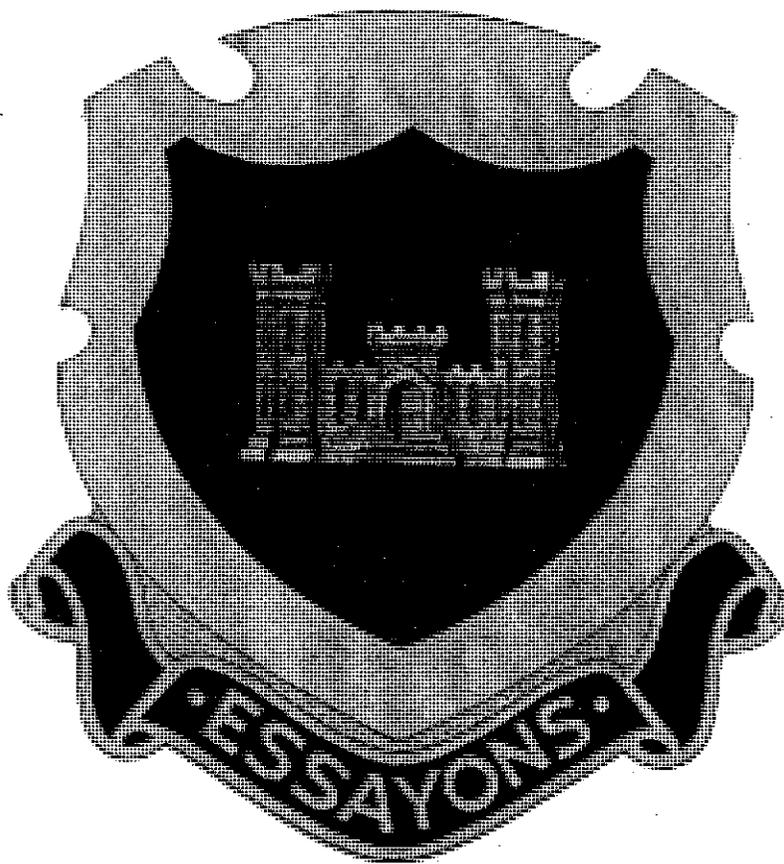
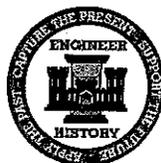


ENGINEERS IN BATTLE



Compiled and edited by the History Office,
U.S. Army Engineer School
Fort Leonard Wood



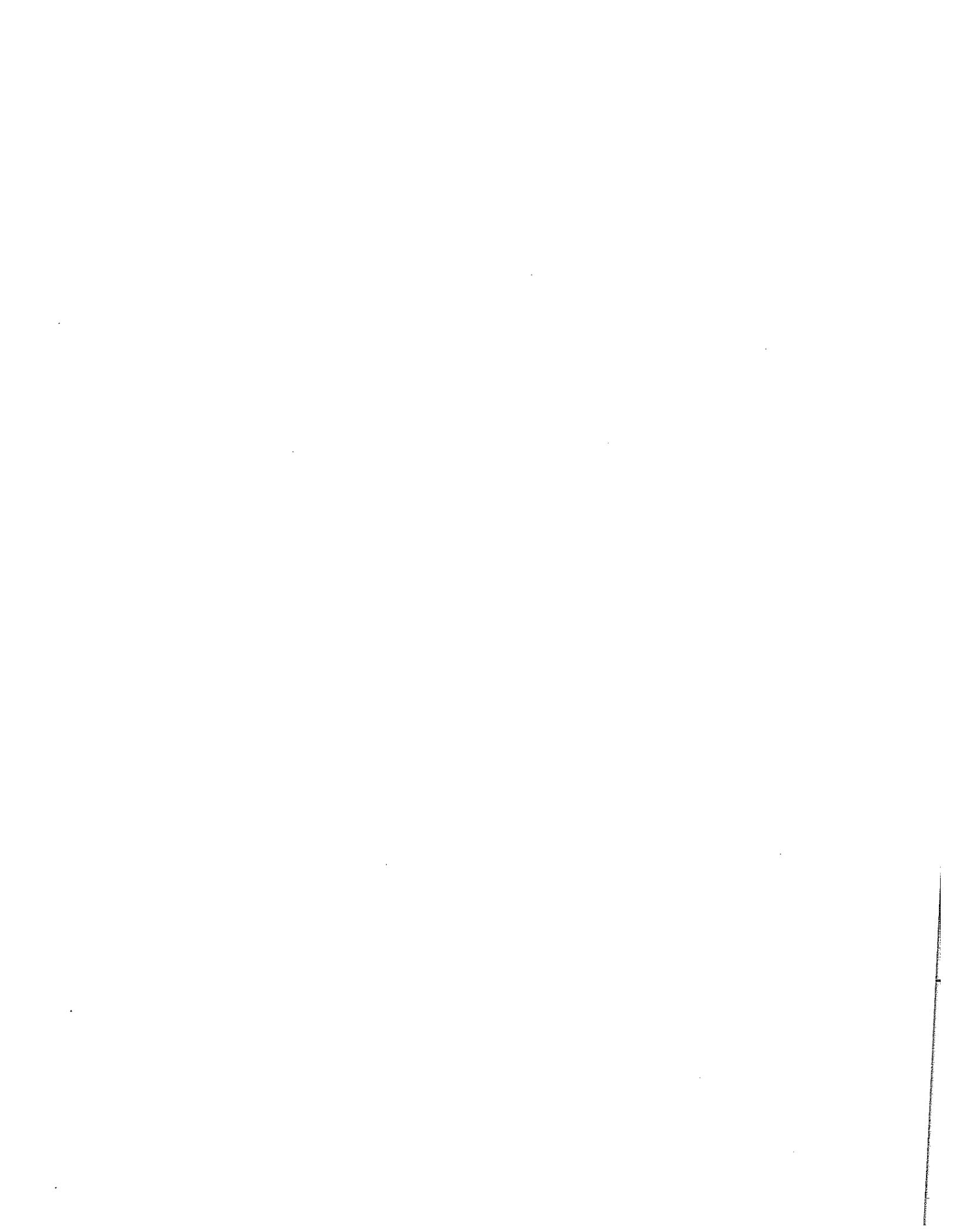


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Preface

In the 1930s, then Colonel George C. Marshall, the Assistant Commandant of the Infantry School at Fort Benning, directed his staff to gather articles, personal recollections, and other material for the use of infantry officers. The objective was to apply the recent experiences of battle to the professional development of infantry leaders. In time *Infantry in Battle* became one of the most widely read books among infantry and other officers.

In the early part of 2000, the History Office of the Engineer School embarked on an effort to produce a version of Marshal's publication for the professional development of Engineer leaders. In that effort, the History Office focused on those articles which represented Engineer operations in a broad spectrum of conflicts and over more than 100 years of time. The articles in *Engineers in Battle* are largely written by the individuals who participated in the operations. These stories are eye-witness, first-hand accounts of the actions of Engineers in war. In many instances they provide lessons learned by those who fought in the wars of the nation.

Those who read these articles will benefit in two ways. First they will gain a greater understanding of the battlefield functions of the Engineers. Institutional training and personal experience are often limited by resources and opportunity. The articles in this publication allow the reader to benefit from the personal experiences of many Engineers in the same way the individual benefits from the personal experiences of his or her mentors, trainers, and leaders. Second, the reader will acquire a greater appreciation of the heritage of the Corps of Engineers. The Engineer Regiment has a rich and diversified history. This heritage includes nation building, civil works, and service in time of war. The articles in *Engineers in Battle* are representative of the Engineers contribution to success on numerous battlefields and during several conflicts.

This publication can be used a number of ways. First the articles in this work can be part of a larger individual or collective professional reading program. In this context, the individuals must do more than simply read the articles. They need to analyze the events the articles describe, examining the relationships between mission, terrain, equipment, and soldiers. If they do this for the articles in this publication, and for other written works, they will come to understand the patterns, causes and effects, and fundamental elements of engineer operations. In a similar fashion, these articles can be used by trainers and instructors. The readings can enhance the understanding of principles and techniques, provide clarity to what might be confusing topics, and illustrate the rationale behind tactical techniques and doctrinal concepts.

The 6th Engineers on the British Front

H.L. Robb

Major, Corps of Engineers

Those of us who were in France in March, 1918, still remember the shock of the great German drive of the twenty-first. Each morning, the Paris newspapers let out enough information to alarm the most stolid. The Germans seemed to be sweeping everything before them, and it began to look as though we would soon have the pleasant alternative of being stuck by a German bayonet or starting out on a long swim to America.

Then, to our great relief, the situation suddenly began to stabilize, the German drive stopped, temporarily at least. The newspapers contained guarded allusions to a mysterious force of American engineers who had entered the line as part of the stop-gap force hastily organized under General Carey, of the British General Staff. The American Engineers referred to above were a detachment of the 6th Engineers.

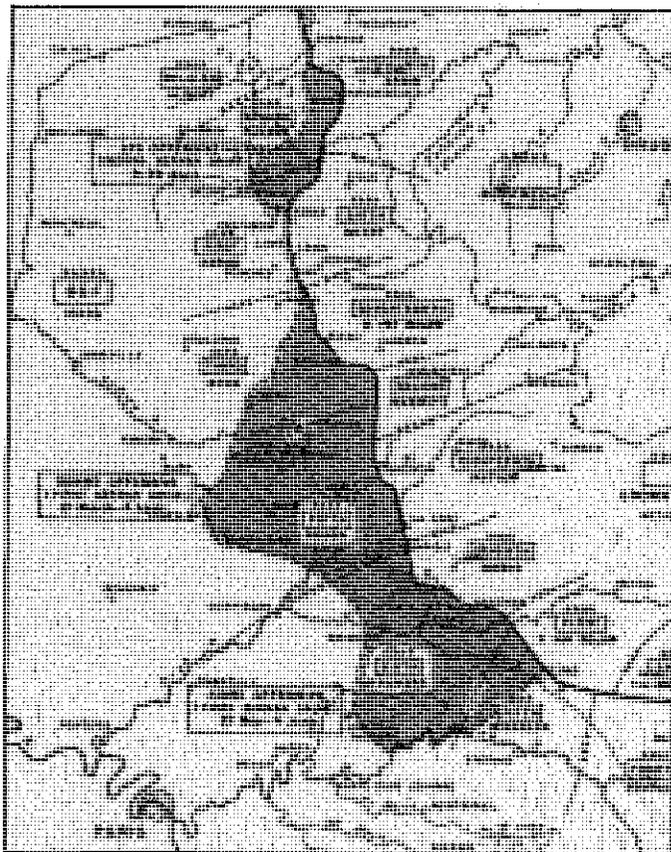
The 6th Engineers arrived in France in December, 1917, and, after a short sojourn in the balmy regions well in the rear of the front-line trenches, the A.E.F (American Expeditionary Forces) headquarters decided to send a portion of the regiment (Companies B, D, and Headquarters Company) to the British front to assist the Fifth British Army in organizing their position along the Somme. The detachment arrived on the British front about the fifth of February, and was attached to the Fifth Army. The companies were assigned to stations at and near Peronne. Small detachments under officers were separately placed in charge of the bridges to be constructed.

The Military Situation

To understand the military situation on March 21, 1918, it is necessary to know something of the war up to that date. At the close of 1916, the British had completed what their commanders regarded as the first phase of the battle of the Somme. Although the British had suffered heavy casualties, they were confident that a continuation of the heavy hammering they had been administering would cause decisive results in 1917. They, accordingly, planned to continue the battle as soon as the ground became passable in the spring of 1917.

The Germans, however, forestalled them by not standing their ground and waiting for the drubbing that was being prepared for them. Instead, they folded their tents, so to speak, and retreated in the general direction of Germany, leaving behind them a wilderness. They fell back to their strong line, known as the Hindenburg line, accomplishing thereby at least two objects. They had upset the British plan for 1917 by leaving them in the position of a boxer who is poised to deliver a knockout blow and suddenly discovers his opponent has evaded him. Also, they shortened their line, enabling them to detach troops to meet and defeat General Nivelle's attack of April, 1917, which proved disastrous to the French Army.

The British were under the necessity of doing a tremendous amount of work in preparing communications and bringing up munitions, before they could hope to attack the Germans in their Hindenburg line. This work occupied them during the summer of 1917 and, in the fall, the Fifth Army, which had been engaged in the battle of Passchendaele Ridge, farther north, was placed on the south flank of the British line. The Fifth Army held the front from Cambrai to Barisis, south of the Oise River where it joined the Sixth French Army. The total length of front held by the Fifth Army was about 42 miles, as compared with 28 miles of front held by each of the other armies. The Fifth was also, numerically, the weakest of the British armies.



British Fifth Army area and the German offensive.

It is thus apparent that the position of the Fifth was rather precarious. It held a comparatively long line; its position was not fully organized and, being in level country, presented no natural obstacles to the enemy. In addition, in case of a forced withdrawal from its advanced positions facing the Hindenburg line, the Fifth Army would be forced to cross the Somme River, which lay in its rear and, therefore, numerous bridges were necessary. It was this last requirement that engaged the attention of the 6th Engineers.

The British commander apparently knew that the Fifth Army was over-extended but, due to the necessity for protecting his communications with the channel ports, he was required to keep the bulk of his reserves in rear of the northern sectors, and to take some changes on the possible results of an attack on the Fifth.

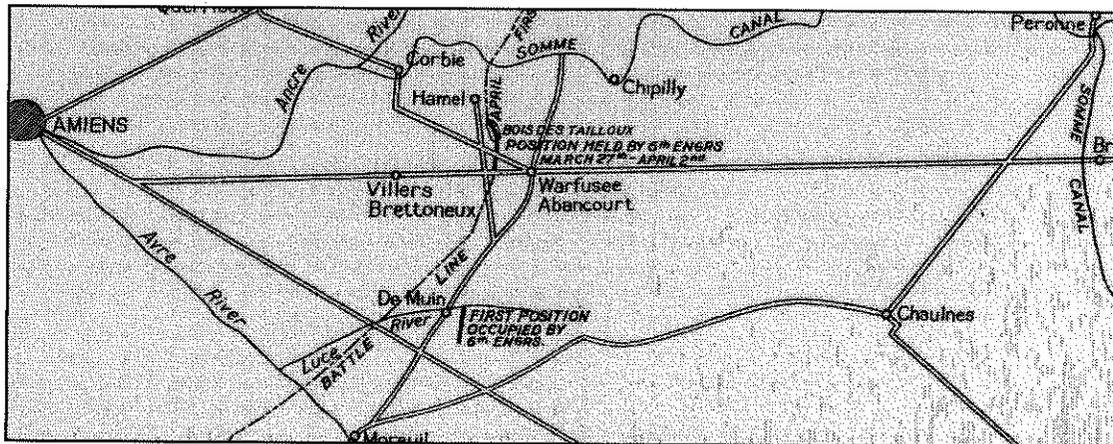
Against the Fifth Army, the Germans assembled a large force under General Von Hutier. The exact size of this force is uncertain, but on the actual front of attack the Germans were about three to one.

The German Attack

March 21, the German attack opened with a tremendous bombardment, beginning about 4 o'clock in the morning and lasting for several hours. Colonel Hodges, the

regimental commander, accompanied by Major Lampert, a member of the staff of the Chief Engineer, A.E.F., had dinner on this day with one of the messes at Army Headquarters at Nesle. The situation was described as satisfactory, and there seemed no great concern over the attack then in progress. Yet, by nightfall of the following day, the Fifth Army headquarters had moved to Villers-Brettoneaux, 25 miles to the west.

On the night of March 21, Perrone was subjected to a heavy bombardment while, farther to the east, the bombardment was even more intense. Early in the morning on the twenty-second, a howitzer battery lumbered into the camp of the regimental headquarters of the 6th Engineers near Peronne with the cheerful news that the Hun was coming fact, was already in Roisel, in fact, which was located 5 miles to the northeast of the position then occupied.



6th Engineer Regiment area of operations.

No orders arrived for the regiment, so it was decided to sit tight and await developments. All day long, the roads were choked with troops and transport, heading south and west. The regimental mess kept open house and many units stopped, but none tarried long. The general "dope" was that the Boche had broken through and was coming on "with his tail up." Darkness brought the news that the enemy was in Thiaucourt, 3 miles to the east, and that the field artillery were going into position just over the hill to the east of us. The regimental feeling was that we had been forsaken and forgotten. The British divisional engineer troops had pass through and, yet, the American engineers, who were army troops, were still in position without orders of any kind.

The Retreat of the Regiment

At eleven o'clock that night, however, orders came for the regiment to fall back to Chauines, 12 miles to the southwest. We lost no time in joining the general exodus. Little transportation was furnished, so that most of the baggage had to be abandoned. The lack of baggage, however, enabled the troops to make good time, as they were able to maneuver more easily on the congested roads. As one officer remarked, "We were a little late getting started, but we sure did lead the procession after we once got going." All of the units of the regiment arrived during the next morning except one.

On March 23, the regiment was directed to assist in the dismantling and destruction of the great engineer park at Chaulnes. In this place, the British had gathered together a great quantity of material of all sorts, as well as a most complete electrical and mechanical layout, capable of handling any of the engineering requirements of the army.

Late in the afternoon, on the twenty-third, the regiment started for Moreuil, a distance of 20 miles. A detachment was left behind to complete the destruction of the park the following day. This march lasted all night, and it was not until seven o'clock the following morning that Moreuil was reached. On this march, the regiment found themselves in the thick of the trains of motor lorries, and crowds of skulkers, all hurrying along in a panic-stricken mood, while the sky in the rear was lit with the incessant flashes of the great guns, and the earth seemed to shake from the thunder of the artillery. The next two days, March 24 and 25, were spent in rest at Moreuil, the command mustering twenty officers and five hundred men.

On the Defense at Demuin

On March 25, it was decided to carry on "business as usual." A drill schedule was instituted and the command was actually turned out for the first drill. It was interrupted, however, by the arrival of orders for the command to march to Demuin, a few miles to the north, and take up a defensive position there. The command accordingly marched and took up a position at that place, which was sited in person for them by Major General Grant, the Chief Engineer of the Fifth Army, under whose orders the regiment had been acting up to this time.

All of the units of any size in the force known as "Carry's Forces" were apparently engineers. General Carey appeared at Demuin on the night of March 26, when all units were in position. He remained only long enough to designate a British commander for the subsector and to leave the information that he had just arrived from England that morning.

The position assigned to the 6th Engineers ran from the reverse slope of Hill 102, southeast to Demuin, northwest to Luce. Our right was in the air, though it was momentarily expected that French reinforcements would arrive to support that flank. Our left was supported by British engineer units.

The night of the twenty-sixth, the regiment was informed, from some unknown source, probably General Carey's headquarters, that the fate of the British Empire depended upon each individual, and that all would fight to the last in the present position. The men of the regiment had become accustomed to being designated as the Sixth Royal Engineers and had, that day, supplemented their Springfields with British Enfields, but they were rather amused at the appeal now to save the British Empire. Nevertheless, all were anxious for a chance at the Boche and all turned in that night expecting to be in actual fighting within the next forty-eight hours.

Patrols were sent out during the night of the twenty-sixth, but only stragglers from the front were encountered. No sound of battle could be heard. It was at this stage of the battle that army organization began to crack; divisions lost brigades, and the brigades lost contact with battalions. The British Fifth Army was routed and in mad retreat. A practically open warfare situation existed. Each unit conducted its own rear-guard action, such as it was.

Before Viller-Bretteux

Shortly after noon, orders were received from General Carey to move to a position in front of Villers-Bretteux. Motor lorries were furnished, and Colonel Hodges was directed to report to a Colonel Sworder at a given map location. Carey's line seems to have extended from about the Luce to the Somme, and ran approximately along the high ground in front of Villers-Bretteux, that is, to the east of the town. The importance of this sector lay in the necessity for denying possession of it to the Germans. From the high ground, they would have been able to obtain the necessary observation to shell Amiens, and make it absolutely untenable in a short time.

The regiment had some difficulty in moving up to the position from the south, as the roads were still choked with transport and the Germans were extremely active in aerial bombardment. Some of their planes, flying within 100 yards of the ground, raked the columns on the road from end to end with machine-gun fire. Remarkably little damage was done under the circumstances, and the regiment escaped without loss.

By nightfall, on the twenty-seventh, the regiment was in the line. Company B, under the command of Captain Charles D. Harris, was assigned to the northern sector in the woods. Next, to the south, was the 353rd Company of the Royal Engineers, under Major Owen, which had been moved northward with the 6th Engineers; then came the Headquarters Detachment, 6th Engineers, under Captain Chandler Davis and, on the extreme right, was Company D under Captain Harris Jones. On the right of Company D, was a mixed detachment of British military policemen commanded by casual officers, who added to their detachment by picking up stragglers from the front. This group did not stay long but disappeared early. A group of British soldiers, who had been on duty as instructors at a machine-gun school, were scattered along the line and were the most valuable of the miscellaneous groups in our midst.

Each American soldier had a British Enfield rifle, in addition to his own Springfield. The ammunition supply for the Springfields was too limited to permit their use for firing, but there were no bayonets available for issue with the Enfield so that the troops were required to keep both guns with them. The parapet fairly bristled with rifles.

The position occupied by the Sixth included a total length of line of about one and one-half miles. Some partially prepared entrenchments, the remains of a French position of the early days of the war, existed. The left of the line was in a woods, well concealed and quite strongly entrenched. The right lay on the open plain, with trenches only a foot deep and no communications trenches between the fire bays.

The night of the twenty-seventh was a busy one. Observers, who had climbed trees before dark, had noted masses of German troops moving west and, as the last lorry straggled through the position shortly after dark, it was apparent that the enemy was at last in the immediate vicinity. A patrol was sent out to the front under Lieutenant Cronin, an old-timer and a former sergeant of Engineers. Lieutenant Cronin afterwards received a good deal of "joshing" for the care with which he arranged to notify the line that he was going to be out in front. He was willing to take his chances with the enemy, but was properly alarmed about the hair-triggers in his own line.

Indeed, this night was the most trying of all. The British stragglers on the right of Company D had suffered so much, and had acquired such a healthy respect for the Boche, that they threatened to bolt at any minute. The least sound brought a shower of bullets and, during all this, a stray horse had the misfortune to wander in the wire entanglement in front of the line and, needless to say, it never lived to wander out again. The horse was still there when the troops were relieved a week later. The patrol under Cronin came back without having gained contact.

Contact with the Enemy

The Boche arrived sometime during the night, as he was plainly visible in front in the morning. Their scouts and patrols must have observed our position as they made no attempt to rush us, but stopped and dug in along the road running north from Warfusee-Abancourt, about 800 yards from our position. As the sun rose on the morning of the twenty-eighth, the German soldiers could be seen digging in. The troops immediately opened up with a heavy fusillade all along the line, which cut short the enemy's digging operations.

The forces observed by our lookouts in the trees were not isolated patrols, but large masses of troops moving on the roads in columns of squads. Those who were present in the line held by Carey's forces will never understand why the Boche did not make a more determined effort to continue the advance at this point. They do not believe that it was due to the German weakness, or to their own strength, for they admit that they were very weak in a military sense. They think the Germans were bluffed. This was the first resistance they had encountered in this sector for several days. They probably figured that it was time that the Allies were getting some force into position to stop them, and they accordingly stopped. They feared to let their troops advance into a trap and held back the knockout blow that they might have delivered. It was not weakness in artillery that held them back altogether for, on March 30, they made their one and only serious effort against our line; and attack well-supported with artillery. In the rear of Carey's line were only a few pieces of artillery, hastily thrown into position to support the thin line in front.

March 28 and 29, the German snipers made it warm from the men in the trenches. Those who had not been willing to dig before developed a sudden willingness. A German plane discovered the kitchen, which had been brought up close behind the trenches in a wood, and proceeded to wipe out it and all the cooks. It was a serious blow to the organization.

March 30 was the worst day of all. The Germans prepared to attack. A heavy bombardment was put down. Shells of large caliber tore great holes in the parapet; some of them landed squarely in the trenches. It was the first time the man had ever actually undergone a severe bombardment but, when the bombardment lifted, and the enemy infantry leaped from their trenches and started across the intervening ground, they were met with a furious fire. The enemy made several attempts to advance, but without success. Our men picket then enemy off before he was well started. This was the only affair resembling an organized attack on the American position, and it failed miserably.

Numerous casualties were suffered by the defenders, however. Two of the best officers in the regiment, Lieutenant E. H. Perry and Lieutenant Milliken, as well as about 20 men, were killed on March 30. Lieutenant Perry was supposed to have been killed by a machine-gun bullet fired by a Boche aviator, who flew over the trenches and did considerable execution. This plane attracted no attention until it started machine gunning, as it was decorated with the British insignia. The men in the trenches had later the satisfaction of bringing this same plane down by rifle fire when it attempted to repeat its performance. In addition to the killed, three officers and a hundred men were reported as casualties from wounds, about 25 percent of the command being casualties in the space of a week.

Relief for the Regiment

The regiment remained in position until April 3, when it was relieved and withdrawn to Abbeville. After a day's rest, they were assigned to a rush job, building a plank road and some heavy bridges in front of the city. The remainder of the regiment, which had been in the south of France, joined on April 29 and the whole regiment was employed as army engineers with the Fourth British Army and with the Australian Corps until June 6, when we were withdrawn, preparatory to entraining for parts unknown, to the suburbs of Amiens. Here, the regiment was addressed by the commander of the Fourth British Army, Sir Henry Rawlinson, who thanked the regiment for the valuable services that it had performed and said that he would like to keep us with his forces. He stated that our division, the Third American Division, was heavily engaged at Chateau Thierry and demanded our return. General Rawlinson then presented Colonel Hodges with the Distinguished Service Order and decorated a number of the officers and men of the regiment.

Colonel Hodges is entitled to the greatest credit for the successful execution of its mission by the regiment. He was in full command of the subsector occupied by the Sixth and had a large number of British troops under his command. Liaison with the British command was very faulty, and he was largely left to himself as regarded the handling of

the situation. He was constantly in the trenches and, by his own example, furnished inspiration to the troops. Colonel Hodges was shortly afterwards promoted to be a brigadier general as a result of the affair on the British front. This made the fourth commanding officer that the regiment had lost through promotion, which is believed to be quite a record for an engineer regiment.

Probably the main military lesson to be drawn from the experiences on the British front is that an engineer regiment cannot afford to neglect military training altogether for pick-and-shovel work. One of the so-called railroad regiments which was on the British front in the same vicinity as the 6th Engineers, was also in a position to have furnished a large contingent to support Carey's line, but the American colonel in command very properly declined to let his men go into the trenches, on the ground that they did not know how to handle a rifle at that time. These men had been in service for nine months, but had been rushed to France without military training and had been entirely absorbed in engineer work after their arrival.

Source: *Military Engineer*, Vol XIX, No. 104, pp. 126-129. Reprinted with permission from the Society of American Military Engineers. The map of the western front was added for information.

The Sixth Engineers in the Meuse-Argonne

A.E. Crane

Formerly, Captain, Corps of Engineers, A.E.F.

