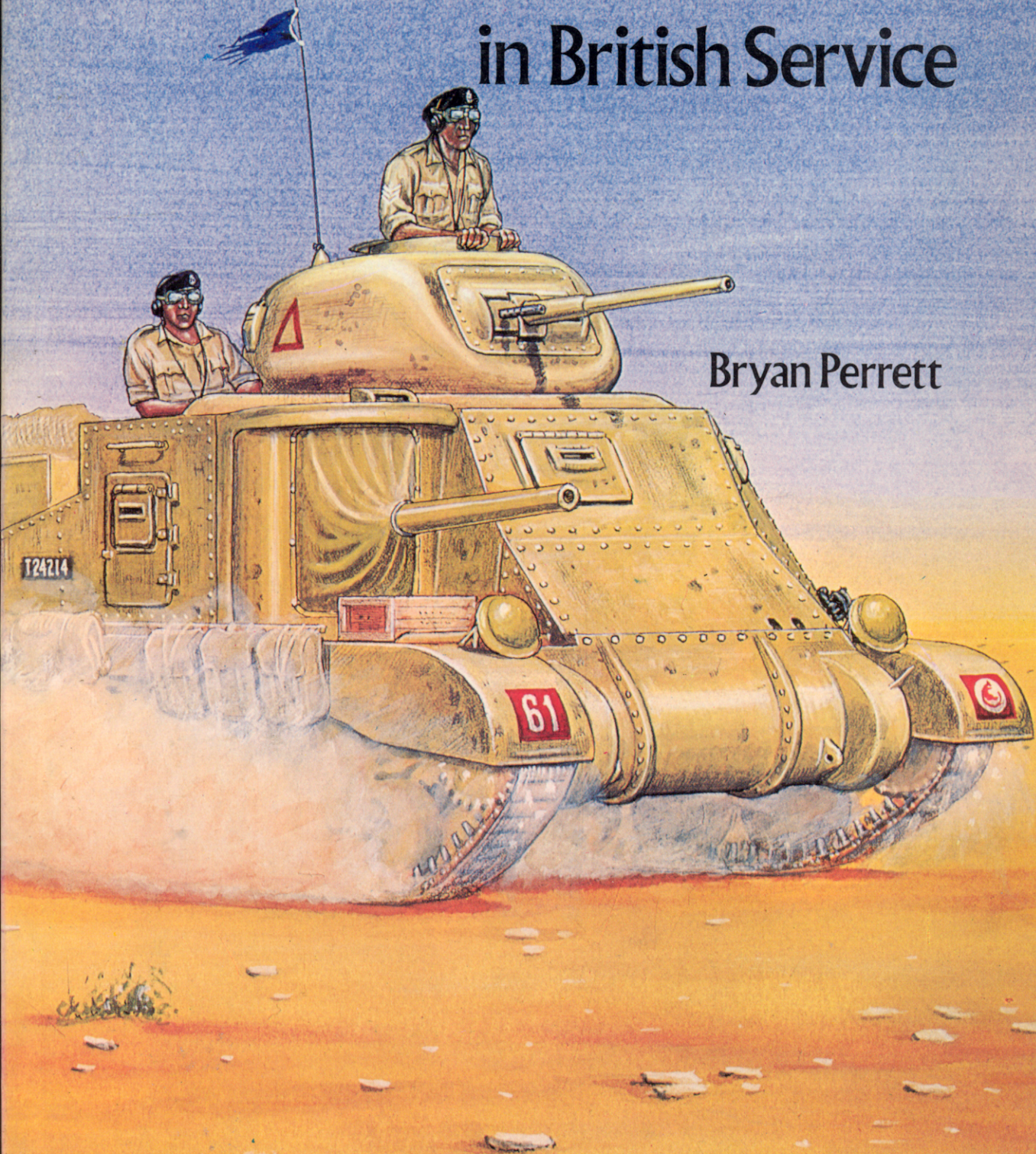


# The LEE/GRANT Tanks in British Service

Bryan Perrett





VANGUARD SERIES

EDITOR: MARTIN WINDROW

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American technical instruction team, Egypt, spring 1942. The 'Technician 4th Grade' points to an armour-piercing strike which failed to penetrate. (This, and all other photographs in this book, unless specifically credited otherwise, are from the Imperial War Museum collection.)

## Development

This book is not a technical manual; inevitably, much technical information will be found in its pages, but the full development history and the specifications of the various Marks, together with descriptions of vehicles derived from the basic design, have all been recorded very adequately elsewhere. The author's primary purpose has been the study of a weapon system in action.

The Lee/Grant medium tank series had its roots in the development by the United States Army of a vehicle designed for infantry support. This vehicle, the M2 Medium Tank, was fitted with a top turret mounting a 37mm gun, and bristled with no less than eight .30 cal. Browning machine guns, some of which fired to the rear, most being mounted in sponsons on either side of a wide hull, which overhung the tracks. By the summer of 1940 the M2

Medium was ready to go into quantity production, but the runaway success of the German Panzer Divisions in France and the Low Countries caused some rapid rethinking on the subject of medium tank armament. The Chief of Infantry, for whose arm the M2 was being developed, suggested that the American mediums should carry a 75mm gun to match the German Mark IV and outgun their Mark III. General Adna Chaffee, chief of the recently re-formed Armored Force, agreed, but the fitting of such a gun into the M2's small turret was a technical impossibility, and it would be some time before a medium tank with a 75mm gun in a fully traversing turret, the M4 Sherman, would be ready for mass production. The best that could be done for the present was a stop-gap based on the M2.

This was done by using the wide hull to its best



A Grant squadron training prior to Gazala. In the opinion of some, 8th Army had over-trained by the time the battle began.

advantage. The 37mm turret was moved to a position over what had been the left sponson, and the right sponson was enlarged to accommodate a 75mm gun with a limited traverse. A commander's cupola was added to the turret, and the armoured protection increased to 56mm. In this form, designated the M3 Medium, the tank went into production in August 1941, setting something of a record in AFV design.

The British Tank Commission had arrived in America in June 1940 and were able to make constructive suggestions during the design phase, based on experience in the field. The Commission placed substantial orders for the tank, which became known as the Lee in British service, and also for a variation of its own, which was called the Grant.

The essential difference between the two vehicles was evident in the 37mm turret. The Lee turret was too small to accommodate the tank radio, which was located in the hull. This did not conform to

British crew practice, which required the loader to operate the set in the turret, where close contact with the vehicle commander could be maintained. The Grant, therefore, carried a larger cast turret with an overhang but without a cupola, which had been eliminated in an attempt to reduce the vehicle's height. The effect of the modification also reduced the crew by one member—seven (commander, 37mm gunner, 37mm loader, 75mm gunner, 75mm loader, operator and driver) being required for the Lee, but only six (commander, 37mm gunner, 37mm loader/operator, 75mm gunner, 75mm loader and driver) for the Grant. The two vehicles, whilst similar in layout, are quite different in appearance, although one version of the Lee, the M3A5, was sometimes referred to as the Grant II, a confusing and needless designation since it did not evolve from the Grant and carried the Lee turret; where it appears in the text, the more accurate title of Lee has been used, since this was how it was known to its crews.

## Crew Assessment

Pundits may argue the merits or otherwise of any fighting vehicle, but only those who have served aboard it will provide a frank and objective impression of its abilities. Below are a selection of such opinions, which, being honest, do not coincide on every detail:

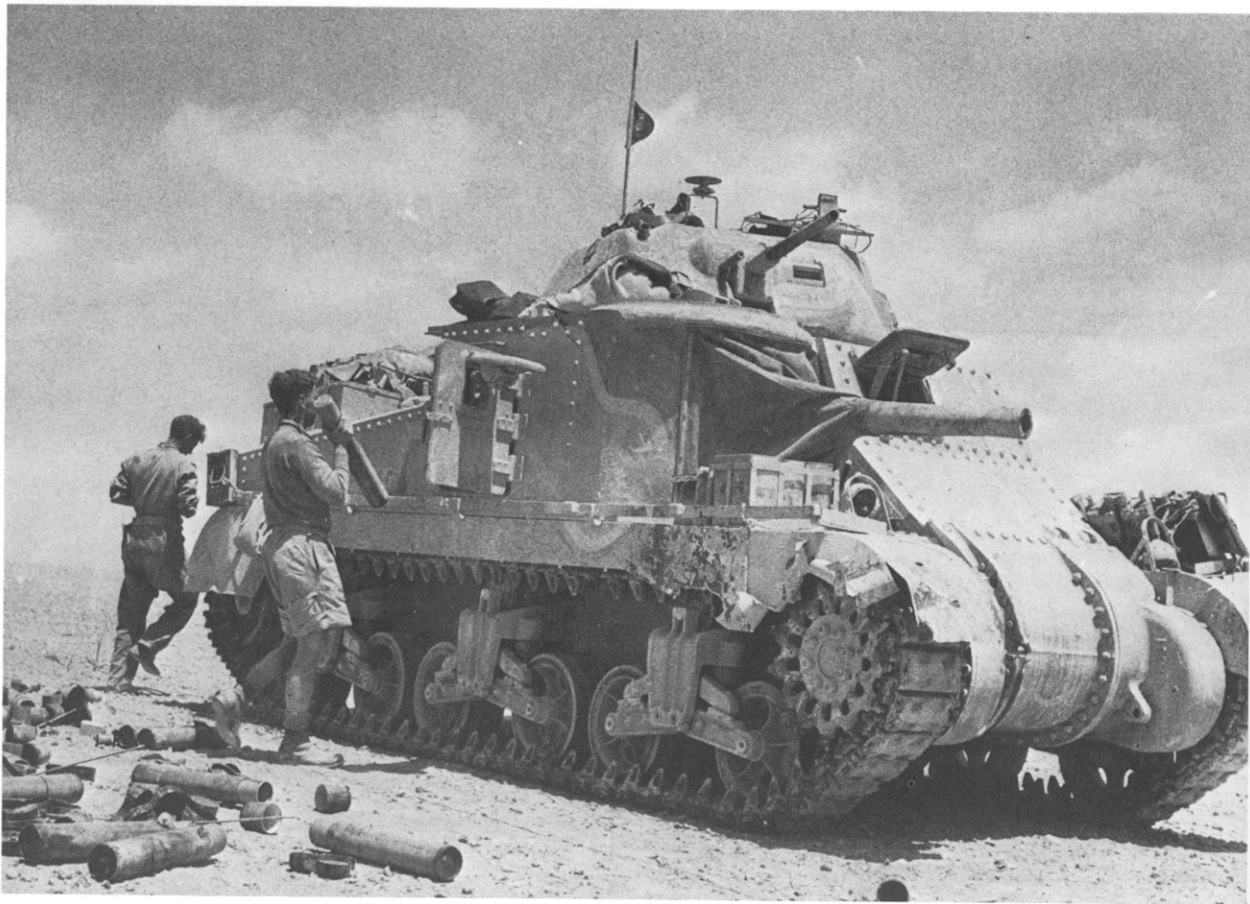
'The new tanks were arriving now and they were super, the finest things we had ever seen. They had a nine-cylinder radial engine, were quite fast, and had a crew of six. . . . We trained a lot around the Pyramids and took part in a demonstration of shooting at a range at Almaza, on the other side of Cairo. The targets were some old Valentines and

the range was fifteen hundred yards. It was a windy day with sand blowing about, but the gunners hit them time after time.' (*Written in the spring of 1942 by Jake Wardrop, a tank driver serving with 5th Royal Tank Regiment, shortly after the first Grants arrived in Egypt.*)

'The base of the tank and tracks were very much the same as the Sherman which came a few months later. The front of the Lee/Grant was sloped in front of the driver, on the left, and there was an upright sponson, with a thirty-degree traverse, on

Tank commanders confer; this photograph was taken towards the end of the Gazala fighting, and signs of strain and fatigue are evident. Note inside details of door and visor; also stowage rail, and jerrycan still bearing German stencils.





Loading 75mm ammunition, an exhausting process at the end of a long day.

the right. The tenants of the bottom “floor” were the driver, the 75mm gunner and a loader. The set-up so far was the same for both Lee and Grant.

‘The turret for both was high and upright, although there was a slope down the front of the Lee version. In the Grant the turret housed the 37mm gunner, the loader/operator, and the commander. In the Lee there was a separate small turret for the commander on top. This rotated with, or separately to, the main turret and had a so-called AA .30 or .50 Browning MG; this made the Lee nearly a foot higher than the Grant, which was already quite high enough. Both Lee and Grant had a co-ax .30 Browning mounted with the 37mm. The Lee had a loader as well as an operator on the “second floor”, bringing the crew up to seven.

‘The tank had very few good points, although I should say that the engine was reasonably reliable, as were American engines in general throughout

the war. It had at least a 75mm gun, which was not very effective or accurate, with which to compete against the Germans, at that time equipped with the Mark III with a 50mm gun, which was a lot better than our 37mm, and the Mark IV with a short 75mm.

‘As regards bad points, the vehicle was cumbersome, wasteful in manpower, and had poor armour. The radios were pretty useless at this stage of the war; I think they only went down to troop leaders in any case, and there were quite a lot of hand signals (cavalry) between tanks.’ (*Lieutenant-Colonel Douglas Stewart, Royal Scots Greys.*)

‘It was as comfortable as such a vehicle could be and, although it could sulk, refuse to obey commands, treat its crew abominably and generate heat that would have made a baker or boilerman homesick, the relationship was generally amicable.

‘Mechanically it had few vices. The Wright radial engine stood up magnificently to treatment for which it was never designed and produced power sufficient to push 28 tons of steel up hillsides

which made mules wish they had been posted elsewhere. I can recall no occasion when it let me down at a critical moment. The transmission and steering were adequate and trouble free. The only design weakness, if I remember correctly, was the parking brake, which would have been inadequate to hold a Fiat 500.

'Its faults were all too obvious. The roar of the engine and the squeaking of the volute springs were such as to destroy any element of surprise—the springs particularly could be heard at a considerable distance. The tank's height and the angling of its armour made it a relatively easy and vulnerable target for anti-tank weapons.

'On the other side of the coin, for the roles in which we were employed the two weapon systems provided us with advantages which would not have been available had we been equipped, for example, with Shermans. The ability to produce formidable fire power in two directions at once was comforting not only to the tanks' crews but also to the infantry, with whom we worked in such close support.

'The support equipment was generally effective—the power traverse for the turret seldom failed, the radio was good and the tracks had a

by the fumes from the guns, and the floor of the turret and the 75mm sponson became cluttered with cartridge and shell cases. Fortunately, we were never under such constant pressure that we were unable to open up for a few minutes, giving time to clear the air and throw out the expended cases.'

*(Ian Morgan, troop leader, 3rd Carabiniers.)*

'For its size it was a very handy, mobile, and fast vehicle. The whole squadron could be on- or off-loaded from transporters in a matter of minutes. It was a good climber, viz Nunshigum and Kennedy Peak. It had tremendous fire power with its 75mm and 37mm guns and four machine guns, and was therefore a good weapon in support of infantry. Mechanically it was very sound and for repairs its engine could easily be removed and replaced. Its real weakness was that it caught fire so easily due to the light armour plating over the petrol tank and the high octane fuel it consumed. This made it a death-trap, particularly for the driver and the wireless operator. The speed with which it could brew up made it impossible, on more than one

'Egypt's Last Hope': Grants of 22nd Armoured Brigade shortly after the First Battle of Alamein.



surprisingly long life considering the fact that the pads were rubber. Visibility when closed down was tolerable, which was a good thing, as the slaughter of tank commanders on Nunshigum taught us all that it was most unwise to have one's head out of the turret when in close combat.

'It was, of course, a very greedy vehicle fuel-wise and the process of pouring up to 140 gallons of aviation spirit from 4-gallon cans was a wearisome affair—particularly as, in the nature of things, this was more often than not done at night.

'When in action, the interior became rather unpleasant; the atmosphere was heavily polluted

occasion, for any of the crew apart from the commander to escape.'

