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Volume 96 JUNE 1982 No. 2

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*Authors alone are responsible for the statements made and the opinions expressed in their papers*

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# Editorial

HURRAH FOR THE ???????

"Mr Stevens" and "Notchy Knight" will be rotating in their graves since the NATO Staff titles were implemented for world wide use in January 1982 and the title CRE seems to have disappeared!

Some readers may be a little puzzled by this introduction and some explanation is called for. Are you sitting comfortably? Then we will begin!

Under the new system the principal divisions of the staff are:—

| *New* | *Old* | *Principal Functions* | *Subsidiary Functions* |
|---|---|---|---|
| G1 | A | Personnel | Manning, Discipline, Personal Services |
| G2 | G | Intelligence, Security | |
| G3 | G | Operations | Staff Duties, Ex Planning Staffs |
| G4 | Q | Logistics incl Quartering | |
| G5 | G/Q | Civil/Military Co-operation | |

*Note:* Staff Duties is to be known as Organisation and Deployment (O&D).

In addition the functional titles of certain Arms and Services will change; "Signals" become "Communications", "Army Air" becomes "Aviation", "Pay" becomes "Finance", "Electrical and Mechanical Engineers" become "Maintenance" and finally, "Ordnance" becomes "Supply".

The staff level at which appointment titles are to be taken into use is:—

COS – Principal Staff Officer at Army, Corps, Division and Brigade level

ACOS – Staff Officer heading one or more General Staff divisions at Army and Corps level

DCOS – A deputy to a principal Staff Officer at Division or Brigade level

Chief – A Staff Officer heading a sub staff division who co-ordinates the work of other Staff Officers or who oversees a number of sections within a sub staff division

SO1, 2, 3 – Staff Officers of Lieut Colonel, Major or Captain rank who perform separate staff functions within a section

Staff Officers of full Colonel rank are to be known by their rank suffixed by their branch title.

Of course there are, and will be further, exceptions and there are certain to be some imaginative, even constructive variations; but to keep our feet on the ground a number of examples from within the Corps are given below:

| | | | | |
|---|---|---|---|---|
| *RSME* | D Comdt – COS | | GSO2 | – SO2 G2/G3 (Ops/O&D) |
| | Col GS | – Col G2/G3 | DAA&QMG | – SO2 G1/G4 |
| | GSO 1 | – Chief G3 | SC(A) | – SO3 G1 |

*BAOR* Chief Engineer, CCRE and CRE – Comd Engr

*RHQ RE* Regt Col – Chief Royal Engr?? who knows??

All changes are accompanied by side effects. The loss of the title CRE could be considered by many as a tragedy in itself. This honourable title cannot be discarded lightly. Pondering on this, (the RE Band were rehearsing on the square at the time), one's thoughts turned to our "signature" tune. "Hurrah for the CRE" might have to change to "Hurrah for the Commander Engineers". Hurriedly mustering the office choir the change was attempted. Although the words could be made to fit the "beat" it was agreed that there would be problems after a few drinks—the phrasing is not easy! Perhaps we should change the tune? In any case, how do we distinguish between the CE, CCRE and CRE that were? It is all very difficult!

You may think that this is some "foreign" plot to confuse us all. Your attention is drawn to the entirely British effort of recent times when all the Engineer Groups had Brigade Majors! At least the NATO nomenclature has put a stop to that!!

# Ubique

CAPTAIN N V R OAK-RHIND RE, B Sc

*The Author joined the Army in Sep 1973 and after Sandhurst he was attached to the Amphibious Engrs in Hameln prior to 55 YO Course. He applied for a posting "anywhere in UK and certainly not BAOR". He was posted to 23 Engr Regt in Osnabruck in April 1975! There he commanded a Fd Tp and completed his first N Ireland tour. After three years at RMCS he gained a lower second in Civil Engineering. A posting to 39 Engr Regt at Waterbeach followed again in command of a Fd Tp. In the two years with the Regt he travelled to Belize, South Georgia and N Ireland again.*

*Currently he is Adjutant 32 Armd Engr Regt in BAOR. His interests include offshore sailing, for which he holds Army Colours, and rowing.*

In late 1979 my CO visited our Squadron in Belize and asked what I was planning for Christmas 1980. It seemed like a leading question so I asked *him* what *he* thought I would be doing! "Building a jetty in South Georgia", he said. "That sounds good", I thought aloud. "Is it cooler than Belize?" "Oh yes", he replied. And so it was. South Georgia, as I soon found out, is not in the USA but is an island just off the Antarctic Continent!

And so it was on return to England that I started to prepare for this project in earnest. *Project Stilt* was to be its name. The job was to rebuild and extend the facilities of an existing timber piled jetty, used by the British Antarctic Survey ships, at King Edward Point, South Georgia. The original jetty was probably built about fifty years ago and belonged to the Falkland Islands Government, who requested help to be given by the Sappers. The Falkland Islands Government was prepared to pay for the rebuild and so it was an ideal project for us. The task was recced by a team of two construction Sappers to see exactly what had to be done. They drew up plans for completely rebuilding the old jetty and constructing three new mooring dolphins in line with the front edge to prevent ships crushing the jetty itself (Photos 1 and 2). The work was assessed to take four months using a team of fifteen specialists, including carpenters, divers, plant operators, a welder, a blacksmith, a fitter and a cook. As well as replacing the majority of the upper structure of the jetty, about thirty-six new timber piles had to be placed, each one weighing up to four tons. It was not to be an easy task to move these heavy weights without the help of mechanical handling equipment.

My first task was to choose a suitable team from my Squadron. There was no shortage of volunteers and soon fourteen men stood before me ready for training. Training for something you have never attempted before is an interesting experience. I, and they, had a lot of learning to do, but I considered it easier to train someone to a specialist task than to train a specialist to fit in with a team in such remote parts. South Georgia has no indigenous population but only the British Antarctic Survey scientists, who numbered fifteen for most of the time there.

All the mass of stores and equipment had to be ordered, collected and checked from contractors and depots around the countryside before even training could start. Five long hard weeks at Chatham to learn how to use the piling rig and courses in



Captain N V R Oak-Rhind RE B Sc

**Photo 1.** One of three completed mooring dolphins sticks out of the icy waters

diving, hydraulics and first aid followed. In all, we had nearly 300 tons of freight to pack onto the British Antarctic Survey ship at Southampton, and this had all the team travelling and busy for some weeks before it was completed. We could then take two weeks of well earned leave before leaving for the task ahead.

The pre-project training was certainly not wasted as extracts from my site diary record:

*"A third of the piles of the jetty are now in place, even though the weather did not help with a 92 knot wind one night, trying its hardest to destroy everything. However, the big green giant of the piling rig did not quite sink, much to the displeasure of the diving team who were standing by to try their hand at marine salvage".*

A few weeks later I wrote:

*"We had a close shave today when the piling rig mast bent and buckled under the strain of piling. It was a heart stopping moment as a 5-ton diesel hammer perched*

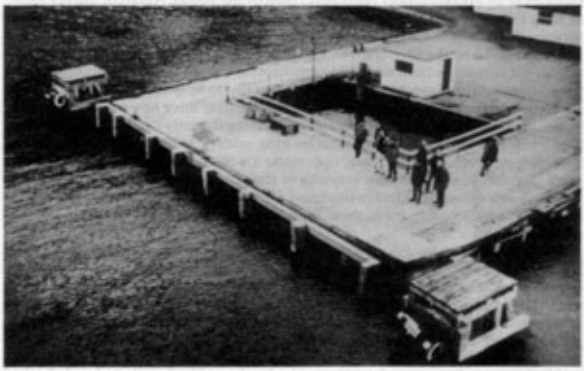


**Photo 2.** The completed jetty showing two of the three mooring dolphins (the third one being 15m to the right) together with the fendering system along its front edge. The new pumphouse containing fuel, water and fire services can be seen at the back of the jetty.

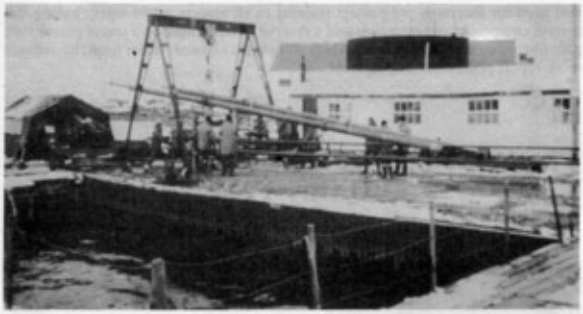


**Photo 3.** The old jetty in the foreground. This photo shows the hand built piling rig being assembled at the start of the project. At the far left, under the tent, is the diesel engine that powers the rig. The whole rig floats on six MEXE floats in the water.