The Sixth Engineers had made history when, in March, 1918, as part of the hurriedly assembled rear guard, it participated in the glory of the delaying action fought by the British Fifth Army, which resulted in checking the German advance in Northern France at the high tide of its success. To the laurels gained there, new luster was added by the conduct of the regiment in the defense of the Marne, and later in the bridging of the Marne under hostile fire at the beginning of the Marne Offensive, and in the bridging of the Ardre and Vesle Rivers during the Vesle Offensive. While these spectacular operations appeal to the imagination, the commonplace daily routine of road repairs, road maintenance, and the minutiae of duties and tasks, which in the aggregate added to the comfort and preserved the fighting vigor of the troops of the Third Division, were the really important contributions of the Sixth Engineers to the efficiency of the Marne Division.

In the St. Mihiel Campaign, the Third Division was in reserve following the movement north. The Sixth Engineers, however, were pushed ahead to the Bois du Jury and beyond to clear up the road through Seicheprey. The same thoroughness which had marked the operations of the regiment as Engineers of Infantrymen in the previous campaigns, was displayed in the more prosaic task of



Engineers work to improve roads in France.

reconditioning the road from Beaumont through Seicheprey to Essey and Pannes. The road across No Man's Land was promptly and effectively restored. An indescribable traffic jam in the vicinity of Seicheprey was disentangled and resolved into an orderly movement. Every hour of the twenty-four found details from the regiment vigorously prosecuting the task of opening and keeping open the road.

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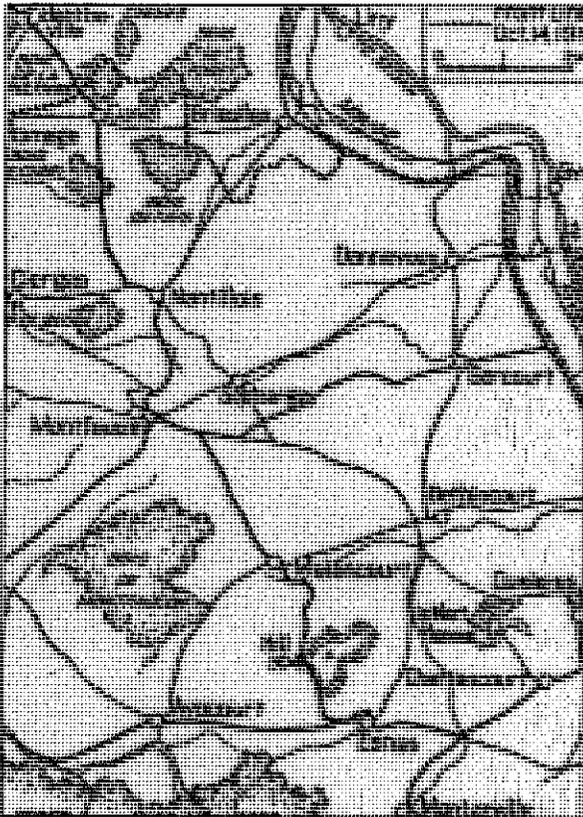
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There was no let up. On the night of September 14-15, the regiment reassembled and rejoined the Third division in the Bois de Lagney. The next move, which terminated for the regiment in the decisive action of Clairs Chenes, began on the morning of September 17, when the regiment was embossed and loaded into French trucks with "heathen" chauffeurs and moved northward toward Julvecourt. The movement by truck ended abruptly near Ippecourt, where was located a camp of these "heathen," who refused to drive beyond. The regiment was moved by small groups, in broad daylight, from the woods near Ippecourt to a woods just east of Julvecourt, 11 miles southwest of Verdun, where it was to stay for a few days. Although the regiment had the experience of the campaigns on the British Front, the Marne Defensive, the Marne and Vesle Offensives, and the St. Mihiel Operation to its credit, no pains were spared to assure its preparedness for the campaign just about to open. The rainy days in the bivouac east of Julvecourt were spent in officers' classes, classes for non-commissioned officers, the training of runners, and in target practice.



Montfaucon and Vicinity

On the night of September 22-23, the Sixth Engineers were ordered to establish themselves in the Foret de Hesse, several kilometers to the south of Montfaucon and to the west of Esnes. On the twenty-third, twenty-fourth, and twenty-fifth, while preparations were going on and troops were being assembled for the Meuse-Argonne attack, the Sixth Engineers were laying out, clearing, and taping trails through the woods so that the infantry and machine-gun units of the Third Division might perform their duty as Corps reserve by moving rapidly along the parallel routes, using the cover of the woods and thus avoiding the concentration of troops on the main roads.

Two parallel trails, totaling over 20 kilometers, were cleared and marked with white tape. The trails were cleared to a width sufficient to accommodate four men abreast, and there was also suitable for the passage of machine-gun carts. The time allotted for the completion of the trails was rather definite and allowed the work to be scheduled, and sections of 2 to 4 kilometers were assigned to each company. The work was finished within the time allowed, and on September 26, the infantry and machine-gun units of the Third Division moved over the trails quickly and without confusion. Engineer soldiers were posted at all critical points as guides. Each brigade with its

machine-gun battalion had a separate route. Steadily moving along, two and one-half hours were consumed by the columns in passing a point on the trails. Work of this character involved a proper organization and layout of the work by the commanding officer, while the execution of such a task seemed to appeal to the engineer soldiers.

During the first day of the battle of the Meuse-Argonne, September 26, the Sixth Engineers were busy guiding the movements of the Third Division over the trails. The night of September 26-27, Colonels Wooten, Dailey, and Stewart reconnoitered the road Esnes-Haucourt-Malancourt. It was a shambles; Malancourt itself had been completely devastated from years of shell fire; in only a few places were there any signs of the old road indicated on the map. At least one village had been so completely obliterated that it existed in name only, on a sign board erected at the side of the road. A good portion of the road had been completely destroyed, while other portions were covered with more than a foot of earth giving no indication of its existence beneath. As it was necessary to open the road immediately and road metal was scarce, it was a tremendous advantage to follow the original trace of the old road, where some sort of foundation still existed, or where the base was still compact. The Fourth Engineers had made the emergency repairs necessary for safe crossing.

The road from Esnes to Malancourt was divided into company sections, with the task of immediately providing a one-way road, over which to pass trucks and guns, carts, and other miscellaneous plunder so aptly called by Caesar *impedimenta*. Road metal was secured by laboriously collecting small stones and spalls from the fields in sand bags, some of which was dumped in two parallel strips about 2 feet wide and spaced to the gauge of a truck. The ruins of Haucourt and Esnes were sources of broken stone. During daylight hours, the work was rushed with the regiment's entire man power except for the night maintenance details. During the hours of darkness, maintenance details, assigned to sections, constantly patrolled the road, made emergency repairs, and kept the road open by off-loading overloaded trucks, ditched trucks back on to the tracks of road metal, and clearing hopelessly bogged vehicles out of the way by pushing them off the road or turning them over. The road over Dead Man's Hill was lined on both sides with off-loaded stores that had been ordered up by some over-enthusiastic but inexperienced staff officer. The tracks of road metal designed to accommodate the wheel gauge of the ordinary truck, did not conform to the four-wheel drive truck, with the result that this type of vehicle gave us a great deal of trouble. French horse-drawn wagons, with narrow steel tires, were continually becoming bogged, necessitating the lightening of loads. Heavy Mack trucks, of wider than usual gauge and usually overloaded, were continually slipping off the road. The main idea was that the transport must keep rolling toward the front. Weak links were eliminated. A road was being built under the moving, endless serpent of mingled vehicles that wriggled up and past and beyond, and still kept moving up and past and beyond.

After strenuous attempts to put one truck back on the road, the Engineers, as a last resort, decided to unload it; only to find it contained Allied soldiers, who had remained comfortably in the truck while the Engineers worked heroically in the mud. *C'est la guerre*. For the first few nights an officer was posted at the entrance of the road near the southerly end at Esnes, and a man from each vehicle was required to walk immediately before the front right wheel to prevent the truck from getting off the bands of road metal.

The area over which the road was built was subjected to intermittent, but rather heavy, shell fire; and during the first day, at least, the Engineers worked in advance of the Divisional Artillery. As the road metal was collected from the fields, it was brought to the road by the shortest possible route, and if not needed there, was



thrown on the running boards of vehicles, and taken off along the road to less affluent areas. To one section, the broken up remains of Haucourt were moved on an old narrow gauge railway. Every running board was the means of transportation of a little heap of road metal. I wonder if our chances for a second regimental Croix de Guerre were not blasted when an allied general's chauffeur finally consented to transporting a bag of stones.

In places the old road could be easily followed; in others it seemed to disappear without trace. Sometimes the road metal went down with every passing vehicle until it suddenly brought up on the old road perhaps 2 feet below.

When the first task of providing a substantial passable one-way road throughout the entire route had been completed, a general and gradual improvement was undertaken, lanes of metal were widened, the weaker sections of the road strengthened, and in some places the location changed to secure a better foundation, until the road finally became a two-way artery. This route was literally reestablished under the rolling wheels of a moving column, which checked over three hundred vehicles an hour, including Army Artillery.

To carry out such a task successfully required proper organization, and the discipline and morale whole-heartedly to pursue an arduous task through long hours of cold, rainy weather. The work was thrilling and enthralling. Here was no abstract problem or

exercise. The number of vehicles that could go forward depended entirely on us. Half a load put through was better than a full load in a ditch. But every vehicle must keep rolling or get off the road.

Patrolling the Esnes end of the road one night, I saw that no trucks were entering. Going back into Esnes I found a solid line of trucks almost two miles long. The men in the head truck had fallen asleep during a pause in the traffic! Our road was passable, but we still had to see that it was used to its limit.

During the ten days we spent on the Esnes-Malancourt road, the boundaries between Divisions and Corps were constantly shifting, often to the bewilderment of regimental headquarters. At times, orders notifying us that we were part of one Corps scarcely arrived before we became part of another.

On October 6, the regiment was moved into the woods to the south of Montfaucon where it remained for three days, repairing the roads radiating out of that place. Directly to the rear of regimental headquarters was an observation balloon. One afternoon, out of nowhere, appeared a small German plane, diving straight at the balloon, and firing tracer bullets. The balloon was brought down, and as the German aviator turned towards home, he came down over us and dropped a sheaf of pamphlets, printed in English, which proved, at length, that the Austrians and not the Germans were responsible for the War.

It was during this time that a routing order to repair a culvert north of Cierges resulted in the engineer detachment finding itself in "No Man's Land" and seeing the Infantry come "Over the Top," from behind them. The Engineer officer in charge was mounted, but not for long.

Several incidents taught us that no matter how simple a task might appear on an order, a reconnaissance on the ground was advisable before actually sending a detail to the site. Reconnaissance often seemed a hardship, since it was always necessary at times when sleep seemed to be at a premium. At times it was dispensed with, and chances taken that the information contained in orders was correct, but experience proved that reconnaissance usually pays for itself in time alone.

From the wood to the south of Montfaucon, the regiment moved on October 12 to a position as the division reserve in the Bois de Beuge just northwest of Montfaucon. That we were destined to be used as Infantry was first indicated by the issue of a full equipment of pyrotechnics. With the pyrotechnics were also issued blank cartridges that proved to be for French rifles and not for our own Springfields. To my knowledge, the use of rockets never became necessary for the Engineers. The blank cartridge situation was settled by removing the steel bullets from the Springfield cartridges and inserting paper wadding.

On the afternoon of October 18, the regiment moved to a position in the Bois due Fays about a kilometer south of the Cunel-Briculles Road, where we became a part of the divisional support. The Infantry had apparently fought their way forward through the woods during the morning, for large numbers of dead were still there. Our movement forward was made in broad daylight. German aviators observed the advance and the enemy harassed the regiment with artillery fire as it moved from the Bois des Ogons to the Bois du Fays.



Bridge built by the 6th Engineers during the Meuse-Argonne offensive.

afloat when it rained a couple of days later. The woods were constantly shelled with high explosive and gas. At night German bombing planes returning from the rear, dropped any remaining bombs on the edge of the woods.

The regiment dug in along the southerly and westerly edges of the woods, with its right overlooking the town of Brueulles, then occupied by the enemy. At least one company thought a ditch would offer cover with the least labor, with the result that the optimists were

Shortly after noon of October 15, an artillery lieutenant arrived at our headquarters, stating that he had been asked to deliver a message from Colonel Dorey, Commanding Officer of the Fourth Infantry, to the Commanding Officer of the Sixth Engineers. The lieutenant belonged to a division other than the Third and was in our sector for liaison or observation. The message asked that one company of engineers be sent to the Commanding Officer of the Fourth Infantry at once. "C" Company was detailed for the duty by Colonel Daley, and the artillery officer offered to serve as guide. Confirmation of Colonel Daley's orders was secured from the Division Commander.

As the movement forward began the company came under extremely heavy shell fire. The artillery lieutenant acting as guide was killed, and the company commander of "C" company was seriously wounded. Lieutenant Carnahan of the Engineers took command and moved forward to Fourth Infantry Headquarters.

Before Company "C" arrived at the Command Post of the Fourth Infantry, Colonel Dorey had been wounded and evacuated. The original mission of the Engineers had been to prevent the infiltration of the enemy between the right flank of the Fourth Infantry and the left flank of the Sixth Engineers, who, in support, were echeloned to the right rear. This mission was lost sight of in the confusion incident to Colonel Dorey's evacuation. "C" Company was now ordered to the Command Post, 2nd Battalion, Fourth Infantry. This battalion had on October 13 captured a cut one mile northeast of Cunel. The Infantry stubbornly held their position under harassing fire from the direction of Bois de la Pultierre to the northwest, the grove called La Mi Noel to the north, and from the Germans still holding that portion of the Bois de Foret to the northeast and east. The unexpected engineer reinforcements were as welcome as manna from heaven.

"C" Company now had a new mission. With that flattering confidence in the ability of the Engineers to do anything, the acting battalion commander pointed out to Lieutenant Carnahan in the deepening dusk the shadowy outline of La Mi Noel woods and directed a night attack. By 9:00 p.m. the company had reached the shelter of the cut, where packs were parked, and arrangements were made for the attack. The advance from the cut was made at 10:30 p.m. in squad columns. After reaching the top of the hill to the north, the advance was continued in line of skirmishers until contact was made with a large enemy patrol in front, and other patrols were reported from the flanks. The enemy patrol fell back, and "C" Company found itself subjected to a rain of fire from the northwest, north, and northeast. Advance was impossible. By 12:30 a.m., October 16, a line had been established on the reverse slope of the hill, and fox holes were dug or shell craters were enlarged to afford shelter. Until relieved at 7:30 p.m., October 17, "C" Company maintained this most advanced salient of the Third Division.

There is no great tactical lesson to be learned from this isolated abortive night attack. Rifles, a few salvaged automatics, and morale constituted the equipment of Company "C", Sixth Engineers. There were no tanks or gas preparation; artillery preparation and rolling barrage were absent. No natural cover made this movement easy. The night was dark and foggy. No time had been possible for even a sketchy reconnaissance. Despite all these difficulties and the entire hopelessness of the proposed maneuver, to the Sixth Engineers it was just one more dirty job to be done. La Mi Noel wood was not captured. It was not on the book that it should fall before such an attack. But "C" Company had advanced the line and stuck and had added to the reputation of the regiment.

During the time from October 14 to October 19, the regiment was busy by day in constant reconnaissance, and by night engaged in various wiring tasks, usually the consolidating of positions that the Infantry had taken during the day. These operations resulted in many contacts with the enemy and the capture of members of enemy patrols. In one case, the Engineers found, to their amazement, that they had wired in an enemy outpost.

On October 19, two and a half companies of the engineers were detailed to participate in an attack on the following morning on the Clairs Chenes woods about one and a half kilometers north of Cunel, as support for a composite battalion of Infantry. The attack was to be launched at 7 a.m. from the northern edge of the Bois de la Pultiere, just north of Cunel. Companies "A" and "B" of the First Battalion and one half of Company "E" of the Second Battalion were assigned to this attack.

At 7:00 a.m., October 20, the rolling barrage started. At 7:12 a.m. the composite battalion of Infantry advanced toward the woods to the north, followed by Companies "A" and "B". The advance to the northern edge of the Bois de la Pultiere was made in the face of severe machine-gun fire from both flanks and the front. Arriving near the northerly edge of these woods, the Engineers found themselves faced by an open space about 100 yards wide, beyond which was the objective—the Clairs Chenes. The Clairs Chenes woods themselves extended about a half kilometer east and west, and about one kilometer from north to south. The open space was raked by machine guns from the woods on both sides. Of the Infantry that had preceded the Engineers, one group, perhaps a dozen or sixteen, had succeeded in reaching the Clairs Chenes, where they clung desperately to its southern edge. Another small detachment of Infantry had penetrated part way into the woods.

Reinforced by two platoons from "E" Company which had started later than Companies "A" and "B", with the mission of supporting an attack on Hill 297, Captain Charles D. Harris of the Engineers decided to attempt crossing to the woods ahead. Tools and wire, which the Engineers had carried, were abandoned. First, certain troublesome machine guns to the right flank were silenced, and the Engineers then began the crossing, dashing across in small groups. Reaching the woods, the Engineers made contact with the lone infantry officer, who advised them to continue their advance to the northerly edge of the Clairs Chenes, with the assurance that they would be supported by Infantry to the rear and to the flanks. At about 1:00 p.m., almost four hours after the Engineers had reached the woods, they had advanced to the northerly edge, in the face of terrific resistance from enemy infantry and machine-gun fire from the woods to both sides. They had drive forward a kilometer in advance of the allied line on either side.

When they reached the northerly end of the woods, they found that no Infantry had protected the rear or flanks, and that the enemy had re-entered the woods behind them. Our companies, depleted both as to officers and men, faced to the rear and fought their way through the woods to the southerly edge and across the open space to the jumping-off place, which they had left almost six hours before. As the Engineers left the Clairs Chenes, it was occupied again by the enemy infantry and machine guns.

The Engineers reported their situation to the Colonel of the Seventh Infantry, explaining the need of help to protect their rear and flanks if they were to again enter the woods and clear it of hostile troops. The Engineers were ordered to retake the woods, and at 2:30 p.m. they again attacked, reinforced by about a dozen Infantrymen. The

second assault on the woods was met by almost as severe resistance as the first had encountered, but once in the woods the Engineers this time protected their own flanks and rear as they moved forward. By dark, the woods were cleared of the enemy, and the consolidation of the position was begun.

During the night, "D" Company of the Sixth Engineers constructed a wire entanglement along the northerly edge of the woods and, incidentally, included on the friendly side of the wire some forty enemy troops.

Late in the afternoon of the following day, a severe barrage preceded a counter attack in force from the woods to the left. As the Engineers had been reinforced during the night and morning by Infantry and machine guns, it was possible to meet the attack vigorously and repulse it.

During the following two nights more wire was strung. The Engineers remained in the woods until shortly after midnight on October 26-27, the last five days being spent in comparative quiet, but in an incessant downpour of rain. While the two and a half companies were engaged as Infantry in the front line, and could only be reached during darkness, hot food was prepared each day for the troops in the line by one company kitchen, and delivery was made by ration detail from the rear.

The German prisoners taken by the Engineers and passed back through the regimental headquarters, gave us accurate and up-to-date information as to the progress of the war on all fronts. Prisoners taken on October 20 knew that the Belgian coast had been cleared of Germans that day.

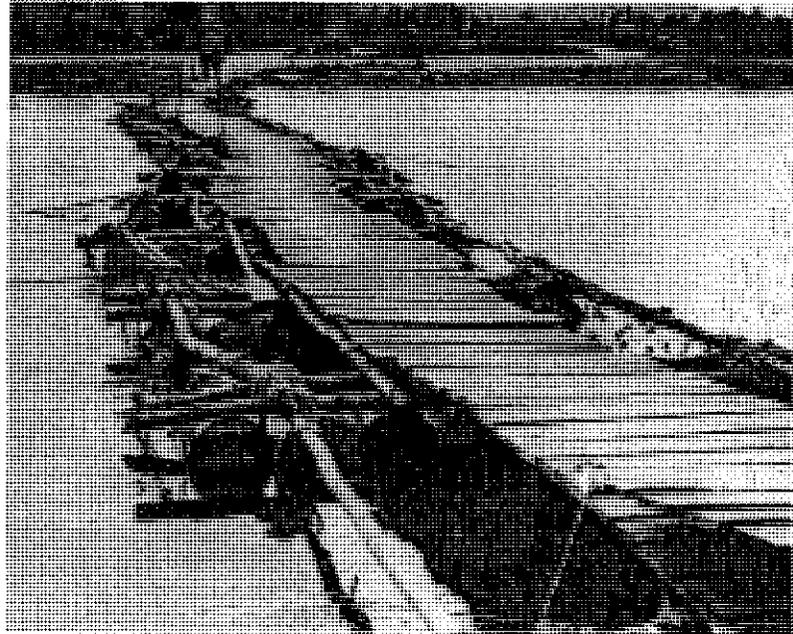
In the very midst of the strenuous days when our companies were in the line, regimental headquarters had to report to Division the amount of Liberty bonds that had been subscribed for in the regiment. I hope the record I received from the companies in the line was never verified!

During the period from October 14 to October 26, engineer patrols frequently entered the village of Briuelles, and arranged for the salvage of a portable shower bath. Later, the village was wrested from the enemy by the Fifth Division, as we learned afterwards from a communiqué that was received while we were in a rest area.

On the evening of October 26, the regiment was ordered to move to the woods south of Montfaucon. The support companies were moved out after dark, leaving only the regimental headquarters. Runners were dispatched to the companies in the front line. After the support companies had left the woods, severe shelling started, and the 4-foot square hole with a field telephone in one corner became the loneliest place in the world. After what seemed like hours of waiting, the runners finally reported back at about midnight. In a momentary pause in the shelling we decided to make a break for the road.

I knew that once I was out of the hole I would break all records going south. I cut the wires from the heavy field telephone, threw it on my back, and ran about a kilometer across the field to the Cunel-Nantillois Road. Another time I will have no such conscientious scruples over saving Government property.

Daylight found the regiment reunited in the woods south of Montfaucon. Until the night of October 31-November 1, as part of the Army reserve, the Sixth Engineers maintained the roads as far north of Nantillois. On November 1, the regiment moved to a rest area and on November 11 was preparing to join the Second Army in the Metz sector.



Expedient bridge built by the Sixth Engineers in the Argonne.

I feel that my experience was too narrow to permit me to draw conclusions which may show a complete ignorance of general conditions, and which may be completely erroneous in the light of a broader experience. And I must confess that I am not familiar with the post-war tables of organization, and the training now specified for the Engineers.

However, I believe that Divisional Engineers are destined to be used frequently as Infantry in time of war. Companies should at least receive a thorough course of combat training as parts of a battalion. In addition to necessary engineer equipment, the engineer company should be as fully equipped as an infantry company, and should be as proficient in the use of machine guns, automatic rifles, et cetera, as the Infantry.

I feel that the action in the Argonne afforded an opportunity to higher infantry officers to test their long-seated notion that the Engineer might not acquit himself perfectly in a purely infantry action, with the result that perhaps the Engineers were required to take care of themselves to a greater extent than an equal number of Infantry would have been.

If the Engineers, despite any possible lack of infantry training, did function splendidly as attack troops, it can be laid to the belief of the engineer soldier that he is just a little bit better than any other soldier in the Army—morale, *esprit de corps*, or whatever you may call it.

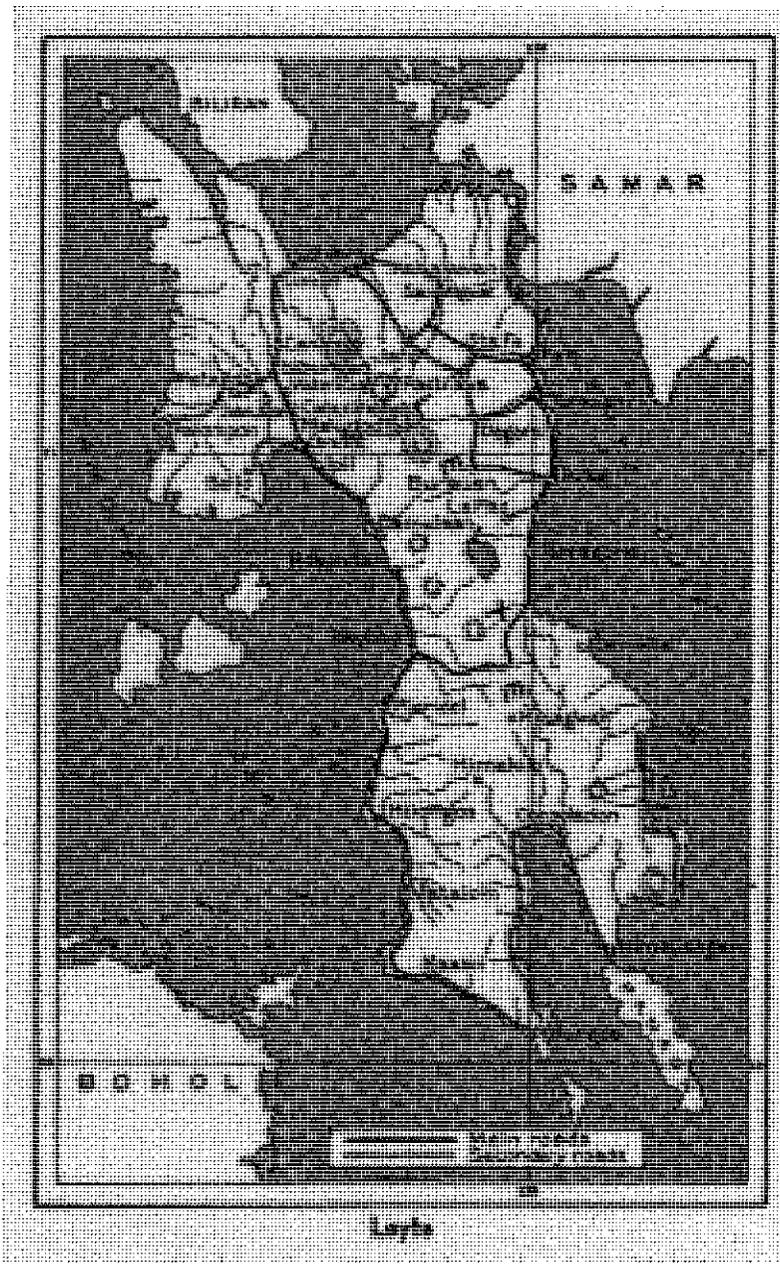
The lessons and habits of engineer training came into use at once, when the Engineers acting as Infantry had gained his objective. He instinctively consolidated his position with a dispatch and thoroughness that the Infantry did not understand and often did not desire. To train the Engineer as a finished Infantryman is a small task compared to that of teaching the Infantryman to protect and fortify himself properly in accordance with the methods taught the Engineer. My feeling is that too much time is spent on close order and that, if Engineers are to fight, combat problems should be more strongly emphasized.

The Sixth Engineers attained a high rating as combat troops in a Division which had a high combat efficiency. This may be attributed to the morale that attaches to success. After the initial baptism of fire on the British Front, the Sixth never doubted its ability to take care of itself in combat.