*(Major Desmond Murphy, squadron leader, 3rd Carabiniers.)*

'It wasn't at all easy to get hull down; this must have mattered a lot in the desert, but wasn't such a serious problem in Burma as the Japanese anti-tank guns were no danger except at close range. Ammunition stowage was also a problem as both 37mm and 75mm had to be carried. In Burma we took risks concerning the proportions of High Explosive to Armour Piercing that would not have been acceptable in the Western Desert. Unfortunately, the big crew meant heavy casualties if a

tank brewed up.’ (*Major-General Ralph Younger, former commanding officer, 3rd Carabiniers.*)

It is, perhaps, as well to remember that opinions are relative. When the Greys were fighting in Lee/Grants in late 1942 and early 1943 the regiment was in the Western Desert; the Carabiniers’ Lees saw action in Burma in 1944 and 1945. In the desert the low-slung 75mm made it very difficult for a vehicle commander to get his tank into anything approaching a hull-down position, and its great height made it stick out like a sore thumb anyway; in such situations the word cumbersome would be very apposite. On the other hand, in Burma these considerations did not apply to anything like the same extent, and what was

The stowage rail above the track guard was supplementary to the basic design. It was an ideal place for camouflage nets and bivouac sheets; less than ideal for personal kit. The middle man is christening this Grant of an unidentified unit.

required was mobility and mechanical reliability, both of which the Lee provided, so, in this context, the word handy would seem to be equally apposite. Again, in the desert the Lee/Grant’s period of domination was comparatively short, for within months of its appearance both armies were employing more sophisticated medium tanks, while in Burma the Lee maintained its dominance to the end, as Japanese tanks and anti-tank guns were both obsolete by Western standards. Also, the 1942 shortage of radio equipment had been solved by 1944.

## Baptism of Fire

With the first Lees and Grants to arrive in Egypt came a team of US Army instructors. They performed their task efficiently and seem to have been very popular figures—one RTR unit made



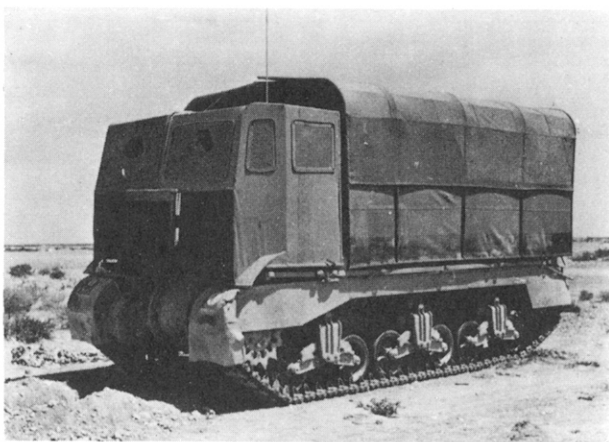
their instructors honorary members of the regiment, presenting them with the famous black beret, which they then wore at all times.

Following crew training came squadron, regimental and brigade exercises. In fact, by the time the vehicles had reached the forward British positions south-west of Tobruk, Jake Wardrop thought that there had been too much training:

‘When the balloon went up on the 27th of May most of the tanks had done about 800 miles on exercises and it was too much—after a thousand they begin to get sluggish.’ Not that this had any effect in itself on the outcome of the battle, although overtraining was perhaps the cause of one disaster on the first day.

In May 1942 the British line ran south from Gazala to Bir Hacheim. The northern end of the line was held by the three brigades of 1st South African Division; then came two brigades of 50th Division, a gap, and then the division’s third brigade, the 150th. Another gap followed, and the line terminated with the 1st Free French Brigade, holding Bir Hacheim. The whole line, gaps included, was fronted by heavy mine belts. Behind the line, 5th Indian Division’s brigades were dispersed in a thin screen to cover the southern flank, while 201 Guards Brigade held a central box called Knightsbridge. In support of 1st South African and 50th Divisions were two Army Tank Brigades, the 32nd and 1st, equipped with Matildas and Valentines. Only a handful of the new 6-pounder anti-tank guns had reached the front, and the old 2-pounder was the sole safeguard for the majority of units.

Two armoured divisions, the 1st and 7th, were available to General Neil Ritchie, the Army Commander. The 1st contained 2nd Armoured Brigade (The Queen’s Bays, 9th Lancers and 10th Hussars) and 22nd Armoured Brigade (2nd Royal Gloucestershire Hussars and 3rd and 4th County of London Yeomanry), and its regiments were equipped on the scale of one squadron of Grants and two of Crusaders each. On the other hand, 7th Armoured Division contained only one armoured brigade, the 4th (8th Hussars, 3rd and 5th Royal Tank Regiments), but here the regiments each possessed two squadrons of Grants and one of Stuarts, so that in effect both divisions could field six Grant squadrons.



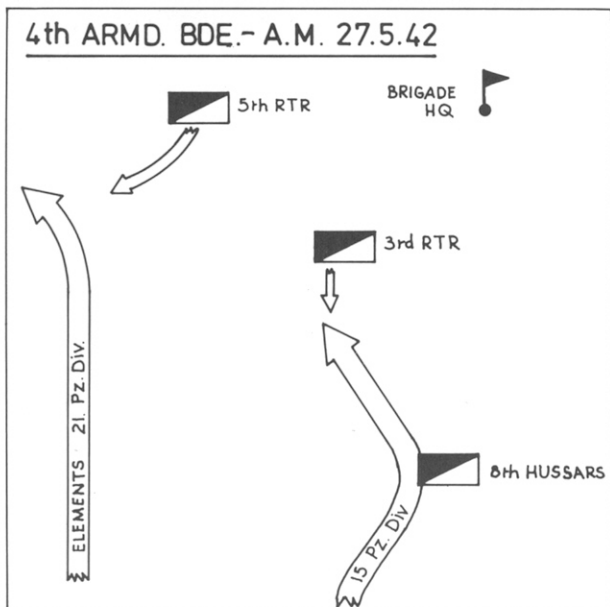
The deception plan for Second Alamein called for many tanks to be disguised as lorries. The Grant obviously fell into the Heavy Goods class! (RAC Tank Museum)

Excluding the two Army Tank Brigades, 8th Army could field 167 Grants, 149 Stuarts and 257 Crusaders. In addition, 1st Armoured Brigade was moving up to the front with a further seventy-five Grants and seventy Stuarts. Against this Rommel had available only 560 tanks, of which 228 were Italian and fifty light PzKw IIs, neither of which would be much use in the coming battle. However, he had received nineteen of the new PzKw IIIJ models, which were more than a match for British Crusaders and Stuarts, although they were not as powerful as the Grants.

On their own, mere numbers mean nothing, and 8th Army lost the battle, disastrously, for a variety of reasons. Some of these are given by the late Major-General G. W. Richards, whose 4th Armoured Brigade absorbed much of the weight of the German attack on 27 May 1942.

‘Up to the opening of the battle both sides had been preparing to take the offensive, and it was just a question of time as to which side would be ready first. Our administrative layout was planned for an offensive; that is, the supplies, repair units and hospitals were moved into the forward area. This would lead to disaster for the side which lost the opening battle, as all these vital support arrangements would be exposed to the enemy. If the 8th Army had been planning a defensive battle all the administrative organization behind the forward troops would have been built up further back.’

Again, there were difficulties within the army’s command structure which worked against the



The 'brew' and evening meal are prepared, while the rest of the crew perform replenishment and maintenance; compare with colour plate D.

smooth running of operations. Technically, Ritchie was junior to both his Corps commanders, Gott and Norrie, and decisions tended to be made collectively and subjected to changes of individual opinion during the planning or executive stages. There was an impression that the army commander could have taken a much harder line with his subordinates.

Not surprisingly, it was Rommel who was ready first. During the night of 26–27 May he began a wide right hook round the southern flank of the British line, while a diversionary attack took place on the northern sector. The enormous columns numbered over 10,000 vehicles, and were watched and shadowed by South African armoured cars, who sent in regular reports—but not to Brigadier Richards, whose regiments would lie directly in the enemy's path once they turned north.

'7th Armoured Division had a screen of armoured cars observing any movement of the enemy, but for some unknown reason communications seemed to have broken down when it really mattered. It is now known that the advance of the enemy was being reported constantly by the



armoured car screen, but the news failed to reach 4th Armoured Brigade. At about 0400 on the morning of the 27th I received a message from Pete Pyman, The Division's G.1, that an enemy column was reported moving east about thirty miles south of Bir Hacheim, which neither Pete nor I considered much of a threat; in fact I couldn't make out what they were doing there. Pete suggested that we stood to at first light, which was something we did anyway.

'The Brigade had previously rehearsed occupying a number of defensive positions on the enemy's

Kilkelly ordered out a patrol of Stuarts, which roared off to the south, and the morning routine continued. At 0715hrs the patrol reported a heavy column of enemy tanks and anti-tank guns about 4,000 yards to the south, moving in a north-easterly direction along a ridge; about the same time Brigade ordered the regiment to its southern battle position. Half-eaten breakfasts were thrown away as the crews scrambled aboard and the squadron leaguers broke up. But no sooner had the regiment begun to move towards its battle station, a little way to the east, than it was spotted by the enemy,



axis of advance, so when Division came through again at about 0530, and told me that the 3rd Indian Motor Brigade, south-east of Bir Hacheim, and Bir Hacheim itself, were being attacked, I gave the order to stand to and move to one of the already reconnoitred positions. Two of my regiments did so, but the third was slow, with dire results for itself.'

The regiment was the 8th King's Royal Irish Hussars, which would have formed the left flank in the Brigade's order of battle. Their leaguer area was the most southerly of the three and therefore nearest the enemy. There was a feeling that any movement to the south was simply a feint, and the regiment expected to be ordered to its northern battle position to deal with an attack on the line near Gazala; this was, as we have seen, the exact opposite of the true position.

At 0630hrs all seemed quiet, and the crews were sent to the cookhouse truck one troop at a time. Breakfast was still being served at 0700hrs when Brigade came through again, confirming that 3rd Indian Motor Brigade had been overrun and warning that the enemy was probably advancing towards the Hussars' position. Lieutenant-Colonel

Lees and Shermans of 8th Armoured Brigade between actions during Second Alamein. The brigade fought at Miteiryra Ridge and Tel el Aqqair.

who immediately swung to the right and advanced to engage.

The Hussars' light squadron, 'C', seems to have been in a greater state of readiness than either of the Grant squadrons, and pushed out towards the enemy in an attempt to buy a little time. Within minutes Major Hackett's Stuart was burning; although he was himself badly burned, the squadron leader continued to command from another tank.

'A' Squadron came up on the left under the command of Captain Nelson, and scored an early success when Nelson sent a round of 75mm HE sailing into an 88mm anti-tank gun, wrecking it. However, the squadron also formed the regiment's southern flank, and was therefore nearer to the enemy, who concentrated most of the fire of their tanks and anti-tank guns against it. The line of Grants was blazing away angrily and hitting its targets, but the tanks were being struck incessantly



A method of ascent reserved for Army commanders . . .

by projectiles of all types and the cumulative effect was crippling. Tracks, bogies and sprockets were shot away, and guns jammed with the constant impact of shot. The fire from the German tanks was not penetrating the Grants, although it was doing external damage, but the anti-tank guns were penetrating with inevitable consequences. Within fifteen minutes it was all over; most of the squadron's officers were either dead or wounded, and the sole surviving Grant was reversing out of action.

On the right flank 'B' Squadron under Maj. Threlfall fought on for about ten minutes longer, but the result was the same, and only one tank came out. For some reason the enemy did not machine-gun the crews as they headed for safety.

Elsewhere, Maj. Hackett had moved his Stuarts from the centre of the line to protect the regiment's flanks, and had knocked out at least ten of the enemy's tanks, several of which had infiltrated as far as Colonel Kilkelly's position; Kilkelly had himself knocked out a PzKw IV at only thirty yards range.

The 8th Hussars had gone down fighting hard. They had been swamped by 15th Panzer Division's 150 tanks and the fire of an unknown number of anti-tank guns, and all that was left were three Grants and Hackett's light squadron, still largely intact.\* In exchange they had knocked out about thirty of the enemy's tanks, and for the Germans this was a high price to pay for the mauling of a regiment that had been caught deploying.

Meanwhile, the 3rd Royal Tank Regiment, under Lt.-Col. G. P. B. Roberts, had moved off from their leaguer areas at about 0730hrs, and were moving south to take up their battle station in the centre of the planned brigade position. 'A' Squadron's Stuarts were acting as a screen about 2,000 yards ahead of the main body, and had been motoring for ten minutes when they observed, about three miles away, much dust and movement they could not identify. It was 15th Panzer Division, continuing its northward thrust, having dealt with the 8th Hussars.

As the two forces converged, Roberts brought his heavy squadrons forward slowly towards the screen, searching for a suitable hull-down position. Through his binoculars he could see the *panzer keil* coming on without fuss or hurry—twenty tanks in the first line, and more than eight lines of varying size and composition behind that. He knew that something had gone badly wrong and that his regiment was facing an entire Panzer division alone, although he hoped that 8th Hussars were somewhere on the left and that 5th Royal Tank Regiment, which had further to come, would soon appear on his right; in the meantime there was no alternative but to stand and fight.

Taking advantage of a small ridge, 'B' and 'C' Squadrons went into the best hull-down positions they could and were told to hold their fire until the range had closed to 1,200 yards, or the enemy had halted. Meanwhile the light squadron was moved to cover the right flank, less one troop, which was sent to the left in the hope of making contact with the Hussars.

The Panzers halted 1,300 yards away, outside

\*General Sir John Hackett, sometimes referred to by his nickname Shan, became Deputy Chief of General Staff in 1964 and Commander Northern Army Group NATO in 1966. As a brigadier he fought at Arnhem, and commanded 7th Armoured Division 1956–58.

their own effective gun range, and were shaken when the Grants' big 75mm guns began slamming shot into them at once. Shells were also coming in from the Chestnut Troop, 1st Royal Horse Artillery, which had unlimbered behind the Grants, and von Vaerst, 15th Panzer's commander, was forced to close the range to reply effectively.

Encouraged by the sight of the Germans' casualties, Roberts sent a message to Brigade to the effect that 3rd RTR were holding their own but did not expect to be able to hold on for ever; Richards ordered him to maintain his position for as long as possible. As well as commanding his regiment, Roberts was fighting as a tank commander in the centre of the gun-line. To the right and left he could see his squadrons being slowly eroded by the enemy's fire, and although ahead he could count at least twenty knocked-out or burning Panzers, he also observed that the Germans were simply replacing their casualties by bringing tanks from the rear ranks. Further, his initial shock over, von Vaerst was sending tanks and anti-tank guns in a

then broke off the action with only five rounds of 37mm left on board, and no 75mm. A total of ten Grants reached the rally point, of which three were unfit for further action because of damage to both guns. 'C' Squadron Leader drove in blinded by blood, all periscopes smashed and with twenty-five hits recorded in his Grant's armour—a testimony to the ferocity of the fight. The Germans made an attempt to follow with a small force of tanks, but this was curbed by the light squadron, which had not suffered as severely as the others.

Further north the 5th Royal Tank Regiment, commanded by Lt.-Col. R. D. W. Uniacke, had also broken leaguer to move to its allotted battle position, but became involved almost at once in a brawl with elements of von Bismarck's 21st Panzer Division, which was moving northwards slightly to the west of the regiment. 'When they arrived we gave them a good warning with the big 75', wrote Wardrop. 'It quite shook them, I'm sure, and they turned and ran for it.' None the less, 21st Panzer did continue to advance towards the coast. The 5th had



wide hook round the regiment's right flank, and the light squadron was becoming very stretched containing this new threat. Briefly, Roberts paused from directing his gunners to address his adjutant:

'Peter, tell Brigade we cannot hang on here much longer; either there will be nothing left, or we will be cut off, or both.'

The situation resolved itself shortly afterwards. The Grants had been firing non-stop for over an hour, and tanks were beginning to reverse slowly out of the line, their ammunition bins empty. Roberts gave a rally point to the north-east, and

suffered little in the engagement, but by now events elsewhere had decreed that the regiment would not go south to the aid of the hard-pressed 3rd.