*precariously on the edge of a foot square pile almost waiting to fall into the ice-cold waters beneath. However, we carefully stopped everything and dismantled the equipment, repairing the damage within two days without further mishap."* (Photo 3).

I should point out that during our training at Chatham, the hammer actually fell into the Medway River, and so we had learnt about this problem already. However, the mast had to be replaced with a spare section, that had been constructed especially for the project, which took two days. I had almost been refused this spare section due to the cost involved just when the moratorium had started.

The work was physically hard but rewarding. With so few of us, the whole team became involved in all aspects of the project. Even with all the work, though, we still had time to enjoy the incredible scenery. Another entry in my diary:

*"South Georgia has the most beautiful scenery that I have seen for a long time. The small base is surrounded by snow capped peaks running sheer down into the clear blue, but ice cold, waters of Cumberland Bay. Icebergs float by, tinged with blue streaks, the sloping surfaces packed with penguins. The surf breaks on the jagged rocks some days, others a flat calm. The silence is broken only by the gentle hum of our workboat."*

We had flown from Heathrow to Rio de Janeiro in November 1980, and then sailed down to South Georgia on the ship that we had loaded in Southampton. On arrival at South Georgia we swelled the numbers by one hundred per cent.

The work progressed well and we finished a few weeks ahead of schedule. With the spare time on hand we took on other work for the base, helping to build new buildings and extending tracks to give better access to them. But the weather started to deteriorate nearer the end of our stay, as the Antarctic winter approached, and we were glad to leave on the same ship for Rio in the middle of April 1981.

A much enjoyed two days holiday in Rio followed, which was almost long enough to see the sights and soak up the sun, before returning to England by plane. You may think that a couple of weeks leave in England would be in order now. But no! The Squadron was preparing for a tour in Northern Ireland and the training could wait for no one!

On this particular project there was no resupply of materials and little communication with the outside world. This meant that we had to be totally self reliant on both stores and equipment, and on actioning necessary minor design changes without reference to others. The important lessons for success that I have learnt include; the

real need for thorough pre project training in all aspects of the work; having the correct equipment and materials and a reserve of both; making a sound practicable plan (including a reserve of time) which will almost certainly differ from the original recce report plan; encouraging luck!

# The 6th Airborne Divisional Engineers on D Day 1944

BRIGADIER F H LOWMAN CBE DSO BA

*FHL was commissioned (28 Batch) in Sep 1932. After a tour in Mauritius as OC 43 Fortress Coy and Garrison Engineer and a number of short spells with the Trg Bns at Chatham and Ripon, he joined the SME as SI Demolitions in 1940. After a brief tour in command of a Fd Coy he attended a War Staff Course at Camberley and then became GSO2 (SD) to HQ 1 Airborne Div soon after its formation in 1942. When 6 Airborne Div was formed in May 1943 he was appointed CRE and took the Div Engrs to Normandy where he was wounded in Jul 1944. After the War he was on the DS at Camberley and attended the Joint Services Staff College. He was CRE Works in Hong Kong, commanded 2 Port Task Force and the Tn Centre RE. He also held various staff appointments including Western Europe Cs-in-C Ctee, CDS Staff and Brig Q (Army Equipment) from which he retired in 1967.*

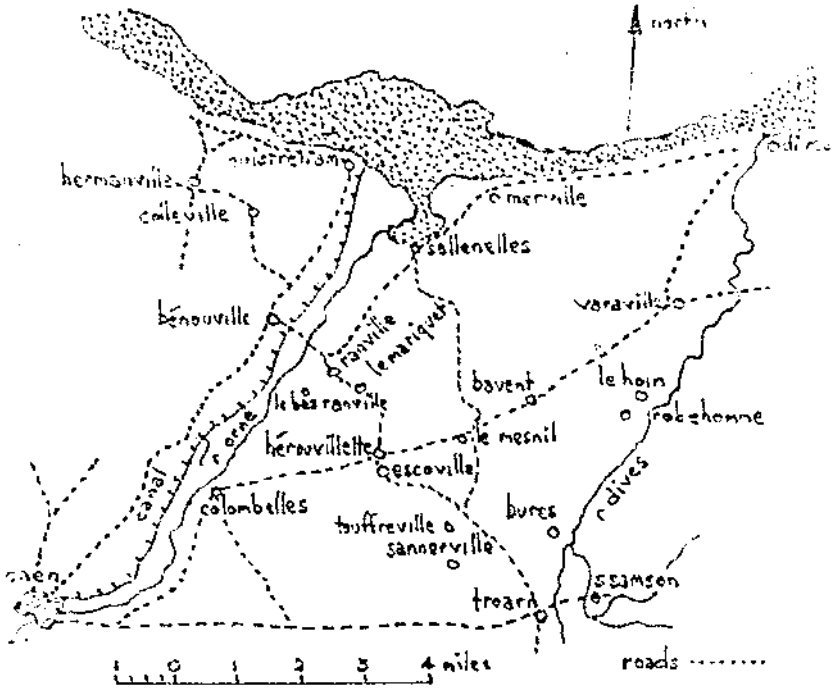
On 22 June 1940 Mr Winston Churchill, who had recently become Prime Minister, announced that we should have a corps of at least 5000 parachute troops. Two days later a Royal Engineer Officer, Major (later Lieut Colonel) J R Rock, was ordered to take charge of the organisation of airborne troops. Thus once again a Royal Engineer Officer was responsible for the earliest development of an adjunct to our armed forces. He was later to command the Glider Pilot Regiment and was killed in a glider accident in 1943.

The first operation carried out by British airborne troops was the raid on the Apulian Viaduct, north of Taranto, on 10 February 1941.

As the Airborne Forces developed Lieut Colonel M C A Henniker was appointed as the first CRE of 1st Airborne Division in 1942. In 1943 Lieut Colonel F H Lowman became the first CRE of 6th Airborne Division.

This article takes us forward to D-Day 1944 and is concerned with the activities of the units of 6th Airborne Divisional Engineers. The co-ordinating Author was then CRE and the units under command were 3 and 591 (Antrim) Parachute Squadrons RE, 249 Field Company RE (Airborne) and 286 Field Park Company RE (Airborne). The "Official" account of the exploits is published in Corps History Volume IX pages 339–343.

Brigadier F H Lowman CBE DSO BA, The 6th Airborne Divisional Engineers On D Day 1944




3 Parachute Squadron RE and the Bridges Over the River Dives

One of the specific tasks given to 6 Airborne Division was to protect the left flank of 1 British Corps (and thereby provide the hingepin for the whole Allied assault) by denying to the enemy the use of the area between the Rivers Orne and Dives north of the road Troarn–Sannerville–Colombelles and delaying the movement of enemy reserves and reinforcements attempting to move towards Caen from the east and south east.

One obvious way of assisting in this task was for the Divisional Engineers to create a demolition or obstacle belt to hamper enemy movement. The four bridges over the upper reaches of the Dives between Troarn and Robehomme made obvious targets but as the river then swung away to the north east the demolition line had to be pulled back to include two smaller bridges over streams at Le Hoin and Varaville. Fuller details of the targets were:

(a) Troarn—5-span masonry arch bridge 110ft long
(b) Bures—Steel lattice girder farm bridge 80ft long
(c) Bures—Steel lattice girder railway bridge 80ft long
(d) Robehomme—Steel lattice girder bridge 80ft long
(e) Le Hoin—Small masonry arch bridge
(f) Varaville—Small masonry arch bridge

Detailed intelligence on the targets was meagre for a series of rapid unreconnoitred demolitions and therefore a low level photo reconnaissance mission was commissioned. Similar missions had of course to be flown elsewhere to avoid disclosing the actual target area. This task was undertaken by an RAF Typhoon fitted with a forward facing oblique camera which followed the river at a height of 600ft. The enlarged pictures provided such excellent detail that the draughtsman at Headquarters Royal Engineers (HQRE), Sapper Clark, was able to produce scale models from which charges could be precisely calculated and the demolition parties fully briefed.