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Division Engineers: Leyte
(302nd Engineer Combat Battalion)
Leigh C. Fairbank, Jr.
Lieutenant Colonel, Corps of Engineers

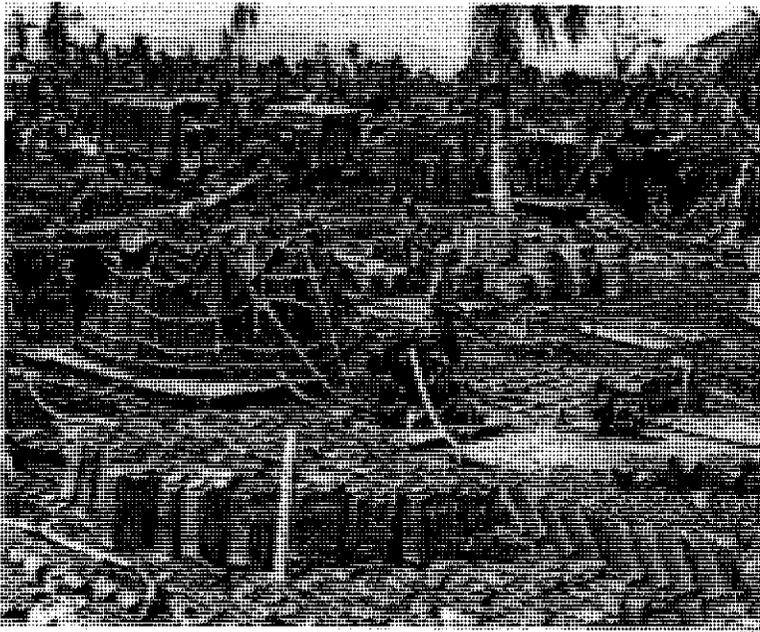
The anticipation with which all troops looked forward to New Caledonia was rather short-lived, when one morning coming up on deck the men found the rising sun astern. In a few minutes the word was passed that during the night orders had been received changing our destination from a rest camp to the combat area of the Philippines, the Island of Leyte. Our only consolation was in the fact that in leaving Guam the transports had been commercially loaded instead of combat loaded and this definitely prohibited us from making an assault landing. With a short stop at Manus Island to refuel the ships, the trip to Leyte was made without further delay. On November 23, amid a tropical downpour and in a rather high surf the division unloaded by means of small boats on the eastern coast of the island. One combat team



unloaded over the beaches of Dulag, still terribly congested with men and equipment of the assault troops, and moved at once inland to the vicinity of La Paz. The remainder of

the division landed on the Tarragona beaches and went into bivouac in this same vicinity. The unloading was accomplished in 24 hours and none too soon, for the convoy was attacked the next day by Jap planes and one transport only narrowly escaped the efforts of a suicide plane.

Although the infantry units of the division were more or less committed piecemeal (one battalion to Samar, another to a front line division, and one regiment at La Paz) the



Engineer water purification point on Leyte Island.

also set up under the difficulties imposed by the presence of schistosomiasis, a water-borne liver fluke. Medical regulations forbade using any source of water within 50 feet of a fresh-water stream so that the sumps had to be dug and well points driven at each location.

The road situation on the east coast of Leyte at this time was critical, to say the least. The main north-south road, about 1 mile inland, was impassable in several sections, with no bypasses immediately available or even possible. Road metal was scarce and had to be hauled long distances; traffic congestion was very heavy. The hard packed sand of the beach was far superior to the inland road, except that the shoreline was broken frequently by numerous streams and rivers, too deep to be forded. The amphibious truck was the ideal vehicle in which to get around. Amphibious tractor units furnished ferry service at the river mouths along the coast for 1/4-ton vehicles and passengers.

The decision was finally made by higher headquarters to bridge the streams along the coast and open up the beach as the main north-south highway. Accordingly, the division engineers were given the mission of constructing bridges and building the road within the division area. Two 8-yard carry-alls were turned over to the battalion and a pile driver was promised within 36 hours. The road location was selected at once and work was

Engineer Battalion, less the one company with the detached combat team, was left under the control of the division engineer. The shore party battalions, less the one with the combat team at La Paz were detached from the division and returned to the control of the XXIV Corps. Initially, within the division, engineer tasks were assigned to assist in the improvement of bivouac areas, and the establishment of the field hospital attached to the division. Water points were

begun on felling trees, clearing out underbrush, cutting ditches, and making fill. Coconut trees were salvaged for use as bridge piles and corduroy material. The soil was a very sandy loam that compacted well, and, if well drained and properly crowned, took traffic with a minimum of maintenance.

Bridge sites were also located, material was gathered and preparatory work completed, pending the arrival of pile drivers. Rather than lose time waiting for equipment, experiments were conducted in jet driving coconut log piles with the water jet from the sump pump of the motorized air compressor. In the sandy soil, prevalent even on the stream bottom, this method worked extremely well, permitting a penetration of 10 to 12 feet, equal to that obtained with a hammer. Accordingly, bridge construction proceeded without the pile driver, the only great difficulty encountered being that of handling and guiding the piles while driving.

This construction work was abruptly cut short early in December, when orders were received for the division to move by water around the southern tip of the island and land behind the Jap lines in the vicinity of Ipil.

The tactical situation at this time, after 6 weeks of fighting, was practically at a stalemate. The Japanese main forces had been driven back to the northwestern section of the island, defending a line from north of Baybay, along the mountain ridges to the north of Limon and westward to the sea. Although enemy casualties had been very high, the Japanese were still able to pour a steady stream of troops and supplies into the island through the port of Ormoc. To take Ormoc was to break the stalemate. This was the mission of the 77th Division: to land in the vicinity of Ipil, drive north, and take and hold Ormoc. All front-line troops were to support the landing with a general attack all along the front, and the 7th Division, north of Baybay was to drive along the coast and close the gap between the 7th and 77th Divisions.

Time limitations were so short for this operation that it was impossible to assemble the entire division; hence, the assault troops that sailed from the Tarragona beaches on December 6 consisted of the division less one regimental combat team. The division was to be lifted entirely by LSM and LCI, carrying only three days' supply. Resupply was to be effected every other day by water, the unloading to be accomplished during the hours of darkness. The remaining combat team of the division was to be lifted on the first resupply convoy.

Preparations were of necessity extremely hasty. Engineer supply in particular was critical. Road conditions being what they were, no engineers supplies had been drawn from the engineer depot since landing. Nails, barbed wire, and explosives were essential. These items were finally delivered by LCM on the eve of sailing, along with two D-7 tractors and two 8-yard carry-alls. Shipping allocations were even more limited than in the past, and the amount of engineer equipment to be carried was seriously curtailed. Each of the two lettered companies accompanying the initial force were limited to three D-6 armored bulldozers and four 2 ½-ton dump trucks. Battalion Headquarters and

Engineer Supply were allowed two 2 ½-ton trucks. The size of the rear echelon left behind was rather large in view of the tremendous supply problem it would have in resupplying the battalion from the east coast. Complete shipping priority on remaining equipment was established and left with the rear echelon, to be sent whenever space could be found on the resupply convoys. Motor maintenance equipment was given particularly high priority, especially since it was estimated that it would be D+6 before any such equipment could be expected. Water supply equipment was limited to two portable units.

The night of December 5-6 was spent in loading ships at the Tarragona beaches. Among other things that the division engineers were called on to perform was the shoring up of the upper decks of two LSTs to provide adequate strength for them to carry elements of an amphibious tractor battalion attached to the division for the operation. Securing the necessary heavy timbers for this task was in itself a major job, not to mention the actual labor involved in placing this material.

Ormoc

The division sailed about noon on December 6, the convoy consisting of about 50 ships, LCIs, LSMs, and LSTs, with several destroyers as escort vessels. The convoy rounded the southern tip of the island just at dusk and was subjected to a Jap air attack, which although successfully repelled cost our forces one destroyer, which sank almost immediately after being crashed by a disabled Jap plane. This awesome sight coupled with the G-2 estimate that as much as three Jap Divisions could be brought to bear against our landing hardly left the troops in a frame of mind to enjoy a peaceful night's sleep.

The division landed on the beaches 1 mile south of Ipil early on the morning of December 7, met no enemy opposition, and drove inland rapidly to a distance of about 1 mile. One regiment then turned north and late in the afternoon took the town of Ipil.

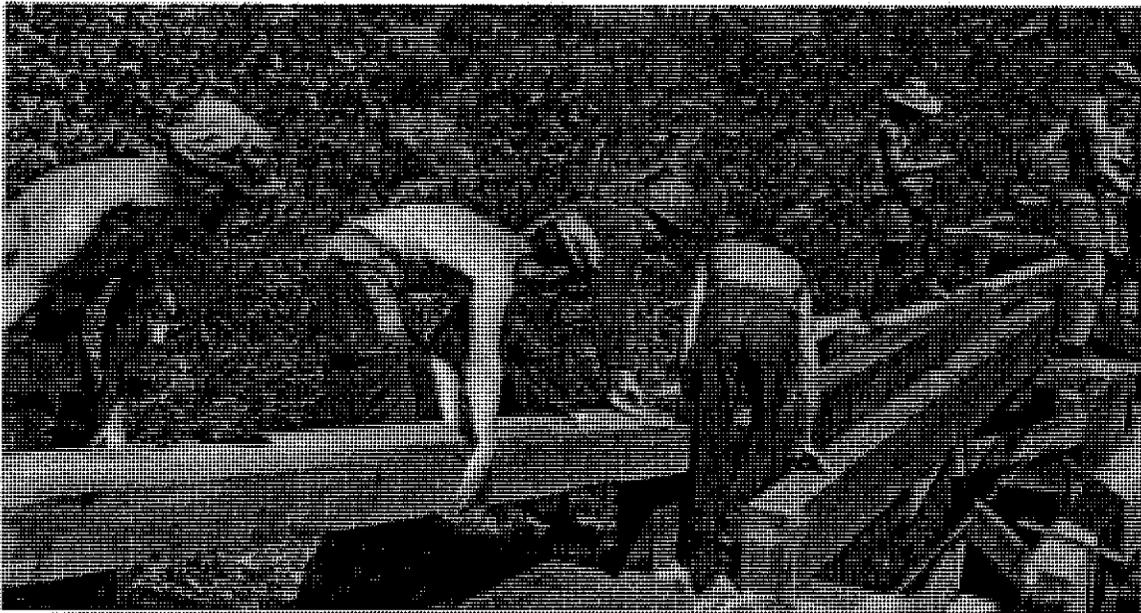
It was planned that once Ipil was taken this town would become the main supply point for unloading later shipping. All supplies were loaded on amphibious tractors, thus permitting the moving of dumps along the beach as the main force drove to the north.

Engineer companies landed with their respective combat teams, cut access roads from the beach to the main north-south highway about 300 yards inland, selected sites for water points, and pushed engineer reconnaissance. It became almost immediately apparent that the main engineer mission would be roads and bridges. Although the terrain was not nearly so difficult as that along the east coast of the island, it was still cut up by many small streams. The north-south road, Route 2, was fairly well drained, surfaced with excellent gravel, but in a very poor state of repair. Adequate road metal, washed gravel and very coarse sand, was available in stream bottoms and along the beach. Bridges were all one-way with steep abutments, in some cases tending to fail, and timbers weakened by age.

Battalion headquarters landed at approximately 0800 and established a command post on the river just south of Ipil. Lettered companies reverted to battalion control at 1200, and were assigned sectors of road responsibility. One platoon was ordered to support the advance of the regiment attacking to the north.

During the day, five bridges were rebuilt and strengthened by replacing stringers and decking and occasionally inserting an additional bent to reduce the length of span. In most cases a hasty bypass was constructed to permit the uninterrupted flow of traffic during construction. The cannon and antitank companies of the division were armed with M-10s and M-8s so that bridge capacities of necessity ran as high as 35 tons. Working parties were subjected continually to sniper fire and strafing attacks causing several casualties, but not without retaliation for the 50-caliber machine guns of the battalion shot down two Jap planes. One water point was installed and in operation by 1400 but again under conditions of harassing enemy fire. Late in the afternoon, one platoon placed antitank and anti-personnel mines beyond the perimeter of the attacking regiment, and during the night these mines accounted for four of the enemy attempting to infiltrate our lines.

During succeeding days the division continued its drive to the north on Ormoc with the engineer battalion in general support. The bridge density along route 2 averaged about two bridges a mile. To provide the required material for reinforcing and rebuilding these bridges, one platoon was given the task of dismantling the sugar mill in Ipil, salvaging all lumber, nails, and spikes. The engineer supply situation was somewhat relieved when a



Engineers rebuild a timber trestle bridge on Leyte Island.

Jap dump of construction materials was found in the vicinity of Ipil. In one instance, engineer reconnaissance discovered that the Japs had prepared a bridge for demolition with numerous well-placed charges of picric acid but had failed to fire the charges. On another occasion, infiltrating Japs prepared a bridge for demolition within the boundaries at night and successfully blew it, cutting all the stringers in one span and shattering a few pieces of decking. Apparently no attempt had been made to destroy or damage the abutments. Nightly, mine fields of improvised anti-personnel mines, located on the perimeter of front-line units continued to produce enemy casualties, and, as compared to Guam, materially reduced the amount of Japanese infiltration. In many instances placing these mine fields beyond our own lines, the engineer working parties were vigorously attacked and had to engage in a fire fight in order to complete their mission.

On December 10, after an air, artillery, and rocket preparation, assault troops of the division moved into Ormoc, accompanied by engineer working parties to clear mines, booby traps, and debris; to reinforce bridges for track-laying vehicles with the assault troops; and generally to assist the advance of our forces. The town was an inferno of burning buildings and Japanese dumps. Remaining enemy forces were generally dug-in under native-type buildings and were routed out by setting fire to the buildings with flame throwers or pushing the buildings over with armored bulldozers. By this time elements of the 7th Division to the south had closed on Ipil and taken over the defense of this port. Also the remaining regiment of the division had arrived by water from the east coast of the island.

The following day, the division occupied Ormoc, sending one regiment, with an engineer company attached, to the north and west of the town to provide security in that direction. Several bridges on the outskirts of the town were rebuilt under direct enemy small arms fire and bypasses were constructed for track vehicles. Late in the afternoon, one engineer platoon was sent forward of the front lines to recover an M-8 gun which had overturned in a swamp while attempting to travel a narrow road on top of a dyke. After retrieving the gun mount the platoon remained in its exposed position to lay a hasty mine field, returning to its bivouac area after nightfall. During the night, the Japanese, apparently unaware that Ormoc had fallen into our hands, attempted to land two ships, similar to our LSTs on the northern edge of the beach. The gun, retrieved earlier in the day, opened fire on the ships and got direct hits on both, setting one on fire, completely destroying it and its cargo, including some 500 Japanese troops, and seriously damaging the other, making it easy prey for the air force the next day. During this fire fight the engineer company acted as ammunition carriers supplying the M-8.

In the meantime, the remainder of the battalion moved into Ormoc, one company commencing work on the construction of a landing strip on the high ground (Camp Downs) just south of the town. Enemy resistance had steadily increased since the initial landing, and it was almost imperative that the liaison planes of the division artillery be made available. Hampered by heavy rains and occasional enemy fire, the company completed the strip just as the planes arrived. Headquarters and Service Company made a reconnaissance of the town, checking streets for mines, blocking off roads that were

impassable, surveying the streets, investigating the water supply, locating duds, selecting dump areas, and spotting salvageable engineer supplies. That night battalion headquarters bivouacked on the beach and was also involved in the attempted Japanese landing, helping to destroy several small landing barges that landed in the immediate vicinity.



Engineers sweep for mines during operations in the Philippines.

At this same time the remaining company of the battalion loaded aboard an LCI at Tarragona Beach and, together with other elements of the division, departed for the beachhead at Ipil. Following close to the shore line, the convoy experienced no difficulty until late in the afternoon when it was attacked by three enemy fighter planes. Heavy anti-aircraft fire disabled one plane, which crashed and dived into a destroyer escorting the convoy, sinking it almost immediately. The LCI with the engineer company aboard was designated to pick up the survivors. Since "General Quarters" was still in effect most of the Navy personnel continued to man their anti-aircraft guns, and the task of rescuing survivors fell to the Army troops. Working with great speed and initiative, the officers and men of the company handled life lines, released boats, and in one case, dove into the oily water to rescue a badly disabled sailor. The company aid men immediately rendered first aid and the kitchen personnel took over the ship galley and served hot food. The company landed at Ipil later that night, unloaded supplies carried by the convoy (thus permitting it to depart under cover of darkness), and then dug in on the beach. At daybreak they marched to Ormoc to rejoin the battalion.

The equipment and transportation of this company, together with the remaining equipment of the battalion had all been loaded aboard an LSM traveling in the same convoy; however, no record could be found of this ship having unloaded during the night. No further information was forthcoming on this matter until two days later when the next resupply convoy arrived, bringing with it the missing LSM and equipment. An explanation of this delay revealed that shortly after dark on the night in question, all engines on the ship suddenly stopped, cutting off all power and leaving the ship helpless. The nature of the engine breakdown proved to be beyond the facilities of the crew to repair, and daybreak found the ship drifting slowly into shore along the southwestern tip of the island and plans being made to abandon ship. The engineer troops aboard included the major portion of the battalion motor repair section, together with its equipment and shop truck. The motor officer suggested that his mechanics and facilities might be able to effect the necessary repairs; so the ship was anchored close to the shore to avoid detection from the air, and the mechanics went to work. Thirty hours later the engines were turning over smoothly; the ship got under way and soon joined the succeeding

convoy just as it rounded the southern tip of the island on its way to Ipil. The initiative and ability of these men saved not only much of the critical equipment of the battalion, including trucks, bulldozers, carryalls, shop facilities, and spare parts, but also saved the services and use of one LSM for the Navy.

The next few days in Ormoc were busy ones. Close in positions for the defense of the town were laid out and fortifications constructed. Access roads were built to the bivouac areas outside the town proper. Dugouts and bomb-proof shelters were installed in the Division Command Post. A new all-weather air strip for liaison planes was constructed. Adequate shower facilities were erected at the site of artesian wells found throughout the town. Streets were named and marked; maps prepared and distributed; roads drained and surfaced; shell and bomb craters filled; and the town carefully cleared of mines, booby traps and duds.

Dump areas were prepared for all classes of supplies, the decision having been made to establish a Corps dump in this area, although Ipil was to remain the main port since the beach of Ormoc could not accommodate our larger landing craft and ships. Engineer supplies and materials were salvaged in large quantities and placed in the engineer dump. The road to Ipil was maintained and the bridges kept in a state of repair. Hospital facilities, including showers, framed ward tents, and a screened and concrete-floored surgery, were erected in the church yard at Ormoc. Advantage was taken of the arrival of motor repair and servicing equipment completely to check all vehicles. A water point was established in the market square, using an artesian well conveniently located at this site. Enemy material of unique and important nature was collected and sent back to intelligence agencies. Of particular importance was an entirely new type of Japanese ceramic mine and a non-metallic offensive hand grenade encountered here for the first time by our forces. Drawings and complete description of the mechanical functioning of these items were produced and widely distributed to all units in the division. In addition to performing these tasks during the day, the battalion nightly occupied certain fortifications in the defensive works surrounding the town as a precaution in the event that the enemy might stage an all-out Banzai attack to regain possession of this important port.

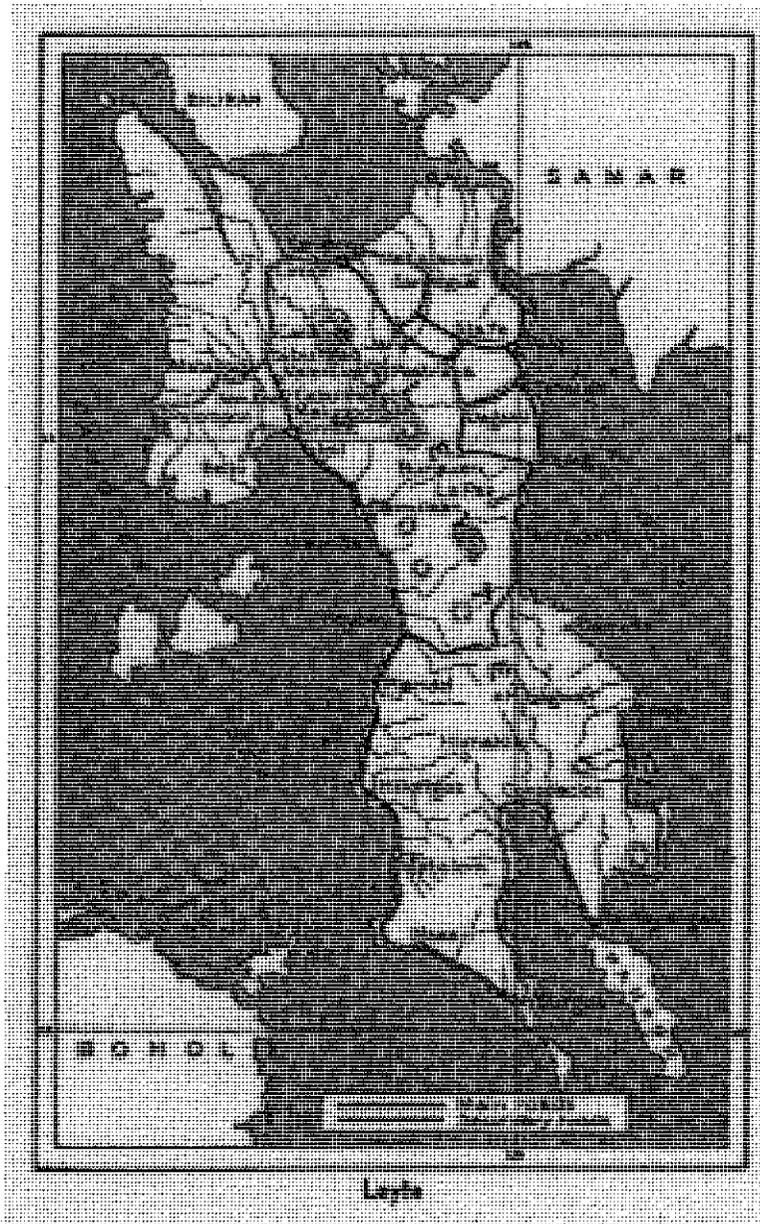


Japanese ceramic mine encountered at Leyte.

Valencia

With the fall of Ormoc the over-all tactical situation for our forces took a turn for the better. Elements of the 7th Division opened the entire west coast from Baybay to Ormoc. Japanese forces in the central mountains were generally falling back or being entirely cut off by attacks from both the east and the west. Resistance in the north in the vicinity of Limon, however, was still fierce and the 1st Cavalry Division fighting south, astride the Limon-Ormoc road, was making very slow progress. The Japs were still landing troops and supplies, using the port of Palompon now that Ormoc had fallen. To exploit fully the advantage gained by our recent success, the decision was made that the 7th Division should take over the defense of Ormoc and the 77th Division attack north up the Ormoc Valley to Valencia-Libungao-Cananga, effecting a junction with the 1st

Cavalry Division driving down from the North, and then turning westward, take and hold Palompon.



The Ormoc-Valencia road runs up the eastern side of the valley almost at the foot of the mountains. The terrain west of the road to a distance of several miles is low, flat, and swampy, cut up by numerous streams and rivers. Past experience and the existing situation indicated that the Japs would defend the road and the mountains, considering the stretches of swampy ground to be impassable to our troops. Rather than make a slow and costly frontal attack, the decision was made to send two regiments on foot around the

west flank to take Valencia from the west and to cut the Ormoc-Valencia road south of Cabulihan. The third regiment, meanwhile, would attack north astride the road. No transportation could accompany the maneuvering troops so that all supplies had to be hand carried. Each regiment was to have attached one engineer platoon equipped largely with high explosives. Only those men in top physical condition were to make the cross-country attack. To afford immediate relief to the enveloping troops, plans were made to send an armored column of amphibious tractors and tanks, loaded with supplies, up the road as soon as the attacking troops had taken their objectives. One company of engineers with a portable water supply unit, was to accompany the armored column with the mission of assisting its advance by clearing obstacles, removing mines, reinforcing bridges or constructing bypasses, and fighting as infantry if need be.

The northern edge of Ormoc is defined by a river having very steep banks on the south side but gradually rising ground on the far shore. The Japanese forces held this position with very elaborate entrenchments consisting of holes 7 and 8 feet deep with additional shelter under-cut at the bottom. Each emplacement was provided with a camouflaged cover or lid to afford concealment, and contained a ladder and firing step to permit the occupant to fire his weapon. The occupying troops actually lived in these holes, even preparing individual meals over small burners of canned heat. Wading the river, our troops had repeatedly assaulted this position but were repulsed each time with heavy losses. It was imperative that the position be reduced before the plan for taking Valencia was put in motion. After an artillery preparation as heavy as the limited ammunition supply would permit, another assault was made but again only to be repulsed.

An engineer officer, waiting to move up his company to rebuild the bridge across the river, witnessed the attack and suggested to the attacking regimental commander that he be permitted to lead another assault. Climbing into one of his company's armored bulldozers, he and the operator forded the river and then methodically went



Armored engineer bulldozer.

about the business of destroying or neutralizing each emplacement. Initially, using the bulldozer blade, the operator lifted covers off the individual holes, and then coming alongside the emplacement, the company commander leaned out of the cab and fired

directly into the hole with a submachine gun. With the ammunition supply running short, however, tactics were soon changed to just filling the emplacements with earth, burying the occupants alive. Intense enemy small-arms fire was directed against the dozer but the armored cab offered sufficient protection to the occupants, and the dozer blade assisted materially in protecting the engine. A small group of Japs rushed the dozer and threw a charge of picric acid under the vehicle, but the alert operator was able to back off before the charge exploded, and the captain disposed of the Japs with his submachine gun. After about thirty emplacements had thus been reduced, the remaining Japs, panic-stricken, abandoned their positions and fell an easy prey to the infantry who soon over-ran the entire position. Over 1,000 Japanese dead were counted in this small area.

Enemy resistance along the road continued to be severe and it was not until the evening of December 16 that the road junction south of Malunod was taken. Meanwhile, on the morning of that day, the two enveloping forces had moved out across rice paddies and waist-deep rivers, over terrain that no vehicle could travel, finally stopping for the night just short of their objective. Accompanying engineer troops placed anti-personnel mines beyond the perimeter and again accounted for several Japs during the night and materially reduced the amount of infiltration.

On the next day, December 17, all regiments were seriously engaged in heavy fighting. Resistance along the road was so great and our advance so small that it was considered inadvisable to attempt to send the armored column to the relief of the enveloping troops. During the day, the remaining engineer troops in the vicinity of Ormoc expended all effort on that portion of the road in our possession, reinforcing bridges, filling shell craters, opening up ditches, and clearing debris and wrecked vehicles off the road. All men realized the urgency of the situation—that relief had to get through on this road to those troops which had been entirely on their own for what was fast approaching three days. Quantities of bridge material, from the engineer dump in Ormoc, were moved and stockpiled as far forward as possible to make them more immediately available when needed. Rock and road metal likewise was stockpiled for future needs. Engineer officers conducted bridge reconnaissance from the air in artillery liaison planes, but were unable to secure any detailed information because of the intensity of small-arms fire directed against the planes. Early in the evening, Japanese artillery pounded Ormoc for the first time, some thirty rounds landing in the engineer bivouac area.

The following morning all regiments continued the attack. Valencia was taken early in the day, and Route 2 was cut near Cabulihan. Resistance along the road was still stubborn and our advance slow, so the decision was made to send the armored column through to resupply the troops at Cabulihan and Valencia. A stretch of 2 miles was still in enemy hands, but this distance was traversed without receiving any casualties among our own troops, although many Japs were killed along the route by the automatic weapons of the convoy. Again within our lines, the convoy stopped to replenish the depleted supplies of the enveloping force. An engineer reconnaissance party started up the road at once and discovered a bridge just south of Cabulihan requiring reinforcing in order to carry the maximum load in the armored column. No bypass being available at

this bridge, work was started at once to affect the necessary repairs. The reconnaissance party, meanwhile, continued up the road. At Cabulihan the reconnaissance party contacted the engineer platoon that had accompanied the attacking force, already at work putting in a bypass around a bridge that had been totally destroyed by the enemy. These bridge repairs and bypasses were completed so that the entire convoy arrived in Valencia in mid-afternoon.