On the outer flank of the Axis wheel to the north was 90th Light Division, supported by several reconnaissance units. One of these, Reconnaissance Unit 33, had snapped up 7th Armoured Division Headquarters and captured Maj.-Gen. Messervy and his G.I, Lieutenant-Colonel Pyman. Both officers managed to escape shortly afterwards, but in the meantime the chain of command to 4th Armoured Brigade was broken. In the circum-

stances Richards did the only thing possible, and ordered his regiments to pull back and concentrate three miles south-east of El Adem.

As he proceeded there with 3rd RTR, Roberts noted that the whole of the army's rear area was in a complete uproar. 'We passed large numbers of single lorries and groups of lorries all going in different directions, the resulting picture being of a somewhat disorganized musical ride.'

The brigade had suffered badly, but was still a fighting formation. 8th Hussars could produce a light squadron; 3rd RTR could also produce a light squadron, and a weak Grant squadron; and 5th RTR were almost complete. Richards despatched a liaison officer to establish a direct link with Corps HQ, and towards evening 4th Armoured Brigade mounted an attack on the 90th Light, driving them away from Ed Duda, before going into leaguer near

Grant and Sherman together, against a desert sunset—the crews have put on greatcoats against the cold of the night. Note pile of bedrolls on rear deck of Grant.

Sidi Rezegh about midnight. It had not been a day anyone was likely to forget.

In the meantime 22nd Armoured Brigade, ordered to support Richards in his fight against von Vaerst, had run straight into 21st Panzer Division shortly before 0900, and had been roughly handled and forced to withdraw to the north-east. At 1100hrs 2nd Armoured Brigade was sent forward in support, but no co-ordinated attack was launched until 1400hrs, although this succeeded in pushing 15th Panzer Division away to the west and badly mauling a motor rifle regiment. About the same time 44th Royal Tank Regiment's Matildas had attacked from the west into a horizon which seemed filled with German vehicles, and had mangled one of 21st Panzer's rifle regiments so badly that it had to be disbanded.

These afternoon attacks, whilst not deliberately co-ordinated, upset the German plans for an advance to the coast. General von Mellenthin, serving on Rommel's staff, speaks of the Grant as being a far more formidable fighting machine than



any the *Afrika Korps* had so far encountered; of German tanks taking a severe hammering, of rifle battalions being obliterated, of supply columns being cut off from their Panzer divisions, and of Grants and Matildas pressing attacks to the muzzles of the anti-tank guns to wipe out the crews. The morning's optimistic euphoria generated by having 'inflicted a shattering defeat on the famous 7th Armoured Division' (rather an overstatement) had faded like the daylight as the two Panzer divisions went into close leaguer near Bir el Harmat. Rommel, who was almost captured while trying to visit 90th Light, frankly admitted that his original plan had misfired, and that he had not allowed for the Grant in his calculations. In his journal he wrote that 'the advent of the new American tank had torn great holes in our ranks. Our entire force now stood in heavy and destructive combat with a superior enemy.'

In a single day the Germans had lost more than a third of their tanks. 15th Panzer Division had been winded in their fight with 4th Armoured Brigade,

were almost out of petrol and ammunition, and had only twenty-nine fit tanks by evening, although the fitters were working frantically on fourteen more. 21st Panzer was slightly better off with eighty tanks, but 90th Light was out on a limb, and the Italian 'Ariete' Armoured Division was still entangled in the minefields near Bir Hacheim. Supply columns winding their way round the southern flank were at the mercy of marauding armoured cars.

True, the British also had their problems; but the stage was now set for the destruction of *Panzerarmee Afrika*. As we know, this did not happen; in fact, almost the reverse took place. Why is beyond the scope of this study, even if space permitted; it was not the fault of the Grants, and it was certainly not the fault of the tank crews.

Briefly, in the days that followed Rommel found himself pinned back against the minefields and the 150 Brigade box. At one stage he admitted to a captured British officer that unless supplies arrived

Complete disintegration, the result of a direct hit by a bomb.





This Grant shows signs of wear after its long advance; the torn sandguards and sand-blasted paintwork are typical.

through the minefields he would have to ask Ritchie for terms. Supplies did get through in the nick of time. Then, without serious molestation, he reduced the box in his rear, and at the same time secured his own position with an iron ring of anti-tank guns. When the British armour did attack, its strength was wasted away until Rommel felt strong enough to break out into the open again. Rommel had guessed on the first day that Ritchie would fight with his armoured brigades dispersed, and was thus able to beat them in turn, having concentrated his own armour at the point of contact. By 15 June 8th Army was shredding away from the Gazala position and retreating towards the Egyptian frontier. On the 20th Tobruk was stormed, and the *Afrika Korps* had won its greatest victory.

Jake Wardrop had hit the nail squarely on the head when he wrote, 'It seemed to me that if they

[i.e. his generals] had got a lot of kit together and had one big push in one place, we could have done something definite. As it was, the units were just battering themselves to pieces in a lot of little scraps which were getting us nowhere.'

A week after the start of the battle, 5th RTR were detailed to attack at five o'clock in the afternoon. For once there was a little time to spare, and Wardrop's crew used it to wash, shave, clean their teeth and slick their hair. 'It used to be a ritual with us to get "queened up" a bit as though we were going to the Plaza when we had a date with Erwin.' It was an old soldier's device, and it served two purposes. First, it occupied the mind during the unpleasant waiting period and, secondly, a man felt a lot better afterwards.

'At five to five, I started up and right on the nail we moved forward. It was a very short engagement. I think they pulled our legs a bit and we just walked in like a lot of idiots. There were a lot of tanks down behind the ridge, and guns, and when we got nearer they started to give us a pasting. Two tanks went up

straightaway and the crews were running for it. We picked up a few of them and were hit ourselves, but not very badly. They didn't all get back—the two commanders were missing. We fired some more and then withdrew; it had been a miserable failure.'

Wardrop's experience was typical, and was only one of a number of frustrating encounters he would undergo before the end of the battle.

## Disillusion and Recovery

For everyone, Gazala/Knightsbridge had been an utterly exhausting experience, as was the long withdrawal to the Alamein position. 'After that', wrote Brig. Richards, 'I came to the conclusion that no officer knew what war meant until he had experienced a defeat and forced withdrawal.' When he eventually found time to sleep, he did not wake for forty-eight hours.

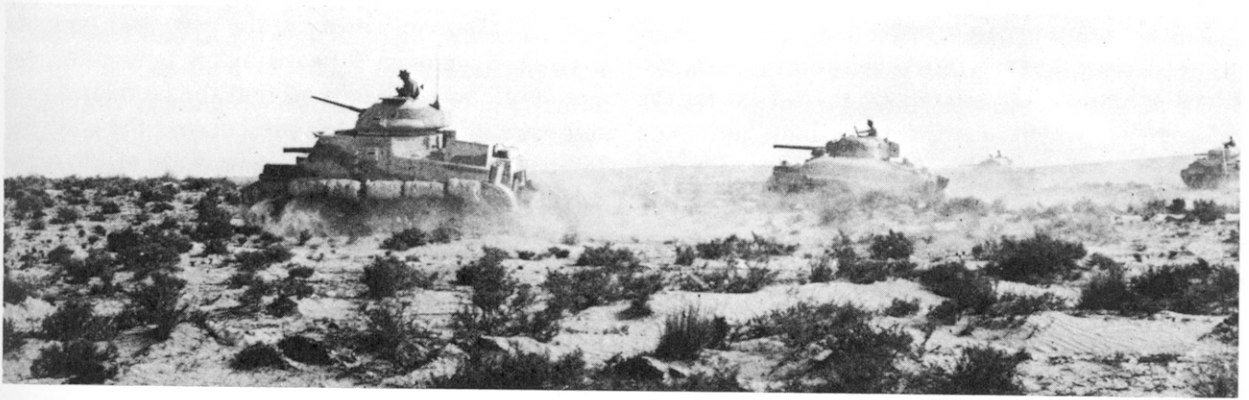
The tank crews were also deadly tired. Tired of being sent into the teeth of unsubdued 88s; tired of being sacrificed in badly planned operations; tired of standing to for attacks that were cancelled at the

hatred', of the British armour. The division felt that it had been badly let down at Mersa Matruh and again at Ruweisat Ridge, although 1st Armoured Division had fought as hard as anyone to put the final brake on Rommel's runaway advance.

By the middle of July the Alamein position had congealed into a solid line running south from the coast to the Qattara Depression. A new commander, Lt.-Gen. Bernard Montgomery, took over 8th Army, and a strong wind blew through the upper echelons of command. With refitting and reorganization came a new spirit of optimism, and the convoys continued to pour reinforcements and supplies into Egypt, whilst Rommel's own supply position remained acutely precarious.

During August it was becoming more and more apparent to Rommel that if victory in Africa was to be his, he must strike before he became hopelessly outnumbered in men and materials. He had received some reinforcements, and half his 200 tanks were the improved PzKw IIIJs. In addition, he had received twenty-seven of the new PzKw IV

The last of the desert; an attack near Gabes, Tunisia, illustrates the declining importance of the Grant in Africa.



last minute; and tired of fighting for senior officers who always seemed one jump behind the enemy. By July they were stale, or 'canny' as Wardrop puts it, unwilling to take risks without good reason. There was also a feeling within the army that although operations might be planned, events would see to it that they never took place; when they did, the consequence of such cynicism was inefficiency and loss of life.

This was the period when 2nd New Zealand Division spoke of an 'intense distrust, almost

F2s, which were known to the British as Mark IV Specials. This new Mark IV carried a 75mm gun that was 43 calibres long, producing a muzzle velocity of 2,428 feet per second. This meant that the Grant, now referred to as 'ELH' (Egypt's Last Hope), was no longer the most powerful tank in the desert, for its 40 cal. 75mm could produce only 2,050 feet per second. On the other hand, there were 164 Grants immediately available.

By the end of the month Rommel felt that he could delay his attack no longer, and put into effect

plans to break through the southern end of the British line, to be followed up by a wide right hook swinging north towards the coast; in fact a repeat of the move with which he had started the Gazala battle.

From north to south the British line was held by 9th Australian Division, 1st South African Division, 5th Indian Division, and 2nd New Zealand Division. To the left of the New Zealanders deep mine belts stretched south towards the Qattara Depression, and these were covered by 7th Light Armoured Division, which mustered 122 Stuarts and Crusaders as well as armoured cars. Behind the infantry divisions was Maj.-Gen. Gatehouse's 10th Armoured Division, containing three armoured brigades, the 8th, 22nd and 23rd. Of these the 22nd, comprised of the Royal Scots Greys, 1st and 5th Royal Tank Regiments and 4th County of London Yeomanry, would play the major rôle in the forthcoming battle—which took its name from Alam Halfa ridge—under the command of the newly promoted Brig. Roberts, although the 23rd (40th, 46th, and 50th Royal Tank Regiments), commanded by Brig. Richards, would come south with its Valentines to fill the gap between the 22nd and the New Zealanders' rear.

The Germans began to move during the night of 30–31 August, but ran into difficulties at once. 7th Light Armoured Division made them fight for the mine belts, which were denser than had been expected, and from the north the New Zealand artillery opened fire. Heavy losses were suffered by the mine-lifting parties and their covering infantry, and von Bismarck, the commander of 21st Panzer Division, was killed by mortar fire. By dawn the columns were still not free of the minefields, and were having to contend with incessant attacks from the RAF as well as the harassment of 7th Light Armoured. Rommel was on the point of cancelling the whole operation when his leading elements at last broke through.

However, on this occasion the Fates were against him. First, a heavy sandstorm caused delay, and then the columns ran into an area of soft going which caused further delay and consumption of priceless petrol. It was not until evening that the leading Panzers were approaching Alam Halfa ridge, and by then the defenders were ready and waiting for them. The area of Alam Halfa was

garrisoned by the British 44th Infantry Division, but the hard shell of the defence was Roberts's 22nd Armoured Brigade, stationed around Point 102. Roberts had placed three of his regiments (from right to left 1st RTR, 4th CLY and 5th RTR) in carefully prepared positions among the foothills fronting the forward slope, while the Greys were in reserve on the reverse slopes. Each regiment consisted of two Grant squadrons and one light squadron, and the brigade's front was approximately three miles long. Six-pounder anti-tank guns were dug in and concealed, and the fire of 1st Royal Horse artillery's 25-pounders was on immediate call.

During the afternoon Roberts had pushed forward two of his light squadrons to look for the enemy. By 1730hrs they were exchanging fire with the Panzers and retiring towards the brigade, where the Grants waited turret-down with their commanders watching from the tops of their hulls.\* Soon the familiar *panzer keil* came into sight, headed by the formidable-looking PzKw IV F2s—a total of 120 tanks belonging to 21st Panzer Division.

The Germans halted briefly when they reached a line of telegraph poles running obliquely across the front of the brigade's position. Roberts watched as thirty tanks swung away to the east, and then the main body moved forward again before turning east itself. So far it seemed that the Germans were unaware of the brigade's presence, as the covering light squadrons had withdrawn wide of the main position to avoid giving it away. However, as the Germans were moving east, just out of gun range, it was inevitable that they would run into 44th Division's area without being engaged unless Roberts acted at once. At 1800hrs he instructed the CLY and 5th RTR to move out of their prepared positions and show themselves on the crest, but to avoid opening fire above 1,000 yards.

The German response was immediate. Halting, they quickly shook out into a fighting formation and advanced directly on the CLY, led by the new PzKw IVs. At 1810hrs, with the range at 1,000 yards, the Yeomanry opened fire. The enemy halted to reply, and the effect of the new tanks was felt immediately as they concentrated on the CLY's 'A' Squadron, which lost all twelve of its Grants within minutes.

\*Many of the Grants' positions had been excavated by bulldozers.

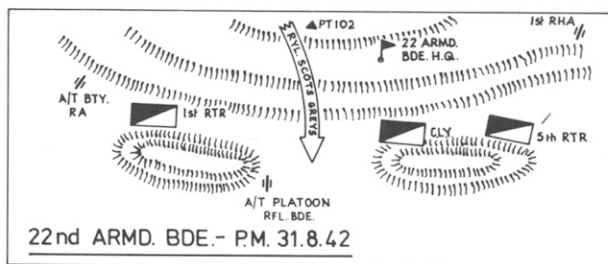
A great hole had been torn in the centre of the brigade, and Roberts ordered the Greys to advance over the crest and fill the gap while he hammered the enemy with his artillery. Sensing victory, the Germans began moving forward through the shellbursts, only to run into the beautifully concealed position of 1st Rifle Brigade's anti-tank platoon, which held the fire of their 6-pounders until the tanks were only 300 yards off. Tank after tank lurched to a standstill, but still the Germans came on. It was the crisis of the battle, and there was still half an hour's daylight left.

The Royal Scots Greys had not long exchanged their distinctive horses for tanks, and this was their first regimental action in armour. With the battle on a knife edge their presence was very badly needed, and as yet there was no sign of them. Worried, Roberts called Sir Ranulph Fiennes, their commanding officer: 'Come on the Greys, get out your whips!'

And then they were there, roaring over the crest in a dust cloud and down the forward slope to fill the gap. They had not really been as long as it had seemed to Roberts. To Maj. Douglas Stewart, commanding one of the two Grant squadrons, the action looked like this:

'Fiennes told us to come forward, which we did, fairly flat out in a cloud of dust, line ahead. I remember coming over a rise and seeing German tanks in front. We dropped down a little slope onto the flat and formed up in line abreast in the open at about 5 to 10 yards interval between tanks, a highly unorthodox manoeuvre. The other heavy squadron was on our right. We all started shooting with everything. I do not think we hit very much and they only hit one or two of ours, but it must have been fairly shattering for them to be suddenly confronted with a straight line of twenty-four tanks, whether they were Lee/Grants or anything else. One of my troop leaders, in his excitement, fired off every single round of ammunition in his tank inside an hour—I am doubtful if he hit a thing! There was a lot of stuff flying about in both directions, which was fun for our first time out.'