The outline plan was that 3 Parachute Squadron RE, less 3 Troop, was to drop with 8 Parachute Battalion at 0050hrs with the task of destroying the bridges at Troarn and Bures. 1 Troop was to destroy the Troarn bridge covered by a Company of 8 Parachute Battalion in Sainte Samson and another Company in Troarn. 2 Troop was to destroy the bridges at Bures covered by a Platoon of 8 Parachute Battalion. 3 Troop was to drop with 1 Canadian Parachute Battalion on another dropping zone (DZ) further to the north east at the same time with the task of destroying the bridges at Robehomme and Varaville. One Company of the Canadian Battalion was to cover the demolition at Varaville and a Platoon of the same Battalion that at Robehomme. In addition two gliders were allotted to the main body of 3 Parachute Squadron and one to 3 Troop to land on the appropriate DZs. These gliders each carried a jeep and two 10cwt trailers plus additional explosives and equipment, and were intended to provide a minimum of transport beyond the folding hand trolleys with which the Squadron was to drop.

All the demolitions were to be blown by 0715hrs which was H Hour for the seaborne assault. This meant that the approximate time available at the various sites varied from two hours at the Troarn bridge to three and a half hours at Varaville after an approach march in the dark with the barest minimum of wheeled transport and a considerable weight of explosive and engineer equipment. In the case of the bridges at Troarn and Bures the approach march was four miles or more.

As part of the overall plan the RE Troop in Lord Lovat's Special Service Brigade, under command of Captain Bobby Holmes RE, was to extend the main demolition belt north west to the sea by cratering access roads on the arrival of the Brigade in the divisional area later on D Day.

In the event matters turned out very differently. The Squadron less 3 Troop which should have dropped between Escoville and Touffreville with 8 Parachute Battalion was actually dropped east of the road from Le Mariquet to Escoville. This was due to misplaced navigational aids caused in turn by the pathfinders of 22 Independent Parachute Company having been dropped in the wrong place. The only members of 8 Parachute Battalion to arrive with the Engineer Squadron were a few Other Ranks but no Officers. At the rendezvous it was established that a satisfactory quantity of explosive and demolition equipment was available from kit bag and container loads, thanks to the efficiency of the illuminated container locating devices. This was enough to make some sort of demolition at the three bridges at Troarn and Bures, but only six trolleys were available to move the heavy loads. The party then moved off about 0230hrs. The march was fortunately unopposed but it was a feat of endurance by the Sappers hauling the heavily laden trolleys and several of them were limping with injuries from the drop.

A little further on at a road junction the RE party met up with further elements of 8 Parachute Battalion and a jeep and trailer loaded with medical stores. The Infantry were left to hold the road junction and the jeep and trailer were reloaded with forty-five heavy General Wade shaped demolition charges required for the Troarn demolition. The RE party then split up. All the plastic explosive and cratering equipment were loaded on to the trolleys and Captain Tim Juckes RE was sent off with the main body of the Sappers to attack his two bridges at Bures. The Squadron Commander Major Tim Roseveare RE, Lieutenant David Breese RE and seven Sapper Other Ranks set off with the heavily laden jeep and trailer to tackle the Troarn bridge. Neither party had any Infantry protection and had therefore to organise their own within their resources.

The attack on the Troarn bridge is best told in the Squadron Commander's own words:—

"We set off down the road at a moderate pace with everyone ready with a Bren gun or one of our several Sten guns for any trouble. Just before the level crossing we ran slap into a barbed wire knife-rest road block. One Boche fired a shot and then went off. It took twenty minutes' hard work with wire cutters before the jeep was freed. We then proceeded on, leaving behind, it transpired later, Sapper Moon; two scouts

were sent ahead to the next cross roads. As they arrived a Boche soldier cycled across complete with rifle. On being dragged from his bicycle he protested volubly and we made the mistake of silencing him with a Sten gun instead of a knife.

"The town (Troarn) was now getting roused so we lost no time and everyone jumped aboard while I tried to make the best speed possible. As the total load was about 3,000lbs we only made about 35mph. At the corner (of the town) the fun started, as there seemed to be a Boche in every doorway shooting like mad. However, the boys got to work with their Sten guns and Sapper Peachey did very good work as rear gunner with the Bren gun. What saved the day was the steep hill down the main street. As the speed rose rapidly and we careered from side to side of the road, as the heavy trailer was swinging violently, we were chased out of the town by a German machine gun which fired tracer just over our heads.

"On arrival at the bridge which was not held, we found that Sapper Peachey and his Bren gun were missing. Thirty-nine General Wade charges were immediately placed across the centre span, a Cordtex (detonating cord) lead was connected up and the charges fired. The demolition was completely successful—the whole centre span being completely demolished giving a gap of 15 to 20ft. The time taken was about five minutes.

"I decided Troarn would not be a healthy spot to return to, so we drove the jeep up a track due north towards Bures as far as possible and then ditched it. It was now 0500hrs. Lieutenant Breese made a reconnaissance of Bures which led him to believe it was occupied. The party therefore swam several streams south of Bures and took to the woods. A good deal of machine gun fire from a road junction ahead made me alter my plan and I decided to make for Le Mesnil which was reached at 1300hrs."

At about 1230hrs the CO of 8 Parachute Battalion decided that a further attack should be made on the Troarn bridge but could only spare one Infantry Platoon as protection party. The following party therefore formed up under Captain Tim Juckes RE, who had by then linked up with the Battalion on his return from the bridges at Bures:—

One Platoon of 8 Parachute Battalion under Lieutenant G Brown,
Protective detachment RE under Sergeant Shrubsole RE,
Jeep and trailer carrying Lieutenant Tony Wade RE, six Sappers and forty General Wade demolition charges,
Rear-guard detachment RE under Lieutenant John Shave.

The route taken was east to Bures and then down a road leading south towards Troarn. Just outside the town a firm base was established with the demolition party and Lieutenant Shave's detachment. While Lieutenant Brown's Platoon set about driving the enemy up the street, Sergeant Shrubsole's RE detachment pushed into the town and worked their way down the hill towards the bridge. On the way they came under fire and a small battle ensued in which one German was killed and five surrendered. The way was now clear to the bridge and the demolition party with the jeep and trailer proceeded straight down to the bridge and laid their charges across the next span to that already destroyed and successfully demolished it. The total gap was now about 35 to 40ft as the intervening pier was almost completely destroyed by the second explosion. The time was about 1500hrs. The demolition party then withdrew in good order through Troarn by the route they had come. The Infantry Platoon was withdrawn through Lieutenant Shave's rearguard and the return march completed successfully by about 1630hrs.

Captain Juckes and his RE party had a less eventful time. After making their way through the Bois de Bures they reached the two bridges at Bures unopposed about 0630hrs and work was started immediately on the two demolitions. Lieutenant John Shave RE and one Section tackled the farm track bridge while Lieutenant Alan Forster RE and about one and a half Sections dealt with the railway bridge. Local protection was provided by Sappers of 1 Troop. Both bridges were blown by 0930hrs after giving a local farmer a few minutes to move his cattle back across the river to the home side and Captain Juckes' party made their way back to the 8 Parachute

Battalion area by 1215hrs.

Captain Smith's troop, which was scheduled to drop north west of Varaville with the Canadian Parachute Battalion, was scattered largely over the flooded area to the east and in the village itself. One aircraft took such violent evasive action that the men were thrown flat and the stick stretched from Varaville to Robehomme, some 3,500yds. The containers proved very difficult to retrieve even though the illuminated locating device showed up under two and three feet of water.

Lieutenant Jack Inman RE collected twelve Sappers and three containers of explosive and took them with considerable difficulty across a network of ditches to Varaville where he met Lieutenant Ted Baillie RE who was on his own. Five Sappers and 200lb of explosive were left with Lieutenant Baillie who proceeded to destroy successfully the Varaville bridge. Lieutenant Inman then set off for the Robehomme bridge with the remainder. On his way he met Captain Smith, Lieutenant Beverley Holloway and three Sappers. Captain Smith went to the Varaville bridge whilst the rest went on to Robehomme. Bavent was held by the enemy and the party had to take to the flooded fields carrying the explosive on their backs. They eventually reached the bridge at 0900hrs, to meet Sergeant Poole RE there and hear that he had dropped nearby and destroyed the steel span with a clean cut, using 30lb of plastic explosive collected from troops of 1 Canadian Parachute Battalion who had dropped in the vicinity.