During the day the engineer complement with the force that had taken Valencia had been busily engaged in destroying dumps and caves with high explosives and had urgently radioed back to the battalion headquarters for additional explosives. Within an hour 100 pounds of TNT were delivered to the troops in the field by an artillery liaison plane.

To the south, fighting continued through the day, and late in the afternoon all enemy resistance was cleared along Route 2 from Ormoc to Valencia. The engineer company supporting the regiment attacking up the road moved into Cabulihan at once and started work on the bridges in the vicinity. The bypass constructed earlier in the day for the armored column was by this time almost impassable and considerable effort was expended reconditioning it. Meanwhile materials were being assembled to replace a destroyed bridge, a span of some 60 feet, 25 feet above the stream bed, with excellent and undamaged abutments. Work was continued throughout the night, seriously hampered, however, by enemy fire and patrol activity, and often interrupted by vehicles bogging down in the bypass.

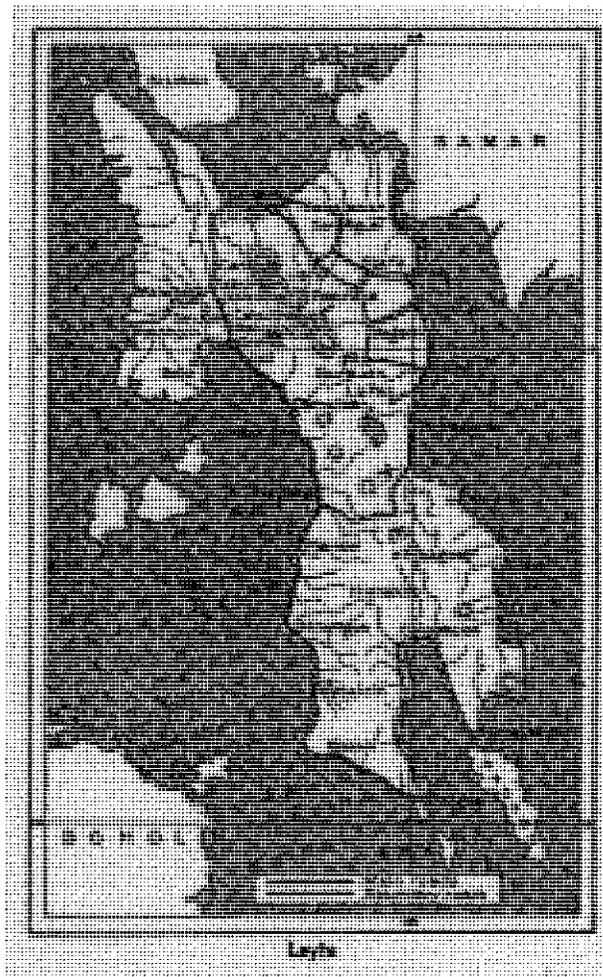
On the 19th the battalion was relieved of the maintenance of the Ipil-Ormoc road by the division engineers of the 7th Infantry Division, thus permitting a further concentration of engineer effort on the Ormoc-Valencia road. The cleared tracks of the amphibious tractors and tanks of the armored column had damaged the road severely, necessitating immediate repair if the road were to be kept open, a condition imperative to hold our advantage. Accordingly, one company still bivouacked at Ormoc, was assigned that portion of the road as far north as Cabulihan. Another company, bivouacked at Cabulihan, continued to work on the bridges in this vicinity and maintained the road north to Valencia. The third company, bivouacked at Valencia, supported the advance of the regiment attacking north astride the road toward Libungao, setting up a water point, reinforcing bridges, destroying Japanese ammunition dumps, and salvaging large amounts of lumber and engineer supplies found in the warehouses near Valencia. During the day the division artillery battalions and the transportation of all three infantry regiments moved to Valencia, congesting the road so badly that effective repair and maintenance was all but impossible. Traffic conditions were so bad at Cabulihan that work on the bridge almost came to a standstill and every effort had to be diverted to keeping the bypass open. However, late in the afternoon, with the bulk of the vehicles out of the way, construction began in earnest and by morning the job was completed. During this period, security detachments of the company killed eleven Japs in the immediate

vicinity. The Cabulihan bridge had no sooner been built, when it became necessary to reinforce three smaller bridges further up the road that had begun to fail under the heavy traffic burden.

Having finally finished these jobs, the company was just turning in for a much needed rest when orders were received to emplace a battalion of 155-mm guns in the vicinity of San Jose by noon of the following day. Immediate reconnaissance revealed that three bridges had to be rebuilt so for the third successive night the men of this company toiled with saw and timber, spike and sledge, this time on the flank of the division beyond the closed defenses of friendly troops. By 1235 the following day, December 21, the last "Long Tom" was placed into position, bringing to a close a continuous working period of 72 hours without rest for the entire company.

Palompon

On December 20, the remaining elements of the division, including all service troops, had moved to the vicinity of Valencia. One regiment had continued the attack towards Libungao against ever-stiffening resistance. Another regiment had made an envelopment to the west, again taking off cross country through rice paddies and rivers, with the objective of the RJ (road junction) at Libungao and the river crossing one mile west of it. The 3rd regiment with an engineer platoon attached, prepared to accompany another armored column scheduled to strike down the road from Libungao and take Palompon. However, late in the night an engineer reconnaissance patrol, sent out several days before, had returned with the information that the road between Libungao and Matagob was nothing more than a dyke 15 to 18 feet wide and raised 6 to 8 feet above the surrounding rice paddies. There were some 20 bridge sites along the road, with some of the bridges completely destroyed and others too weak to carry heavy loads. Bypasses, as hasty means of crossing were out of the question. These facts definitely prohibited the use of a fast, hard-striking armored



column. Accordingly, plans for the employment of the 3rd regiment were altered. The regiment, less one battalion, was to attack down the road towards Palompon on foot, the remaining battalion, with one platoon of engineers, was to make a shore-to-shore movement by amphibious tractor and tank from Ormoc by sea to Palompon. The actual date of this latter movement was to be determined by the progress of the remainder of the division.

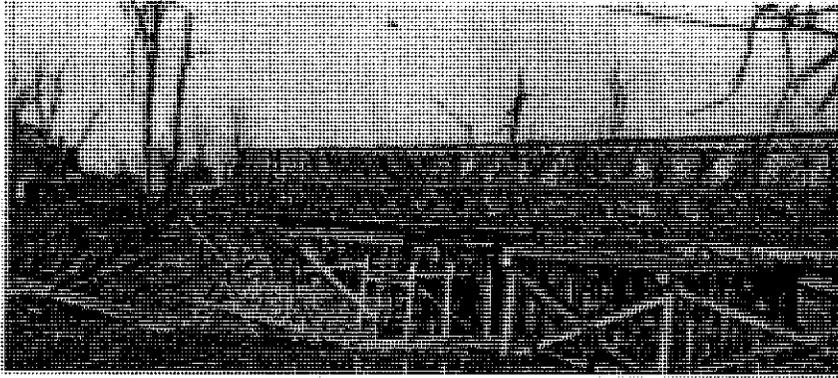
The enveloping force gained its objectives the following day against fanatical resistance on the part of the Japanese who were converging on the road junction from the north as a result of the pressure exerted by the 1st Cavalry Division in its drive to the south. The fighting in this vicinity was extremely bitter and, in the latter stages, was quite critical in view of the ammunition shortage of the enveloping force that had not been resupplied since starting its cross-country maneuver. This crucial situation was relieved only in the nick of time by the construction of two bridges within 100 yards of the front lines, thus permitting self-propelled guns to move up and overrun the Japanese position. During construction the bridges were under heavy enemy small-arms and mortar fire, but work continued even as the wounded fell. Late in the afternoon elements of the 77th Division and the 1st Cavalry Division effected at junction at Cananga.

The Japanese forces were not badly cut up and dispersed, with sizeable numbers still east of Route 2, although the main body had withdrawn to the mountains in the west. To insure holding the gains that had been made, one regiment of the division was held at Valencia, another at the road junction at Libungao, and the third regiment continued on the previous plan for taking Palompon. Christmas Day was set as the objective date.

Although the engineer battalion had reinforced or constructed some thirty-two bridges in the past 14 days it now became apparent that the drive on Palompon would truly become a "Battle of the Bridges". In anticipation of the task ahead two engineer companies were moved forward on December 22 to the Tagabong River (not shown on the map but actually one mile west of the Libungao road junction). Possession of the far bank of the river was still being hotly contested by the Japs. Release was secured from Corps for the responsibility for the Ormoc-Valencia road. Bridge timbers were salvaged from any source whatsoever and stockpiled at the Tagabong. A unit of Bailey bridge, just then arriving at Ipil, was brought up and held in readiness.

Engineer reconnaissance parties moved out with the forward elements of the infantry as they advanced down the road, and information was sent back promptly so that requirements, as they arose, could be handled with a minimum of delay. During the day it was impossible to maintain a construction or repair rate that could keep up with the rate of advance of the infantry, but at night, with the infantry units at a standstill, it was usually possible to complete all bridge construction right up to the front lines. This night work also had the additional advantage of being unhampered by heavy traffic, a serious obstacle to the rapid construction during daylight. The initial objective at each bridge was the passage of light vehicles to effect supply and evacuation. The ultimate objective

was a bridge of 35-ton capacity to take the M-10 gun mount, a weapon that would most definitely be needed in the drive across the mountains once the area of rice paddies had been crossed. Short length spans of Bailey bridge were sometimes used; a timber bridge was then constructed underneath the Bailey, and the latter removed during a period of minimum traffic for use farther down the road. With sufficient equipment available, this



Timber trestle bridge being built under an existing Bailey bridge.

method proved to be most expeditious and permitted a far more uninterrupted flow of traffic than is normally possible during the construction of a bridge. Three or four bridges were usually under repair simultaneously, with the working parties leap frogging as they finished one job and started another, often hand-carrying timber and materials to the new site. The security detachments protecting working parties at night, were very active, invariably picking off several Jap stragglers or repulsing a Jap patrol.

Matagob was taken on the afternoon of December 23, and on the following morning, additional troops moved into town, including a 105-mm howitzer battalion. Japanese resistance in the mountains stiffened noticeable, and it became apparent that it would be impossible to reach Palompon overland in one day. However, the decision was made to move the 155-mm howitzer battalion of the Division into town, and with supporting fire from this position and from the 155-mm gun battalion at San Jose, to land the amphibious force at Palompon on Christmas morning.

At this time, all but one bridge had been completed to take the normal division load, so all effort was now concentrated on this one exception. The bridge site was 90 feet long, 10 feet above the water surface, with a depth of water of 20 feet, and a mud bottom of about 8 feet. This obstacle was spanned by a pile bent bridge of excellent timber but with very unstable bents. Time and material permitted only an improvised reinforcement. Batter piles of coconut logs were placed to steady the bents, and the whole was tied together with cross bracing. Working feverishly until the last possible minute, the engineers finally cleared the bridge, and the first howitzer, towed by an M-5 tractor, started across. Unfortunately, the drive had not gotten a straight approach as he went onto the bridge and was forced to use his steering clutches as he progressed. The shock of the repeated twisting and turning of a 15-ton track vehicle was too much for the bridge and it collapsed. So almost did the engineer troops witnessing the disaster. However, in spite of almost 60 hours of continuous work, the men set about the task at once of removing the debris and clearing the site. In the meantime sufficient Bailey bridge

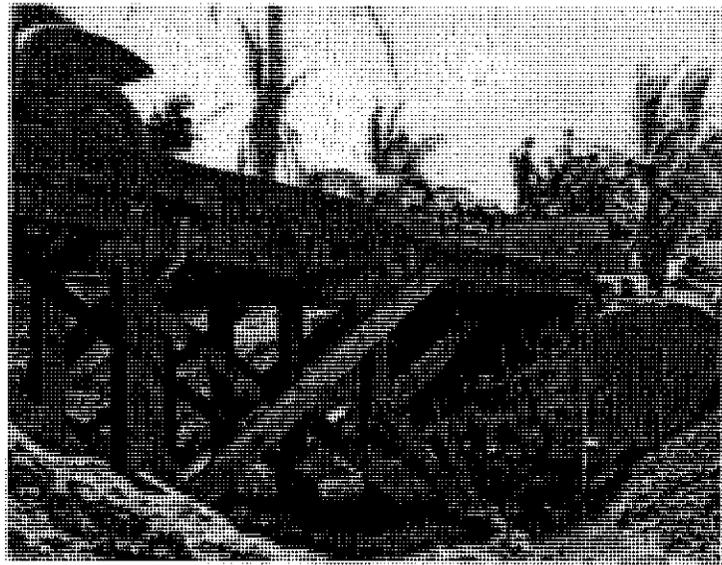
equipment was brought up by truck. The exhausted condition of the men seriously reduced their efficiency, but work continued throughout the night and at noon Christmas day the road was again opened to traffic.

Meanwhile one battalion of infantry had landed at Palompon without benefit of supporting fire from Matagob. The town was taken quickly without much resistance and the Japanese were thus denied the use of the last port on the island. With the news of this achievement, higher headquarters, on this date, declared the island of Leyte secure, but to the combat troops, there remained the laborious, time-consuming, and dangerous task of mopping up.

Mop-Up

From Matagob, one combat team, less the detachment already at Palompon, continued its attack through the mountains, finally reaching the coast on December 31. The road through the mountains was in relatively good condition, requiring only the filling of shell holes and craters, and the improving of ditches. Continued maintenance of this road, however, required the presence of strong security detachments to protect the working parties from possible Jap ambush. The reservoir and pile line serving Palompon were repaired and put in condition, serving the troops as well as the civilian population of the town. An air strip to accommodate artillery liaison planes was constructed and the main pier, badly damaged by bombing was repaired and made serviceable.

The road from Valencia to Matagob continued to be maintained, use being made of about a hundred native laborers to load gravel, fill ruts, dig ditches, and clear underbrush and weeds that lined the sides of the road. Plans were made and carried to completion to replace the 90-foot Bailey bridge with a fixed pile bridge. The howitzer and tractor lost in the stream when the bridge collapsed were salvaged and turned over to the ordnance for disposition. Materials were gathered from 10 miles around



Timber trestle bridge on Route 2, Leyte Island.

and work progressed rather slowly. Piles, fitted with a heavy timber shoe, 4 feet square, were driven in position by jacking them down against the weight of the Bailey bridge. Although this was a crude and laborious task, the final result was a satisfactory bridge that continuously took 35-ton loads. The remaining bridges along this road required

constant maintenance, usually of a minor nature. Inspection teams were sent out twice daily to insure the immediate discovery of any weakness or failure.

In the vicinity of Valencia necessary facilities were constructed for the division clearing company and field hospital; showers were set up for the use of all troops; a Japanese emergency airfield was cleared and repaired, accommodating C-47s for the evacuation of the sick and wounded; and the division cemetery was improved and beautified.

With units scattered as they were, motor maintenance during the operation became, more than ever, the responsibility of the individual companies. Road and weather conditions were far less severe here than they had been on Guam, so that wheeled vehicles stood up very well. However, the long overland distances involved were quite telling on tractors and bulldozers. The capture of Japanese shop equipment assisted materially in augmenting repair facilities. The general-purpose shop truck again proved invaluable for repairing parts not only for the battalion but also for the units of the division as a whole.

The health and sanitation problems involved were those common in any tropical climate, and in general, were in keeping with past experience. We were spared the ravages of dengue fever, but were confronted with the threat of malaria, necessitating the use of Atabrine. Of greatest concern was the presence of schistosomiasis, a water-borne liver fluke prevalent in this area. The danger of this disease to engineer troops was particular great in view of the tremendous amount of bridge construction, requiring men to work in infested waters. In fact one engineer battalion on the island sustained over 50 per cent casualties from this source alone. Frequent showers and GI soap constituted our only preventative, but that proved quite successful since only one case developed in the entire battalion. The usual occurrences of intestinal disorders, common to the early stages of an amphibious operation, prior to the arrival of kitchen equipment and during which men prepared their own meals, was largely avoided by limiting the amount of individual messing equipment to one spoon and a canteen and cup. The remaining mess gear was brought in with the kitchens and reissued only when proper and adequate facilities were available to wash and sterilize mess kits. The drain on physical strength and stamina resulting from extended periods of back-breaking work without rest and proper food left its mark and was apparent in the weakened and rundown condition of the men. A surprising number of cases of jaundice broke out in the battalion, hospitalizing men for as much as six weeks. Use was made of the available native labor to construct native type shelters and bamboo beds to protect men from the rains and get them up off the damp ground.

Very little has been said of the operation of the water supply section other than to mention the occasional change in location of a water point. Actually with elements of the division strung out and scattered as they were in this campaign, and with transportation facilities so limited, it was necessary to keep water supply equipment constantly on the move and as far forward as possible. On many occasions, the operators of this equipment were subjected to both small-arms and artillery fire, and frequently had to fend off Jap

patrols and raiding parties. The efficiency of their work is attested by the fact that units of the division were never without water and that in no case was any sickness or disease traced to water that they had treated.

The mopping-up operations of the division continued well through January, with the engineer battalion performing generally routine missions. During this period the battalion staff studied the problems, difficulties, and deficiencies noted during this and previous operations with a view to finding a means to improve the effectiveness and efficiency of the battalion in rendering service to the division. This matter was discussed with the Division Engineers of other divisions on the island, and, in general, agreed with their thoughts and experiences.

It was felt, first of all, that the Division Engineers operating in the Pacific theater were confronted with many problems far in excess of those contemplated in a normal mission. Some of these points included:

1. The total non-existence of roads suitable for military traffic
2. The availability of but one supply road to serve not only one division but two or more.
3. The torrential rains complicating all road construction.
4. The prevalence of swamps, marshes, and rice paddies.
5. The current use of self-propelled weapons in the front lines requiring bridges capable of carrying 35 tons.
6. The conspicuous absence of supporting engineer troops. (Attached non-divisional combat battalions were always involved in shore party operations were unable to give close engineer support, and were no better equipped than the organic battalion.)
7. The usual necessity of conducting engineer work 24 hours a day, week in and week out.
8. The frequent practice of operating by combat teams, leaving no engineer reserve to support other attached troops.
9. The tremendous burden of engineer supply in the combat zone.
10. The continuation of engineer work after the cessation of hostilities and during rehabilitation.
11. The further complication of water supply resulting from the presence of water-borne diseases peculiar to this area.
12. The habitual attachment of other troops, such as AAA and tank battalions.

The solution to the above problems obviously involved two things, equipment and personnel. To some extent this had been appreciated by headquarters as witnessed by the SLOE (special list of equipment) authorized engineer troops. However, the extent of heavy equipment thus authorized was limited almost entirely to bulldozers. Although this was of inestimable value, it did not provide the means for loading road metal or grading roads. Power shovels, carryalls, patrol graders, and shop trucks were the items required to overcome existing obstacles in order to move, fight, and supply a division.

The personnel problem, however, seemed to be an entirely different matter. In fact it was impossible to keep a unit up to even authorized strength, much less secure an overstrength. Even the additional equipment authorized was not provided with operators or maintenance personnel. A serious personnel shortage was felt in the supply section. The authorized strength of this section was sufficient to handle only the supply needs of one small battalion, yet it was burdened with the responsibility of engineer supply for the entire division, a job of sizable proportions, involving considerable tonnage in the combat area. Further shortages became apparent when the Division, operating frequently by Combat Teams, found itself without engineer assistance for the remaining element and attached troops.

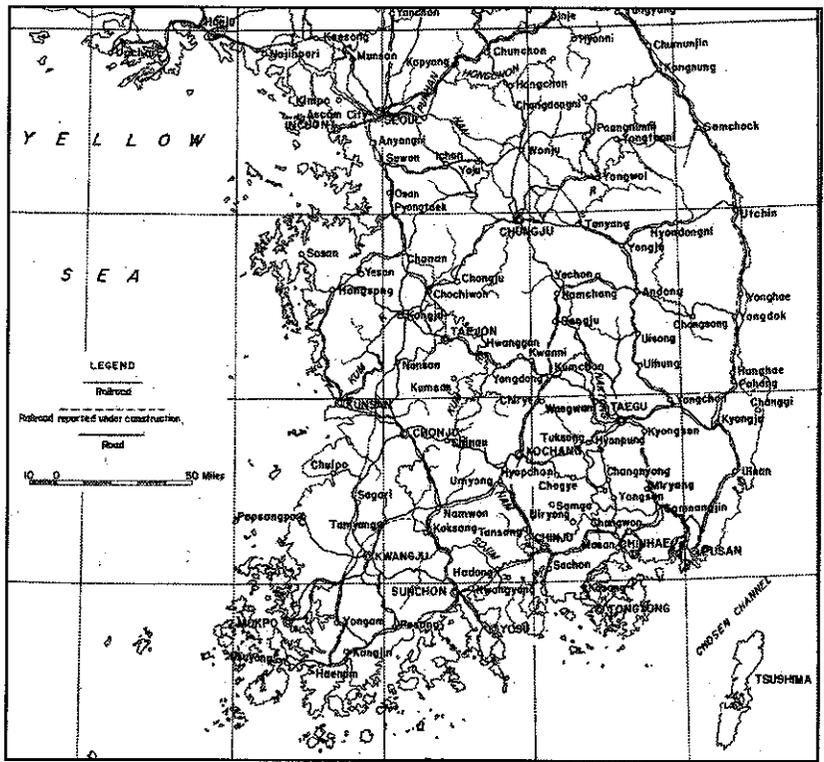
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The Third Engineers in Korea

Peter C. Hyzer
Lieutenant Colonel, Corps of Engineers

Part I

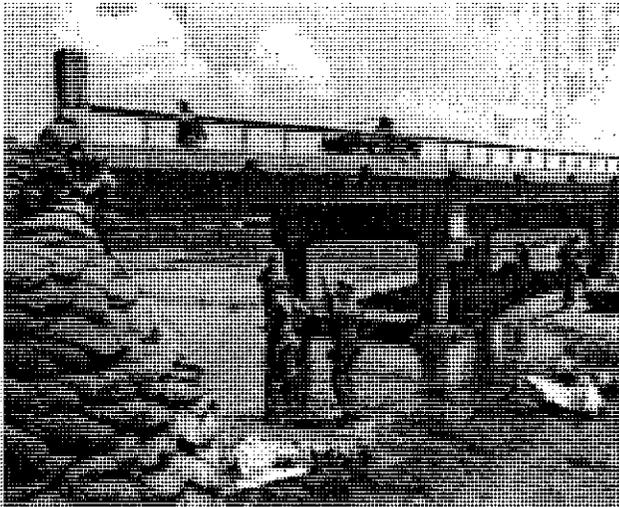
Very early on the morning of July 1, 1950, the 3rd Engineer Combat Battalion, then in Japan, was notified that it would be ready to move overseas within seventy-two hours. On July 2, the Battalion S-3 and one officer from each line company departed for Pusan, Korea, as the advance party. On July 5, Companies B and D with elements of Headquarters and Service (H/S) Company and the Medical Detachment loaded on LSTs and departed for Korea. The next day Company A and the remainder of H/S Company sailed. Company C left Japan on July 9. In the meantime, Companies B and D had landed and Company B had moved by rail to Taejon to join the 21st RCT (Regimental Combat Team), completing the move on July 8. On the same day Company D moved by rail to Taejon, followed by H/S Company, and Company A that joined the 19th RCT at Taegu.



Korea 1950

To assist the 21st RCT in its bitter fight against overwhelming odds, Company B immediately began preparing bridges for demolitions, road blocks, and road craters in the Chochiwon area. Company D, the third company to be committed, joined the 34th RCT on July 9 and was immediately engaged in blowing bridges and craters and building roadblocks. On July 10, company B lost its first two men, one killed and one missing.

Company A, having been released from the support of the 19th RCT on July 11, was ordered to cover the right flank of the 34th RCT north of the Kum River. With their RCTs, Companies A, B, and C withdrew south of the Kum River on July 12. Company A had just reached the battalion area when it was dispatched forward immediately in support of the 19th RCT with the mission of preparing every possible obstacle. Working



3rd Engineers prepare demolitions on the Kum River Bridge.

the 34th RCT, executing demolitions and delaying by fire. Overwhelming enemy forces caused the withdrawal of Company A and the 19th RCT with one officer and sixteen men missing in Company A on July 16.

Company B was in action again on July 19 when YAK planes bombed a railroad bridge 6 miles north of Iwon-ni. In five hours both tracks were repaired and trains were moving. On the same day, Company C relieved Company D in support of the 34th RCT. During this time, companies not in support of RCTs were engaged in building and repairing roads and airstrips, and in other engineer missions.

July 20 saw even further withdrawals of our troops when enemy tanks entered Taejon and shelled the command posts of the 34th RCT and Company C. Enemy infiltrations and road blocks caused heavy losses; only forty-seven enlisted men from Company C had returned on July 22 from these operations.

During this very crucial period of July 5-22, the battalion worked unceasingly in the face of enemy opposition and natural obstacles. The units of the battalion made fourteen reconnaissances; completed one cemetery and started another; maintained one airstrip and constructed one; repaired twenty-five roads; build one bridge; destroyed fifty-six highway bridges, eleven railroad bridges, and six tunnels; blew nineteen road craters; and laid one anti-tank and one anti-personnel minefield on the Kum River.

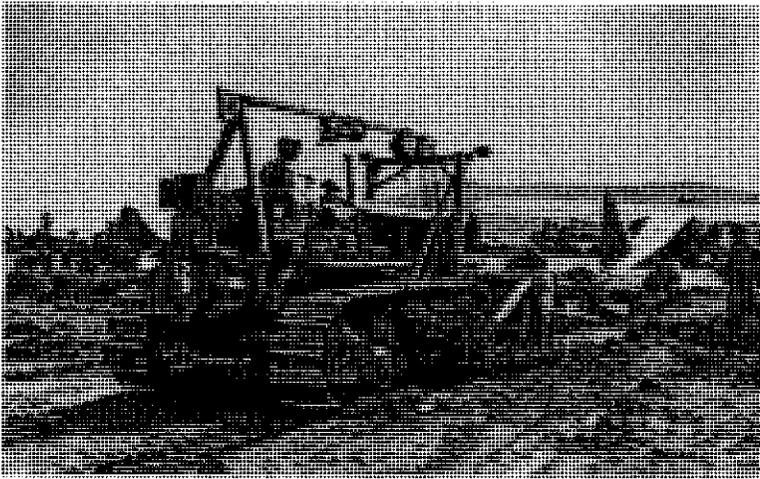
July 23-August 25

The Battalion Headquarter and Company C were located at Sindong on July 23, moving to Kumchon during the day, with Companies A and D also located at the latter place. Company D moved with the 34th RCT on July 24 to Kunwi. Company B moved to the east coast at Yongdok with the 21st RCT, and Company A joined the 19th RCT at Kumchon.

night and day, often under mortar, artillery, and small-arms fire, anti-personnel minefields were laid, demolitions were placed, and troops were posted to prevent premature blowing of bridges and craters. On July 13, one platoon of Company B, which had been left north of the Kum River to guard the right flank withdrawal of the 21st RCT, rejoined safely.