The centre was now secure but crowded, and as some enemy tanks were trying to work round 5th RTR's left flank into the artillery area, Roberts pulled out what remained of the CLY and sent them to deal with the threat, which they contained



effectively. These last flashes of gunfire in the failing light ended the day's fighting but next morning 15th Panzer Division tried to barge their way past 5th RTR and were stopped dead. Wardrop had been dozing in his driving seat, and was suddenly woken as his commander spotted the enemy:

'It was just breaking light and there in front of us, about 2,000 yards away, was a great heap of tanks. They must have halted there the night before and were shaking out. I wakened the gunner and we started to go to town on them with the 75; we couldn't miss them, they were so bunched up. It was all right while it lasted, but they started to give us a lacing in return—it was quite a morning.'

Bombed and strafed by the RAF, shelled constantly and facing a solid defensive front every time they turned north, the Germans conceded defeat. Hamstrung by lack of petrol, Rommel could only order a withdrawal through the minefields, which he completed over the next few days, leaving behind forty-nine tanks and other AFVs, sixty guns of various types, and 400 transport vehicles. The British lost sixty-seven tanks (including thirty-one Grants), but many of these were repairable.

After Alam Halfa, all hope of an advance to the Nile evaporated. Because of his tenuous supply line, Rommel was forced to play a purely defensive role, not daring to retreat for fear that Montgomery would swamp him in a battle of manoeuvre. When 8th Army began its offensive on 23 October, he admitted that he had begun 'a battle without hope'. Perhaps, therefore, it may be said that morally the Second Battle of Alamein was won on the slopes of Alam Halfa, for after that the rôles of the protagonists were reversed and their respective outlooks underwent a profound change. The Grant had shown that the Desert Fox could be beaten, and that was its major achievement during the desert war.



'B' Squadron, 3rd Carabiniers, and 1/17th Dogras moving up to the south-eastern spur of Nunshigum.

Of course, Grants and Lees fought at Alamein and throughout the long advance that followed; Lees, with American crews, also fought with the Anglo-American 1st Army in Algeria and Tunisia. But after Alam Halfa the Sherman began arriving in North Africa in large numbers, and assumed the mantle of the Allies' main battle tank at once. Alam Halfa was the last major engagement in which the Grant fought as 8th Army's mainstay.

## Burmese Battles

There was depression at General Headquarters in Delhi. In February 1943 a handful of Valentines had been committed to an attack in the Arakan, and the attack had failed disastrously. Now, in spite of the lessons learned during the 1942 retreat from Burma, when 7th Armoured Brigade's Stuarts had provided a most effective rearguard, many officers

drew the short-sighted conclusion that tanks could never be employed effectively in that country. In fact one officer made it his business to tour armoured units telling people that if they wished to see anything of the war they should transfer to the infantry.

Unfortunately for him, he visited 254 Tank Brigade while its commander, Brig. Reginald Scoones, an RTR officer, was up at Imphal discussing the question of the brigade's employment with his brother, Lieutenant-General G. P. Scoones, the commander of 4 Corps. At Imphal there had been general agreement that tanks could operate on the Corps' two axes to the south, and the brigadier was not pleased to hear on his return that unqualified officers, however senior, had been throwing cold water on the idea of armoured warfare in Burma.

Taking the first plane to Delhi, he saw Auchinleck and put his case firmly and successfully, having

first exchanged harsh, not to say insubordinate, words with those who doubted the abilities of his arm of the service. Fortunately for all concerned the tanks were given the chance they deserved, although it would be early 1944 before they would see action.

A second offensive was mounted in the Arakan, the primary objective of which was the seizure of the road which crossed the Mayu Range, linking Maungdaw and Buthidaung. The plan was for Maj.-Gen. H. R. Briggs's 5th Indian Division to advance down the coast on Maungdaw, while across the range Maj.-Gen. Frank Messervy would advance on Buthidaung with 7th Indian Division, his left flank covered by two West African brigades. In support would be a Lee regiment, the 25th Dragoons, under Lt.-Col. H. R. C. Frink, which would be largely instrumental in giving Britain her first clear-cut victory over the Japanese.

Whilst it was now considered obsolete in other theatres, the Lee was the ideal tank for north-western Burma and Manipur. As movements were

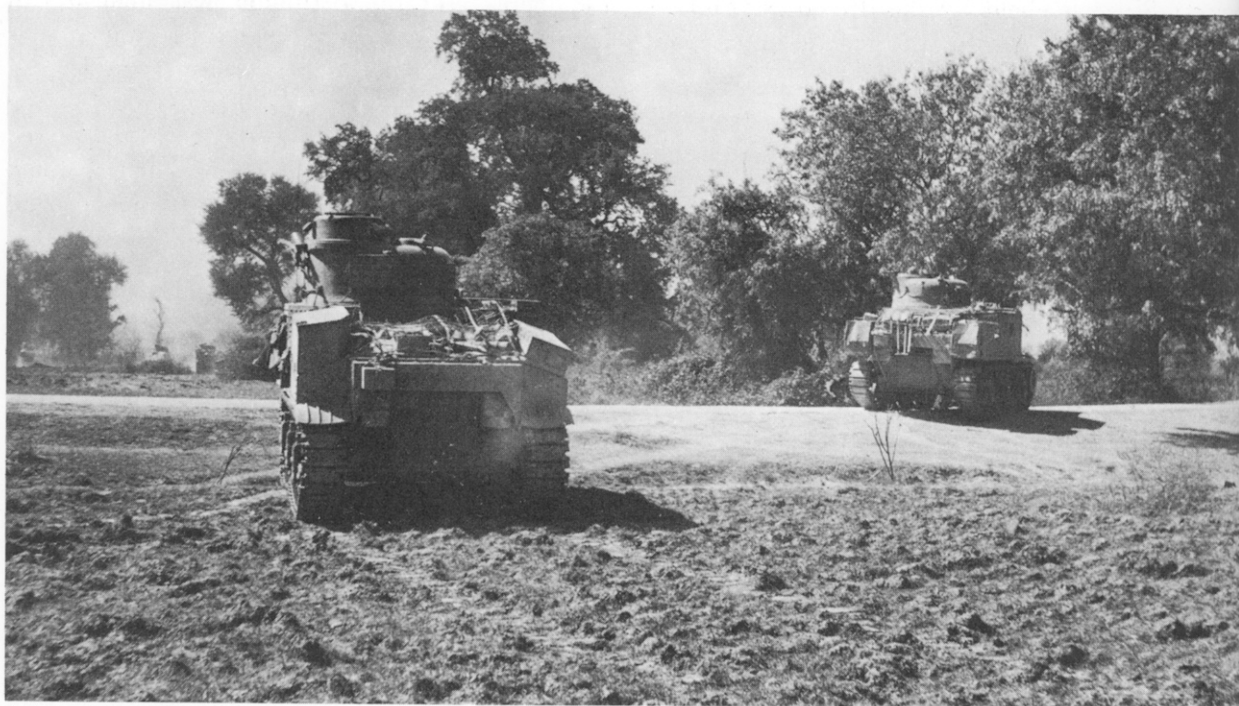
often confined to a one-tank frontage, the limited traverse of the 75mm was not a major disadvantage, while the full traverse of the 37mm, which could now fire a canister round, was most useful, enabling a tank commander to sweep the trees clean of the enemy's snipers. As the country was close, the tanks had an escort of infantry, usually from the Bombay Grenadiers, who were specialists in the work, for the Japanese did not hesitate to rush the vehicles with pole charges and contact mines.

5th Indian Division captured Maungdaw on 9 January, but were held up by a strong position at Razabil to the south, and the Dragoons moved forward in support, going into action on the 26th against a bunker complex on a feature known as Tortoise Hill. During the next few days the regiment perfected a technique of bunker-busting that would, with refinements, be employed effectively against the Chinese in Korea several years later.

First, using HE rounds, the tanks would progressively blast the scrub off a feature, revealing the

Advance down the rain-soaked Tiddim road; note commander wearing the rimless RAC steel helmet.





Carabinier Lees on the Shwebo Plain, February 1945.

bunker fire slits. Then the timbers would be smashed up with AP shot, causing the roof to collapse. If a round of Smoke could be got into a fire slit, so much the better, for the smoke would seep along the galleries and out of other, possibly undetected, slits, identifying them as the next target. Meanwhile, the whole position would be under intense machine gun fire, and the infantry's mortars would be firing on the reverse slope to prevent the enemy escaping. Finally, the infantry would storm the slopes under a diversionary barrage of flat trajectory AP shot, which could be maintained until the riflemen were within yards of the bunker itself.

However, by the end of the month, the Japanese were pouring reinforcements into the Maungdaw sector faster than they could be killed, and the battle tailed off into a stalemate. The Dragoons crossed the Mayu Range by a secondary route, the Ngakyedauk Pass, at the beginning of February, to assist 7th Division to achieve its objective of Buthidaung, leaving their reserve tanks and crews to support 5th Division.

Meanwhile the Japanese, who always regarded the Arakan as a sensitive area since it provided access to central and southern Burma, were mounting their own counter-offensive, which they

called *Ha-go*. They planned to infiltrate their crack 55th Division through the gap between 7th Division and the West Africans, and then swing west towards the coast, severing the communications of the former and 5th Division. This had worked during the 1943 operations, and it was hoped that yet another disorderly British withdrawal would ensue. Their plans, while well laid and efficiently executed, failed to take into account two important factors. First, they no longer controlled the air space over the Arakan, since the newly arrived Spitfires had proved more than a match for their own Oscars and Zeros; and, secondly, the Dragoons' move over the Mayu Range had not been allowed for, although it had been detected.

On 6 February the 7th Division's Headquarters was attacked at dawn. By 1030 it became obvious that it could not be held, and General Messervy ordered the defenders to break out and head for the

Aspects of armoured warfare peculiar to Burma. The wire grill over the engine deck is designed to keep off hollow charge and other explosive devices. The Indian soldiers are Bombay Grenadiers, who provided the tanks with an escort in close country. During hot weather, petrol vaporized, and when a driver started up there was sometimes a fire in the engine compartment; as a precaution, another member of the crew stood beside the open hatches with a fire extinguisher handy.

box at Sinzewa, held by the division's administrative troops. By 1245hrs the general and several members of his staff had arrived, while two squadrons of Lees pushed up the road towards the old headquarters, providing cover for troops trying to concentrate on the Admin Box. The Box itself measured only 1,500 yards from east to west and about 800 yards from north to south, and was bisected by two features known as Artillery and Ammunition Hills, joined by a shallow saddle. It was overlooked from every direction by hills varying in height between 100 and 200 feet, and was therefore a bad position in which to fight a defensive battle.

Apart from the Dragoons' Bombay Grenadier escort, the only professional infantry present at the outset were two companies of the West Yorkshire

Regiment, and the perimeter was held by an unlikely mixture of units, including gunners and transport drivers fighting as infantry, muleteers, and even the staff of an officers' shop. In the beginning, morale was poor, and it was considered unlikely that the defence could hold for long. However, Brig. Evans, the box commander, had other ideas; he told his hotch-potch garrison that they had two alternatives—they could fight hard and keep the enemy out, or they could become prisoners of the Japanese, in which case they risked being butchered, starved and beaten. As an incentive, he instituted a daily competition between sectors for the largest enemy body count.

The Japanese closed in round the Box during 7 February, and began attacking at once. During the

*continued on page 26*



**Key, Plate A, Grant turret, looking forward (left) and to rear (right):**

- 1 Signal pistol
- 2 225-round belt box, .30 cal. co-axial Browning MG
- 3 .30 cal. co-axial Browning MG
- 4 .30 cal. MG tools
- 5 2 in bomb thrower
- 6 Fourteen smoke bombs
- 7 Gun elevating and traversing mechanism
- 8 37mm gun
- 9 Spare 37mm gun periscope
- 10 Two 225-round belt boxes, .30 cal. MG
- 11 Six 100-round belts .30 cal. MG
- 12 Sixteen 37mm shells
- 13 Spare W/T valves
- 14 Map case
- 15 No. 19 W/T set
- 16 Prismatic binoculars
- 17 Two spare protoscope prisms
- 18 Hellesen lamp
- 19 4lb CO<sub>2</sub> fire extinguisher
- 20 Recognition signals
- 21 Seven plus seven plus five plus four 37mm shells
- 22 Distinguishing flags and poles
- 23 Twelve signal cartridges: four red, four green, four illuminating
- 24 Six No. 36 grenades
- 25 Two spare commander's periscopes

**Key, Plate B, Grant fighting compartment, right-hand side:**

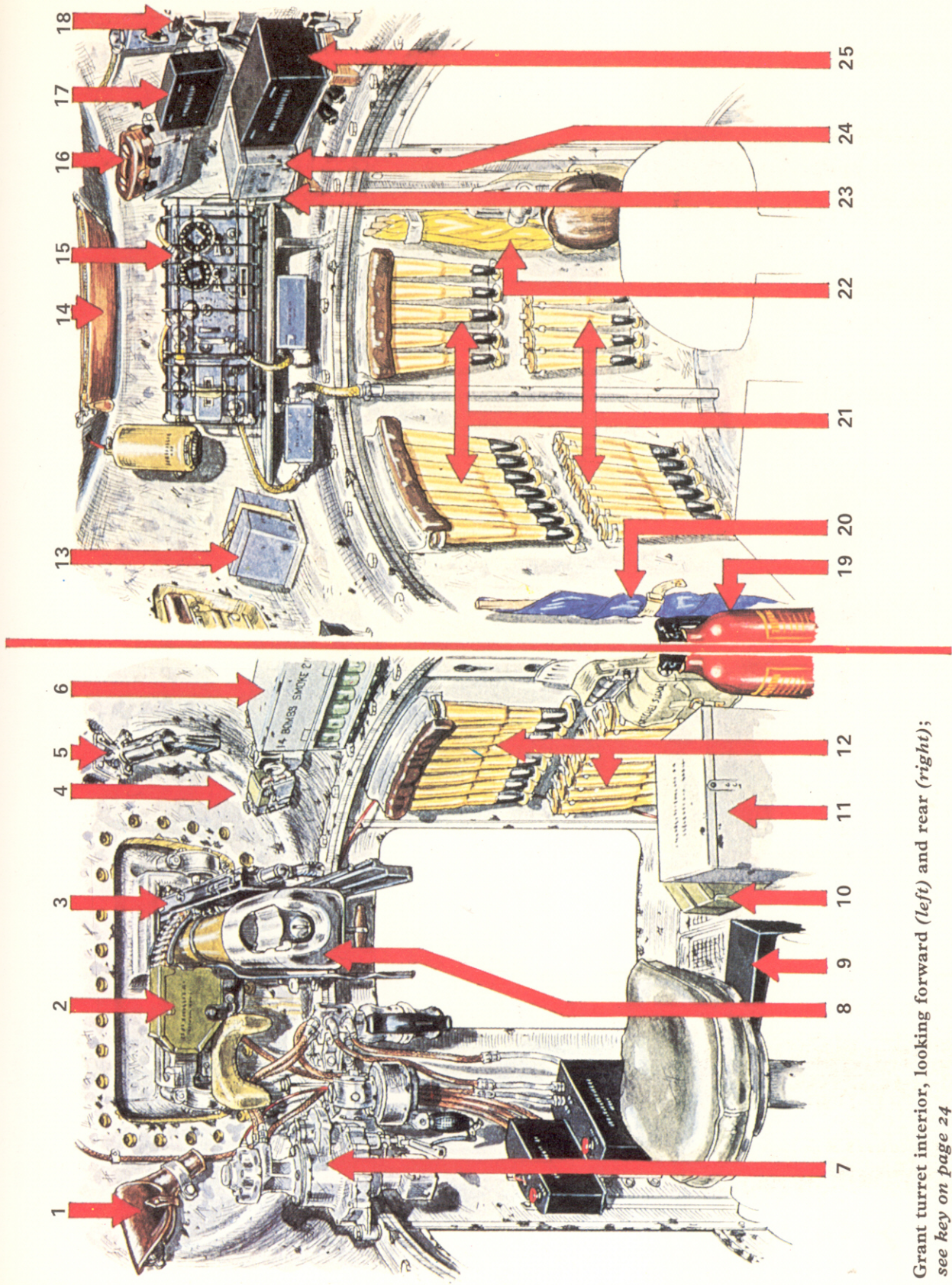
- 1 Driver's tool box, with portable cooker stowed on top
- 2 Two spare driver's visors
- 3 Chest for tools, spares and accessories for 37mm, 75mm and .30 cal. guns
- 4 First-aid chest
- 5 Two spare protoscope prisms
- 6 Binnacle
- 7 Lever for driver's front flap
- 8 75mm gun recuperator cylinder
- 9 Periscope spares and accessories, 75mm gun
- 10 CO<sub>2</sub> fire extinguisher
- 11 Cleaning staffs, 37mm and 75mm guns, and spare antennae
- 12 Twenty-four 75mm shells
- 13 Sixteen 20-round Thompson magazines
- 14 .45 cal. Thompson SMG
- 15 Signals satchel, with four spare protoscope prisms above
- 16 .30 cal. Browning MG, AA mounting, with cover, strapped to turret guard in this position when turret fore and aft
- 17 Forty-one 75mm shells

The elevating and traverse wheels can be seen on the left of the 75mm gun recoil shield. The open ammunition bin in the foreground shows the safety clips around the base of each round.