Sappers jumping towards the ends of the sticks tended to get embroiled with the enemy at once and there were many stories of Sappers being cornered and escaping. The individual reports all showed that a heavy toll of the enemy was taken by these small bands. Sergeant Jones for instance killed eight of his captors with their own weapons. Sapper Thomas, although wounded during his descent, killed three of the enemy on landing with two 36-grenades. Nearly all these parties rejoined the Squadron later in the day.

Thus 3 Parachute Squadron RE, despite many difficulties, successfully carried out its allotted tasks. Unfortunately these demolitions could not be covered by fire and in due course the enemy was able to circumvent them. However, there is no doubt that they served to delay and hamper the enemy build-up seriously during the early critical stages following the initial assault.

*Postscript*

The gallantry and initiative of the Squadron Commander, Tim Roseveare RE, was recognised by the award of an immediate DSO in the field. Sadly Captain Tim Juckes RE was killed some time later during a mortar attack on Le Mesnil and Sergeant Jones was also to be killed.

Major Roseveare's exploit also forms the basis of the Airborne Chapter in *Sappers at War* by Anthony Armstrong (AA) who was himself once a Sapper Officer.

### 249 Field Company RE (Airborne), 591 (Antrim) Parachute Squadron RE and the Bridges over the Caen Canal and River Orne

One of the primary tasks given to 6 Airborne Division was to "Capture, intact if possible, the bridges over the Caen canal at Benouville and over the River Orne at Ranville". The story of the successful assault by the *coup de main* glider force under Major John Howard, 2nd Oxfordshire and Buckinghamshire Light Infantry, is well known but the engineer role in support of this critical task is worthy of documentation, not the least since it brings out the breadth and depth of contingency planning in airborne operations.

In view of the importance of the two bridges it was certain that they would have been prepared for demolition and the demolition charges might well be actually in place. To this end detailed models of the bridges were made from available information and the likely placing of demolition charges assessed. Here it is interesting to note that the best information on the canal bridge was a copy of a pre-war picture postcard supplied by a member of the public in response to a general appeal in the United Kingdom for information on occupied Europe.

2 Platoon of 249 Field Company RE (Airborne) under Captain Jock Neilson RE with Lieutenant Jack Bence RE was distributed one Officer or NCO and four Sappers in each of the six gliders allotted to the coup de main force. Each glider party was briefed to search the same places for demolition charges on their own and on the other bridge. Their equipment comprised scaling ladders, hand axes, small crowbars, torches and pliers as well as a folding canvas assault boat and an inflatable reconnaissance boat.

The three gliders intended for the canal bridge, including Captain Neilson RE, all landed within 100yd of the bridge as planned. Despite the roughness of the landing due to the marshy ground every Sapper was at his allotted place searching for demolition charges within two minutes of touching down. It was found that the places intended for demolition charges had been indicated with paint, and no charges being found in place the bridge was declared clear within five minutes. A wireless message then came through that only one glider had arrived at the River Orne bridge. Captain Neilson RE therefore promptly took an RE party from the Benouville to the Ranville bridge and was able to declare the latter also clear just as Lieutenant Bence RE arrived on the scene: his glider had landed some 500yd from its target. The third glider for this party landed even further away in the marshes near the coast and the party did not arrive until the evening of D plus 1.

Sometime after first light the Frenchman responsible for working the lifting bridge at Benouville arrived and the RE party learned from him the rudiments of the mechanism before he beat a hasty retreat.

Lieutenant Bence RE then set about the next task which was to assess what load class of vehicle the two bridges were capable of carrying. This involved taking measurements with tape and footrule and applying a known formula, and it was no healthy task with the sites still under aimed small arms fire. The answers showed that both the bridges were Class 30, ie capable of carrying Sherman tanks, but the approaches to the Ranville bridge were rather below this figure. This was important, as a Squadron of the amphibious Sherman tanks that had swum ashore leading the seaborne assault over the beaches were due to cross into 6 Airborne Division's area to provide sorely needed tank support. Bearing in mind also that the formula included a factor of safety and that the doubtful area was clear of the watergap, the Commander Royal Engineers (CRE) of 6 Airborne Division took the decision when visiting the bridges during the morning that the tanks should be allowed to cross. This they did later without mishap.

So much for the operation at the bridges as it turned out, but what if the bridges had not been captured intact and one or both had been blown? This was a contingency for which plans had to be made in advance and equipment provided. There was also another ugly hazard. The level of water in the canal was controlled by locks near the coast at Ouistreham. If these were destroyed by the enemy the canal waterway at Benouville would be reduced to a few feet in width with steep muddy slopes on either side.

The contingency plan was for 7 Parachute Battalion dropping north of Ranville to secure a bridgehead to the west of Benouville and the canal. This would involve ferrying troops across the water gaps and was to be supervised by a detachment of a Sergeant RE and four Sappers dropping with 7 Parachute Battalion. The equipment required, consisting of thirty inflatable RAF type dinghies and 500 fathoms of cordage, was carried down by Battalion personnel in kitbags with which they jumped. In order to get some light vehicles and 6-pounder anti-tank guns across four gliders with the balance of 2 Platoon 249 Field Company RE (Airborne) were to land with the main glider force some two hours later. Each of these gliders carried one light anti-tank gun raft, further RAF type inflatable dinghies, ferrying gear and two 30ft rolls of chespaling. The last had hessian sacking stitched underneath, sprayed with oil paint, designed to complete with the steep muddy slopes which might have been met on the canal. The equipment was not of course needed but it was dumped on the east bank of the River Orne for use if the bridges were subsequently des-

troyed. In fact the canal bridge was lucky to escape a bombing attack on the evening of D Day when one bomb glanced off the superstructure into the water.

*Postscript*

Later in June 1944 another Division appeared in the area and this Division had earned the nickname of the "Highway Decorators" from its habit of daubing available walls with its insignia. The CRE 6 Airborne Division therefore sought the Divisional Commander's approval to staking our own claim on the canal bridge. General Gale readily gave his assent and two swinging inn type signs with 6 Airborne Division and Pegasus Bridge painted in the correct colours were made in the workshops of 286 Field Park Company RE (Airborne) and erected on 26 June 1944.

On the cessation of hostilities the sign at the Benouville end was formally unveiled in the presence of local dignitaries. An addendum plaque was added to mark the role of 6 Airborne Division in the invasion. The signs, together with the Pegasus Café (home of the Gondree family) nearby are today well known landmarks.

## 591 (Antrim) Parachute Squadron RE and the Clearance of the Glider Landing Zones

The original 6 Airborne Division plan had provided for the early landing of as many gliders as possible on the open ground north of Ranville so as to have available the heavier weapons and best possible anti-tank defence against the expected counter attacks by German armour. However, some four weeks before D Day, routine photographic reconnaissance suddenly revealed a pattern of white spots on the air photographs of the intended landing zone (LZ). Fortunately the CRE had seen these half-an-hour before being summoned to the Divisional Commander, General Gale. "Have you seen these air photos, Frank?", said General Gale, "Do you realise what they mean and what do you propose to do about them?" "Yes Sir," replied the CRE, "They are anti-airlanding poles and we shall have to blow them down and carry them away." The divisional plan had then to be recast to drop the maximum parachute force first in order to secure the area and to clear sufficient lanes through the poles to enable the essential glider elements to come in as early as possible.

Detailed examination of the air photographs indicated that the obstructions consisted either of wooden poles 12 to 18in in diameter or of metal girders, in both cases about 15ft high and sunk in holes about four feet deep. It was also possible that the tops of the poles were laced together with stout plain or barbed wire. In some areas the holes had been dug but no poles erected at that stage. The spacing of the poles was 30 to 60yd.

The CRE and the CO of the Glider Pilot Regiment, Lieut Colonel George Chatterton examined the problem in detail and decided that for the initial glider force of some seventy Horsa gliders, needed to carry Divisional HQ and one 6-pounder Anti-Tank Battery and to be landed by moonlight, two strips would have to be cleared, each 1,000yd by 60yd. This would involve the demolition and removal of one complete row of poles in each strip. Each strip would then take thirty-five Horsa gliders. In order to take the main glider force of some 140 gliders due to land at 2100hrs on D Day under the revised plan two strips further to the east would be needed. As this force also included some of the much larger Hamilcar gliders carrying 17-pounder anti-tank guns, the strips would have to be increased to 90yd in width. This would involve the demolition and removal of two complete rows of poles in each 1,000yd strip. In addition each landing strip would need an approach funnel 120yd long in which the poles would have to be dropped but need not be removed to the side. All strips would be marked with a landing "T" of lights by night and ground strips by day and this would be for the Independent Parachute Company to do.