July 14 and 15 saw further reversals and withdrawals of the 24th Division. Company D covered the withdrawal of

Reconnaissance Company. Companies B and C moved into defensive positions during the night. They conducted reconnaissance west of the Nakdong River and continued preparing positions on August 2. That night the river bridge was blown. On August 3, Task Force HYZER was relieved by the 21st and 34th RCTs and Company A reverted to battalion control. The battalion, less companies C and D, moved to Muan-ni and Company C moved to Chondo where it was engaged in road repairs until August 6. In the meantime, Company D (attached to the 34th RCT) installed minefields on the east bank of the Nakdong River and provided security for the field artillery in that area. An airstrip at Miryang and one at Muan-ni were completed on August 5, using battalion



Engineers build an airstrip for observation aircraft in July 1950

equipment supplemented by local labor. Company B moved on August 4 to the northern part of the Division sector to support the 17th South Korean Infantry Regiment.

Massing of enemy troops and crossings in the sector of the 24th Infantry Division west of the Nakdong River, the last natural barrier on the enemy's march toward Pusan, forced the use of the

Division's reserves, and, at midday on August 6, the battalion (less Company D) with Company A, 78th Tank Battalion attached, was committed as infantry. The companies began reconnaissance of their areas, and started moving into position. Mortar crews, formed from the Bridge Platoon of H/S Company, were attached to the companies. Battalion S-4 and Maintenance Sections were in Miryang supporting the battalion in its role as infantry.

On August 7, the units of the battalion had completed the occupation of defensive positions, with Companies A, B, and C on the line, and Company D (relieved from the 34th RCT) as battalion reserve. The sector of the battalion had a frontage of 15 miles. Occupying positions on the edge of the water at night and pulling back to observation posts during the day, constant vigilance was maintained of enemy activities on the east side of the Nakdong River.

Patrols from Companies A and C crossed the river on the night of August 10 observing no enemy troops, but reporting that many South Korean civilians were still west of the river, afraid to cross because of the accuracy of our riflemen. Patrols of Company B crossed the Nakdong River during the night of August 11 to set up an observation post on a hill some 4 miles west of the river. One patrol completed its mission but the other encountered enemy fire when returning across the river. It was attacked on its return by a vastly superior enemy force and only five of the original patrol of thirteen Americans and four South Koreans returned.

On the night of August 12 an enemy regiment crossed the river under the cover of darkness. To protect this exposed flank of the 24th Division, Company B moved to positions north and northwest of Sibri-ri. Then Company D was moved north through Company B's positions to maintain contact with the enemy. Company C extended its right flank to cover the former positions of Company D. Continuous efforts to effect a contact with elements of the 1st Cavalry Division to the north were finally successful, when on August 14, a patrol reached 1st Cavalry patrols north of Hyongpung.

One battalion of the 23rd RCT, on August 16, was ordered into position near Hyongpung, to reconnoiter in force, and to keep the enemy isolated on Hills 409 and 265. A patrol from Company D and the RCT proceeded to Hyongpung to clear the town of enemy troops. In the meantime, elements of the 23rd RCT were encountering enemy patrols in the same vicinity, but were having equal success in keeping the enemy confined to its original landing area. Contact with the enemy on Hill 409 was maintained by patrols from Companies C and D. Several prisoners from the 29th Infantry Regiment of the 10th North Korean Division were taken during this period. The enemy was not aggressive, appearing content to hold his bridgehead and cross additional troops. Enemy action was limited to firing on our patrols and sending out parties in search of food.

Company A, relieved on August 20 by Company B, was placed in battalion reserve. During the night, a Company A patrol crossed the river, reconnoitered Kaekki-Dong, and returned safely with two prisoners.

Advance elements of the 38th Infantry of the 2nd Infantry Division on August 21 were furnished guides to reconnoiter defensive positions being held by the battalion. On August 22, tired, high-spirited troops of the battalion were relieved of their 17-day vigil on the Naktong River. Some breathed a sigh of relief, while others thought of their friends lost through enemy action during the operation. All were proud of the record of the battalion during the operation.

The Battalion moved to Kyongsan, with the final elements arriving on August 24. Reorganization and training began immediately, with troops of Company C building an airstrip to accommodate liaison aircraft, Company A building culverts and repairing roads for division artillery, and Company D building access roads to the Kyongsan railhead to be used by the division quartermaster and engineer supply.

During the period July 23-August 25, the battalion blew twenty-four road craters; destroyed on railroad bridge and twelve highway bridges; installed four anti-personnel and three anti-tank minefields; constructed five airstrips, three fords, and three bridges; and repaired 68.5 miles of road. In addition, the battalion spent seventeen days as infantry defending positions along the Naktong River. While being used as infantry, the officers and men of the battalion displayed aggressiveness by penetrating enemy positions on both sides of the Naktong River and kept the enemy confused as to the location and strength of the units of the battalion.

August 26-September 28

On August 26 the battalion less Company B was in the vicinity of Kyongsan, with the companies engaged in combat training and engineer missions. Company B, relieved of attachment to the 21st RCT by Company D on August 31, reverted to battalion control.

South Korean Army troops were assigned to the battalion on September 1. Companies A and C received one hundred each and immediately began training them in basic infantry courses, and integrating them as members of American squads and platoons. On the same date, Company D cleared a minefield under intense enemy artillery fire, resulting in one man killed and seven others wounded.

On September 2, the enemy made a number of crossings across the Naktong River and established beachheads in force on the east bank. On September 3 the battalion less Company D moved to Susan-ni, where the companies began repairing and maintaining roads and building an airstrip. They continued to train the Korean recruits.

The Battalion was alerted on September 5 for movement to the vicinity of Kyongju, where a large enemy force was threatening to break the Korean sector of the defense line that would leave the road open to Pusan. The movement to Kyongju was completed the next day. Because of the condition of the Ulsan-Kyongju road, it was necessary to begin work to repair it before it became impassable.

Company D, still attached to the 21st RCT during this period, repaired roads and bridges, and constructed roads in order that the infantry might supply its troops. Companies A, B, and C continued to maintain the road from Ulsan to Kyongju, repairing wash-outs, fords, bridges, by-passes, and shoulders which had caved in under excessive traffic and heavy rains. On this work, each company hauled an average of two hundred and fifty 2 ½ -ton truck loads of rock, gravel, and sand a day, using filled sandbags as reinforcements at critical points of the road.



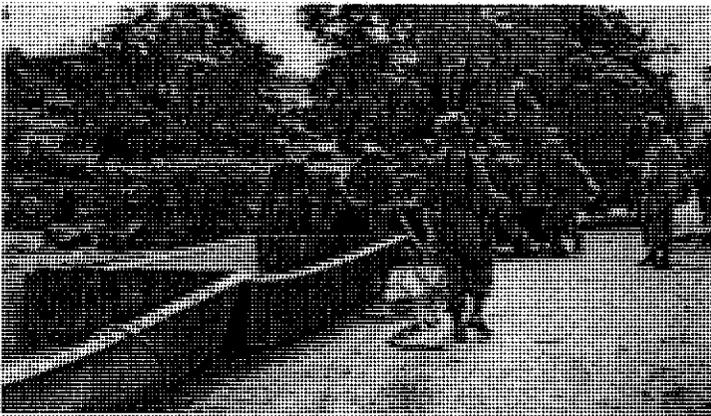
Engineer road work in August and September 1950.

On September 10, Company A was attached to the 19th RCT, and moved to Changgi on the east coast. Companies B and C were engaged in maintaining the Ulsan-Kyongju road and preparing access roads to the 24th Division Command Post. The Headquarters and Service Company equipment section constructed an airstrip near Nadong-ni.

Company D supported the 21st RCT. On September 14, Company A was relieved of its attachment to the 19th RCT, but remained in general support of the RCT.

The Assault Platoon of H/S Company was notified on September 13 that the tank-dozers authorized for the platoon were available for issue at Kyongsan. After receiving instruction in the use of the M4 tank at the 6th Tank Battalion, the platoon moved to Kyongsan on the same date to continue training.

The battalion was alerted to move to the vicinity of Kyongsan on September 16 preceded by Company D, still attached to the 21st RCT, and followed by Company A on September 17.



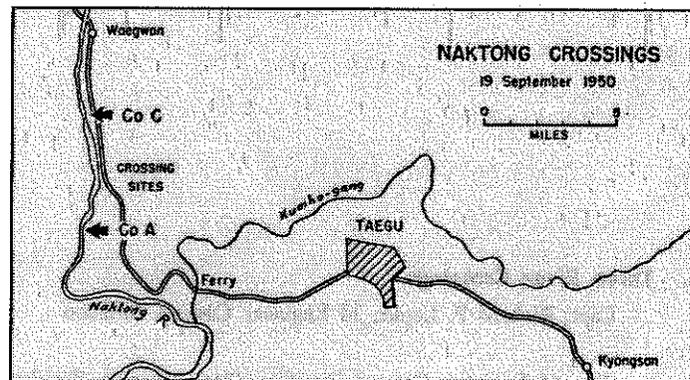
Engineers unload M2 Assault Boats for the crossing of the Nakdong River.

With the buildup of our forces in the Pusan defense perimeter, and the landing at Inchon on September 17, the battalion was instructed to prepare to cross the 24th Division over the Nakdong River approximately 6 miles south of Waegwan during the night of September 18. Plans were initiated to reconnoiter the crossing area, to gather the necessary assault boats, and to

coordinate with the infantry on the tactical employment of troops and equipment in the crossing. The companies of the battalion conducted refresher training on assault river crossings and furnished instructors to the infantry in the use of the assault boats.

At 12:30 p.m. September 18, the first elements of the battalion were ordered to move to the vicinity of the two crossing sites, where Company C and one platoon of Company D were to cross the 21st RCT at the northern crossing, 6 miles south of Waegwan, and Company A and one platoon of Company D were to cross the 19th RCT 2 miles farther south. Company B was assigned to construct infantry support rafts at both crossing sites, in order that vehicles and supplies might be crossed when the infantry assault troops had secured beachheads. Company D less two platoons was placed in battalion reserve.

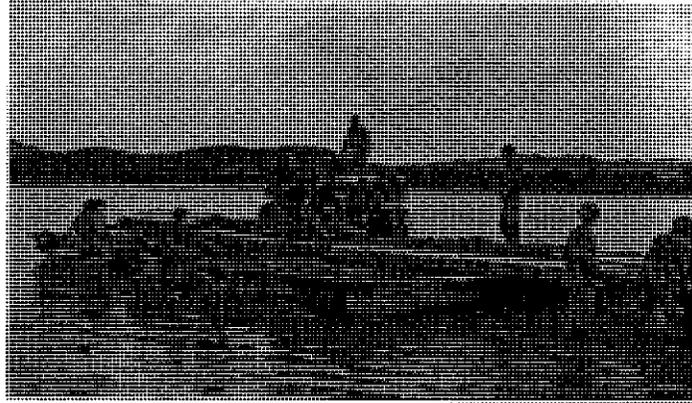
The original crossing time was to be at dusk on September 18, but because of the congested traffic conditions on the road leading to the crossing sites, the assault time was reset to 5:00 a.m. on September 19. As the first streaks of dawn touched the



3rd Engineer Battalion crossing sites on the Nakdong River

fog-enshrouded river, infantry-laden assault boats manned by troops of Company C, glided into the stream. There was no indication of the enemy on the far shore until their machine guns started weaving a path of tracers among the boats, but the infantry was landed on the far shore, and started the attack. Company C continued to cross the infantry to the far shore and bring back wounded and prisoners. In spite of enemy artillery and mortar fire on the beach which resulted in loss of men and equipment, and which hampered support raft construction, the crossing was a success.

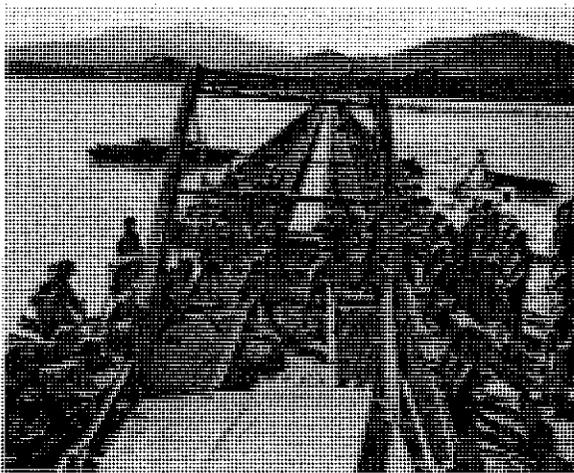
At the southern crossing site, Company A began crossing the 19th RCT at 4:00 p.m., September 19, with little enemy opposition. Intense enemy artillery fire, however, caused the loss of men and equipment on the beach. Company B completed the infantry support rafts in the early morning hours of September 20 and began ferrying supplies and equipment to the rapidly advancing infantry troops.



3rd Engineer cross a jeep on an Infantry Support Raft on the Naktong.

In the meantime, Company A was left at the southern crossing; Company D relieved Company C at the 21st RCT crossing site; and Battalion Headquarters, H/S Company, and Companies B and C moved to the vicinity of Waegwan, where Company C began preparations to cross the 5th RCT. At 8:30 p.m. on September 20, the first elements of the 5th RCT reached the west bank of the Naktong River with light enemy resistance.

It was then necessary to build an M2 floating bridge to accommodate the heavier vehicles and tanks. The 11th Engineer Combat Battalion, attached to the 24th Division for this purpose, began movement to a new area in the vicinity of Waegwan to construct the bridge at a site previously chosen by the 3rd Engineers. Company B was assigned to the construction of the approach roads and to clear the approaches of enemy mines. Company C continued to operate the infantry support rafts at the 5th RCT crossing site, and when it was decided to cross the 3rd Battalion of the 5th RCT at a site some 6,000 yards up the river from the previous crossing site, Company C collected the boats, and crossed the infantry.



M2 Steel Treadway Bridge over the Naktong River

The M2 bridge was opened for traffic at 9:00 a.m. on September 22, 1950. The crossing of the Naktong River was a costly one to the battalion, with 10 American and 5 Korean recruits killed, 31 American and 10 Korean recruits wounded, and 5 Korean recruits missing. A further loss was encountered when a mine clearing detail from Company B encountered an enemy patrol. During the ensuing action the company had one man killed and one man wounded. One man returned to his organization to report the incident and a platoon of Company B was sent to relieve the party and to hold the high ground in that vicinity. This action prevented a large enemy force from attacking the bridge or seizing the ground from which the bridge could have been severely damaged by artillery and mortar fire. Company A, meanwhile, was engaged in crossing the 27th British Brigade at its crossing site, but operations were materially hampered by intense enemy artillery fire.

With the major portion of the infantry across the Naktong River and the bridge completed at Waegwan to cross the remainder of the division, the major responsibility of the battalion was centered in the area west of the river. Company D was directed to cross the river and support the 21st RCT in its attack toward Kumchon. The next day, September 23, Battalion Headquarters, H/S Company, and Companies B and C moved across the river. Company C was placed in support of the 19th RCT, which was to attack toward Songju in the south. Companies B and D were assigned sectors of the road from Waegwan to the front. Company A, relieved of its crossing site in the south, rejoined the battalion on September 24.



Engineer mine sweeping teams check for mines following the breakout from the Pusan Perimeter in September 1950.

Although the repair and maintenance of the assigned sectors of road were of major importance to all of the companies, it was found that special attention had to be given to the removal and destruction of the numerous enemy mines encountered. Because of the rapid advance of the infantry, it was necessary, on September 25, to move the battalion to the vicinity of Kumchon.

September 26 saw the 19th RCT spearhead the attack toward Yongdong. Riding the leading tanks were personnel from Company C, equipped with mine detectors. Other personnel of Company C followed behind repairing roads and by-passes. The capture of Yonggon on the same date permitted battalion headquarters to move to Anuidong.

It was necessary for corps engineer units to relieve the Battalion of the responsibility of the Waegwan-Kumchon road on September 27. Battalion Headquarters, H/S Company, and Company A moved to an area 4 miles north of Yongdong; Company B moved to Hwanggan; and Company D moved to the vicinity of Kwan-ni. Company C continued to support the 19th RCT in its attack on Taejon, while the other companies of the battalion continued to maintain the division main supply road.

During the period August 26-September 28, the battalion constructed five airstrips; repaired and maintained 287 miles of road; cleared seventeen minefields; made four assault river crossings; conducted training, and furnished RCT attachments and support whenever needed. With the change in the division policy that the units of the battalion would support the infantry regiments rather than be attached during offensive action, it was noted that a more efficient utilization of the engineer units was obtained. As in the previous two months, the battalion during this period proved that it had well earned its reputation as the "Best Engineer Battalion in Korea."

It must be noted that Company C, which had been nearly wiped out fighting as infantry with Major General William F. Dean at Taejon, using bazookas and rifles on July 20, came back as a revitalized Company C, entering Taejon about 5: p.m., September 28, clearing mines ahead of the tanks.

September 29-October 31

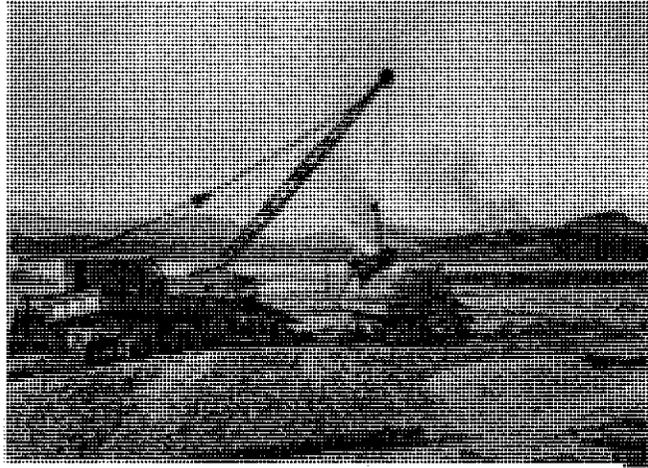
From September 29 to October 31, the Battalion was normally in general support of the division advance. This allowed the battalion commander full control of all resources to accomplish the tremendous task of the 3rd Engineers.

With the fall of the city of Taejon to the 24th Infantry Division, the division was ordered to clear the enemy from its zone south of the Kum River and to prepare for further combat operations. The 3rd Engineer Combat Battalion worked long, hard hours on the repair and maintenance of over 130 miles of road between Kumchon and the Kum River north of Taejon. The companies on September 29 were widely scattered with Battalion Headquarters, H/S Company, and Company A located near Yongdong, Companies B and C located north of Taejon, and Company D located near Kwan-ni.

As each length of the road was repaired, companies were extended for maintenance or leapfrogged to a new sector. On September 30, Company D was assigned a new area from Taejon to Kumsan and the highway tunnels south of Taejon. Company A was assigned the patrolling and maintenance of the road formerly assigned to Company D. On the same day, Company D, Battalion Headquarters, and H/S Company moved to the vicinity of Taejon, a more central work location for Company D, and where Battalion Headquarters could keep abreast of the tactical situation as it progressed. The companies continued repairing bomb and shell craters in the roads, repairing fords, by-passes and

bridges, clearing the road of destroyed enemy vehicles, and widening the road in order that continuous two-way traffic could be maintained. The battalion also constructed a mass burial plot at Taejon for the victims who were murdered by the North Koreans, and cleared the bombed Taejon RTO of debris and destroyed equipment.

Early on October 1, the battalion was ordered to construct a bridge for tanks and vehicles across the Kum River north of Taejon. A concrete highway bridge across the Kum River in the same vicinity had been destroyed by the battalion on July 12, and the enemy, unable to repair it, had built a sandbag ford across the river. With this ford as a base, a cause-way-culvert combination with 100 feet of M2 floating treadway in the center was constructed to bridge the 1,000 foot gap. Company B was



Engineers load rock for road and bridge construction.

detailed to build the bridge; Company C to operate a gravel pit; and Company D to repair access roads and to haul gravel. Working throughout the day and night of October 1, troops of Companies B, C, and D filled and placed sandbags, diverted the stream into channels, and placed and hauled gravel to the bridge. Treadway culverts and the floating sections were placed by the 11th Engineer Combat Battalion.

On October 2, the 24th Division began moving to the area in the vicinity of Chonan, north of the Kum River. Repair and maintenance of the Kum River bridge was assigned to Company C. Companies B and D were assigned the road work in the new area, and they moved to the vicinity of Chochiwon and Chonan, respectively, on the same date. Battalion Headquarters and Company A moved west of Chonan on October 4, and Company C followed on the 5th. The companies were engaged in the maintenance and repair of the road from the Kum River north to Suwon- some 70 miles of road. They continued to repair shell and bomb craters; to construct fords, by-passes, and bridges; to clear the road of destroyed enemy vehicles, and to widen it at critical points.

On October 6, the 24th Division and the battalion were again alerted for movement to a new area north of Seoul. To expedite the movement of the Division to the new area, Company A remained in its location to maintain the road until the Division had moved from the area. The battalion, less Company A, moved to its new area, some 15 miles north of Seoul on October 6.

On October 7, the battalion was given the responsibility to repair the road from Munsan-ni south to Seoul, a distance of 25 miles. Companies B, C, and D were detailed to this work which consisted of the repair of culverts, bridges, and by-passes, the construction of new drainage ditches, and the transportation of gravel and rock. Several

new sectors of the road had to be built to eliminate sharp curves, steep grades, and unreparable sectors of the old road. Company A, in the meantime, had rejoined the battalion north of Seoul on October 8, where it began preparations for further combat missions. On October 9, Company D was assigned to improve a bridge and ford across the Imjin River northeast of Munsan-ni. On October 12, individual officers and men of the battalion were presented decorations earned in the previous three month of combat operations.

Company B, on October 13, was attached to the 21st RCT whose mission was to move across the Yesong River, west of Kaesong, and block enemy attacks against the left flank of the I Corps. On October 14, the rest of the 24th Division was ordered to move to an assembly area in the vicinity of Kaesong, from which it would attack west toward the key port of Haeju and then north to Sariwon.



Northern area of operations- October 1950 to January 1951

Battalion Headquarters, H/S Company, and Companies A and C completed their movements to a new location 8 miles east of Kaesong on the same date, and, on October 15, Company A was attached to the 19th RCT, and Company C was assigned the responsibility for the bridge across the Yesong River.

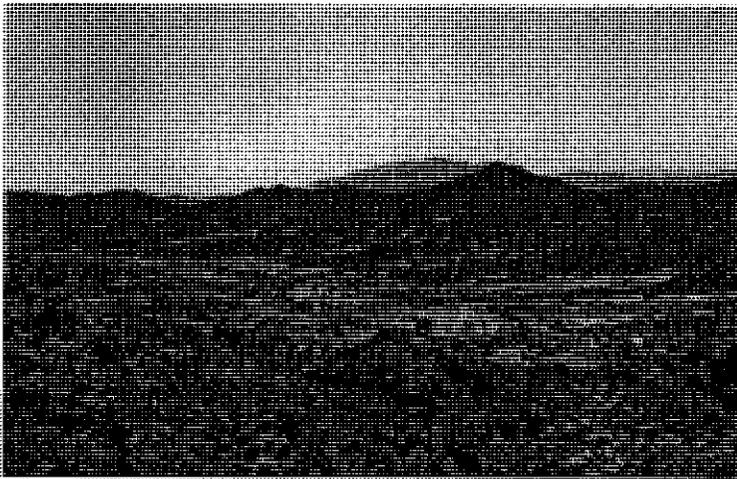
With the lead tanks of the 19th and 21st RCTs went troops of Companies A and B to clear enemy mines from the road and to repair any part of the road which hindered the advance of the tanks and truck-mounted infantry. Following closely the rapid advance of the infantry on October 17, Battalion Headquarters and H/S Company moved near Kirin-ni. Company D was assigned the repair of the main supply road from Namchonjom to Sinwon-ni.

On October 18, Companies A and B reverted to battalion control. New assignments were Company A to the road from Chaeryong to Chinnampo; Company B to the road from Haeju to Sinwon-ni, and the port and airport facilities at Haeju; Company C to the road from Chaeryong to Sariwon; and Company D to the road from Namchonjom to

Sinwon-ni. On October 22, the 24th Division was ordered to move to the vicinity of Sunan, north of Pyongyang. Company C remained to maintain the road from Chaeryong to Sariwon and the bridge across the Chaeryong River.

The road from Pyongyang to Sinanju had been heavily bombed making immediate repairs necessary if the division were to move north. Company A was assigned the road from Sukchon to Amjong-ni; Company B the road from Amjong-ni to Sunan; and Company D the road from Sunan to Pyongyang. The road was made passable for continuous two-way traffic.

The 27th British Commonwealth Brigade, attached to the 24th Division again on October 23, was given the mission of leading the attack across the Chongchon river, with its first objective as Pakchon. The H/S company Bridge Platoon was detailed to cross the 27th Brigade on infantry support rafts. Company C, having rejoined the battalion on October 23, was assigned to support the brigade in the attack. It moved to the vicinity of Sinanju on that date. Company areas of responsibility were extended to include Anju. In order to give close support to the attack, Battalion Headquarters, H/S Company, and Companies A and D moved to the vicinity of Sinanju on October 25. With the fall of Pakchon to the 27th Brigade on October 26, the 5th RCT, with Company D in support, attacked toward Taechon.



Typical terrain faced by the 3rd Engineers in their road building efforts.

tong to Impo-ri. Companies C and D continued their support of the 27th Brigade and the 5th RCT. Before Company B could make initiate work on its road, it was necessary to make an armed reconnaissance to clear the enemy from the area. This work was completed on October 29 by a reinforced platoon from Company B with two tank dozers from the H/S Company Assault Platoon.

The 27th Brigade and the 5th RCT continued the attacks toward Chongju and Kusong, respectively, and, on October 30, the 19th and 21st RCTs were ordered into the attack with Company A in support of the 19th, and Company B of the 21st. In addition to supporting

On October 28, the battalion was relieved by Corps Engineer units of all road responsibilities south of the Chongchon River and east of the Eaeryong River, and Battalion Headquarters, H/S Company, and Companies A and B moved to new locations west of Pakchon on the same date. Assignments were Company A to the road from Pakchon to Toktal-tong, and Company B to the road from Toktal-

the RCTs , the companies were responsible for road repair and maintenance in their areas. On October 31, Company C was released from its support mission and assigned to the road from Napchong-jong to Chongju and the by-passes across the Takchon River at Chonju.

During this period, September 29-October 31, 1950, the Battalion, in addition to furnishing support and attachments to the infantry regiments, repaired over 620 miles of badly damaged roads; constructed ten airstrips; cleared seven minefields, and repaired innumerable bridges, fords and by-passes.

The first four months of the Korean War saw the Battalion involved in every phase of Engineer operations in the field---supporting the infantry, artillery and armor in defensive and offensive combat; building and destroying roads, railroads, bridges and airfields; mine laying and anti-mine operations; and finally, participating in battle as infantry. As a result, on October 31, the 3rd Engineers were a battle-proven organization with high morale, capable of any task that might confront it in the future, and fully worthy of the designation "Combat Engineers."

Part II

Early in the morning, November 1, 1950, Company B was in close support of the 21st Infantry within 20 miles of Sinuiju, as the 24th Infantry Division continued its rapid advance toward the Yalu. Companies A and D in the vicinity of Kusong were supporting the 19th Infantry and the 5th Infantry, respectively. The remainder of the 3rd Engineer Battalion was near Chongju. Hopes were high for an early end of the Korean War.