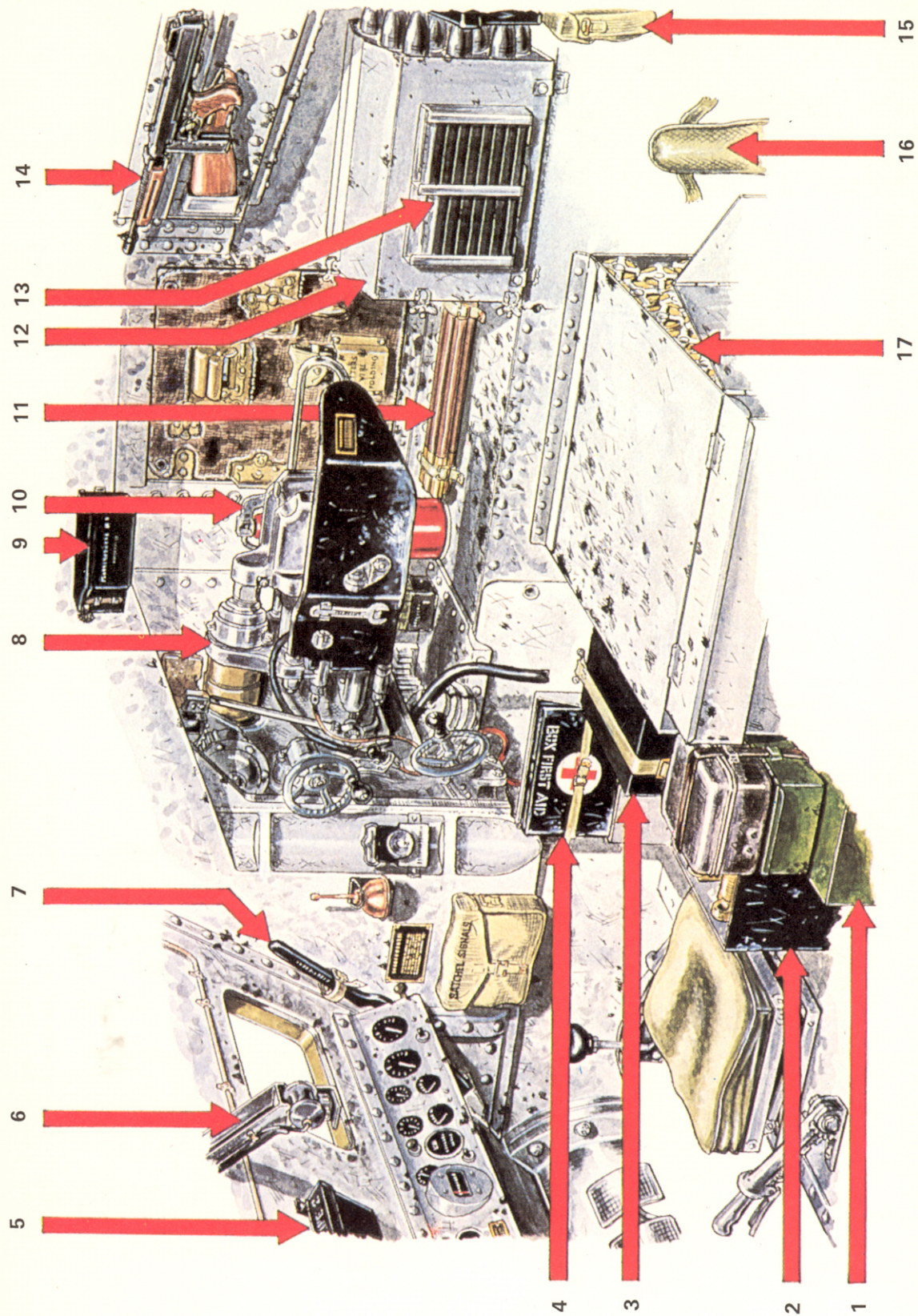
**Key, Plate C, Lee fighting compartment, left-hand side:**

- 1 6½-gal drinking water tank
- 2 Seven 37mm shells
- 3 Eleven 37mm shells
- 4 225-round belt box, .30 cal. MG, periscope spares, and 37mm gun
- 5 Side door, with spare protoscope prisms in box
- 6 Spare maps
- 7 Spare W/T valves
- 8 No. 19 W/T set
- 9 Thirty-seven 37mm shells
- 10 Spare protoscope prisms
- 11 Two 6½-gal drinking water tanks
- 12 } .45 cal. Thompson SMG, butt,
- 13 } and sixteen 20-round magazines
- 14 }
- 15 Two spare barrels, .30 cal. MG
- 16 225-round belt box, .30 cal. MG
- 17 Rations
- 18 Nineteen 37mm shells
- 19 225-round belt box, .30 cal. MG
- 20 Four 100-round belts, .30 cal. MG
- 21 Eight 100-round belts, .30 cal. MG
- 22 Crew haversacks, and anti-gas suit in valise
- 23 Two 100-round belts, .30 cal. MG
- 24 MG belt filling machine

This view emphasizes the isolation of the 75mm gunner and loader from the turret crew behind.

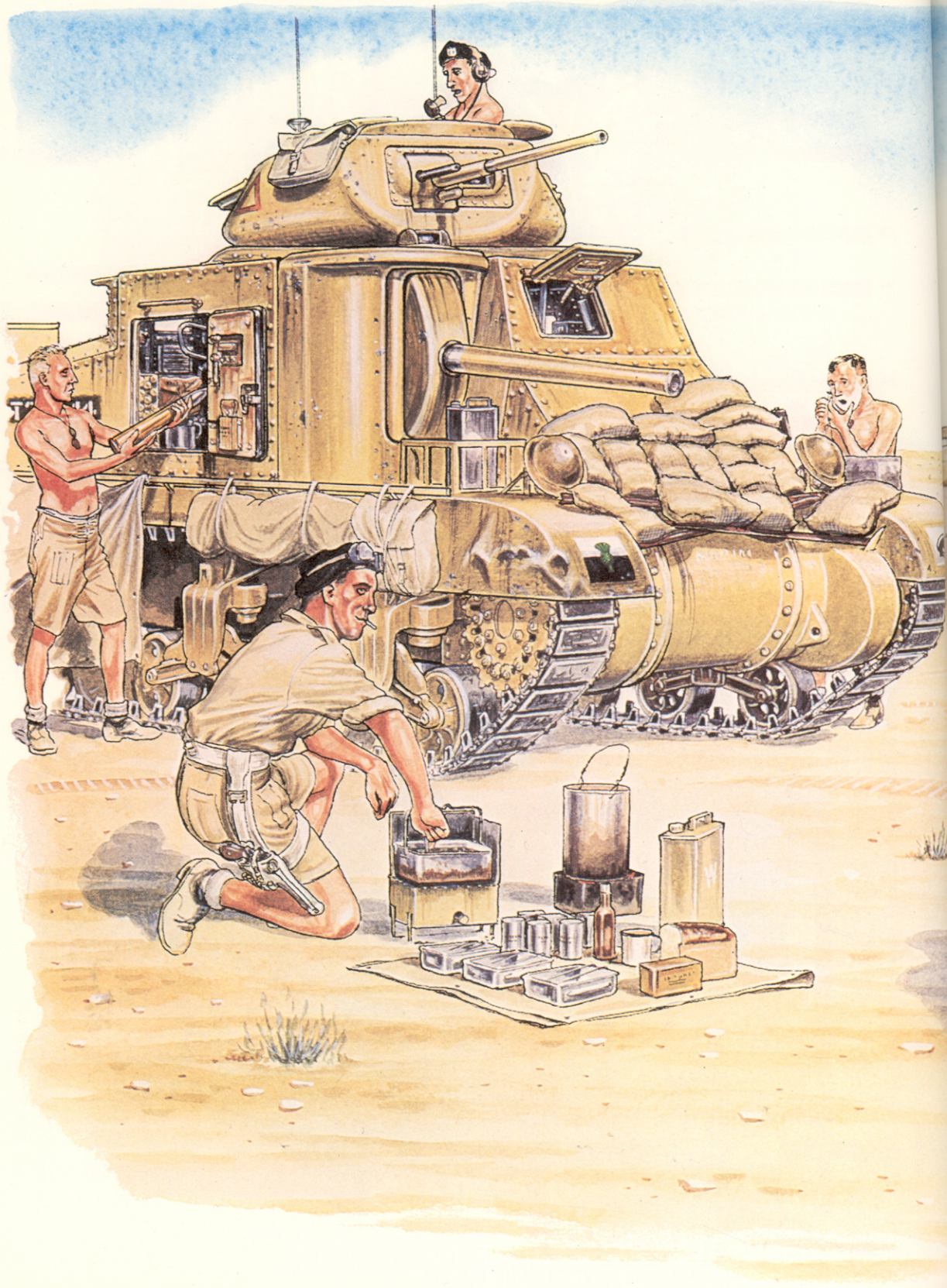


A Grant turret interior, looking forward (left) and rear (right); see key on page 24



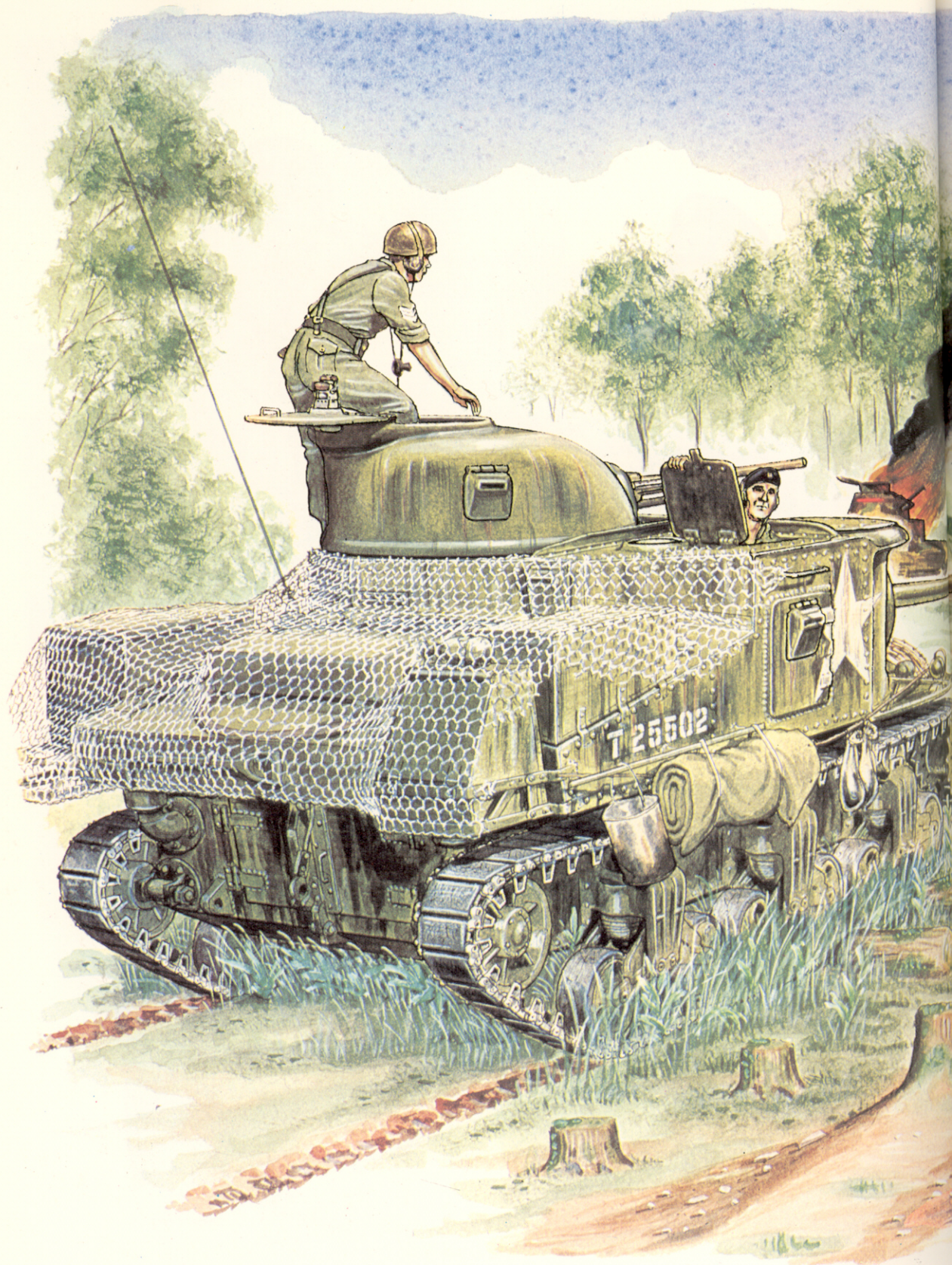
B Grant fighting compartment interior, right-hand side;  
see key on page 24





D Grants of Royal Scots Greys, Western Desert, October 1942



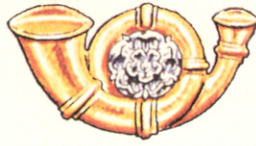


E Lee of 3rd Carabiniers, Kabaw Valley, Burma, 20 March 1944





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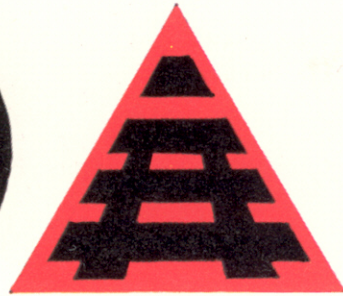
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**Plate D: Grant of a troop leader, 'A' Squadron, Royal Scots Greys; Western Desert, October 1942**

The officer on the right is wearing off-white corduroy slacks and suede chukka boots, typical of privately purchased items favoured in the desert. The khaki SD cap bears the regimental cap badge pinned through its black patch; a lieutenant's rank 'pips', on yellow cavalry backing, are sewn to the shirt shoulderstraps. The rest of the crew wear regulation khaki drill shirts and shorts, and the black Royal Armoured Corps beret with the regimental cap badge; the sergeant follows normal cavalry practice in displaying the cap badge on his chevrons (worn on the right arm only). All webbing was generally scrubbed white, and brasses were only polished when out of the line. The driver, who is making 'hash macandy' on the tank's petrol stove while the tea brews on the sand-and-petrol 'tommy cooker', wears his revolver holster on the long leg-strap supplied to AFV crews. The mixture of open and closed holsters was quite normal. Evidently the quartermaster's truck has not long departed, as the meal will be accompanied by such luxuries as fresh bread, sauce and marmalade. The operator remains on radio watch, and is checking the net with the squadron's other tanks, while the gunners carry out ammunition replenishment. Those crew members not actually working take it in turns to wash and shave.

The tank carries the Greys' own regimental insignia of a green thistle on a white-black square, and the insignia of 4th Armoured Brigade; the 'A' Squadron sign is painted on the turret. Additional protection in the form of sandbags has been added to the glacis, and a stowage rail is welded along the side.