So much for the commitment. There remained the problem of dropping the poles and then removing them. Permission was obtained to fell 100 suitable trees in the New Forest, something that would be unheard of in peacetime, and these were then transported to Bulford Fields on Salisbury Plain where they were erected according to the pattern in the air photographs. Following trials of various possible methods a

standard drill was evolved as follows:—

(a) The ground round the base of each pole was excavated to a depth of 6in and about 12in out from the pole.

(b) A 5lb sausage of plastic explosive was attached round the base of the pole to be fired individually by safety fuse and igniter. These sausages were made up in bicycle inner tubes and carried down by the parachute Engineers as bandoliers.

(c) Each pole was then removed by human porterage provided by an Infantry working party and the shallow crater filled in and stamped down. Demolished poles were carried away to the side of the strip and laid at the base of a standing boundary pole and at 45° to the axis of the strip to allow gliders to turn off. Six infantry teams of twelve men were required for each strip and they were headed by an RE NCO to ensure a safe separation from the demolition parties.

With one RE Troop working on each strip target timings were ninety minutes to clear each night strip and two hours each day strip. The two night strips had to be ready by 0320hrs, when the glider force was due to land.

The troops allotted for the task of clearing the two night strips were:—

591 (Antrim) Parachute Squadron RE (less one Troop),

Infantry working party of 4 Officers, 12 NCOs and 120 men from 13 Parachute Battalion,

A detachment of the Divisional Signals,

Protection party from 12 Parachute Battalion.

Two Engineer reconnaissance parties were to drop at 0030hrs to tape out the two strips, with the remainder dropping at 0100hrs to prepare the landing strips.

In general the drop went fairly well. However, one RE reconnaissance party under Lieutenant Pip Mitchley RE was dropped wide and did not arrive in time to carry out its task. The other party under Corporal Stoner RE therefore reconnoitred and set out both strips though they were very short of tapes for this. Also the two Squadron HQ sticks with the Squadron Commander and his 2IC failed to appear at all. Captain Fergie Semple RE of 3 Troop therefore took charge and got the two Troops working with the Infantry party which had arrived as planned.

The removal of the obstruction poles proved easier than was expected. Few of them exceeded 8in diameter, and little more than half of them were in place in the ground. Towards the northern part of the LZ they were securely wired together with heavy gauge wire. In many cases manual removal by three men was found to be quicker than using the prepared explosive charges. The two westerly strips were ready in good time for the gliders at 0320hrs but lighting by the Independent Parachute Company proved unsatisfactory due to lack of personnel and special equipment. As a result gliders came in from all directions but with the traditional ability of the Horsa glider to absorb punishment, casualties to men and equipment were remarkably few. Immediately the gliders were down the Engineers set about clearing the two easterly strips and completed these by 0500hrs. Up to this time only light rifle and machine gun fire had been met and a patrolling armoured car which kept at a discreet distance.

### 591 (Antrim) Parachute Squadron RE and the Merville Battery

The story of the capture of the Merville Battery by 9 Parachute Battalion in the face of great difficulties is now well known. As planned, a Troop of 591 (Antrim) Parachute Squadron RE was to support the Battalion and destroy the guns and equipment after capture of the Battery position. This Troop, under Captain Tony Jackson RE, less a glider detachment, was to drop with the Battalion and assist by making gaps through the perimeter minefield. The glider detachment consisting of seven Sappers under Lieutenant Leslie Shand RE was to crash-land with members of the Battalion in three gliders between the actual gun emplacements at 0430 hrs to synchronise with the main assault, storm the emplacements and destroy the guns.

In the event the Engineers in the parachute element were scattered far and wide—as indeed was 9 Parachute Battalion—and none were able to reach the

Battalion rendezvous. Half the Troop under Lieutenant Jock Hinshelwood RE were dropped as far away as Robehomme where they linked up with 1 Canadian Parachute Battalion. Of the three gliders, one crash landed in England, a second with Lieutenant Shand RE landed at a distance from the Battery near Varaville but eventually rejoined the Battalion and the third managed to land fairly close to the Battery.

Regretfully therefore, through no fault of their own, the Engineers were unable to carry out their allotted tasks.

### 286 Field Park Company RE (Airborne) and its Work on D Day

The "Field Park" was the workshop, equipment, plant and stores unit of the Divisional Engineers and important though it was it seldom gained a front line role. However, in order to maintain morale the CRE had told 286 Field Park Company RE (Airborne) that every effort would be made to include at least elements of the unit in the initial assault.

Because of the weight limitations imposed by parachutes and gliders, carriage of the standard types of bulldozer was not possible and the Plant element was equipped with light wheeled agricultural tractors. The Company itself made bulldozing blades for these, ingeniously operated with oleo legs from the undercarriage of bomber aircraft but as a machine it was not a great success. However a month or two before the invasion took place the CRE heard that a small American bulldozer, called a Clark Crawler Tractor, had been used in a glider landing by Wingate's Chindits behind the Japanese lines in Burma. So the CRE visited the HQ United States Aviation Engineers in England and asked if he could have three of these machines. "Sure", said the Commanding General, "Just get your CG to drop me a line and they're yours." So the Plant Troop got three of these small bulldozers which would load into a Horsa glider without dismantling.

As they would be valuable in clearing the glider landing zones for the second and main landing on the evening of D Day a detachment of fifteen Sappers under Lieutenant "Gunner" Read RE of 286 Field Park Company RE (Airborne) was to land in four gliders with the first glider wave at 0320hrs. Three of these gliders were each to carry a Clark bulldozer, one American tipper trailer, petrol and tools. The fourth glider was to carry a jeep and air compressor.

Two of the three gliders carrying bulldozers and the fourth with the jeep and air compressor landed as planned at 0325hrs. It is believed that the remaining glider broke its tow rope over the Channel and landed in the sea. Sadly the bulldozer operator involved was a Sergeant Rousseau RE, a French speaking Channel Islander, whose linguistic ability would have been most useful. Unloading the bulldozers posed some problems. One broke the loading ramp on the glider but survived the drop to the ground. The second was also difficult to unload as the glider had shed its nosewheel. Both machines were working on their strips within one and a half hours of landing, about 0445hrs. In eight hours and well in time for the next glider force landing at 2100hrs, they had cleared, unassisted, glider debris from the first landing as well as filling in holes on the two easterly strips where the poles had not in fact been placed in the ground. During this time the LZ had become subject to some sniping, mortar and shell fire but despite this the operators persevered and completed their task.

The other requirement at an early stage was for an Engineer stores collection and distribution unit and the balance of the detachment mentioned above was organised to do this. Only part of the bomb bays in the parachute aircraft was required to carry equipment containers for the use of the paratroops it was to drop. The remainder of the bomb bays was therefore filled with containers of stores likely to be needed, principally anti-tank mines. These latter containers were released shortly after the equipment containers and the system called the Jettison Drop. This Jettison Drop was inevitably very scattered and though only about fifty per cent of it was retrieved, it proved to be a valuable bonus.

There was a further development of the Jettison Drop principle. HQRE heard that all the RAF tug aircraft towing gliders were to drop their nylon tow ropes into the Channel on their way back to their base. These tow ropes might be most useful to the Engineers on the ground whose resources were naturally very limited. So arrangements were made for each stream of tug aircraft to drop their tow ropes over specified map squares in Normandy itself, where they could be collected later.

*Postscript*

Tragically Lieutenant Read RE was killed soon after landing, the first Divisional Sapper Officer to fall in action.

It would be an omission in this account of the work of 286 Field Park Company RE (Airborne) not to mention the Memorial Cross. Sadly the temporary divisional burial ground at Ranville began to fill and later in June 1944, when there was a lull in the battle, the CRE approached the Divisional Commander and Senior Chaplain, George Hales with a design for a simple temporary memorial cross sketched on the back of a message form. Both readily agreed. The cross was actually made by Sapper Hanslip RE of cement cast in moulds and speckled with coal dust to simulate marble. A Pegasus and "6 June 1944" were attached, made from copper compressed air bottles salvaged from derelict gliders, beaten flat and stippled with the Pegasus design and lettering. The cross was erected on 24 June 1944 and consecrated by the Senior Chaplain. The burial ground became a permanent War Graves site and the cross was still standing thirty years after—and still is, it is believed—a fine tribute to Sapper Hanslip's workmanship. In the days when the annual Airborne Pilgrimage took place, the service in the cemetery was always held round this memorial cross rather than the much larger formal one erected by the War Graves Commission.