Northern area of operations of the 3rd Engineer Battalion November 1950

Then the Chinese communist struck, driving a deep wedge east of the Division. Starting in the evening, the 24th Division withdrew to

a bridgehead north of the Chongchon River. The 3rd Engineers less Company D was directed to support the defense of the bridgehead—assisting in laying out defensive positions; supplying and placing trip flares, antipersonnel and antitank mines and wire; and keeping roads and bridges open. Company D supported the 5th RCT in its attack toward Kunu-ri, south of the Chongchon.

Critical Conditions, November 4-15

Company A was placed in direct support of the 19th Infantry, Company C in support of the 27th British Commonwealth Brigade, and Company B in general support. Due to the tense situation, a small Command Group consisting of the Commanding Officer, Executive Officer, S2 and S3 sections, and Communications remained north of the Class 12 bridge with Company B. The remainder of the Headquarters and Headquarters and Service Company moved south of Anju.

On November 4 the bridgehead situation became critical with the Chinese driving forward in overwhelming numbers and infiltrating through the over-extended infantry. Without orders, the Battalion Commander directed Companies A and B to take up defensive positions north of the Class 12 bridge. During the next two days, the enemy completely cut off the 27th British Commonwealth Brigade on the left and made a deep penetration between the Battalion's positions and the positions of the 19th Infantry on the right. Company C, in the meantime was dug in near Pakchon with the cut-off British. By counterattack the lines were restored on the right, and the British drove the enemy back on the left to re-establish contact.

On November 6, the situation was sufficiently eased so that the Battalion could drop its infantry role and get back to its neglected engineer work. Company B moved to the vicinity of Battalion Headquarters south of Anju to begin extensive repairs to the bridge and approach roads south of the Chongchon River. Company A moved to the vicinity of Yonghung-don to extend closer support to the 19th Infantry.

Although the enemy seemed to be temporarily halted, the threat to the Chongchon bridgehead remained. The next two days, Companies A, C, and D, in direct support of the 19th Infantry, 27th British Commonwealth Brigade, and the 5th Infantry respectively, continued to organize defensive positions, laying mine fields, and installing trip flares and barbed-wire entanglements in their respective zones. Company B, in general support, continued to maintain the Anju-Sinanju road, and to make extensive repairs to the bridges and approaches.

On November 10, plans were initiated to enlarge the bridgehead and secure more favorable defensive positions. This required the clearing of previously laid mine fields and barbed-wire entanglements and their installation to protect new defensive positions. In addition, the engineers concentrated on the repair and maintenance of the roads by widening them at critical points, hauling gravel, and repairing by-passes, bridges, and culverts. Company C was engaged in the construction of a network of trails over very hilly terrain to permit supply of the forward elements of the British Brigade. On

November 11 a platoon of the 76th Engineer Dump Truck Company with twelve dump trucks was attached to the Battalion to assist with the extensive road construction and repair.

The Division launched and successfully completed an attack on November 15 to secure defensive positions north of Pakchon along the road to the northeast, with the Battalion providing engineer support. On the same date, Company B moved to the vicinity of Tongnam-dong and relieved the other companies of some road responsibilities.

November 15-30

The engineering highlight of the period was the construction of a two-way bridge over the Taeryong River at Pakchon. The bridge was a product of ingenuity and local materials. Sufficient heavy 30-inch pipe was located near Anju for five culverts. Sectionalized Warren-type truss sections of Japanese manufacture were plentiful right at the site. Preparations began on November 16 when Company C moved to the bridge site. Reconnaissance and plans were completed and materials and equipment assembled. At dawn, November 17, construction was started on the bridge and approach roads. After culverts were placed in the river, dump trucks hauled hundreds of loads of gravel to form a causeway while troops and Korean laborers filled and placed thousands of sandbags to strengthen and form the retaining wall of the causeway. As work progressed on the causeway, abutments were completed and four steel trusses, each weighing 6 tons and measuring 53 feet in length, were launched as bridge stringers by the use of two Brockway trucks. Decking was completed and the bridge opened for one-way traffic. On November 18, the bridge was opened for two-way traffic and named "The Captain Wirt Bridge" in memory of Capt. Frederick C. Wirt, former commander of Company C who was missing in action at Taejon on July 20, 1950. In constructing the bridge, causeway, and approach roads, Company C placed 11,827 filled sandbags, hauled 714 loads of rock and gravel, built a 600-foot new approach road, hauled and placed 24 loads of pre-set cement, and installed 5 culverts 30-inches in diameter and 30 feet long.

With the completion of the bridge, the 5th Infantry with Company D in support, attacked across the Taeryong River and secured the high ground in the vicinity of Kasan. Company D immediately began clearing mine fields, destroying enemy artillery and ammunition, and widening and improving the poor road west from Pakchon. Companies A, B, and C, in the meantime, continued the repair and maintenance of the Anju-Pakchon road, and made preparations for the support of the Division's attack toward Chongju.

Passing through the 5th Infantry on November 24, the 21st Infantry, with Company B in support launched an attack and seized the city of Chongju. The 19th Infantry moved to the vicinity of Napchong-jong on November 25. Company c took over the Anju-Pakchon

road, and Company D, Battalion Headquarters and H/S Company moved to a more central location in the vicinity of Napchong-jong on the following day. In repairing and maintaining their assigned sectors of road, the companies repaired fords, culverts, by-passes, and bridges; constructed drainage ditches; widened roads; and eliminated hazardous curves and steep grades.



Engineers sand roads to improve traction during the Korean winter of 1950-1951

During the new offensive, the Battalion staff engaged in reconnaissance and planning with navy representatives for the construction of an LST landing site along the coast west of the Taeryong River for the purpose of facilitating Division support

The new offensive was short-lived. Although little opposition developed, Chinese and North Korean elements harassed the right flank resulting in the loss of most of the Battalion reconnaissance section. Far to the right the Chinese hordes broke through on November 26, again forcing rapid withdrawal of the Division to prevent entrapment. The next few days involved almost daily movement with the Battalion keeping the roads open and supporting the delaying tactics. The rear echelon of Battalion Headquarters moved successively to Anju on November 28, Sukchon on November 29, and Pyongyang on November 30. Battalion Headquarters and H/S Company pulled back to Pakchon on November 27 and then to Tongnam-dong on the 28th, and to Anju on the 29th. On November 30 moves were made to Sunchon and then to Kangdong as the Division, in Army reserve, prepared to protect the fluid right flank. Company C was kept with Battalion headquarters for engineer work on the main route which included rebuilding a bridge blown by guerrillas behind our lines near Sukchon. Company A, supporting the 19th infantry in its withdrawal made preparations on November 30 to get the Division across the Taedong River to its assigned area at Kangdong. Company B remained in support of the 21st Infantry, which initially covered the withdrawal over the Taeryong river at Pakchon and then moved with the Division to Sunchon and Kangdong. Company D was attached to the 5th RCT, which was directed to secure the bridges over the Chongchon River in the Anju area until all friendly elements were south of the river. On November 30, all elements having withdrawn, Company D demolished the two wooden trestle bridges and moved back to Sukchon.

Morale and efficiency remained high during this withdrawal despite hard work and long night moves in zero weather. Shoe pacs and more complete winter clothing finally

arrived and losses were low as compared to the lonely Taejon days in July. The 3rd Engineers in the short period of a month had run the gamut of both military and engineering problems; rapid pursuit with strenuous road repair; withdrawal and stubborn defense with infantry action, mine laying and wire obstacles; deliberate attack in expansion of a bridgehead with miles of new roads through the mountains; a major bridge project; again the advance; and finally a rapid withdrawal with delaying action. The lessons learned and the ability for organization and hard work paid off with missions accomplished in spite of zero weather, enemy action, adverse terrain, and lack of adequate supply and maintenance support.

December 1950

During December the 24th Infantry Division continued the withdrawal and defense necessitated by the all-out attack of the Chinese communist forces. The 3rd Engineers were occupied with supporting missions of extensive reconnaissance, preparation of defensive positions, and improvement of the completely inadequate road nets in extreme weather and rugged terrain.



South Korean troops withdraw over bridges on the Taedong River at Pyongyang. Engineers subsequently destroyed these bridges

On December 1, the Division had moved south to the vicinity of Kangdong east of Pyongyang. All bridges over the Taedong in the vicinity had been destroyed so that movement into the assigned reserve area could not be completed. Immediate ground and air reconnaissance was instituted and the most likely ford was selected. Companies A, B, and C with all heavy equipment available immediately began building the ford and access roads on either side of the river to allow passage of the Division. Company D had just completed destruction of the bridge across the Chongchon River in the vicinity of Sinanju and was en route back to the Division area with the 5th RCT.

The Division again received orders on December 2 to move south, this time to take up defensive positions in the vicinity of Yulli. Battalion Headquarters and Company C moved to Pyongyang that evening and continued to the new area the following day. The other letter companies moved with the infantry that they were supporting. Battalion S4 was directed to move to the vicinity of Napchongjong on the Army main supply route and rail line and to put all heavy equipment not in good operating condition on railroad cars at Pyongyang for movement to an engineer maintenance unit near Seoul. In the rapid evacuation of Pyongyang sufficient engines were not available to handle all personnel and equipment. Two D-7 dozers, two graders, three 5 or 6-ton prime movers, one air compressor, and two 20-ton semi-trailers were destroyed. This, combined with the hysterical burning by other units of equipment stopped alongside of the road greatly reduced Battalion capacity at a time when an all-out effort was vital.

In the Yulli area the Battalion assisted in preparing positions, built two airstrips, and improved a very poor road net to a point where it carried three divisions and all of the IX Corps troops. A platoon of Company A moved to Pyongyang with a battalion of the 19th Infantry. On withdrawal of all our forces from north of the Taedong River, this platoon destroyed the two bridges east of Pyongyang by demolition and burning.

Extensive aerial reconnaissance by the Battalion commander and assistant operations officer disclosed that the area through which the Division was ordered to withdraw was occupied by large guerrilla forces and that all roads in the area were blocked by craters, blown bridges, antitank ditches, railroad rails, and other newly constructed and defended obstacles. As a result, orders were changed during the night and on the following day the entire battalion moved via Sibyon-ni and Kaesong south of the 38th Parallel to Uijongbu, about 15 miles north of Seoul.

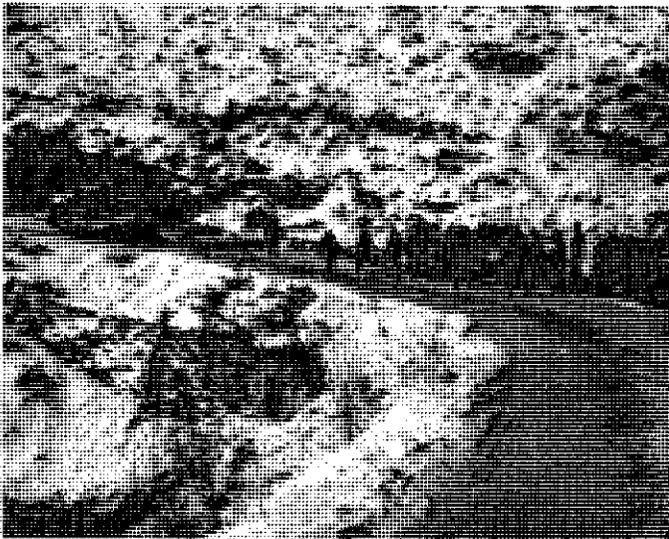
In this new area immediate work was instituted by the entire Battalion on the road net to the north where the infantry advanced against the North Korean forces. As pressure increased, defensive positions were organized in the vicinity of the 38th Parallel. The engineers constructed wire obstacles, mine fields, and access trails for the infantry. Detailed withdrawal plans were made and new roads were opened so the Division could withdraw from Uijongbu to Seoul. Company D particularly became involved with a road-building program and improved to all purpose classification a trail from Uijongbu to the M2 bridge over the Han river east of Seoul.



Engineers prepare timber bridge for destruction.

The next position of the Division was to defend south of the Han River east of Seoul. Ground and air reconnaissance disclosed that the area was mountainous and completely devoid of roads. Companies B and C were sent to the area to start immediate construction of roads farther forward. First priority was given to improvement of trails so that the artillery could be moved into supporting positions; and second to the construction of roads farther forward to supply the infantry. This situation, where elements of the Battalion were working nearly 100 miles apart, made control more difficult and emphasized the need for a return to the pre-World War II engineer regimental organization. To afford some control the Battalion executive officer was sent south to co-ordinate the two companies and was based with the Battalion supply echelon at Ichon.

Company A remained near the 38th Parallel supporting the 19th and 21st Infantry and Company D continued to work on the road south of Uijongbu. Both companies after extensive reconnaissance prepared demolition of all places where obstacles could be efficiently produced. Plans were co-ordinated with IX Corps Engineers, 27th British Commonwealth Brigade, and Company D for engineer work in the proposed bridgehead area east of Seoul and for the demolition of bridges in the area. On December 23 the principal mission of the Battalion shifted to the area south of the Han. Battalion Headquarters moved to Konjiam-ni on this date to co-ordinate and supervise Companies B and C. Company B improved the road from Ichon northeast to Chonyang then pushed new roads up streambeds to the north toward Yangpyong. Company C working from the left flank, extended roads from Kyongan-ni to the east and started construction of several miles of new roads over a mountain pass. This operation illustrated the need for more organizational heavy equipment. The number of dozers authorized was completely inadequate. Fortunately, we were able to obtain two or three dozers each day from the 8th Engineer Combat Battalion of the 1st Cavalry Division, which was nearby.



Engineers work to turn mountain paths and trails into roads.

On December 28 the decision was made to defend an area around Seoul. The sector assigned the 24th Division was a quadrant about 10 miles from Seoul extending from the Han River to the west of Uijongbu. All other work was abandoned except for Company A's initial support of the front-line units. The entire Battalion then was assembled in the northeast outskirts of Seoul to organize the new defensive positions. The Division area was split into four regimental sectors: the attached 27th British Commonwealth Brigade was to be in reserve near Seoul; and the attached 7th Cavalry occupied the south sector. Companies A, B, and D were assigned to organize the defensive areas of the 19th, 21st, and 5th Infantry sectors, respectively. Company C was assigned to support the 7th

Cavalry until the arrival of Company B, 8th Engineers, with the additional mission of constructing roads in the area behind the 19th Infantry sector. The 19th Infantry had no roads in its mountainous area except for the road along its front. Companies A and C improved foot and cart trails through streambeds and over the mountains until all portions of the area had near access for 2 ½-ton trucks. The companies immediately began to organize their areas into the most completely deliberate defensive positions of the war up to that time. Civilian labor from Seoul was put to work by the engineers. Foxholes and emplacements were dug in frozen ground, and the entire front was covered by banks of barbed wire, antipersonnel and antitank mine fields, and trip flares. The year ended at the height of this activity as positions were being prepared for the infantry to use a few days later.

January 1951

There was no time for celebration on New Years Day 1951. The 24th Division was under heavy attack along the 38th Parallel north of Uijongbu and on this date started a withdrawal towards the defensive positions north and east of Seoul. The withdrawal action was covered by teams from Companies A and D executing previously planned and prepared demolition obstacles along possible routes of attack toward the new positions.

On January 1 and 2, the 3rd Engineers was at the height of its activity in preparing defensive positions for the Division around Seoul. Approximately five thousand civilian laborers from Seoul had been organized to assist in the preparation of the positions. Companies A, B, and D, of the 3rd, and Company B of the 8th engineers prepared the positions for the 19th, 21st, and 5th Infantry and the 7th Cavalry RCTs, respectively. Company C, with all available heavy equipment, continued to improve roads in the outskirts of Seoul and to build new roads through the mountainous sector occupied by the 19th Infantry. Thousands of foxholes of all sizes, an extensive network of trenches, artillery positions, CPs, Ops, and hundreds of gun emplacements were dug. Nine thousand yards of double-apron fence and 1,000 yards of triple concertina were constructed and three thousand antitank and antipersonnel mines were laid. An attempt was made to co-ordinate the location of all emplacements and obstacles with the infantry without complete success. The 19th and 21st Infantry were under heavy pressure along the 38th Parallel during the planning stages, and found it difficult to send reconnaissance parties to the rear to work with the engineers in laying out defensive positions. The 5th Infantry and the 7th Cavalry RCT, on the other hand, were in reserve and located near their defensive

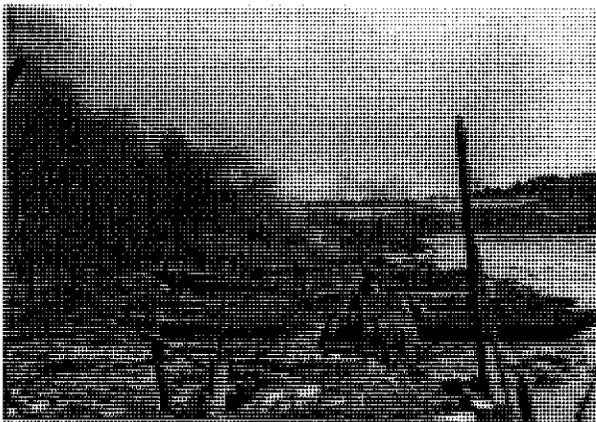


3rd Engineer plants defensive mine.

positions. These units worked closely with the engineers and assisted materially not only in the planning but in the execution of the defensive works. Need for closer coordination was felt. In several cases machine-gun positions were moved after final protective wire had been constructed, and other positions laid out by engineers were abandoned by the infantry for higher ground, relegating tactical wire to little value except for pasture fence.

The Chinese communist forces, following through rapidly after the attack on New Year's, were moving on the new positions in force early on January 3. The 21st Infantry on the north received constant pressure during the day and the 19th Infantry positions came under heavy attack starting soon after midnight. In spite of the attack against the 19th Infantry, Company A continued to work in front of the infantry front lines on obstacles in areas that were not under heavy attack, and Company C continued vital road work within a few hundred yards of the fierce combat.

The 19th Infantry, which had many casualties two days before when it received the force of the main Chinese attack along the 38th Parallel, soon became critically involved and at 10 a.m. the 3rd Engineers was directed to assemble in the vicinity of Kandong prepared to fight as infantry in the 19th Infantry sector. The companies were immediately alerted and directed to organize as infantry, sending kitchens, excess vehicles, and equipment to the Battalion Headquarters area. After visiting the 19th Infantry CP, the Battalion Commander directed Company A to move at 12:30 p.m. to positions on the right flank of the 19th Infantry. They were to be followed immediately by Company D. Before these positions could be occupied, however, the order was rescinded and the Division was ordered to withdraw south of the Han River. The defensive positions organized by the Battalion were not fully tested. Since the entire Seoul position was being outflanked to the east, both the I Corps and IX Corps were forced to pull back.



Float bridge over the Han River destroyed by fire.

immediately east of Seoul, prepared to destroy all bridges in the area. Corps engineer units were prepared for this mission, however, and Company C destroyed boats on the south bank of the Han River in the Division zone and moved to the new CP location in

During the night of January 3-4, the 24th Division withdrew south of the Han River. Company A supported the withdrawal of the 19th Infantry. Company B supported the withdrawal of the 21st Infantry, destroying all boats north of the Han River in the Division sector, and moved to an area immediately south of the Han to support the 21st Infantry in a blocking mission. Immediately upon receipt of the movement orders, Company C was dispatched to the M2 bridge site

the vicinity of Naegon-ni. Company D supported the withdrawal of the 5th Infantry and then covered the withdrawal of the 27th British Brigade bridgehead force by executing demolitions in the bridgehead area.

Just prior to the withdrawal, additional fortification supplies had been delivered. Battalion heavy equipment was walked across the river and to the south while all available 20-ton trailers were loaded with fortification material and hand tools in the forward areas. Although the dozers experienced some difficulty, some even requiring welding jobs almost in the face of the enemy, all equipment and supplies were safely evacuated across the Han, some of the heavy equipment being the last vehicles to cross. The calculated risk paid off, for damages to the heavy equipment were largely superficial and readily repaired and the fortifications materials brought back were the only supplies available for fortifying the new positions.

Upon completion of the withdrawal, the 24th Division occupied defensive positions in the general vicinity of Changhowon-ni and the following period was spent primarily in fortifying these positions and in building and improving access roads. Companies A, D, and C supported the front line infantry units, the 19th and 5th Regiments, and the 27th British Commonwealth Brigade, respectively. Company B remained in general support. The fortification materials brought back from the northern positions were used mainly in the 19th and 5th Infantry sectors. All available mines were installed after which substitutes were improvised. Grenades were used for antipersonnel mines and spikes were taped to blocks of TNT. Company A installed 2,750 yards of single-apron fence, 1,700 yards of double-apron fence and laid 1,021 antipersonnel and 185 antitank mines in the 19th Infantry sector. This job was much more difficult than normal because almost the entire 19th Infantry front was inaccessible by road, and supplies had to be hand carried over steep mountain trails. Company D installed 3,210 yards of single apron fence, 6,374 yards of double-apron fence and laid 996 antipersonnel mines and 192 anti tank mines in the 5th Infantry sector. The most difficult job, initially allotted to Company C, was construction of an access road into the British area. A sudden unseasonable thaw completely wiped out the first road constructed and a jeep trail was built in another location. Company B was used initially to improve a narrow cliff-side road from the 19th Infantry area along the Han River to the vicinity of Chungju.

During this period it was thought that the Chinese would pursue rapidly and that the new line would be engaged and probably outflanked. As a result, it was directed that our supply and administrative installations be moved far to the rear. The Battalion supply, maintenance, and personnel sections were moved to the vicinity of Sangju, approximately 70 miles from Battalion CP. Furthermore, sources of supplies were much farther to the rear, Division Ordnance having moved to Kyongsan and Army Engineer Supply to Pusan. The closest rail connections to the Division area were Sangju in the south and Chongju to the west. The resulting logistic situation was most unsatisfactory. With poor roads and long truck haul distances, many types of supplies were virtually nonexistent and maintenance deteriorated rapidly. At times it was impossible for the engineer companies to work at even a small percentage of maximum efficiency because of lack of gasoline; vitally needed heavy equipment stood still without diesel fuel.

In view of expected further withdrawals, the unsatisfactory road conditions to the rear, and a critical shortage of supporting engineer troops, Company B was moved, on January 9, to Poun to improve a section of the very poor road allocated to the Division for further withdrawal. Arrangements were made with Corps and the 8th Engineers for the

improvement of other portions of the road.

At the request of the British, Company C, less one platoon, also moved back to construct access roads into the completely roadless sector assigned to the 27th British Commonwealth Brigade on the next defensive line. One platoon of Company C



Korean laborers use A-frames to haul rock for a revetment. Korean labor was critical in the road construction and maintenance effort due to the shortage of engineers and equipment.

remained in the forward British area constructing and maintaining new trails and roads and assisting with fortification work.

As the fortification supplies on hand dwindled, Company A and Company D were partially relieved for vital road work. These two companies maintained the deteriorating road net in the Division area. Since the road from the 19th Infantry area toward Chungju was in poor condition and on an exposed flank along the Han River, a new road was constructed over two mountain ranges using the approximate alignment of an old Korean cart trail in the right center of the Division area for the use of the 19th and 5th Infantry.

A comprehensive demolition plan for the entire Division area was prepared. The area was divided between Companies A and D and at each location holes were dug for explosives and all charges were computed. On direction of Corps, Company D blew a tunnel and two railroad bridges on the Division's west flank. Extensive aerial and ground reconnaissance was made in the guerrilla-infested areas to the rear, particular attention being paid to the area north of Kumchon, which had been designated as the next probably defensive position for the Division. Battalion reconnaissance teams and working parties from both Companies B and C were fire upon on numerous occasions.

In the meantime, the enemy forces did not follow up as expected. The only enemy contacts along the front lines were small reconnaissance patrols. Gradually our combat patrols were pushed farther to the front and toward the end of the period the entire Division pushed forward in a limited offensive action. Company D was moved forward on January 29 to Yoju to rebuild a bridge across the Han River that had been partially demolished by withdrawing ROK forces. Company A moved up in support of the 19th I

Infantry advance. Company B was moved forward to Yoju to support the 21st Infantry and took over responsibilities in the area releasing Company D to support the 5th Infantry. Company C was moved forward with Battalion Headquarters to the vicinity of Ichon for general support purposes on January 30. At the end of the period the Battalion was confronted with its major road construction problem of the war. The Division was to advance through an area without roads. Initially jeep trails were cut behind the advancing infantry and plans were made for the construction of roads through the mountainous area to the north.

February 1951

The month of February was primarily a period of road building for the 3rd Engineers. During the month the Division pushed forward from a line generally north of Ichon to the Han River. Except for lateral and diagonal roads in the rear, there were no roads to the



Engineers clear a mountain road blocked by a landslide.

Division forward area. More than ever the operations of the Division were dependent upon the ability and work capacity of the engineers. Again, as in all previous months, the inadequacy of the present organization and equipment tables was demonstrated. The lack of roads was aggravated by rice paddies or rough mountainous terrain and the frozen unworkable ground, which became a quagmire under heavy traffic in the afternoon sun. To assist in the work, IX Corps procured 750 Korean

laborers who were divided among the companies and proved invaluable in the road-building tasks. Experience soon showed that these workers were of little value at technical tasks such as bridge or culvert construction but their accomplishments as common laborers were prodigious when restricted to digging ditches, loading trucks, or filling sand bags.

The actual advance of the Division occurred during the period February 1 to 18. The battalion had already moved along to the vicinity of Ichon just prior to February 1. With Battalion Headquarters were Companies C and D.

Company A, which had moved to a front-line position in the vicinity of Yongbang-ni, opened the road northwest from Ichon and supported the 19th Infantry. Some work had been done on this road during December but the road was a poor one at best: narrow with

Company D worked in close support of the 5th Infantry on the left. It opened several trails north of Ichon for the infantry battalions, for supplies and evacuation. After the 5th advanced, these trails were abandoned and new trails opened farther forward. To avoid going outside our sector on the exposed left flank, Company D built a 2 ½-ton road over a low mountain range, utilizing Korean cart and foot trails in part. This road connected with the forward east-west trail across the Division zone. They then improved this trail to a point midway in the Division sector, joining up with Company A.

Company C remained in general support during the first half of the month, clearing the roads in the vicinity of Ichon and rebuilding the division airstrip. The airstrip, in the river bed, was virtually unusable from melting snow and ice. Since it was vitally needed, Company C, augmented by all but the minimum essential Battalion Headquarters personnel, worked on the airstrip for a continuous period of 24 hours, ditching the frozen ground and surfacing it with sand and cinders. This work was so successful that with only minor maintenance, the strip withstood heavy traffic and all further thaws and heavy rains and was the only strip in a large area that was at all times usable. When Company B moved forward, Company C took over and improved the Ichon-Yoju road and the north-south road through Songchon. The improvement of these roads was a heart-breaking task for they had originally been constructed, without base, upon soggy ground without adequate drainage and became deeply rutted by the heavy traffic over the thawing ground.