**Plate E: Lee of 'A' Squadron, 3rd Carabiniers; Kabaw Valley, Burma, 20 March 1944**

The Carabiniers were one of the smartest regiments to serve in Burma; they painted their webbing green, and some photographs suggest that gaiters, at least, were sometimes boot-polished black. Crews almost always wore cross-straps and gaiters, with polished brasses. Officers wore their

badges of rank on khaki cloth slipovers on the shirt shoulderstraps. All ranks wear the standard jungle green cellular shirt and slacks; the sergeant in the turret has small white tape chevrons on the right sleeve. Tank commanders wore steel helmets more often in Burma than in any other theatre, because of the ever-present danger of snipers.

The Lee has the longer M3 gun, and the side door has been welded shut. Markings are limited to the Allied star recognition sign, and the vehicle serial number. The mesh grill covering the engine deck is an improvised protection against hand-placed hollow-charge explosives, which the Japanese regularly used against tanks. Hanging on the stowage rail are the brew can, the tank-sheet/bivouac, and two water *chuggles*. A coil of barbed wire can just be seen fixed to the glacis, for the use of infantry when consolidating a captured position. An Indian infantryman is showing the tank troop leader a trophy—a Japanese helmet—while in the background his comrades examine a knocked-out Japanese Type 95 tank. This bears the red turret stripe of the *14th Sensha Rentai*, which is known to have served in Burma at this time; this identification of the unit annihilated in this action is speculative.

**Key, Plate F, cap badges and vehicle insignia of Lee/Grant units:**

- 1 Royal Scots Greys
- 2 King's Own Yorkshire Light Infantry (*149th Regiment, RAC*)
- 3 The Duke of Wellington's Regiment (West Riding) (*14th Regiment, RAC*)
- 4 3rd Carabiniers (Prince of Wales's Dragoon Guards)
- 5 Royal Tank Regiment
- 6 25th Dragoons
- 7 County of London Yeomanry (Sharpshooters)
- 8 8th King's Royal Irish Hussars
- 9 York and Lancaster Regiment (*150th Regiment, RAC*)

*Vehicle insignia*

- 10 4th Armoured Brigade
- 11 50th Indian Tank Brigade
- 12 254th Indian Tank Brigade
- 13 22nd Armoured Brigade



Part of 'Stiletocol' moving out.

night they broke into the Main Dressing Station and massacred the patients and orderlies. They were thrown out next morning by a West Yorkshire company supported by a troop of Lees, and fifty of them were killed. The entire plan for *Ha-go* was found on an officer's body.

On the 8th, an air attack started a huge fire in the main dump on Ammunition Hill. Three days later the Japanese secured a lodgement in the same area, and dug in. It was essential that this pocket be eliminated, since it overlooked the main headquarters, the ammunition dump and the water point. Two troops of Lees scientifically smashed in the bunkers, and the West Yorkshires dealt with the survivors. On the same day, supplies were air-dropped into the Box for the first time, and continued to arrive regularly throughout the siege. The defence was holding, and morale began to rise.

In all this the tanks played a critical rôle. With their tremendous firepower they smashed up the enemy's attacks, battered his bunkers and provided defensive shoots at night. They were, as the 7th Division's historian puts it, 'a continual source of anxiety to the Japanese,' and he was echoed by the author of the 5th Division's history, *Ball of Fire*, who

said that 'The debt owed to these tanks and their crews cannot be overemphasized.' The enemy admitted that the presence of tanks east of the Mayu Range had upset their calculations, and did all they could to destroy them. They fired phosphorus shells into the tanks' harbour area in the vain hope of starting a grass fire, and they tried to break into the harbour itself in a *banzai* charge, which was annihilated. Some tanks were lost, but not enough to make any difference, and in fact 'A' Squadron had been sent out of the Box to join 33 Brigade to the east quite early in the siege.

Some magnetic mines were captured, and the Dragoons tested them on a derelict Lee. When fixed to the sides, they simply bulged the plating, but when applied to the roof above the operator's seat, they blew a hole through the armour, through the floor below, and ten inches into the ground. As a result of this experiment, wire grills were improvised to protect the tanks' vulnerable engine decks, and these later became a standard fitting.

Meanwhile, help was on the way. 5th Division was fighting its way through the Ngakyedauk Pass, spearheaded by the Dragoons' spare tanks. At the summit, progress was delayed by a large bunker

complex, which the Lees were unable to subdue. A 5.5 inch howitzer was brought up and, with two tanks providing shelter for the crew, it methodically blew the fire slits apart at point blank range. On 22 February 'C' Squadron and two infantry companies broke out of the Box to make contact, which they succeeded in doing the following day. The siege was over.

Elsewhere, the enemy's plans had had little success. The thrust on the coast had been turned back, and the troops involved were themselves now under pressure from a newly committed division—26th Indian—and in danger of being cut off. Moreover, their supply line had broken down, and

instead of living off captured rations the men were starving. The proud 55th Division had been ripped apart with the loss of more than 5,000 of its men.

For the first time, the Japanese had been soundly beaten at their own game. They were forced to commit vital reserves to hold the Arakan, reserves which were needed to support their forthcoming offensive in Manipur. When the time came, it was the British who sent reinforcements from the Arakan to the Central Front, in the shape of the 5th and 7th Indian Divisions.

A Lee of 150 Regiment RAC during the street fighting in Mandalay.





Some of the bitterest fighting of the campaign took place in the villages round 33 Corps' bridgeheads. The picture shows graphically the risks taken by the Bombay Grenadiers to safeguard their charges against Japanese suicide attacks.

In Central Burma the Japanese were on the move, marching towards the Chindwin and the hills of Manipur beyond. Their offensive was called *U-go*, sometimes referred to as the 'March on Delhi', but its objective was simply to secure a defence line along the crest of the Naga Hills, which would prevent the British invading Burma from the north.

The troops employed came from Lt.-Gen. Mutaguchi's 15th Army, and the plan was for 31st Division to cut the road north of Imphal at Kohima, while the British 4 Corps would be besieged around Imphal by the 15th and 33rd Divisions. However, once again they failed to take into account either the benefits of air supply or the potential of aggressively used armour.

By the middle of March 1944, Brig. Scoones had brought two of his tank regiments up the long and difficult route from India proper. They were the 3rd Carabiniers, under Lt.-Col. Ralph Younger, with Lees, and 7th Light Cavalry, an Indian regiment commanded by Lt.-Col. Jack Barlow, with Stuarts. Some personnel of the second Lee regiment, 150 Regiment RAC, had also arrived, but not their tanks. As the Imphal Plain was

entirely surrounded by mountains, training in hill-climbing commenced at once, although 'A' Squadron, 3rd Carabiniers was sent down to the Kabaw Valley, where the withdrawing 20th Indian Division had reported the presence of several Japanese light tanks.

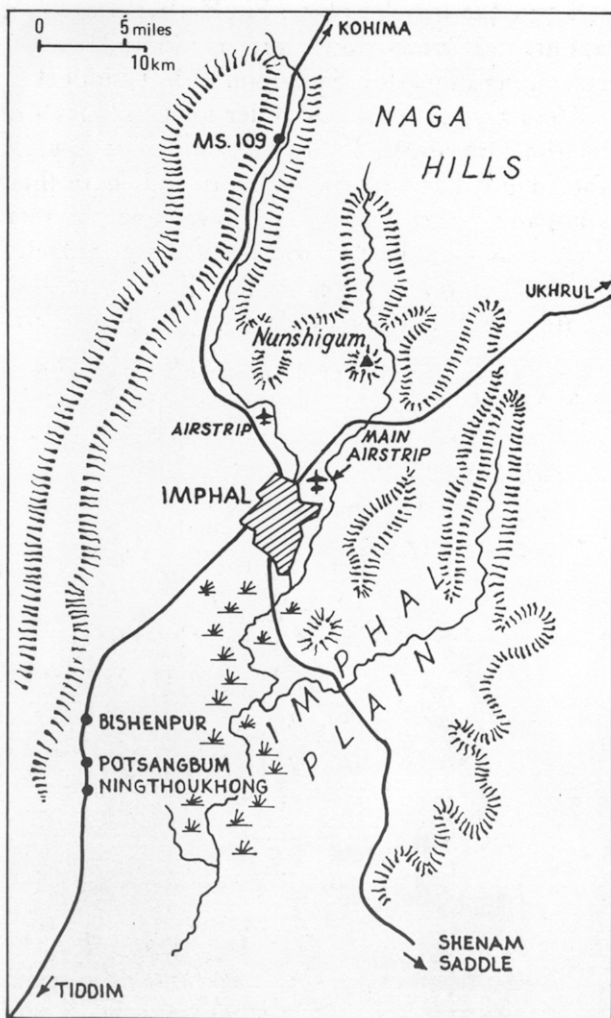
Several engagements were fought in support of the infantry, but the enemy's armour was not encountered until 20 March, when it attempted to ambush a relief column trying to get through to some trapped infantry. The column, consisting of a company of 9/14th Punjabis and some carriers from the Northamptonshire Regiment, was led by a troop of Lees under Lieutenant Millar, whilst SHQ Troop brought up the rear under Maj. Pettit. Most of the infantry were mounted in lorries, but some were riding on the tanks.

At 0730hrs the column was moving along a jungle track when Millar was fired upon by six Type 95 light tanks on one side of the road, and by infantry on the other. Pettit at once roared up the column with his own tanks, ordering the infantry to dismount, and found a situation which he described as 'most confusing and rather dangerous'.

The Japanese had chosen their position well. They could fire into the thinner side armour of the Lees, which could not bring their 75mm guns to bear, and which could not depress their 37mm guns sufficiently. However, Pettit noticed a clearing just ahead, and ordered both troops forward. As



The last earthly sight of many a Japanese soldier. The counterweight fitted to the M2 gun provided a better working balance for the stabilizer, which worked in elevation only.



Millar's last tank was moving off it burst into flames as a round entered the petrol tank, and some of the crew were killed or wounded before they could scramble aboard the squadron leader's vehicle.

When the Lees swung round in the clearing, the respective positions of the combatants became reversed, for the Japanese were now trapped between the Punjabis and the bigger tanks. There was a short but intense fire fight, and then the enemy infantry began melting away. Suddenly, the Japanese crews lost their nerve, and tried to escape *past* the Carabiniers. Five of their tanks were turned into blazing wrecks at once, and the sixth was knocked out; it was repaired and sent back to Imphal for General Scoones, with the Carabiniers' compliments. This was the last occasion when Japanese armour deliberately tried to bring British tanks to battle.

In a book of this size it is not possible to describe the course of the Imphal battle, which lasted from the end of March until the middle of June. For the tanks, it was a troop leader's, if not a tank commander's battle, and there was scarcely a day when they were not involved somewhere. The Lee showed itself to be an excellent hill-climber, scaling slopes which the Japanese considered impossible; in contrast, their own armour performed miserably, staying on the Plain and rarely venturing forth. Only in the fighting around the villages of Potsangbam and Ninthoukhong were the Lees checked for a short period by the enemy's new 47mm anti-tank gun, and this difficulty was resolved by using smoke or attacking just before dawn with the infantry leading.

If the tanks were generally successful, their battles were by no means easy, and the action described below was, perhaps, the most critical and spectacular in the Lee's entire history.

Some miles to the north-east of Imphal town lies the detached massif of Nunshigum, towering 1,000 feet over the Plain and dominating several road junctions as well as the principal 4 Corps airstrips, into which vital supplies poured daily. If Nunshigum was to fall into Japanese hands, the future course of the battle might be open to debate.

After several days of vicious fighting, Nunshigum fell on 10 April. An attempt to recapture the feature failed the following day, and a further attack was planned for the 13th employing the 1/17th Dogras and the Carabiniers' 'B' Squadron. It was appreciated that having been in possession of the hill for three days, the Japanese, with their customary skill in field engineering, would have constructed bunkers on the crest, and that the Lees would have to suppress them on the summit itself.

A heavy artillery and air support programme was in effect as the Dogras and Carabiniers began their long climb at about 1030hrs. Lieutenant H. N. Neale's No. 5 Troop led up the south-western spur, followed by Maj. E. A. Sanford's SHQ Troop and the tank of the artillery's Forward Observation Officer, supporting the Dogras' 'A' Company, while on the south-eastern spur 'B' Company were accompanied by Lt. C. T. V. FitzHerbert's No. 4 Troop. Meanwhile Nos. 6 and 7 Troops remained on the plain below, providing overhead fire support during the climb.

Nunshigum is 7,000 yards long, and its summit consists of a number of features connected by narrow hogs'-backs. The summit is covered with open jungle, but the slopes are clothed in long grass and shrubs. It took the tanks more than an hour to complete the climb, but by 1115hrs they were converging on the first feature, known as the Pyramid. This was captured without difficulty, and the squadron proceeded along the crest towards the next feature, the Twin Bumps, which was also secured. Watchers below could see the tiny figures of the enemy running north along the ridge.

The way forward now lay along a narrow spine connecting the Twin Bumps with the Northern Bump, and along this the tanks could only proceed in single file with the commanders' heads out so that they could properly control their drivers' movements. The infantry were deployed on either side, and the speed of advance as they approached the final objective was about 1mph. Neale's troop was leading, followed by SHQ Troop, then FitzHerbert's troop, with the FOO bringing up the rear. As the squadron closed in, the artillery support lifted and the Japanese counter-attacked immediately, making a special effort to kill the tank commanders, who used pistols, tommy guns and grenades to defend themselves. Neale was killed almost immediately, and Sanford was mortally wounded shortly afterwards.

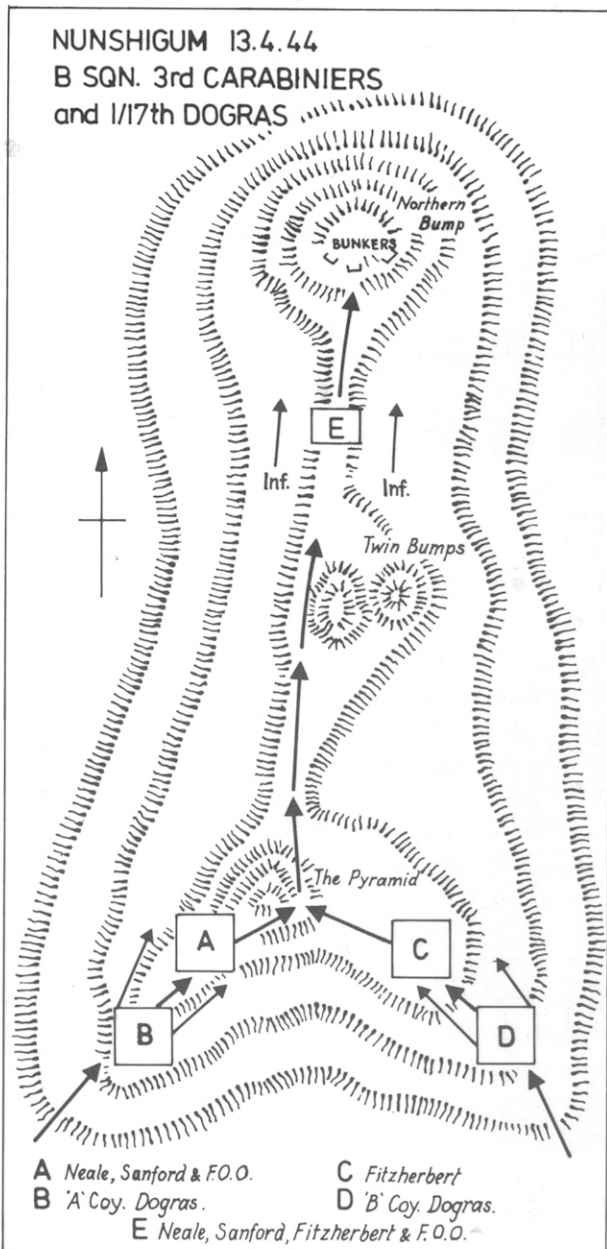
Down at HQ 123 Brigade, the Dogras' parent formation, Col. Younger was in contact with the tanks by radio, and he ordered FitzHerbert to assume command and to continue the attack, simultaneously despatching a further troop up to the Pyramid in case a withdrawal became necessary.