### Headquarters Royal Engineers and its Misfortunes on D Day

HQRE of an Airborne Division was a small affair with the barest minimum of staff. It consisted of three Officers—the Commander, Adjutant and Intelligence Officer—and ten Other Ranks, including an Army Physical Training Corps Parachuting Instructor. To match the pattern of the divisional plan an advance element consisting of the Commander, Intelligence Officer, one clerk and one despatch rider were to go in by parachute with 591 (Antrim) Parachute Squadron RE at 0050hrs. The main body comprising the Adjutant and seven Other Ranks in two gliders was to land with two jeeps and trailers at 0320hrs with Divisional HQ. Because of the shortage of Officers Lieutenant Jim Lockey RE of 591 Squadron was to join the HQ as a Liaison Officer after landing and after finding out the situation at the Canal and River Orne bridges.

In fact the Commander landed far south of the DZ and it took him some one and a half hours evading German opposition trying to ring the landing before he reached the rendezvous at about 0230hrs. Here he found the despatch rider, Sapper Souster, but there was no sign of the Intelligence Officer, Lieutenant Johnnie Shinner RE nor of the clerk, Sapper Guard. However Lieutenant Jim Lockey RE arrived shortly after with the good news that the bridges had been captured intact. Following the glider landing at 0320hrs the small party waited for the two glider loads with the main body to link up. Presently one load consisting of Staff Sergeant Rickman, Army Physical Training Corps, Lance Corporal Hullin (clerk) and Sapper Clark the draughtsman arrived with a jeep and trailer but there was no sign of the second load with the Adjutant, Captain Jack Maynard RE, and three Other Ranks.

Lieutenant Lockey went ahead with the Deputy Assistant Provost Marshal to confirm whether the site at the Chateau du Heaume in Ranville, which had been earmarked as Divisional Headquarters, was in fact in our hands and they established that it was. So at 0600hrs RE Headquarters was established alongside Divisional Headquarters, but the RE staff consisted only of the Commander, Lieutenant Lockey RE as combined Adjutant and Intelligence Officer, one Lance Corporal clerk, one despatch rider, one draughtsman and the Parachute Training Instructor.

It transpired later that Captain Maynard and his glider load had been hit by flak

and landed beyond the River Dives, only to be taken prisoner soon after. Lieutenant Shinner and Sapper Guard were in the same parachute aircraft as Major Andy Wood RE, the Officer Commanding 591 (Antrim) Parachute Squadron RE. Their Stirling was shot down in flames but miraculously the parachutists survived. They were all taken prisoner and Lieutenant Shinner was promptly removed for interrogation. Sapper Guard and several Other Ranks were summarily executed with a machine pistol.

### Subsequent Engineer Tasks on D Day

In view of the tactical situation and dispersion, 3 Parachute Squadron RE was left under the command of 3 Parachute Brigade but it continued with the tasks laid down for it. These included road reconnaissance within the Brigade area to see if they were clear of mines and the laying of an anti-tank minefield at the Le Mesnil crossroads with mines collected from the jettison drop round Le Mesnil. After completing these tasks the Squadron took its place in the line in an Infantry role at Le Mesnil and gave a very creditable account of itself.

The remaining Engineer units reverted to the CRE's command at 0600hrs on D Day. Those that had completed their initial tasks were deployed on essential work planned as the second phase. This comprised mainly road reconnaissance in the Divisional area to determine if any mining had been carried out by the enemy and also the laying of our own minefields which were essential to thwart Infantry and Armoured counter-attack. The actual mines required had to come from the jettison drop containers and these were not easy to find, especially as many of them had come down in the village of Ranville, south of the main DZ.

Shortly after 1200hrs enough anti-personnel mines had been collected to enable one Troop of 591 (Antrim) Parachute Squadron RE to lay one anti-personnel minefield to deny the covered approach between Le Bas de Ranville and the River Orne to the enemy but insufficient mines had been found by then to complete another anti-personnel minefield nearby. At the same time another Troop of the Squadron made a start on an anti-tank minefield through the orchards between Le Mariquet and Herouvillette. However, there were only enough mines to do the southern half of the belt and even that at half the normal density. The northern belt was therefore laid as a dummy minefield as sufficient fencing wire and minefield marking materials were available.

The Platoon of 249 Field Company RE (Airborne) with the Infantry Company on the Canal and River Orne bridges had to be left there to assist with their defences as they were still subject to sporadic counter-attack. The Platoon was however given the task of providing a water point. Apart from a few small shallow wells in the villages the only adequate source initially was the canal which fortunately was passed as fit to drink. A water point was therefore established close by the canal bridge at Benouville using a water purification trailer handed over during the afternoon as planned by 3 British Infantry Division at the bridge. Unfortunately during the evening the bridge was dive bombed and received a direct hit. The bomb must have disintegrated without exploding as the bridge escaped any damage. The water point alongside was less lucky and it was damaged beyond repair.

### Finale

The Engineer tasks on D Day were probably more varied than in any other airborne operation and entailed a dispersion of the Sappers in small parties over the whole Divisional area. They had their full share of casualties, faulty dropping and loss of equipment. That all the allotted tasks were nevertheless carried out on time, with the single exception of the destruction of the guns in the Merville Battery position, was due to flexibility in the plan, a wide dispersion of equipment and stores throughout the various parties and above all the determination of all ranks to get their tasks completed, even when left by circumstances to their own devices. In fact they lived up well to the Royal Engineers motto of *UBIQUE*.

# Sunshine Soldiering in Zimbabwe

MAJOR C M DAVIES RE, B Eng

*The Author was commissioned into the Corps as a Direct Entrant in 1971. After a tour as Tp Comd in 9 Indep Para Sqn he went to 26 Engr Regt as Training officer. A period as Adjt of 40 Army Sp Regt was followed by a year in command of 21 Army Sp Sqn before going to Camberley in 1979. At present the Author commands 9 Para Sqn.*

On a cold December morning the Colonel GS arrived in his overcoat for his monthly briefing of the GSO2s. ("They" were fixing the central heating). After sniffling his way through the first few items he mentioned, almost casually, "the Zimbabwe pot appears to be about to boil over" and that volunteers were being asked for to "help sit on the lid." I confess I paid little attention to the rest of the briefing. My thoughts were transcended from the reality of commuting daily to my desk-bound job on my cold and wet motorbike to the hot sunshine and, possibly, some "real soldiering." It seemed too good an opportunity to miss.

On 6 February 1981 I descended the steps of a 747 at Salisbury Airport, not knowing quite what to expect but ready, I thought, for anything. Anything that is except rain! As if to punish me for escaping a dreary British winter the Gods saw to it that I was drenched as soon as possible after my arrival. But at least it was warm rain! Contrary to the many ill-conceived notions I had, I was not whisked off into the middle of a bush war, nor was Salisbury like Belfast with guns, sangars and soldiers much in evidence. Indeed I was greeted by a remarkably quiet, civilised city with blossom-laden trees lining broad avenues of beautiful, spacious houses. Was this the calm before the storm? What was I to do here anyway?

Before answering these questions, and to put the role of the British Military Advisory and Training Team (BMATT) into perspective, it is worth saying something of the recent history of the country up to my arrival.

In 1953 Southern Rhodesia joined with Northern Rhodesia and Nyassaland to form the Federation of Rhodesia and Nyassaland. When this was dissolved in 1963 the Rhodesian Government, after forty years of self-rule, felt ready for full independence. However, this was not to be. The British and Rhodesian Governments could not agree on the terms for Rhodesian independence and this led to the declaration of UDI by the Rhodesian Prime Minister Ian Smith on 11 November 1965.

