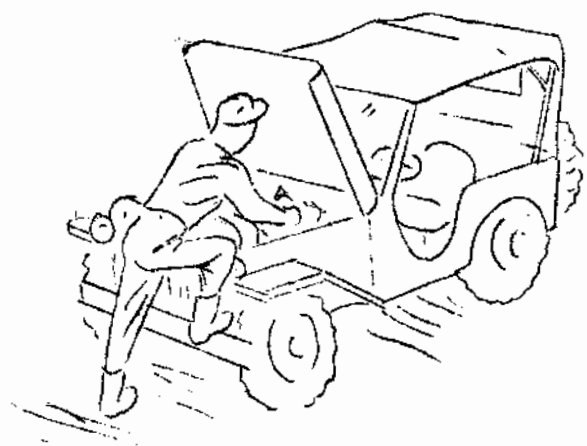
QUARTERMASTER

A salvage section in combat can save thousands of dollars of valuable material. Several plans have been tried. However the most satisfactory one is to have a "Flying Squadron" of some 25 men and ten trucks constantly covering the front lines as combat troops move forward. Because of its nearness to the front this salvage section can arrive at captured supply dumps in time to prevent looting by soldiers and civilians. Close coordination between combat elements and the Division Salvage Officer is essential. In the case of the 33d QM Company the salvage detail consists of 10 salvaged Jap trucks, twenty civilians and a small number of Quartermaster men.



ORDNANCE

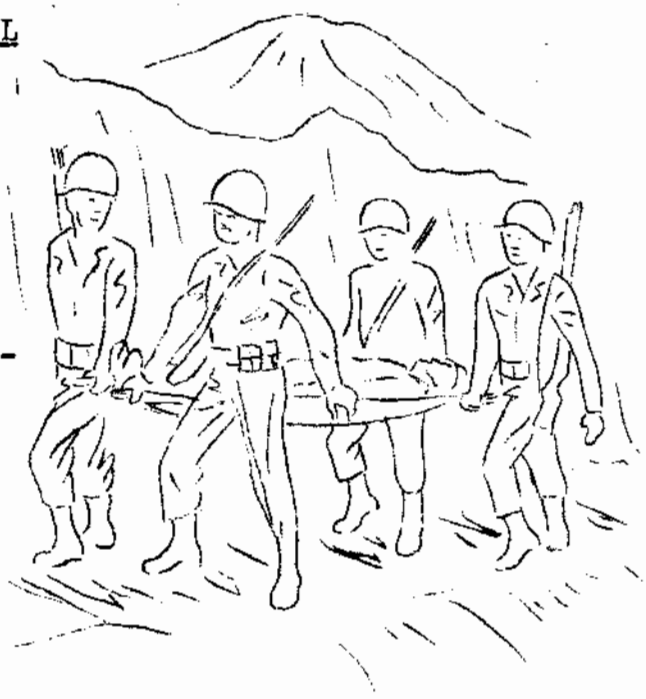
Roadside inspection teams with the unit motor officers assisting Ordnance, proved of great value in keeping the Division transportation in excellent condition.



Prior planning on waterproofing vehicles must be accurate and thorough. All chassis will be covered with compound rust preventive, thin film.

No captured ammunition should be displayed unless a bomb disposal expert has checked each piece. Men have been killed or maimed by experimenting with enemy ammunitions.

MEDICAL



The Medical Battalion of an Infantry Division must be prepared to form emergency Provisional Surgical Units, Clearing Stations, and Clearing Platoons when action is over an extended front.

Unit Commanders desiring Medical installations in front line areas will consider their protection, as sufficient personnel is lacking in medical units to form a perimeter defense. Surgical units cannot be moved daily as patients operated on by these units are usually in no condition to be evacuated for six or seven days.