Meanwhile, Sergeant Doe, commanding the leading vehicle of Neale's troop, was killed, and when a member of the crew, Corporal Hubbard, scrambled into the cupola, he too was shot dead. Before FitzHerbert could attack, the tanks of Neale, Sanford and Doe had to be painfully reversed off the only route ahead. This took time, but eventually he set off along the knife edge again, with SQMS Branstone leading and Sgt. Hannam behind, arriving in front of three bunkers built into the Northern Bump. Once again the Japanese rushed the tanks, firing from close range. Branstone was killed, as was his gunner, Trooper Hopkins,

who tried to take his place. FitzHerbert was killed about the same time, and command of the remaining tanks devolved upon SSM Craddock.

Younger had only one order for Craddock—to continue the attack. It was not going to be easy, for the Dogras had suffered badly as well; both their company commanders were down, and the men were now commanded by two VCOs,\* Subadar Ranbir Singh and Subadar Tiru Ram. Craddock conferred with the senior of the two, Ranbir Singh,

\*Viceroy's Commissioned Officer. There is no precise equivalent in the British army.





Many of the Burmese *chaungs* were no obstacle to tanks during the dry season.

and it was agreed that the tanks should stifle the bunkers while the Dogras went in with the bayonet. However, the route would have to be painstakingly cleared again. In FitzHerbert's tank the gunner's telescope had been smashed, but the driver, Tpr. Smith, was observing through his *open* visor, and passing back corrections. When he received Craddock's order to reverse, he found that the starter motor was jammed, but jumped out and secured a tow rope under heavy, close-range fire, and then scrambled back on board.

The attack stalled within yards of the bunkers. Craddock conferred with Ranbir Singh again, and they agreed to try once more. This time they succeeded, Sgt. Hannam performing a very steep climb to the top of the Northern Bump, the centre of the bunker complex, while Craddock subdued more bunkers on the right. When the Dogras closed in they left not a man of the enemy alive.

Nunshigum remained firmly in Allied hands

thereafter. Craddock received the Distinguished Conduct Medal, Ranbir Singh the Indian Order of Merit, and Hannam and Smith the Military Medal. On the anniversary of the battle, the Carabiniers' 'B' Squadron paraded thereafter without officers as a tribute to Craddock and his NCOs, the tradition being maintained to this day by the Royal Scots Dragoon Guards, formed from the amalgamation of the Carabiniers with the Royal Scots Greys.

Perhaps one of the coldest acts of courage on this day was that of the driver who, after the battle, was compelled for technical reasons to *reverse* his tank the 1,000 feet to the plain below.

\* \* \*

Further north, at Kohima, 33 Corps was struggling to break through the immensely strong Japanese position. At first the only armour available

was a small group of five Lees belonging to 150 Regiment RAC, manned by scratch crews and commanded by Lt. R. H. K. Wait. During the early hours of 14 April the Japanese tried unsuccessfully to break into Wait's harbour area, and later the same day the little unit smashed up some bunkers on a feature known as Cameron Picquet, enabling 1st Cameron Highlanders to storm it, thus opening the way for the relief of the tired garrisons of Jotsoma and Kohima. Wait received the personal thanks of Maj.-Gen. Grover, who told him that this action had enabled his troops to effect the relief in time.

Within days the Lees of 149 Regiment RAC, commanded by Lt.-Col. F. W. B. Good, were beginning to arrive. Although there was little scope for manoeuvre along the tight mountainous front,

the tanks were largely instrumental in punching a hole through the centre of the enemy's position. On 12 May a half squadron under Capt. P. S. Field broke through three road blocks and worked its way round the back of Garrison Hill, the arrival of the tanks being greeted with cheers from the British infantry pinned down in front of bunkers on FSD, DIS, and Jail Hills. Field systematically reduced the bunkers, killing every Japanese in them, and then remained with the infantry on the captured ground.

The following morning a single Lee commanded by Sgt. J. Waterhouse threw the enemy off the notorious Tennis Court:

'My driver was shouting "Hold on!" and bump, there we were, smack in the centre of the tennis court itself. We pulled to the right and found

'C' Squadron, 3rd Carabiniers, and British infantry on the Mount Popa massif.



ourselves in front of a steel water tower, very heavily sandbagged, and small arms fire met us. My 75mm gunner dealt with this position so effectively that the Nips started to leave in a hell of a hurry, without even arms or equipment; they were met by infantry fire from both flanks and very few got away. We next paid our attention to a series of crawl trenches and m.g. posts all round the court, and had a hell of a party for the next twenty minutes or so. The infantry commander got me on the intercom and told me the whole position had been captured. I learned afterwards that as we came over the top onto the tennis court we crashed right on top of one of the Japs' main positions, burying a few of them without having had the

Just one of the difficulties encountered on Mount Popa. In Burma tanks often carried infantry consolidation stores, such as the roll of wire attached to the front of this Lee.

privilege of killing them first.

'We next went on to the edge of the court, which overlooks the DC's bungalow, and gave it a pasting. The infantry again went in and took over without a casualty. The whole action lasted about 40 minutes, and the infantry suffered one casualty only, and even he walked out. We went down afterwards to view the shambles, as the infantry CO called it, and, well, he was just about right.'

Incredibly, although they were without supplies, starving, disease-ridden and decimated, the Japanese fought on for some weeks before they began their painful crawl back to the Chindwin. When they did retreat, they left a message scrawled on a wall:

'British—too many guns, tanks, troops. Japanese going. Back in six months.'

Led by 149 Regiment, 33 Corps began streaming



down the long road to Imphal, and at Milestone 109 on 22 June the Lees were greeted by 7th Light Cavalry's Stuarts; the long siege was over. *U-go* had failed. Everywhere 15th Army was retreating, leaving all of its tanks, most of its guns, and 55,000 of its men behind it. The Japanese Army had never sustained such a defeat in its history. Heads rolled as never before, including those of Kawabe, the Burma Area Army Commander, the arrogant Mutaguchi, and the divisional commanders. Only the public interest prevented a series of mud-slinging courts-martial.

\* \* \*

It was Slim's intention that the enemy be permitted no respite during their withdrawal, and their rearguards were followed closely. 149 Regi-

ment, after a spell on the Shenam Saddle, moved down into the Kabaw Valley, two troops eventually reaching Tamu. Thereafter pursuit on that axis was taken over by 7th Light Cavalry. On the Tiddim axis the Carabiniers' 'C' Squadron under Maj. T. E. Dimsdale provided a spearhead for 5th Indian Division.

The advance began during the monsoon, and the going was vile along the earth roads. Everywhere on the road to Tiddim was evidence of the Japanese defeat—abandoned transport, guns, tanks—and, everywhere, bodies. Even so, the White Tigers of the 33rd Division would still snap back, engaging

Journey's end; the Carabiniers fought from Imphal to Raingoon in their Lees and were genuinely sorry to lose them at the end of the campaign.





Grant Canal Defence Light, India, 1946. None of these vehicles saw active service in the Far East, but some were used at the Rhine Crossing. (RAC Tank Museum)

the leading infantry from wooded spurs covering the road:

'The tanks would reply and the infantry would try to work round', wrote Maj. Dimsdale. 'If it proved to be a big position, Hurri-bombers would be sent for and the infantry companies would hook deeper. At the last moment the Japanese rearguard would fade away. On we would go, and repeat the business a few miles farther on.'

During the manoeuvres to capture Tiddim, one of 'C' Squadron's tanks scaled the 8,000ft Kennedy Peak, the greatest height attained by any AFV at that time. (Since then the record has been broken by the Carabiniers' old comrades-in-arms, 7th Light Cavalry, who fought an arctic battle at 12,000 feet against Pakistan.)

The Chindwin was reached and crossed, and then the Irrawaddy. 254 Tank Brigade was now working with 33 Corps, which began establishing bridgeheads over the Irrawaddy in January 1945. 19th Indian Division crossed to the north of Mandalay on 9 January, 20th Indian Division seized a bridgehead south-west of the city on 12 February, and on 24 February 2nd British Division

arrived on the left of 20th Division. Against these bridgeheads the Japanese bled themselves white in incessant attacks, which the Lees and Stuarts found no difficulty in containing.

Then came what the Japanese themselves later described as Slim's master-stroke. To the south, the vital communications centre of Meiktila was seized by 17th Indian Division and the all-Sherman 255 Tank Brigade, which had burst out of 4 Corps' apparently harmless bridgehead at Nyaungu. After 28 February neither supplies nor reinforcements reached the divisions locked in battle with 33 Corps, and they began to wither and die.

19th Division was already pushing south towards Mandalay. On 6 March Maj. E. M. Parker of 150 Regiment, commanding a mixed force of Lees, Stuarts, artillery, infantry and supporting arms known as 'Stiletocol', outflanked the enemy's main position and headed for Mandalay Hill. Progress was rapid and spectacular, twenty-six miles being covered on the second day alone, and by the afternoon of the 8th the tanks were exchanging fire with the defenders of the hill itself. Once outflanked by 'Stiletocol', the Japanese facing 19th Division melted away, but it took until 20 March to eliminate the last resistance in the Burmese capital. The heavy armament of the Lees proved invaluable in the street fighting, but not even their 75mm

guns, firing at close range, could make any impression on the walls of Fort Dufferin, from which the enemy eventually escaped through the sewers.

During these operations, 2nd British Division, supported by the Carabiniers, had been pushing steadily east out of their bridgehead towards the city. The Japanese resisted with a ferocity which was unusual even for them, and lost no opportunity of coming to grips with the tanks; on one occasion an officer boarded a Lee with his sword, killed the commander and 37mm gunner, and was only subdued after the loader had fired the entire contents of his revolver into him.

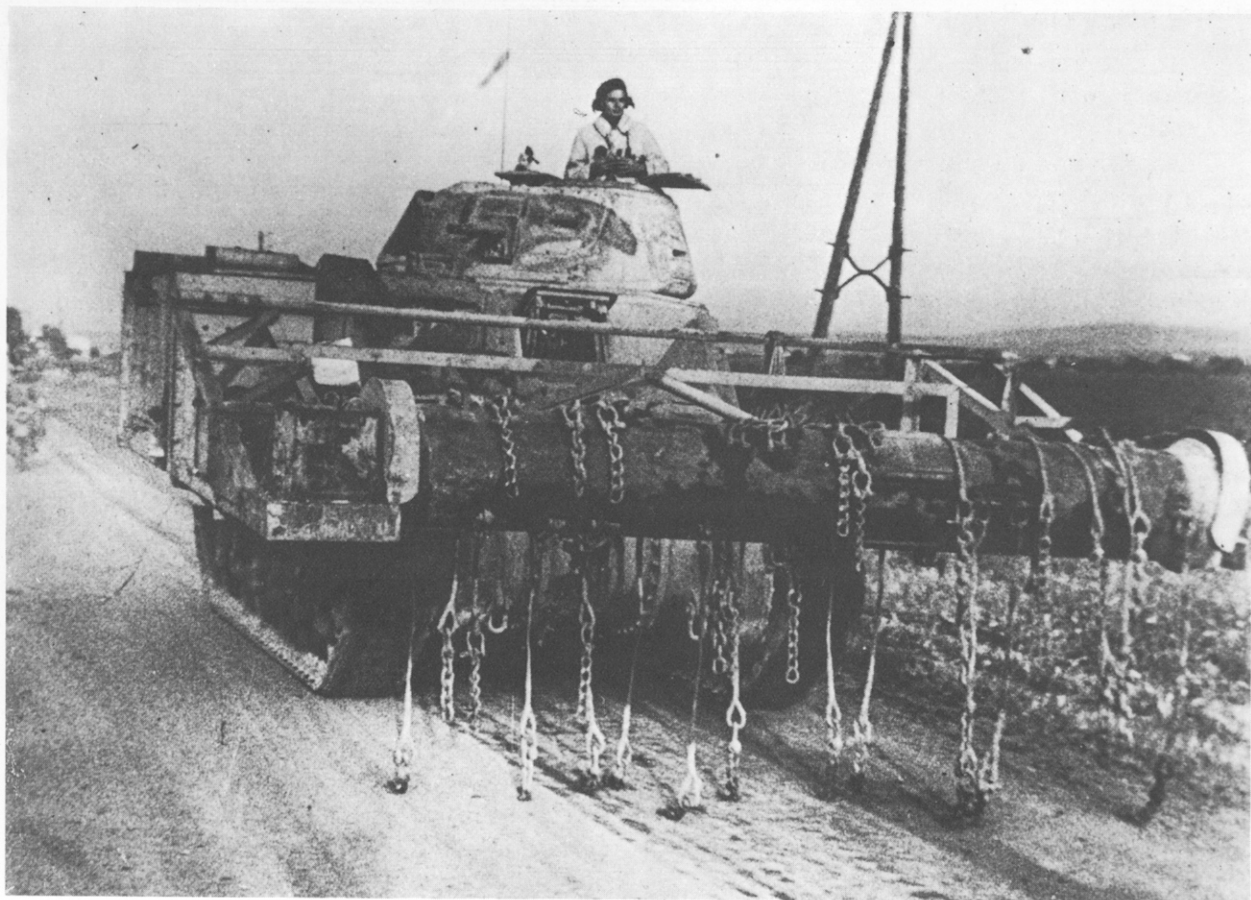
On 33 Corps' right flank, 20th Division also pushed out a heavy armoured column, containing Lees from 150 Regiment, Stuarts from 7th Light Cavalry, Daimler armoured cars, Priest self-propelled guns, infantry, an air-support control post, and supporting arms. Known as 'Barcol' after its commander, Lt.-Col. Barlow, the battle group broke out of the divisional bridgehead on 19 March

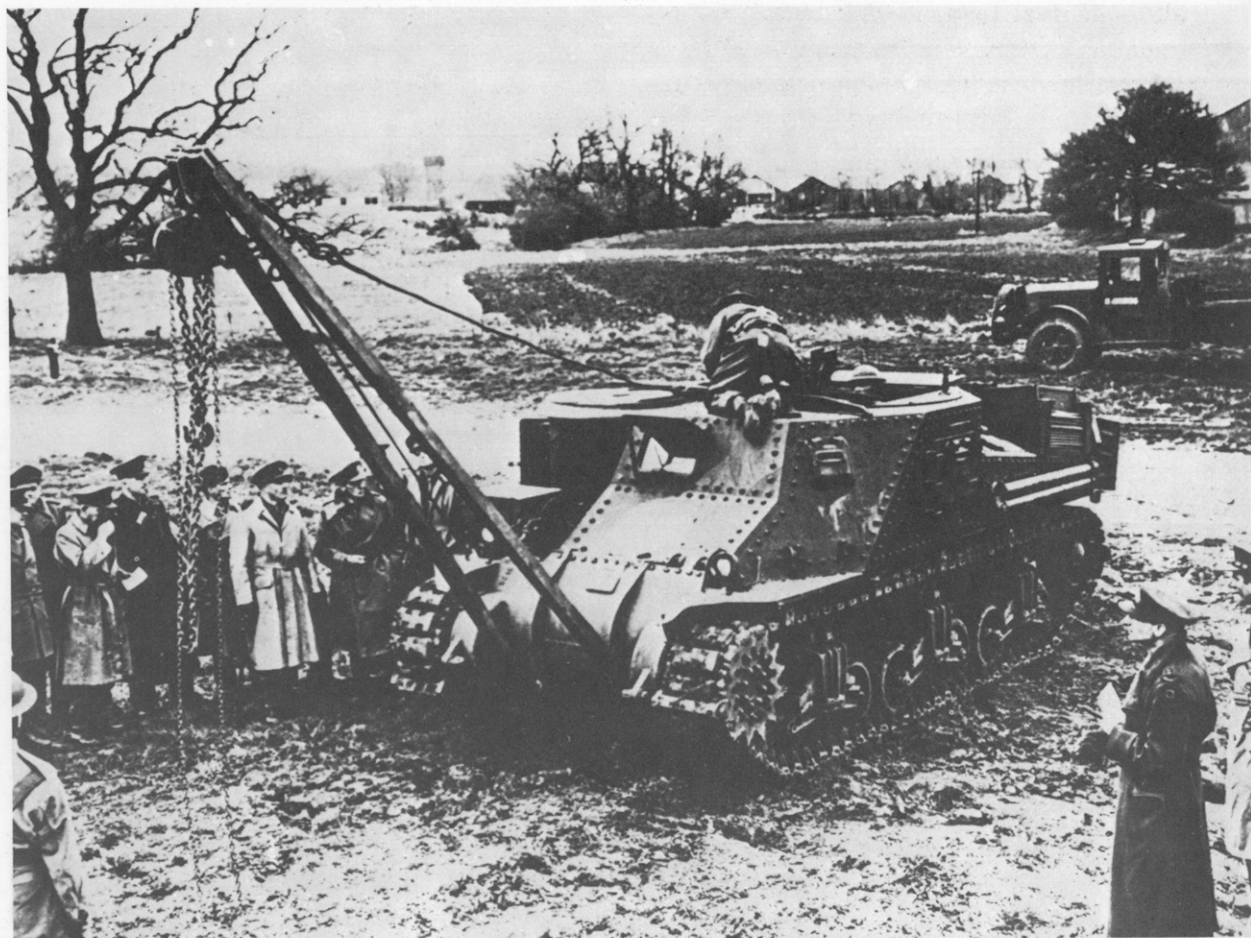
and swept south to cut the Mandalay–Meiktila road, covering sixty miles in fifty-four hours, and effectively disrupting the enemy's planned withdrawal by depriving him of a major axis.