Thus began a long and acrimonious period in British-Rhodesian relations. These were not eased by UN sanctions, the bitter personal duels between Harold Wilson and Ian Smith on HMS *Tiger* (1966) and HMS *Fearless* (1968) nor by the increasing guerrilla activity of the black nationalist groups within the country. By the early seventies the Rhodesian Security Forces were fully involved in trying to destroy the guerrilla forces of the Zimbabwe Peoples' Revolutionary Army (ZIPRA), loyal to the Matabele Joshua Nkomo, and of the Zimbabwe African National Liberation



Major C M Davies RE E Eng

Army (ZANLA), loyal to the Shona Robert Mugabe. By the late Seventies, sanctions, the strain of seige-like living and that of the "Call Up" (by 1978 many white men were doing six weeks "Call Up" in every twelve) was becoming intolerable. Ian Smith could no longer proclaim that there would be "no majority rule for a thousand years." He sought a solution which would both appease the blacks and preserve the white way of life.

As a result of elections held in March 1979, Bishop Abel Muzorewa of the African Nationalist Council (ANC) became the first black Prime Minister of the country, (now called Zimbabwe-Rhodesia).

At last, in September 1979 all the interested parties came together for the now famous Lancaster House talks. The British Government, represented by Lord Carrington, resolved to find a solution acceptable to each of the parties in the conflict. Muzorewa represented the government of Zimbabwe-Rhodesia, Smith, the whites, Mugabe, the largely-Shona Zimbabwe African Nationalist Union (ZANU) and Nkomo, the largely-Matabele Zimbabwe African peoples' Union (ZAPU). The last two had formed an alliance for the prosecution of the war (The Patriotic Front) but each was now seeking power free of compromise. The talks achieved a measure of success. It was agreed that there should be a ceasefire; that a free election should be held; that the election and the ceasefire should be supervised by a British-led Commonwealth Monitoring Force (CMF); that all guerrillas of the revolutionary armies should be allowed to enter Zimbabwe unmolested to collect at designated Assembly Points (AP's) and that they would, subsequently, be allowed to serve in the new, integrated, Zimbabwe National Army (ZNA). The black representatives, if not overjoyed at the result, were modestly pleased: the white Rhodesians felt let-down, bitter and suspicious of what might ensue. Nevertheless there was an air of relief that, at last, the war had ended.

After his overwhelming election success Robert Mugabe faced many problems. Not least of these was that of forming the ZNA. This would involve the disarming of thousands of former guerrillas (no-one was to know exactly how many of these there were for many months), forming them into battalion-sized units and retraining them as conventional soldiers. At the same time the integration process meant that ex-ZIPRA, ZANLA and former Rhodesian Army (FA) personnel would have to put aside their old quarrels and loyalties and work together. Many white FA officers and soldiers left or made plans to leave. Realizing that Zimbabwe lacked the capacity to form and train the new army, Mr Mugabe asked for British help. He saw that not only could the British Army offer the necessary expertise but that, as a neutral force, it could be relied upon and respected by all parties. Most important of all, the presence of British soldiers in the country would, he reasoned, offer a degree of reassurance to the white population whose emigration he could ill-afford. It was in response to Mr Mugabe's request that the British Government agreed to the formation of BMATT Zimbabwe.

The role of BMATT was to assist in the integration of the former guerrillas from ZANLA and ZIPRA with elements of the FA.

Initially the plan was to form an Army of some fifteen battalions with supporting arms and services. The balance of the former guerrillas were to have some military training but were to be largely "Soldiers Employed on Economic Duties" (SEED) – agriculture, civil tasks and so on. For a number of reasons Operation SEED was a failure. The men so employed were still armed and becoming more disillusioned and frustrated as time went on. The outbreaks of violence in November 1980 and February 1981 were manifestations of this dissatisfaction. It seemed inevitable that civil war would soon erupt. To prevent this it was decided to absorb all ex-guerrillas into the Army. This meant expanding the Army to thirty-six battalions and a total strength in excess of sixty thousand men and women. It was to cope with this expansion, in the face of catastrophe should it fail, that the BMATT-assisted training system ("The Sausage Machine") was adjusted to accomodate the vastly increased numbers. It became "Super Sausage." It was for this reason that BMATT called for

additional volunteers at the end of 1980. Hence my joining about one hundred and fifty other Officers and NCO's from all Regiments and Corps in the British Army who were spread across Zimbabwe (a country the size of France).

BMATT personnel were empoyed in a variety of roles. There were instructors at the Zimbabwe Military Academy (ZMA), the School of Infantry, the Service Schools, the Training Depots and the Zimbabwe Staff College. The other main concern was the provision of a Major and a Warrant Officer to each of the new Battalions. These met their Battalion as they formed up, watched them through basic training then accompanied them to their Battalion locations as advisers and, perhaps, wet nurses. It should be noted that the formation of a Battalion bore no resemblance to its British counterpart. First the leaders of ZANLA and ZIPRA would select approximately 160 men each from their respective AP's. These received three weeks "orientation" training at the ZMA. Essentially those who passed this course became Officers in the new Battalion, those who failed became the Warrant Officers and Senior NCO's. Naturally the appointment of the Commanding Officer (average age twenty-three years) and his Officers was heavily influenced by politics. For example, if the CO were former ZANLA the Second-in-Command had to be ZIPRA. The other Officers had to be approximately 50% ZIPRA and 50% ZANLA. After these appointments were made a further 720 "comrades" were chosen from the AP's. Ideally these would also be 50% ZANLA/ZIPRA. However, as ZANLA had many more men in AP's than ZIPRA, some Battalions were composed of only former ZANLA OR's.The Rhodesian African Rifles (RAR), although retitled, were maintained intact and, for a while anyway, retained some of their white officers.

After the orientation course the command element of the Battalion joined the OR's for three weeks training. This included disarming, kitting-out, documentation and basic military training – largely drill and weapon training. It can be seen, then, that as a new Battalion had little formal training and no experience at all of life in a conventional Infantry Battalion, the BMATT Major and Warrant Officer were absolutely key figures in holding it together. In the six months this team had with the Battalion there was barely enough time to establish the unit's camp, a daily routine and set it on course with basic infantry training. At the end of this time the team left without replacement. Clearly all new Battalions required advice and help for a

**Photo 1.** The Brigade Study Centre

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**Photo 2.** The ever-cheerful student

considerably longer period. However the team's nominal replacements were required for yet more Battalions still being produced from "Super Sausage."

It was to fill the gap left by departing Battalion teams and also to provide a British representative at a higher level than Battalion which led to the decision to provide a small BMATT team at each of the five formation Headquarters. Initially this team consisted of a Major and a Warrant Officer but experience soon showed that at least another Warrant Officer and Sergeant were required to cope with the task. My contribution to BMATT was to be the first such Major at a Brigade Headquarters, so-called a Brigade Coordinator. I was attached to 2 Brigade and based at its Headquarters in Salisbury.

In February 1981 the Brigade HQ consisted of a largely-white staff and had five new Battalions under command. By August there were eight new Battalions and two more in the pipeline. The size of the Staff and the resources available to it were woefully inadequate to cope with the enormous problems set it. Simply accommodating, feeding, clothing and administering the new Battalions would have provided more than enough work for a fully-manned and experienced staff with adequate resources. Alas neither was available. As an advisor to my Brigade HQ and to the Battalions under command it was soon apparent that there would be more than enough scope for my energies. On arrival I had the situation aptly described to me as being "rather like advancing in contact before the smoke has cleared."

The spectrum of activity in which my small team became involved in order "to keep the wheels on" made for much variety and called for a "be prepared for absolutely anything" mentality. A few examples of our work will give some idea of the scope of our task.

One of our most important functions was to visit the new Battalions, especially those which no longer had their BMATT Major and Warrant Officer. As the Battalions were up to 220 kilometres from Salisbury and we tried to visit each at least once a week this was a very time-consuming activity. The purpose of these visits was to advise unit Officers, Warrant Officers and SNCO's *in situ* upon any problems they might have. Although we were officially described as a Training Team, training was

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not always high on the list of pleas for help. It must be remembered that no-one in the new Battalions had any experience at all of handling or administering over a thousand men in barracks in peacetime. The Battalions were composed of men who had operated as guerrillas and whose experience consisted of living in small groups with little or no logistic support and no permanent home. Often, therefore, it was the instruction of key personnel in the minutæ of maintaining the unit in discipline, health and good morale which occupied most of our time. Quartermasters had to be shown (and re-shown) how to indent for stores, consumables and rations. It was often only after units ran out of fuel, fridges ran out of gas and rations failed to appear that the importance of this instruction began to sink in. Paymasters had to be shown how to account for money, complete acquittance rolls and conduct pay parades.