During this early period the Division was advancing over a wide front against heavy opposition. Northeast was a large enemy build-up which culminated in their unsuccessful drive to the east of the Division area. The protection of the right flank was vital to the Division. The 19th Infantry took heavy casualties as it advanced through the mountains against stubborn Chinese resistance. The regiment was greatly over-extended and rapidly used up all of its reserve. Counterattacks by the Chinese were a nightly occurrence. On the evening of February 8, the Battalion was directed to assemble two companies in the 19th area as regimental reserve. Companies A and B, being the closest at hand, were designated. During the night a heavy snow-fall made all roads slippery and hazardous, so the companies, in addition to acting as infantry reserve, continued to work throughout the night. Company A on February 8 and 9 worked 31 consecutive hours without rest, keeping the treacherous roads open and being ready at all times to move immediately into the battle. Although the importance of the road work was recognized, it was again necessary, on the 10th, to assemble Companies B and D and, on the 11th, Companies A and C in the forward areas of the 19th Infantry as regimental reserve. The effect of these infantry missions became apparent at once in rapid road deterioration and on February 12 the Division Commander agreed to require no longer the assembly in the 19th forward area, providing the entire Battalion was prepared to assemble and move as infantry on one-hour notice. This released the companies for more effective accomplishment of their engineer tasks without the tiring moves at night into infantry assembly areas.

On February 18, the stubborn enemy resistance was broken by hard, continuous pounding, and the area south of the Han River in the Division zone was cleared. Detailed air and ground reconnaissance was made to try to find means of communication between the forward infantry elements along the Han and the rear areas. Attempts to build a road over a hill in the center of the Division sector were abandoned when the magnitude of the task was discovered and work was concentrated on the flanks of the 5th Infantry, which occupied the sector west of the Han. Company D was assigned a road through the 25th Division sector and over a pass to the 5th Infantry sector from the west. Company C was assigned the mission of constructing a road on the right flank of the 5th, generally through the hills overlooking the Han. Company B supported the 21st Infantry east of the Han and improved the ford north of Chonyang. Company A opened trails in the center of the Division area so artillery could move into position.

On February 20 heavy rains stopped all movement and demanded all-out engineer effort to re-open the roads. The extensive drainage work which had already been done was successful in minimizing the damage, but the heavy rain on frozen ground resulting in complete run-off, added to ground thaw and broke up the river ice. The most serious damage was the washing out of two by-passes in the vicinity of Ichon. Company A was



Floods were a constant threat to bridges and fords throughout the Korean War.

moved back to repair this damage and improve the Ichon-Chonyang road. The by-pass northeast of Ichon was completely washed out although 2 ½-ton trucks and tanks could use the ford with difficulty provided tow vehicles were available. A causeway of large rock and sand bags was constructed, cutting the depth of the ford; then the stream was channelized and a small gap spanned by M2 treadway. The treadway was subsequently replaced by culverts made from oil drums. South of Ichon the by-pass was washed out during the night so that it was impassable for any type of vehicle. Headquarters and Service Company shored up the damaged concrete bridge and rebuilt the approaches so that traffic was flowing by early morning. Use of this bridge, however, was extremely hazardous and from an engineering standpoint it should not have carried any vehicles. This sector of road was in the Corps zone of responsibility but Corps was unable, because of other flood damage, to make any repairs on this by-pass. Company A reconstructed part of the old causeway and built a low-level bridge over the confined stream using I-beams taken from another destroyed bridge in the vicinity.

Company B repaired the worst of the storm damage on the east side of the Han but had to concentrate its efforts on the poor stretch of road between Chonyang and the ford.

When the Han River rose so that the ford became impassable Company B constructed two infantry assault rafts at Chonyang and operated then with the assistance of the bridge platoon, for the remainder of the month. Company C constructed a new road north from the ford to replace the old one along the beach which had been inundated by the river and against great odds kept open the road into the artillery area. The size of the task was too great for the engineers available; hence the Division commander authorized the use of the ammunition and pioneer platoons of the 19th Infantry, which was in reserve, to assist. These troops, working for five days, guided by officers from Headquarters and Service Company did an excellent job in improving the main road in the vicinity of Chonyang.

Company A spent the remainder of the month improving the road from Ichon to Chonyang. It instituted an extensive drainage program and widened the narrow road to two-way capacity except at a few critical points. The battle with the initial frost action was successful when Company A used bricks from demolished buildings in Ichon to rebuild the road foundation.

Company D moved forward and improved the mountain road into the area to the left of the 5th Infantry sector. It also constructed new trails over hills and rice paddy dikes. It is hard to imagine a poorer site for a road than the thawing, soggy ground that confronted Company D. Long stretches of corduroy were necessary to keep the road open. Company C constructed a new road over the hills immediately west of the Han into the area of the 1st Battalion, 5th Infantry and was publicly complemented by the Division Commander.

In drawing lessons from the road construction experience of the 3rd Engineers during the month it should be pointed out that the fundamental principles of road construction, as outlined in *FM 5-10*, are sound and that they were used to good effect. Adequate drainage is particularly important. The specifications for combat roads, however, were virtually impossible of attainment with the means at hand and the time available. In Korea, even the main highways could not be brought up to the standards prescribed for combat roads. Existing trails were used to a maximum, except where new construction was easier than trying to improve old trails. Simplicity was the keynote. Trails at first were one-way, except that turnouts were put in as often as practicable. Sound organization was required because only sufficient troops and equipment were available to do the minimum. Economy of time, material, transportation, and labor was forced upon the Battalion. The infantry and artillery are always anxious to use the roads before they are constructed. Material and supplies from the rear were unavailable; local materials and improvisations were used. Transportation was inadequate. Available dump trucks were in continuous use hauling rock at the point where the road was currently about to disappear. Although the troops were augmented by Korean laborers, the tasks necessary were far in excess of the manpower available.

The all-out effort took its toll, particularly on transportation and equipment. Old trucks cannot haul full loads of rock all day, day after day, in deep mud, and with axles dragging and up steep slopes, without some breakdown. Maintenance support from the rear was

poor. The Battalion made repairs far beyond its authorized capacity. Trucks evacuated remained deadlined sometimes for months awaiting parts. During the early part of the period, the Battalion maintenance section fortunately moved to a central location with Division Ordnance, and a working arrangement was established whereby ordnance supervised the installation of major assembly parts by the Battalion. This saved approximately twenty-seven vehicles from being evacuated to the next echelon for repair. Such an arrangement worked successfully in an emergency but is normally beyond the capacity of a battalion maintenance section.

Again the inadequacy of the current tables of organization and equipment was demonstrated. Admittedly the backing up from Corps and Army was not in accordance with current doctrine. Even with normal Corps support, however, the task required on the organic division engineers is so great as to require as a minimum, a regiment with two battalions of three companies, each, and a material increase in heavy equipment.

Summarizing statistically the 3rd Battalion accomplished the following work during February 1951:

New roads constructed.....	34 miles
Road or trails improved or reconstructed.....	84 miles
Drainage ditches dug.....	36,434 yards
Sand and gravel moved.....	16,800 cubic yards
Sand or rice bags filled.....	10,866
French drains constructed.....	39
Fords improved or constructed.....	29
Bridges built.....	4
Culverts built.....	39

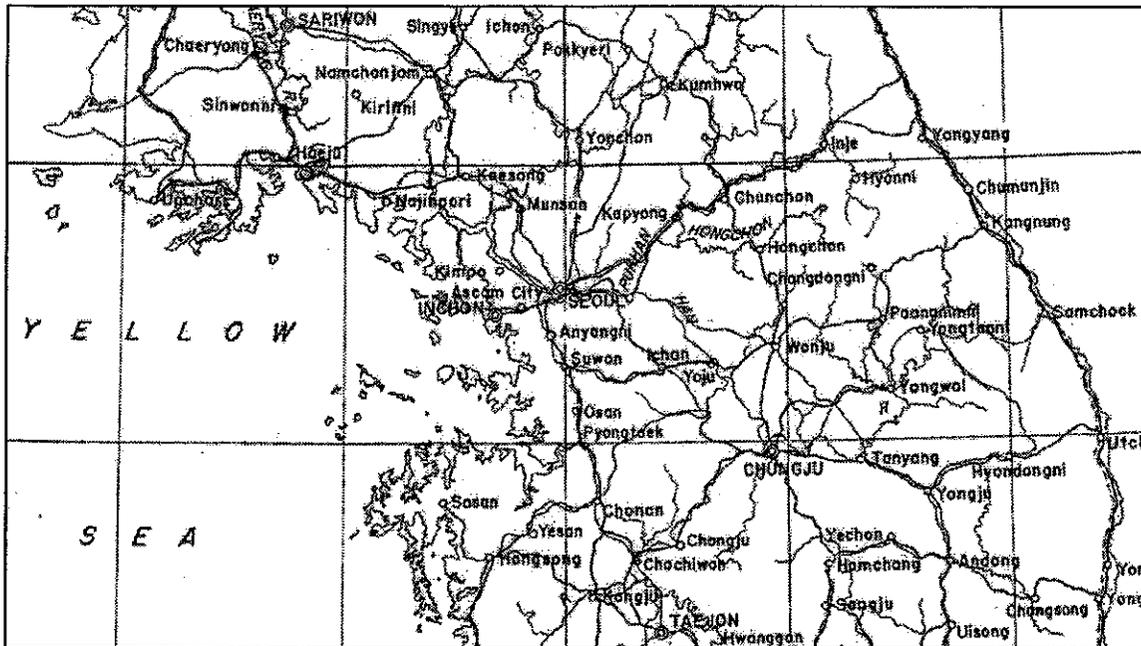
Part III

During March the 24th Infantry Division advanced steadily against light to heavy resistance from its line behind and astride the Han River in the vicinity of Yangpyong northward to the 38th Parallel over some of Korea's roughest terrain. The 3rd Engineer Combat Battalion, adopting the slogan, "Where danger goes dynamite makes the way," exceeded its records of all previous months in the quality and quantity of work performed. Road and trail construction and improvement was again the primary task.

Operations during March 1951

On March 1 the battalion CP was at Ichon. Company A continued improvements to the Division positions between Ichon and Chonyang, widening the road for two-way traffic and improving drainage. Company B, supporting the 21st Infantry, continued operation of the ferry at Chonyang and repair and improvement of the Chonyang-

Yangpyong road. Company C improved the road it had constructed over the hills west of the Han to the forward positions of the 1st Battalion, 5th Infantry, to allow movement of artillery forward. Company D continued construction and improvement of roads on the left flank of the 5th Infantry.



3rd Engineers area of operations, March- April 1951

During the first week in March, preparations were made to continue the advance. The 21st Infantry was to attack north and the 19th Infantry northwest from Yangpyong north of the Han to uncover the positions of the 5th Infantry. On March 3, Company B moved west of the Han in order to concentrate its efforts in the 21st Infantry area and started reconnaissance and trail construction behind the infantry combat patrols. On March 5, Corps engineers completed an M2 bridge at Chonyang and relieved the Division of Chonyang-Ichon road. This allowed Company A to move east of the river and improve roads in the forward areas where the 19th would operate. Company C moved east of the Han on March 7 and commenced improvement of the Division main supply road from Chonyang to Yangpyong.

On March 7 the 19th and 21st Infantry jumped off on Operation RIPPER against strong Chinese resistance, and after destroying the elements opposing them advanced rapidly. There were no roads forward from the principal east-west road through Yangpyong. Muddy cart trails were opened and extended to the heads of the valleys to allow artillery into forward supporting positions and on into the mountains to afford the infantry jeep supply as far as possible. Lack of sufficient engineer support prevented the extension of these trails. The 21st Infantry front-line troops were without even jeeps for a period of two weeks during which they had to rely upon native porters for supply. Company A opened the road west from Yangpyong by clearing mines, filling craters, and constructing

bridges, including two short M2 treadway spans, and a 50-foot Bailey bridge at Ok Chon-ni. It then concentrated its effort behind the 19th Infantry, constructing a trail 5 miles north from Ok Chon-ni over the first mountain pass and opening a jeep trail to the northeast for the 2nd Battalion, 21st Infantry. Company B opened a trail north from Hajin to supply the infantry in an attack and then opened another cart trail from Maryong-ni, in order to push supplies further up. The trails were improved from rice paddy morasses so that they could carry both light and medium artillery as well as the infantry supply



3rd Engineer bulldozer sunk in soft soil during road construction.

vehicles. Company C vastly improved the Chonyang-Yangpyong road by widening and ditching. The spring thaw came in full force requiring a complete rebuilding of many stretches of this basically poor road. As the attack progressed, the 5th Infantry, south of the Han, was uncovered and moved to reserve position. This allowed Company D to leave the vital road on the left flank and to take over the road west from Yangpyong. During the attack, much of the forward

area work was accomplished under small arms and at times heavy 150mm artillery fire, but the only casualties were from an antitank mine north of Yangpyong.

From a logistical standpoint the Division front at that time was a poor position, with no roads into the forward area. On March 14 the Division obtained authority to continue the advance to the Chungpyong Reservoir using the road along the east bank of the Pukhan River. Company D moved to make passable a narrow defile road cut into the cliffs overhanging the Pukhan and on March 15 Companies A and B also swung to the left flank to extend this road and open the trails to the northeast into our area. The Chinese had started demolition work on the road west from Yangpyong. Company D was assigned road responsibility from the confluence of the Pukhan and Han Rivers to Oesnyori. Company A extended north to Oesuiim-ni, and Company B opened trails to the east. The major job for Company A was the repair of a large crater where the roadway had been blown away for a distance of 40 feet, a sheer drop of 70 feet into the river. The soil was a mixture of rock and sand, with no means of support below the crater. It was necessary to blast and cut with dozers into the hillside to provide a solid footing and then bridge the gap with M2 treadway. Company B had the heartbreaking task of opening and trying to keep passable a quagmire road over the hills into the 21st Infantry area that connected with a good but badly cratered road running to the dam and the reservoir. This road, kept open with difficulty for jeeps only, gave the 21st their first vehicular supply since the operation began.

The Division contemplated a further advance to the north necessitating a crossing of the Pukhan River. On March 15 a reconnaissance for a bridge site disclosed that a road could be constructed without too much difficulty from a point near Oesuyori north along the west bank of the Pukhan River to join the main Seoul-Changgong-ni road. Although much less bridging would have been necessary farther north, this stretch of road was constructed on sand at a critical angle overlooking the river and was subject to slide at any moment. It was necessary to have minimum traffic on this road and to close it altogether as soon as practicable. Company C was moved on March 17 west of the Pukhan River to construct the new road. All equipment that could be spared was given to Company C and the road rapidly took form. From the M2 bridge, a sidehill cut extended north for about a mile. The road then extended on the high rocky soil above the river to join the main highway. The new road was opened for traffic early on March 22. It was 3 miles long, approximately 40 feet wide and was thoroughly ditched throughout with adequate cross drainage, including two timber trestle bridges. The success of the construction was assured when it held up under the combination of heavy rains and continuous convoy traffic.

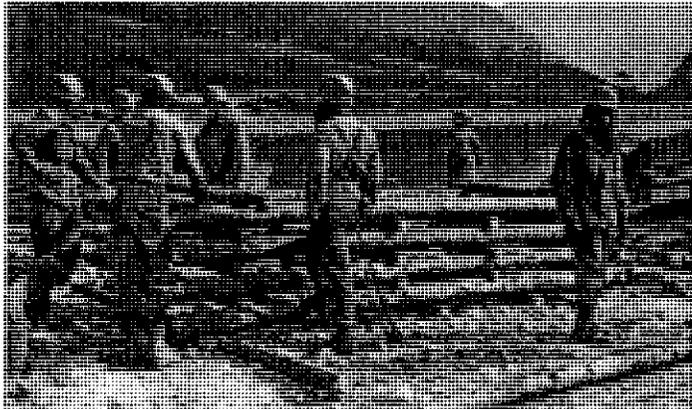
In the meantime, the 5th Infantry, which had been in reserve, was moved west of the Pukhan and authority was given on March 18 to continue the advance. The road south of Changgong-ni had been badly damaged by the Chinese. Company A, working through the night of March 18-19 with the leading elements of the 5th Infantry, opened the road for all types of vehicles by 5:40 a.m. March 19, repairing three bridges, constructing three bypasses, and repairing several large craters. Company B relieved Company A on this stretch of road on the following day, and Company A moved forward to support the 19th Infantry opening the main road from Changgong-ni to Kapyong and the trails to the northwest. On March 21 the entire 74th Engineer Combat Battalion took over the road from Yangpyong to the M2 bridge, which Company D had opened and maintained, allowing Company D to move forward to provide close support to the 5th Infantry, opening the road northwest from Changgong-ni.

The period March 22-28 was spent in improvement and construction of roads and trails with emphasis on bridging since rains were increasing in frequency and duration. Materials were not available from higher headquarters. This led to an inefficient and somewhat incongruous situation. The bridge across the Chojongchon River, north of Changgong-ni was an example. The bill



3rd Engineer road work in 1951

of materials was allocated by Corps, but the three Brockways, one 20-ton trailer, and a bolster truck returned empty after visiting supply points for 48 hours. In the meantime, Company B attempted to bridge the two 60-foot gaps in the long bridge since the very



Engineers build log cribs to use as supports for a bridge over the Pukhan.

poor ford could not be kept passable for all vehicles during heavy rains. Timber and rock cribs were built and such poor logs as could be found were used as stringers, bridging one gap for a capacity of approximately 12 tons. Sufficient steel I-beams were found to bridge the other gap to bring this second span to a class 50 rating. The necessity for strict traffic control was made apparent during this period. A

treadway span had been placed across a small gap on a weakened bridge and specific instructions issued that all vehicles heavier than 2 ½-ton would use a bypass. Some tank and self-propelled artillery commanders, however, disregarded the bridge guards and crossed, so weakening the structure that it had to be abandoned and the treadway transferred to a much longer one-way bypass, entailing thereafter considerable traffic delay.

On March 28 the attack again jumped off toward a line near the 38th Parallel. Company A remained on the right flank supporting the 21st Infantry that passed through the 19th Infantry. The 27th British Brigade returned to the Division and Company C moved to support the British north from Hyon-ni. Company D supported the 5th Infantry on the left, opening the road to Sopa and improving a cart trail north from Sopa to make it passable for Division traffic.

During the month of March, the Division advance was limited on few occasions by strong enemy action, and was always dependent upon the capacity of the engineers to open a minimum road network. Support from the over-extended Corps engineer group was almost completely lacking. Fortunately, the Battalion retained ROK soldiers and civilian laborers who became increasingly productive. The need for an organic engineer regiment in the division was again proven.

To slow the advance still further by decreasing the efficiency of the engineer effort, supply from normal sources was virtually non-existent. This was most keenly felt in bridge construction. Although continuous efforts were made through supply and command channels, bridging material was unavailable. Instead of quickly constructing a solid 50-ton bridge with squared timbers, the engineer troops frittered away valuable time and labor searching out poor logs, spent long hours chipping them into shape, and ended their long hard labor generally with a comparatively inadequate bridge.

During this period the Division had its first successful experience with searchlights. A platoon of the 56th Searchlight Company was attached on March 7 and supported the 19th Infantry during Operation RIPPER. Although skeptical at first, the 19th Infantry became enthusiastic about battlefield illumination. Searchlights were credited with stopping the enemy from his normal practice of night counterattacks. Later in the month, the five operational lights proved inadequate to cover the Division sector. From this one experience it would appear desirable to make a searchlight company an organic part of the divisional engineer element.

Summarizing statistically, the 3rd Engineer Combat Battalion accomplished the following work during March 1951:

New road construction.....	35 miles
Roads and trails improved.....	159 miles
Drainage ditches dug.....	88,775 yards
Sand and gravel moved.....	21,649 cubic yards
Sand and rice bags filled.....	57,267
French drains constructed.....	98
Bridges built.....	25
Culverts built.....	84

Road Building during April 1951

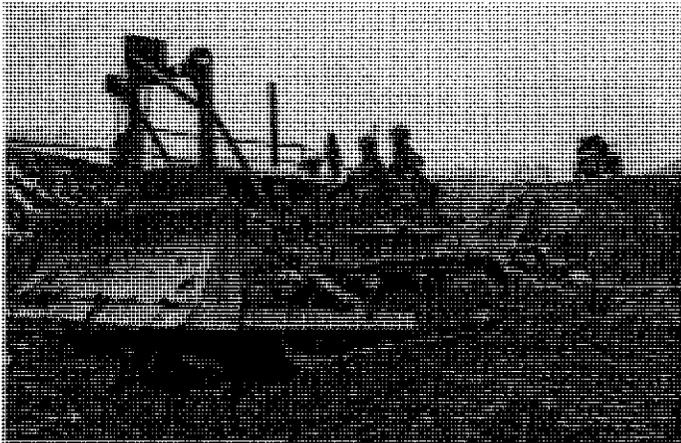
The road building program continued through the first half of April, with the 3rd Engineers constantly improving its technique and the quality of its work. The tactical situation, however, required a great variety of engineer activities. Mine detection and removal was a major problem. With the sudden, but long expected Chinese counteroffensive later in the month, the Battalion was again called upon to act as an infantry reserve, and demolition and emergency roadwork, together with the fortifications, became the primary missions.



Engineers from C Company, 3rd Engineers prepare demolitions to clear debris.

On April 1 the Division continued in the offense. Loss of the 27th British Brigade and the transfer of the Division from IX Corps to I Corps required a shift in battalion work assignments. Company D continued to support the 5th Infantry, opening up a cart trail north from Sopa to provide access into the area for the 5th Infantry and the remainder of the Division. Company A, which had been on the right flank support the 21st Infantry, continued to support the British during the changeover; then moved up behind Company D to take over the road net in the vicinity of Sopa. Company B was jumped forward to support the 21st infantry north from Hyon-ni. Company C maintained and improved the poor road from Changgong-ni forward to Sopa. Battalion Headquarters, at the time, was located immediately south of Hyon-ni

When the division transferred to I Corps on April 2, there was an immediate improvement in logistic and troop support due to a better road and rail net. Corps units took over the improvement of a part of the road south from Sopa. A dump truck platoon was attached to assist in the new road construction work. And engineer supplies began to flow again to the Division.



3rd Engineer bulldozer moves aside for road traffic.

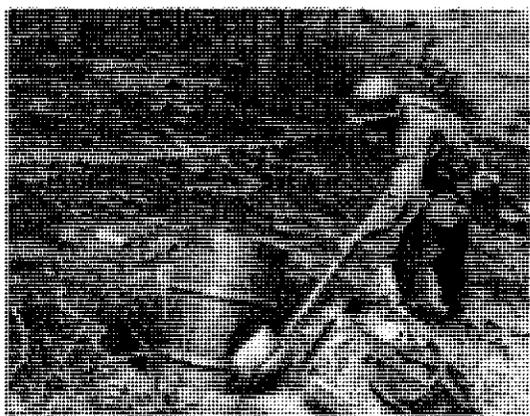
From Sopa north the only route available for the use of the Division was a quagmire cart trail through the hills and rice paddies. Company D worked day and night in order that the tanks and vehicles of the 5th Infantry could penetrate the area in the advance. Company A moved to the vicinity of Sopa late on April 1 and started improvement of the new road south from Sopa for approximately 10 miles and the new construction of the road

north from Sopa behind the pioneer work being accomplished by Company D. On April 4 the Battalion Headquarters moved to Pairi. Company C moved forward and took over new construction in the middle portion of the Sopa road and Company B abandoned the road north from Hyon-ni and started improvement of the road north from Pairi. This allowed Company D to concentrate on construction of a road northwest from Suim-ni to the Yongpyong-chon River behind the 5th Infantry. The bridge platoon from Headquarters and Service Company was also thrown into this all-out road construction effort and it opened a one-way loop from Pairi to the west and back to the new road about 4 miles to the south, so that Company C could construct its road without the distraction of traffic jams which the two-way traffic would involve. On April 10 the new road, constructed by Company C, was opened for two-way traffic, although improvement was continued for some time thereafter. In the construction of this road, equipment was used

to the maximum. The old trail was abandoned in most instances and the road was relocated to eliminate the curves and to put it on more solid ground. Where possible, dozers were used to make new sidehill cuts or to build a fill road using soil from adjoining fields. All available trucks in the battalion and the dump truck platoon worked with the heavy equipment 20 hours each day surfacing the new road. The result was a wide smooth, well drained, two-way highway and a monument to the diligent toil of the engineer soldiers and Korean laborers. Its use for the purpose of withdrawal later, during the enveloping action of the Chinese hordes was worth all the work expended.

During the action near the 38th Parallel some division casualties were caused by mines. The great majority of these mines were American M2 antipersonnel mines that had apparently been laid by ROK troops who had defended this sector during December. Mine field reports from Army had indicated no mines in this area, again illustrating the tremendous importance of proper accounting for mines and the proper reporting and marking of mine fields. The entire division became suddenly mine conscious. The engineers were constantly on call to locate and remove or destroy mine fields so that all elements of the Division could move into or through infested areas. The companies of the Battalion, unable to handle the volume of requests, conducted training for the infantry and artillery units so that they could use their own mine detecting equipment. Along with the Division, the Battalion also suffered mine casualties.

On April 10 the 19th Infantry relieved the 5th Infantry on the left to continue the advance to the north toward Kumhwa. The advance was slow and careful against stiffening Chinese resistance as we approached the heart of the enemy troops concentrating for their coming offensive. Company A moved with the advance of the 19th Infantry clearing mines and repairing the damage to the relatively good road in the left of the Division sector. Company B continued to support the advance of the 21st Infantry north of the 38th Parallel, where the road soon petered out to little more than a



3rd Engineer soldiers fills hole around drum of napalm.

trail. The 5th Infantry relieved the 21st Infantry on April 21, as the advance continued. Company D was moved forward to construct a new road over the mountains as the infantry advanced. Company B remained behind Company D to continue construction of that portion of the road that it had started.

In the meantime, Companies A and B, in addition to their road construction, had started some fortification and demolition work north of the 38th Parallel. Company C, in addition to its road work, had one platoon and most of its Koreans constructing fortifications, particularly barbed-wire obstacles in the vicinity of Sopa. Battalion Headquarters had moved, on April 17, north of the Yongpyong-Chon River behind the 19th Infantry. Company B of the 1092nd Engineer Combat

Battalion was attached on April 20 and its platoons were further attached to Companies A, B, and C for training purposes and to assist in the work. This company turned out to be a fine National Guard unit and did some excellent work. On several occasions large tank patrols were sent into enemy territory. Each patrol was accompanied by at least a squad of engineers, a tank dozer, and members of the Reconnaissance Section.

Combat Operations, April 22-30, 1951

On the evening of April 22 the Chinese counteroffensive struck in all its fury. Never did it penetrate the Division front lines, but because of deep penetrations on the flanks, the Division started a rapid withdrawal. As the 19th and 21st Infantry withdrew, the 5th Infantry took up blocking positions in their rear. The 3rd Engineers, less Company C, assembled in the vicinity of Hwahyon-ni as infantry reserve to act independently or as part of a tank-engineer team with the 6th Tank Battalion. Company B, 1092nd Engineers was reassembled as a company and given the mission of keeping the roads open to the south, but that evening they were recalled to their parent unit. On April 23 and 24 the surrounding hills were swarming with engineer soldiers brushing up on their infantry tactics in preparation for any eventuality. Company C, with all of the Battalion's Korean laborers, worked day and night to complete the fortifications along a line in the rear. On the evening of April 24, the 6th ROK Division, on the right, and the 25th Division of the left failed to come forward to the assigned limiting point to close the gap. The troops on the Division front continued their slaughter of thousands of Chinese, but during the night and early morning the Chinese started their envelopment of both flanks and the 5th Infantry became completely committed to blocking on both flanks. The order was finally given to withdraw on the morning of April 25. During this withdrawal, demolition teams from Companies B and C blew out cliff roads behind the last tanks, under heavy enemy fire and accounted for many Chinese casualties without harm to themselves. The 19th and 21st Infantry followed by the 3rd Engineers withdrew in good order over the road—now almost vital—which had been constructed only a few weeks before. A roadblock closed in immediately behind the 3rd Engineers and took a heavy toll of personnel and equipment in the 5th RCT. During the period the Battalion was prepared to move on numerous missions. They soon, however, became the only Division reserve and with the fluid situation could not be committed except as a last resort.