Quite suddenly, the Irrawaddy Line ceased to exist for the Japanese, and the divisions which had manned it were reduced to small groups working their way to the east and south, past Meiktila. Quickly reorganizing his two Corps, Slim decided to thrust at Rangoon before the monsoon broke, sending 4 Corps and 255 Tank Brigade down the Meiktila–Rangoon railway route while 33 Corps and 254 Tank Brigade followed the more difficult line of the Irrawaddy.

33 Corps began the advance with 7th Division on the right, or river, flank, and 20th Division on the left. On 12 April the former took Kyaukpadaung, supported by the Carabiniers' 'B' Squadron, and was then delayed by stiffening opposition. 20th

Grant Scorpion Mine Exploder, Tunisia, 1943. The 75mm gun has been stripped out. (RAC Tank Museum)





Grant Armoured Recovery Vehicle. (RAC Tank Museum)

Division instituted a left hook, spearheaded by 150 Regiment, to take the defenders in the rear, and this culminated in the capture of Magwe on 19 April. This action was remarkable in that 150 Regiment stormed through the town with two squadrons 'up' and one in reserve, the only occasion during the war when Lees made an attack in full regimental strength.

After the capture of Yenaungyaung, Burma's principal oil town, the Carabiniers moved south to join 20th Division at Magwe, and continued the advance with them. Another left hook was directed at Allanmyo on 28 April, and the town fell after some hard fighting. Prome, abandoned by the enemy, was entered on 3 May, but at Inma the advance was halted the following day, as Rangoon had fallen to an amphibious landing made by 15 Corps while 4 Corps had reached Hlegu after a *blitzkrieg* advance of 300 miles in three weeks. After

a few days' mopping up 33 Corps set off again, reaching Tharrawaddy on 15 May. Here, at Milestone 60 from Rangoon, the Carabiniers' 'A' Squadron fought its last action in conjunction with the leading elements of 15 Corps, capturing a Type 95 in running order. The regiment's 'C' Squadron had meanwhile been fighting a series of hard-fought actions on the west bank of the Irrawaddy, against troops who were withdrawing from the Arakan under pressure from 15 Corps, which had mounted a series of amphibious operations along the coast.

During these landings tanks in small numbers had provided invaluable local support. Shermans of 19th Lancers had been used at Myebon, Kangaw, and Ruywa, while Lees manned by 146 Regiment RAC effectively outflanked a strong enemy position on Ramree Island after a very difficult approach march. 146 Regiment's Lees

were also landed at Letpan, where five Type 95s were trapped between them and a Frontier Force ambush, the Japanese fleeing after making a half-hearted attempt to burn their vehicles. Here, the Lee crews were complimented by an infantry brigadier on the accuracy of their pin-point bunker-busting shoots, which, it was said, would have formed two-inch groups at 100 yards.

## Envoie

It was a long road between Gazala and Rangoon, and only the major milestones along the way have been mentioned—Alam Halfa, the Admin Box, Imphal, Kohima, Mandalay, and the Irrawaddy. All were battles of decision vital to the Allied cause, and in each case the part played by the Grants and Lees was critical. Whatever its limitations, this essentially stop-gap design continued to win battles long after it had been declared obsolete in the West, and the reader might agree that its eventual contribution to victory deserves wider recognition than it has perhaps received; Japanese senior officers, in particular, would support such a view.

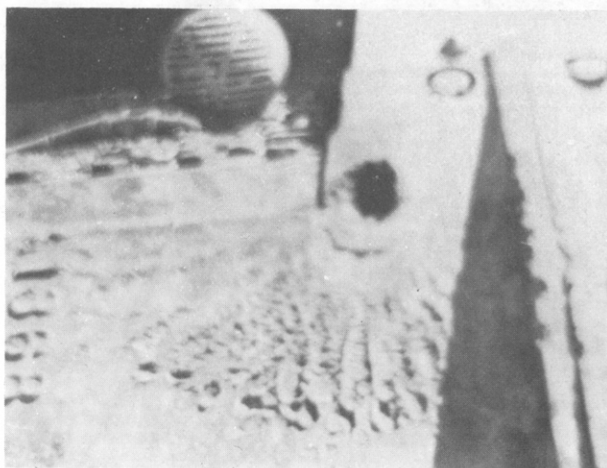
## The Lee/Grant Series

### BASIC TECHNICAL DETAILS

Length:	18'6"
Width:	8'11"
Height, <i>Lee</i> :	10'3"
Height, <i>Grant</i> :	9'4"
Weight:	29 tons
Armour:	65mm
Armament:	1 75mm gun in sponson 1 37mm gun in turret 3 Browning .30 cal. machine guns
Engine:	Wright radial 340hp petrol, or Chrysler 370hp 5 unit multibank petrol. Some versions had twin General Motors diesel engines, producing 375hp.
Speed:	26mph
Crew, <i>Lee</i> :	7
Crew, <i>Grant</i> :	6

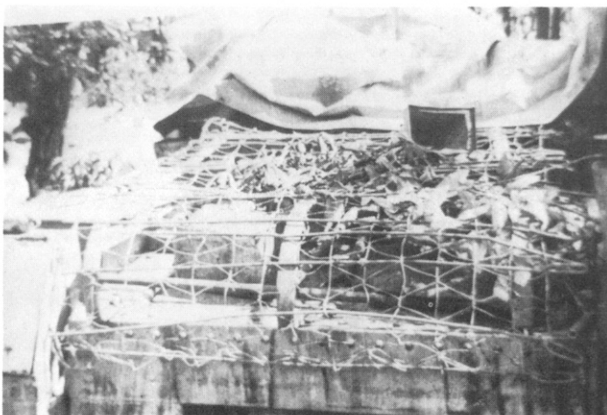


Tanks of 'C' Squadron, 3rd Carabiniers just visible on the summit of the 9,000ft Kennedy Peak. For many years this was the greatest height ever attained by an AFV, although the record is now held by the Indian Armoured Corps.



The effect of a hollow charge magnetic mine on the bow-plate of a Lee. The explosion killed four members of the crew and burned out the vehicle. (Ian Morgan)

A detailed view of the anti-mine mesh covering a Lee's engine deck. (Ian Morgan)



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Major O. F. Sheffield, *York and Lancaster Regiment  
1919-53*

### Notes sur les planches en couleur

A L'intérieur de la tourelle d'un char d'assaut Grant, regardant en avant (gauche) et à l'arrière (droit). Les plus importants des articles identifiés sont: 37mm canon, avec cartouches et pièces de rechange (8), (12), (21), et (9). Browning .30 mitrailleuse, avec cartouches et outils (3), (2), (10), (11) et (4). No. 19 appareil de radio avec soupapes de rechange (15) et (13). Projecteur de bombes de fumées avec bombes (5) et (6). Pistolet de signalisation et cartouches (1) et (23). Fanions de reconnaissance (20) et (22). Etui à cartes et jumelles (14) et (16). Grenades (24).

B Côté à droite de l'intérieur d'une coque d'un Grant char d'assaut; les articles les plus importants sont: 75mm canon, cartouches, outils et pièces de rechange (8), (12), (17), (3), (9) et (11). Browning .30 mitrailleuse avec affûtage antiaérien emmagasiné en l'intérieur de char d'assaut (16). Boîte à outils de personne qui conduit, pièces de rechange, et habitacle (1), (2) et (6). Thompson mitraillette, avec cartouches (14) et (13). Prismes à périscope de rechange (5) et (15).

C Côte à gauche de l'intérieur de la coque d'un char d'assaut Lee; les articles les plus importants sont: cartouches pour 37mm canon de tourelle (2), (3), (9) et (18). Cartouches pour .30 mitrailleuse (4), (16), (19), (20), (21) et (23). Eau potable (1) et (11). No. 19 appareil de radio avec soupapes de rechange (8) et (7). Thompson mitraillette et magasins (12), (13) et (14). Rations (17).

D Char d'assaut Grant de commandant d'une troupe, 'A' escadron, *Royal Scots Greys*: Lybie, 1942. Les servants appréhendent un repas, ils rasant, remplissent de cartouches et ils mettent à exécution leurs corvées domestiques journalières en même temps que le lieutenant (droit) vérifie ses cartes. Son pantalon de velours côtelé et ses bottes de peau de suède sont articles personnellement achetés. L'écusson de casquette de régiment est porté par les servants sur le béret noir des *Royal Armoured Corps* et par l'officier sur son casquette à pic de kaki. Le char d'assaut, avec sacs de terre empilés au devant pour plus grande protection, tient les insignes d'escadron sur la tourelle, et sur les gardes-boue l'insigne de régiment—un chardon vert sur un carreau noir et blanc—et l'insigne de 4th Brigade—un jerboa noir sur blanc.

E Char d'assaut Lee de 'A' escadron, 3rd Carabiniers; Kabaw vallée, Birmanie, le 20 mars 1944. L'escadron vient de battre un groupe de chars d'assaut japonais Type 95, probablement du 14th *Sensha Rentai*; le char d'assaut naufragé vérifié par les fantassins indiens tient la raie rouge sur la tourelle de cette régiment. Le Lee tient le canon long M3, et la porte latérale est soudée fermée. La maille métallique protège le pont à l'arrière contre grenades anti-chars que l'infanterie japonaise utilisait contre chars d'assaut Alliés parce qu'il y manquait canons anti-chars. Les 3rd Carabiniers furent un régiment que se piqua d'éclat, les bretelles d'épaule pour la ceinture à pistolets furent toujours portées et ceintures et guêtres furent quelque fois peintes verte foncée, quelque fois noircis avec crème à chaussures. Le casque d'acier fut souvent porté à cause de danger de canardeurs.

F Les écussons sur casquettes et les insignes de véhicules de régiments qui utilisaient les chars d'assaut Lee et Grant—voyez les légendes anglaises. Bataillons de chars d'assaut mobilisés du personnel de quelques régiments d'infanterie furent numérotés ('49th Regiment, *Royal Armoured Corps*') mais ils continuèrent à porter les écussons sur casquettes de leurs régiments originales ('*King's Own Yorkshire Light Infantry*') sur le béret noir de *Royal Armoured Corps*.

### Farbtafeln

A Das innere des Panzerturms eines Grant-Tanks sehend nach vorwärts (links) und nach hinteren Teil (rechts). Die wichtigste der genannten einzelnen Gegenstände sind: 37mm Gewehr mit Munition und Ersatzteile (8), (12), (21) und (9). Browning .30 Maschinengewehr mit Munition und Gerätschaften (3), (2), (10), (11) und (4). No. 19 Radio mit Ersatzröhren (15) und (13). Rauchbombeprojektmacher mit Bomben (5) und (6). Signalpistole und Patronen (1) und (23). Erkennungsfahnen (20) und (22). Kartenschutzhülle und Feldgläser (14) und (16). Handgranaten (24).

B Rechte Seite des Inneren eines Grant-Tankrumpfs; die wichtigste einzelne Gegenstände sind: 75mm Gewehr, Munition, Gerätschaften und Ersatzteile (8), (12), (17), (3), (9) und (11). Browning .30 Maschinengewehr mit Flugabwehrlafette verstaute Internen Tanks (16). Werkzeugkasten Panzerfahrers, Ersatzteile, und Kompasshaube (1), (2) und (6). Thompson-Maschinenpistole, mit Munition (14) und (13). Ersatzsehrohrprismas (5) und (15).

C Linke Seite des Inneren eines Lee-Tankrumpfs; die wichtigste einzelne Gegenstände sind: Munition für 37mm Turmgeschütz (2), (3), (9) und (18). Munition für .30 Maschinengewehr (4), (16), (19), (20), (21) und (23). Trinkwasser (1) und (11). No. 19 Radiopparat und Ersatzröhren (8) und (7). Thompson-Maschinenpistole und magazine (12), (13) und (14). Rationen (17).

D Grant-Tank eines Zugführer, 'A' Schwadron, *Royal Scots Greys*; Libyen 1942. Die Bedienung bereiten eine Mahlzeit, abrasierten, füllen Munition wieder und setzen ihre tägliche Alltagsarbeit durch, während der Oberleutnant, rechts, seine Karten nachprüft. Seine lange weite Hose aus Kordstoff und Stiefel aus Wildleder sind persönliche gekaufte Einzelheiten. Das Regimentsabzeichen auf der Mütze wird von der Bedienung auf der schwarzen Baskenmütze der *Royal Armoured Corps* und von dem Offizier auf seiner Schirmmütze getragen. Der Tank bedeckt mit Sandsäcken auf dem vorderen Teil für verstärkte Sicherung hat die Schwadronabzeichen auf dem Tankurm, und auf den Schutzblechen das Regimentsabzeichen—eine grüne Distel auf einem schwarzen und weissen Viereck—und das 4th Brigadeabzeichen—eine schwarze Jerboa auf Weiss.

E Lee-Tank 'A' Schwadron, 3rd Carabiniers; 20 März 1944, Kabaw-Tal, Birma. Die Schwadron hat gerade eine Gruppe japanischer Tanks Typ 95 wahrscheinlich von dem 14th *Sensha Rentai* überwindet; der zerstörte Tank untersucht von den indischen Infanteristen hat den roten Tankurmstreifen diese Verbands. Der Lee hat das lange M3-Gewehr, und die Seitenturm wird zu zusammengesetzt. Die Drahtmasche beschützt das hintere Verdeck gegen Panzerabwehrgranaten, die japanische Infanterie gegen vereinigte Panke verwendete, weil sie knapp an Panzerabwehrgewehren hatten. Die 3rd Carabiniers war ein Regiment, das sich stolz auf Eleganz war; Die Schulterbänder für den Pistolgurt wurden immer getragen, und Gurte und Gamaschen wurden manchmal dunkelgrün gemalt und manchmal mit Schuhkrem schwarz gemacht. Der Stahlhelm wurde oft infolge der Nachlässigkeit Scharfschützgefahr getragen.

F Mützenabzeichen und Fahrzeugabzeichen Verbände, der die Lee- und Grant-Tanke verwendeten—bemerken die Bildtexte in der englischen Sprache. Tankbataillonen aufgestellt von der Mannschaften einiger Infanterieregimente wurden numiert (*149th Regiment, Royal Armoured Corps*) aber sie trugen weiter die Mützenabzeichen ihrer Mutterregimente ('*King's Own Yorkshire Light Infantry*') auf der schwarzen Baskenmütze der *Royal Armoured Corps*.

# OSPREY · VANGUARD

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