The 19th and 21st Infantry took up the newly prepared positions but the flanking movement through the 6th ROK Division sector had been so deep that it was necessary for the 21st Infantry to fight its way forward to the newly fortified line, which both regiments held without difficulty against heavy attacks. On April 25, Battalion CP, with Companies A and B moved to the vicinity of Changgong-ni. Company B was assigned to emergency repair and improvement of the road northwest of Sopa and Company A had the same mission on the road to the south along the Pukhan River. Companies C and D, with all the Korean laborers, were moved to the vicinity of the confluence of the Han and

Pukhan Rivers to start work on a line that extended in an arc a few miles north of the Han River. On April 26, Companies A and B did vital emergency work on their roads. As one example an M46 tank was stalled on a narrow defile road completely obstructing traffic and preventing movement after the withdrawal had been ordered. Company B was assembled rapidly on the spot and it constructed a new road around the tank with hand-placed rocks from the streambed far below, allowing the passage, with difficulty, of the M5 tractors towing the 155mm howitzers.

The Battalion Headquarters, under the Executive Officer, less a small command group, moved on April 26 to Ochon-ni south of the Han to control the work of Companies C and D, and Company B was moved to the vicinity of Oesuyo-ri to open the trails and start defensive work in the new 21st Infantry sector on another line.

As a result of further penetrations on the flank, the Division was ordered, on the morning of April 28, to withdraw to a new line immediately north of the Han River. Company A kept the roads open during the heavy rain and executed effective demolitions after the withdrawal. During the night of April 28, the 74th Engineers removed the M2 bridge across the Pukhan River behind a 5th Infantry covering force and the Division occupied the new defensive line north of the Han, with the 19th Infantry on the left, the 21st on the right, and the 5th in reserve. Company A was moved to the far left flank of the Division south of the Han to improve the defensive positions and prevent any enemy crossing in this area, and Company B was moved to the vicinity of the Battalion CP and later north of the Han behind the 21st Infantry.

During the remainder of the month, the fortification work, started by Companies C and D, was continued with Company B working on the left flank of the 21st Infantry with fortifications and improvement of trails and Company D working on the right flank reopening trails previously cut by the Battalion. Company C continued to work in the 19th Infantry sector. The Battalion Staff was occupied principally with co-ordinating the plans for the removal of the two M2 treadway bridges across the Han and Pukhan in the vicinity, and the removal of the covering force by assault boats and footbridge across the Han. The month closed with the Battalion working feverishly to improve the over-extended positions north of the Han so that the infantry could defend them; and prepared to evacuate the Division south of the Han if ordered.

The Battalion finally received a long overdue supply of medals and just prior to the first rotation, the Battalion Commander, at company formations, presented the various well-earned decorations. The Division Commander, on April 15, presented the Legion of Merit to the Battalion Commander, as recognition of work accomplished by the Battalion during the period July to November 1950

Summarizing statistically, the 3rd Engineers accomplished the following work during April 1951:

New road constructed.....	34 miles
Roads maintained.....	120 miles
Airstrips constructed.....	9
Rock and gravel hauled and spread.....	15,926 cubic yards
Drainage ditches dug.....	159,483 yards
Footbridge constructed.....	850 feet
Bridges constructed.....	9
Culverts constructed.....	151
Sandbags filled and used.....	9,400
Double-apron wire strung.....	19,900 yards
Mines, M2 laid.....	114
Mines, M3 laid.....	25
Enemy miles removed and destroyed.....	203
Demolitions utilized.....	5,341 pounds

This amount of work, all vital to the Division, could not have been accomplished without the assistance of the hundreds of Korean laborers employed or the heavily augmented heavy equipment section. A division must have a larger organic engineer organization or its communications are imperiled. Supporting engineer units cannot be properly directed, and they lack the divisional spirit so necessary in combat where success depends upon close co-ordination and top efficiency.

Source: *Military Engineer*, Vol XLIII, No. 293, pp. 101-107; Vol XLIV, No. 300, pp. 252-259; Vol XLIV, No. 301, pp. 356-361. Reprinted with permission of the Society of American Military Engineers. Pictures and maps replaced for clarity and for illustration.

1st Engineer Battalion Republic of Vietnam- 1967

Operations

The projects and operations for this period of time consisted of both base camp construction and combat support, with emphasis being placed on the maintenance of Highway 13 from Di An to An Loc and the removal of all the VC (Viet Cong) infested jungle immediately adjacent to the highway. The 1st Engineers have supported every Infantry company size, or larger, operation with demolition teams. In addition to providing regular demolition and mine clearing teams, the battalion was involved in performing such support operations as road clearing, airfield construction, road construction, Rome Plow operations (land clearing), and the providing of tank dozers and water points.

Operation Cedar Falls

The Iron Triangle, 45 miles north and slightly west of Saigon, had long been a successful haven for Communist forces operating in the II Field Force area. Early in the year 1967 this area was invaded by the United States Forces in Operation Cedar Falls that lasted from the 8th to the 26th of January. During the operation the 1st Engineer Battalion provided combat engineer support to the 1st Infantry Division, 173rd Brigade (ABN), and the 11th ACR in a search and destroy mission. So successful was the "Diehard Engineers" participation during this operation that it was continued for another three days.

Echo Company constructed a 160' double-single Bailey bridge on the Thi Tinh River just west of Ben Cat. Delta Company, operating in conjunction with E Company, improved the bridge approaches on both sides of the river. The most unusual occurrence during the whole operation was the construction of two M4T6 rafts by E Company which were mounted with Quad .50 caliber machineguns. The rafts were then pushed up the Saigon River to the junction of the Saigon and Thi Tinh Rivers and were positioned where they could act as a blocking force against VC fleeing west from the Tan An area during the subsequent Operation Niagara Falls.

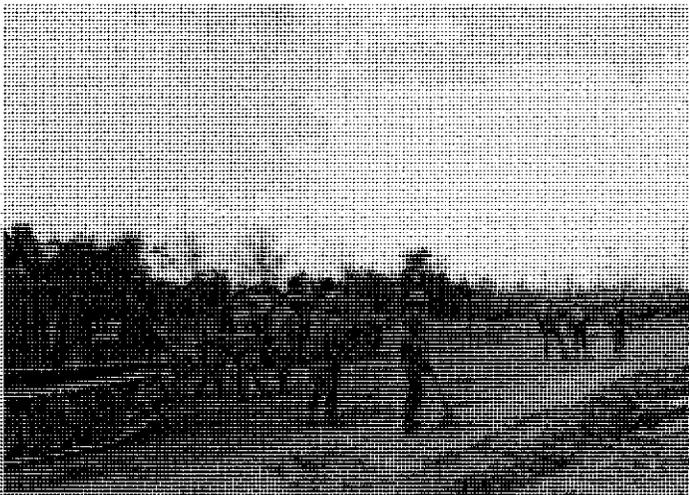


Land clearing operations with Rome Plow equipped bulldozers

At approximately 1500 hours on 9 January a vehicle track retriever from the 11th ACR, pulling a disabled M48 tank out of the Iron Triangle, crashed through the western span of the Bailey bridge, stopping all the traffic. After replacing the disabled span with an AVLB the difficult task of removing the two vehicles from the river bottom was given to Delta Company. Working without relief in the hot summer sun, the Diehards had the two vehicles on dry land in a matter of eight hours. Alpha Company uncovered a small enemy base camp and hospital complex containing approximately a million units of antibiotics and 40,000 pounds of rice.

The jungle clearing operations were highlighted by the construction of the "1st Engineer Battalion Castle" which was cut in the virgin jungle. The 1st Engineers discovered a major base complex and tunnel system on the western edge of the Iron Triangle. Intelligence showed that it belonged to the 4th VC Regional Forces. Helicopter loads of documents, records and plans were extracted from the tunnel complexes by the 1st Engineer Tunnel Rats. These documents described in detail the activities, units, meeting places and names of all the major VC military units operating in the II Field Force Area. The battalion suffered one man killed and seven men wounded.

Operation Tucson



Engineer mine sweeping teams in Vietnam

Operating in support of the 1st and 3rd Brigades of the 1st Infantry Division, the 1st Engineer Battalion provided combat engineer support during Tucson, a search and destroy mission in the vicinity of the Michelin and Minh Thanh plantations. The VC and NVA (North Vietnamese Army) operating in this area felt the effectiveness of the engineer effort from the 14th to the 21st of February. During this operation, the "Always First" committed

two companies: A and C, and elements of a third (two AVLBs)

A and C Company utilized nearly all of their divisional engineer skills during Operation Tucson as they constructed helicopter landing zones, cleared enemy mines and booby traps with demolitions, provided night defensive and work site security, breached enemy road blocks, and cleared jungle. A Company assisted the movement of vehicles from Minh Thanh to the Michelin plantation by providing mine sweeping teams, cleared jungle with chain saws and demolitions, and upgraded the road. C Company assisted the 3rd Brigade in their move to seal off Minh Thanh by clearing road blocks, reinforcing bridges to allow class 60 loads and preparing an AVLB launching site. The 1st platoon

of E Company provided the AVLBs and the M4T6 dry spans for the rapid bridge repair during the operation. The 1st Engineer Battalion suffered 5 men wounded.

Junction City I and II

Operation Junction City I and II was the largest, and in all probability, the most significant operation in all of Vietnam. From the engineer point of view, the "Always First" completed more construction work in less time than ever before. Working day and night under fire, Delta Company constructed three C-130 airfields. The battalion opened, cleared, improved and maintained over 74 kilometers of road on a daily basis; built three timber trestle bridges and two major Bailey Bridges—one being the largest and the most sophisticated structure built by an engineer battalion since World War II. In



Engineers descend from a CH-47 helicopter to begin work on a helicopter landing zone

In addition, tactical support of the infantry brigades included numerous landing zones constructed by engineers (descending from CH-47 by ladder) and by bulldozers, as well as preparing many fortifications and clearing fields of fire for infantry units in dense jungles. The battalion also supervised construction of two Special Forces camps and an additional C-130 airstrip, the actual construction being done by supporting engineers. This operation, which extended from 22 February to 15 April, has been one of our more costly operations with 1 KIA and 42 WIA. During this period, the battalion separately was given credit for 48 VC casualties.

The highlights of this operation were the three air strips and numerous bridges that were constructed. Delta Company, during this operation, constructed three C-130 airstrips: Katum, Suoi Da, and ton Le Chon. They also supervised the construction of the C-130 airstrips at Prek Klok. The Katum airfield was of extreme significance for it was the first compacted silt field constructed in Vietnam and with proper maintenance it provided continued service for a prolonged period. While D Company was working arduously on the airfields, the other line companies were upgrading roads and constructing bridges. A and B Company with the technical assistance from E Company constructed a Bailey structure consisting of 2 spans of 120' double-double and a 100' triple-single which were supported by an intermediate concrete pier. A Company ended the operation by demonstrating the motto "Always First" by constructing the Song Be Bridge. This Bailey bridge was 437' in length. A sophisticated structure that consisted of a 110' double-double cantilevered off of two 163.5' double-double spans. The bridge was the most unique Bailey bridge constructed since World War II.

Operation Manhattan

Operations Cedar Falls and Niagara, which were conducted by the 1st Infantry Division, had pushed the Viet Cong out of their sanctuary in the Iron Triangle, 20 miles northwest of Saigon. In April of 1967, it was again up to the "Big Red One" to root the enemy out of his favorite hiding place- the tunnel in the jungle. The battlefield this time was just north of the Iron Triangle and to the southeast of the large Michelin Rubber Plantation. C Company supported this mission by opening, improving and maintaining roads, constructing bridges, clearing fields of fire, and cutting helicopter landing zones.

C Company left Di An on 21 April and had to emplace an armored vehicle launched bridge in order to get to their destination, Fire Support Base Oscar, located at the southern edge of the Michelin Plantation. Ever hampered by the wind and erosion of the rainy season, they were entirely successful in supporting the efforts of the combined arms teams for the following three weeks. In addition to rebuilding 2 ½ miles of roadway, constructing four bridges, destroying four base camps, and clearing more than 1,000 acres of jungle, the engineers made several significant finds. On 27 April, the 2nd platoon was accompanying the 2/18 Infantry on a search and destroy mission when they discovered a Viet Cong hospital area. They destroyed several bunkers that day. The next day they destroyed 10 bunkers, 10 tons of rice, 4 tunnels, 150 meters of trench, and 16 antitank mines. Further search in the area over the next five days uncovered 42 more tons of rice, 10 more bunkers, and a weapons and munitions cache. All of these were captured or destroyed despite harassing sniper fire. The 1st Engineer Battalion suffered only three wounded during the operation

Operation Dallas

War Zone "D" has been a haven for communist guerrillas since the beginning of the present insurgency in Vietnam. Situated generally to the east of Route 1-A, its rolling, jungle covered terrain provided perfect cover for Viet Cong base camps. On 16 May 1967 the 1st Infantry Division penetrated War Zone "D", conducting a search and destroy mission from three fire support bases in order to make contact with the 273rd VC Regiment. The 1st Engineers committed two companies, A and D, and elements of a third (C) to the operation.

The engineer mission during this operation was to clear, upgrade, and maintain access routes to Fire Support Bases A, B, and D. This was particular difficult to accomplish due to the continual rain of the monsoon and the heavy convoy requirement on the roads which were to be improved. During the operation, D Company repaired and maintained 18 miles of road in the space of eight days, as well as clearing 350 acres of jungle. At the same time, A Company spread a new four-inch laterite cap on the runway at Phouc Vinh, which increased the capability of the airstrip to a heavy C-130 load. The ingenuity of the men of A Company produced a homemade rig to distribute peneprime on the new runway. The battalion suffered 5 men wounded during the operation.

Operation Bluefield

The 3rd Brigade conducted this search and destroy mission north of Lai Khe in the vicinity of Bau Bang and Bau Long. Company C provided combat support to the Iron Brigade from the 5th to the 9th of June by maintaining Route 13 between Lai Khe and the artillery base, prepared the artillery positions, and provided mine detector teams to assist the infantry. No injuries occurred during the short operation.

Operation Billings

The next large scale operation conducted by the 1st Infantry Division took place in the western portion of War Zone "D", just north of the new Division forward base at Lai Khe. The area was believed to be saturated with North Vietnamese Army (NVA) troops

up to four regiments in strength. The only road through this portion of the jungle was 1A, reaching north from Phouc Vinh to Xa Dong Xoai. The road was in terrible condition, filled with Viet Cong roadblocks and craters, blown bridges, and lengthy overgrown, washed-out sections. It was evident that no traffic had use the road for some years. A



strike by Air Force B-52s

Vegetation cleared from transportation routes to deny cover for enemy ambushes.

had converted one marshy area along side the road into a lake, and the accumulation of water had gradually washed away a great deal of Route 1A. It was up to A Company to clear, upgrade, and maintain this twenty-mile stretch of road, as well as constructing Fire Support Base G-1. A and C companies were to carve infantry landing zones in the heart of the virgin jungle, and B Company supported a separate brigade and constructed Fire Support Base G-II.

The tremendous engineer effort required to support such a large operation became apparent as A Company LZ teams utilized an average of 4,000 to 6,000 pounds of explosives per mission over a twelve-day period. C Company cut an LZ fifteen miles north of Phouc Vinh. The 1st Platoon flew out of Lai Khe and were doing an outstanding job of cutting large scattered trees when a heavy firefight broke out between an estimated battalion of NVA and the platoon's infantry security. During the three hours of fierce fighting which ensued, the engineers distinguished themselves by doubling as infantrymen and self-appointed medics. They were finally able to extract themselves,

their equipment, and the wounded via helicopter about three hours later. The operation was cut short on 25 June, but by that time A Company had upgraded and cleared the jungle from the sides of seven miles of Route 1A. It was quite an accomplishment since only one platoon each day could be made available for the road clearing aspect of the mission. In addition, by the end of the two-week operation, the 1st Engineer Battalion had cleared nearly 18,000 acres of jungle. There were 8 men wounded during the operation.

Operation Paul Bunyan

The Ong Dong jungle is located on the western bank of the Dong Nai River, some ten miles north of Di An. It was a principal Viet Cong base of operations during the monsoon of 1967, until the 1st Infantry Division conducted a search and destroy mission there. The 1st Engineers supported the operation with B Company. The usual rainy season problems plagued B Company as they cut a 1 ½ mile road through the Ong Dong in order to provide a bypass around Tan Uven to give easy access to the area of operations. Engineer ingenuity was put to a real test as the entire company was committed to build a 175-meter corduroy road in order to extract artillery pieces stuck hopelessly in the mud. It was the largest homemade road in the battalion's history.

A true first for the 1st Engineers occurred on 26 July when B Company was faced with the task of clearing a large number of rubber trees from the side of the roadway. Performing a modification of a previous experiment conducted in the 9th Infantry Division, the Rome Plow section connected two medium bulldozers with a 180' length of heavy anchor chain from a Navy cruiser, and proceeded to pull the trees down. One thousand five hundred rubber trees were cleared in that day, and the experiment became standard operating procedure.

At the same time that B Company was sloshing through the jungle, A Company continued to upgrade Route 13 by hauling a record 2100 five-ton loads of laterite up the highway. Company E extracted two destroyed bridges, disassembled them for salvage, cleaned out the gap, rebuilt the abutments, and constructed a 160' double truss Bailey bridge. There were no casualties during the operation.

Operation Foxtrot (Highway 24)

This was a search and destroy mission in the southern portion of War Zone "D" straddling the Dong Nai River. The 1st Engineers were to upgrade the roads on both the northern and southern banks of the river. Operating to the north of the river was A Company that cleared a four-mile path through the jungle to make way for a new road.



1st Engineer landclearing bulldozer pushes back the jungle.

A total of 205 acres of jungle was cleared in the first four days of August. On the south bank of the Dong Nay, monsoon rains were a constant hindrance to bridging operations. On 31 July D Company launched an AVLB in order to get to a worksite; on 1 August, when they returned to the same area to relaunch the AVLB, they found the original site completely under water.

The problem was solved by placing one end of the AVLB on an old timber trestle bridge nearby. But weather was not the only problem D Company encountered. It seems that civilian motor scooters and water buffaloes have a difficult time traversing an AVLB. A great deal of effort was expended retrieving these unfortunates from a number of precarious situations. And if this wasn't harassment enough, the local populace fell into the habit of constructing expedient bridges in the early morning, before the AVLBs could arrive. The materials they used were timber and base plates from AVLB abutments.

Company E was extremely busy during this operation. On 30 July they retrieved an Eiffel bridge and emplaced a Bailey at the same location. On 2 August the company reinforced another Bailey bridge and then encountered one of the most unusual engineering problems the battalion has ever seen. For two days the second platoon had been working on an intermediate pier for the 190' Bailey bridge. On the third day, the water level on the river had risen 3 ½ feet making the construction of a timber pier impossible. They removed the deck of the bridge, maneuvered a borrowed pile drive onto the bridge, and drove eight steel beams into the river bed to serve as the pier. By the end of the mission, which lasted six days, the battalion had set a combat engineer record in Vietnam- an equivalent of 485' of double-truss bridging installed in a period of six days.

Operation Portland

As the operations of the 1st Infantry Division began to move to the north, it once again became necessary to open Route 13, the main highway stretching from Saigon north to the Cambodian Border- "Thunder Road". Three companies of the 1st Engineer Battalion were committed to accomplishment of the task: A, C, and E. The usual sticky problem of upgrading a road during the monsoon plagued the battalion as well as the rest of the Division during this operation. The day after the operation began an M-48 tank from the armored cavalry became stuck in the mud. An armored track recovery vehicle also became mired while attempting to extract the tank. And for the finishing touch, an

engineer VTR also sank into the mud in an attempt to retrieve the first VTR. Company C entered the area at this time to terminate the problem by constructing a 225' timber treadway on which the three vehicles were able to drive out.

The largest project undertaken during the operation by the 1st Engineers was the construction of a bypass around the airfield at Chon Thanh. Several methods of combating the poor construction conditions were employed by the battalion. On the 15th and the 16th of August E Company emplaced a 23' M4T6 dry span bridge over an extremely wet area. Several more dry spans were lifted intact to the site by CH-47 helicopters and emplaced them in the extremely wet areas, an innovation which has saved days of working time on bridging missions. Companies A and C constructed a total of 752' of timber roadway (not including the treadway built to extract the mired vehicles).

Company E solved the problem of the stopped-up culverts by blowing them in place and then bridging the water-filled gaps. While the Division was reopening "Thunder Road", C Company was performing a great deal of construction at both ends of the highway. To the south of Phu Loi they build 100 "L" shaped revetments for a heliport; the use of corrugated steel planking in this construction was so successful that the design has become a standard within the division. Just east of the northern terminal of "Thunder Road", at Bo Duc, C Company upgraded two airstrips to be able to handle heavy traffic during the monsoon.



Pierced steel planking used as revetment materials to protect helicopters.

The problems encountered in rebuilding and maintaining a road during the monsoon season when rock fill cannot be brought to the worksite will always be difficult. The use of hand labor and unsophisticated engineer expedience such as timber treadways and steel drags are but half the solution. The other half of the solution must come, as it did in this operation, from the determination of the engineers on the ground that no combination of adverse circumstances can prevent them from the accomplishment of their mission. This positive attitude did allow the 1st Engineer Battalion to accomplish its mission in the true spirit of its motto, "Always First". There were no 1st Engineer Battalion casualties during this period.

Operation Rolling Stone

Phouc Vinh was a small town situated on Route 1A at the western edge of War Zone "D". It has been an allied stronghold since the outset of the Vietnam Conflict, but access has generally been restricted to air traffic. On 12 September the 1st Infantry Division launched an operation to rebuild and secure "Rolling Stone Road", the highway leading to Phouc Vinh from the southwest. Again the 1st Engineer Battalion was required to support a major division effort. One large task of the engineers in the days following was a daily sweep of "Rolling Stone Road" with mine detectors. Company D excelled in the performance of this particular mission. One of their teams uncovered in one day a total of 42 mines. Company B was also doing an exceptional job. One platoon practiced at great length the building of a helipad with the T-17 membrane. It then flew three of them to locations supporting the operation and emplaced them in record time. Company A also experienced a race against time but under very peculiar circumstances. Once "Rolling Stone Road" had been opened at the outset of the operation, the Division ran daily convoys of some 400 vehicles to Phouc Vinh for the support of units in the field. On one particularly rainy day, a tank at the head of a convoy struck a mine and the shock of the explosion completely shattered the structure of the roadway. Succeeding vehicles quickly turned the road into a quagmire that looked "just like jelly", according to the company commander. Luckily the convoy contained a large number of dump trucks hauling rock which they used to repair the road and the convoy arrived on time.

At the same time that the line companies were sweeping and upgrading the road, the Headquarters Company Rome Plows cleared over 940 acres of jungle along the side of the highway, denying the enemy the terrain needed to ambush and harass the convoys.

This operation demonstrated that the 1st Engineer Battalion was capable of going into a denied area, opening, and upgrading and maintaining a road within a few days that was capable of handling sustained divisional traffic. This road was openly controlled by the Viet Cong, and consequently a large number of mines and other obstacles were encountered on the roadbed. The minesweeping parties discovered and destroyed over 130 mines during the operation. All of them were blown in place, and the craters were quickly filled with rock and laterite. After the road was opened from Ben Cat to Phouc Vinh, three convoys, each in excess of four hundred vehicles, made round trips across this route without incident during the last six days of the operation.

Operation Bluefield II

This operation began 23 September with the mission to support the 1st Infantry Division operating along Route 301 from Bo La to Bau Bang with road opening and Rome Plow clearing operations. Three companies participated in the operation: A, C, and HHC. Company A had to open and maintain route 301 from Bo La to the half way point between Bo La and Bau Bang. They worked arduously repairing and upgrading the

road as their Rome Plows cleared the VC infested jungle back from each side of the road approximately 100 meters. The Rome Plows also had the added task of clearing the jungle each night for the new NDPs (nighttime defensive positions) as the operation progressed. Company A replaced a blown bridge with a 20' timber trestle bridge of which the superstructure was completed with abutment sills at Phuoc Vinh. This bridge was airlifted by CH-47 helicopter to a prepared site. The platoon leader directed the lowering of the bridge in place on the prepared abutments, and traffic was flowing again within two hours after the engineers arrived at the site. Company C conducted operations similar to those of A Company. They started from Bau Bang and worked along Highway 301 towards Bo La. After the completion of this mission, the 1st Infantry Division had access to a second road between Lai Khe and Phuoc Vinh.

Operation Shenandoah II

The area of this operation was along Route 240 generally running northwest from Ben Cat to the Suoi Da Yen River. This highway required an extensive engineer effort to open. The enemy had cut a large number of obstacles along its length, making it impossible for vehicular traffic and in places, when combined with the jungle overgrowth, could be considered to be little more than a footpath. The 1st Engineer Battalion, represented by A, B, C, and D Companies, attacked this mission aggressively and produced highly successful results. The mission's objective was to open this route, conduct search and destroy missions, and establish fire support bases to deny the enemy this sanctuary that had been used for logistical bases for the Phu Loi Battalion and other VC elements.

The engineer challenge was quite apparent. Route 240 had been cut systematically in many places, and its long period of disuse had caused the disintegration of several stretches. The jungle in the northern extremity had closed in on the route making it little more than a trail, ideal for VC ambushes. This jungle was triple canopied with trees over 100' tall.

In spite of several enemy contacts, mines, booby traps, and adverse weather, the route was repaired and upgraded to accept division traffic. The jungle was cleared approximately 100 meters on both sides of the road and five fire support bases were carved out of the virgin jungle to give 105mm artillery coverage to the western portion of the sector. All of this was accomplished in two weeks. This operation showed that fairly extensive road repair could be accomplished in the rainy season by careful planning and the use of corduroy construction. Local timber was used to form a base which was capped by laterite and rock. Laterite pits were carefully controlled to insure proper drainage and the availability of relatively dry laterite. Over 771 5-ton dump truck loads were hauled from these laterite pits during the mission. The Rome Plow clearing proved that the thickest of jungle can be cut, but care must be taken to leave the largest trees for demolition. The Rome Plow stinger will allow the cutting of large trees, but in the wet season, too much activity at the base of large trees results in stuck dozers. In the area where poor trafficability reduced the use of the plows, demolitions were used quite

effectively. Two prefabricated timber trestle superstructures, flown in by CH-47 helicopters were used to span water gaps up to 20'. The Rome Plows cleared 981 acres of dense jungle by the end of the operation without receiving a single casualty.

The year 1967 closed with the 1st Engineer Battalion conducting two operations that continued into the new, more promising year of 1968. The Cam Le Bridge which is a 130' double-single Bailey bridge was constructed by the bridge company, Companies E and B started on Operation Lam Son. Their mission was of the search and destroy type with the added mission of upgrading Route 1A from Phu Cuong to Claymore Corners.

Source: 1st Engineer Battalion, Annual History- 1967.