The first of the Battalions formed had a Medical Officer who had received eleven months training in Yugoslavia, the other Battalions were not so fortunate. A handful of basic Medical Assistants was the normal medical cover for a unit. These had to cope with the ills of unit personnel and provide treatment for local civilians for whom the nearest hospital was usually a day or more's walk away. Hence we also became "instant experts" on bilharzia, venereal disease (up to 45% in one unit), gumboils and a host of other minor ailments including "spirits" for which the only cure was the witchdoctor. On one occasion while staying with a Battalion I found a woman outside the gate in obvious discomfort, being in an advanced state or pregnancy. Through an interpreter she told me she was going to have her baby "today." Being unwilling to share her and the soldiers' phlegmatic acceptance that she should have it where she was, (and regretting that I had left my jacknife at the other end of the camp!), I launched into my first gynaecological military appreciation. Suffice to say I decided she could last out at least forty-five minutes so I commandeered a 7.5 ton armoured vehicle (the only one available) and sent her to hospital. I went back to supervising the digging of latrines, rubbish disposal pits and other routine hygiene matters.

To utilize the talents of our small team as effectively as possible we established a Brigade Study Centre and ran a number of courses and seminars centrally. We used these to teach Commanding Officers, Seconds-in-Command, Company Commanders, RSM's, Warrant Officers and unit instructors their duties. Instruction was, of necessity, at a very basic level but the students were eager to learn and progress was made.

**Photo 3.** Africa is different

**Photo 4.** Officers under Instruction

In addition to visiting Battalions and conducting centralized training we had an important function to fulfill at Brigade Headquarters. The Headquarters was suffering from the departure of Officers, often at short notice. This forced us to be prepared to put "fingers in dykes" at equally short notice. For example one of the Warrant Officers in the team became the Brigade's GSO3 Training for a month until a replacement could be found. At the same time the Brigade Commander required advice on a host of subjects. One project was the expansion of the Defence Company into a Mechanised Battalion and advising upon the training of this unit (from scratch) fell to us. However priorities for advice could change rapidly. For example I went to work one day primed to talk on mechanised infantry matters. I was greeted by the Commander who had returned from a visit to the Engineer Boat Squadron, based at Lake Kariba, horrified at its equipment state, the lack of trained personnel and the lack of a credible tactical concept for it. Could I help? Three hours later a joint Police/Army cordon and search operation became a higher priority. I was given ten days to train one and a half Infantry Battalions whose officers and men had no previous experience of such an operation. The soldiers loved the variety this new training gave them and set about it with much cheerful enthusiasm. Ten days later, when I was fairly confident that we could at least establish a cordon, the operation was cancelled.

As light relief we ran a TEWT, planned a Brigade advance-to-contact exercise, supervised the building of assault courses, thirty metre ranges, the repair of tracks and the digging of drainage. Life was never dull! What a change from the usual roundabout of European peacetime soldiering.

Cecil Rhodes' last words are reputed to have been "so much to do, so little time." This phrase was, perhaps, never more appropriate than in the time since Zimbabwe's independence. The task of BMATT required it to achieve a great deal. Much has been achieved and, while it is much too early to say that all is now "plain sailing," there can be little doubt that at least the "ship" has been set on course. I left the country having seen much progress during my all-too-short six month tour. I was, nevertheless, grateful for having had the opportunity to contribute a little while enjoying a most remarkable experience.

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# TA Sappers—An Appraisal

BRIGADIER E G WILLMOTT OBE, MA, FBIM

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*The cartoons are by Captain R J Griffiths RE, Adjutant 73 Engineer Regiment (V).*

ALMOST one third of the mobilised strength of the Army is provided by the Territorial Army. From this, the Royal Engineers reinforce formations committed to NATO with two Engineer Brigades, a Regiment, two EOD Squadrons, ten STRE and some forty individual Officers.

Since the TA spends little time training with active formations, few Regulars understand it although many are concerned with its operational role and training. Regular Officers task TA Sappers on mobilisation, directly as their commanders or indirectly whilst serving on the staff of formation HQ; others assist the TA by training units on the Continent or by providing facilities in the UK and yet more influence decisions in higher HQ and in the MOD. All should be aware of the peculiarities of TA Sapper units; this short article aims to promote such an understanding.

## CHANGES IN 1980 AND 1981

In the last two years the environment within which TA Sappers train has changed. Many of the recommendations contained in the *Shapland Report* (1) were implemented: the traditional and well understood title of "Territorial Army" was reintroduced with no change in the concept that they should continue to be a trained volunteer Reserve fully integrated into the country's defence plans; support of employers was improved by ministerial pressure and the activities of TAVR Associations throughout the country; the minimum engagement was made three years following which the efficient soldier has an annual bounty of £300 free of tax; pay and allowances were brought into line with the Regular Army and standards of training improved. Following on, the Corps introduced a new system of training as explained in the *Phillips' Report* (2); it is similar to the Revised Career Structure for Regulars although only the essential elements are taught in module training and on career courses at RSME and 11 Engineer Group because of the very much shorter time available, (for example, only a weekend is spent on each Combat Engineer module confirming knowledge taught at drill nights). Then *Exercise Crusader 80* proved to the world at large, and the TA in particular, that the Mobilisation Plan was practical, demonstrated the key role of the TA and impressed all with its keenness and enthusiasm. Further, the TA adopted with the rest of the Army the new *Individual*



Brigadier E G Willmott OBE MA FBIM

*Reinforcement Plan* drawing Reservists from a geographical area close to unit drill halls to fully man establishments; these Reservists keep a basic scale of clothing and equipment at home and get an annual taxable reporting grant of £100. Finally, in common with the whole of the Defence Sector of the economy, the TA was subjected to the *regime of financial stringency* resulting from the recession and efforts to make the public sector more efficient; economies and strict controls on the use of resources were imposed on all.

## The Effect of Changes

TA morale was boosted by most of the changes wrought. In addition, the TA was encouraged by announcements made in the *Defence White Papers* (3) (4). These underlined the vital role of reserve forces, the high state of training and readiness they need to maintain and committed the Government to fostering a positive attitude towards the TA by the community as a whole, stressing the contribution civilians can make to the Nation's defences on a part-time basis. Also announced were plans to expand the TA substantially and increase the provision for training days. As a result of all this, strength increased. At the time of writing TA Sapper sponsored and independent units are almost fully manned; wastage in sponsored units is down to 10% and in independent units reduced to 15% from 30% when the Shapland Report was published in 1978. Further, TA training of independent units became more efficient; the Revised Career Structure provided readily understood progressive steps for each man and the stricter controls and limits imposed on Man Training Days, fuel and travel funds forced a more productive use of each hour of training—it has been interesting to observe during Financial Year (FY) 1981/82, the increased activity and diverse concurrent training arranged for training weekends.

However, against this heartening background, the TA is confused by the imposition of economies in the last two years which retard training whilst, on the other hand, expressions of confidence in it continue to come from the Government and field commanders. The TA knows it is in the ORBAT, it knows each unit must get itself quickly and efficiently to its mobilisation location, it knows it has a job to do and it knows that, by and large, it is fit for its role. Yet by its very nature the TA is limited; it believes the further limitations imposed on it during the regime of financial stringency may cause it to lose some of its operational effectiveness. It looks for action to improve areas of known deficiency at the same time as its strength is increased and additional roles allocated. The Army relies heavily on the TA with a concomitant degree of operational risk and fragility which could increase beyond an acceptable level with the planned increase of TA strength by 16,000 unless action is taken to compensate for the induced strains.

## The Body of the TA

The nature of the TA needs explaining. Often termed a "great body of men and women", the simile of the human body is apt when describing a typical TA Sapper independent unit organised and established to be similar to Regular non-mechanised units; others, the sponsored units, will be touched on later. *The skeleton*, on which all hangs, is provided by the Officers and SNCOs, many of whom will have attended the same drill hall for twenty years and changed titles and sometimes cap badges with the various TA organisational changes. These long serving Sappers are highly motivated; having started their involvement as a hobby they become committed to a second profession. Their motivation is enhanced by the vocational and voluntary nature of their interest—all TA soldiers report for duty because they want to be there; taking the decision to attend training each time there is a drill night or training weekend rather than, say, watching TV after work. Many devote part of their holidays to the Annual Camp. This desire to attend training wins against the demand of family commitments and obligations to employers; some of those forming the skeleton of a unit complete 100 days training each year (this compares well with the 230 days spent in employment!) In addition to their motivation and commitment,

the Officers and SNCOs bring to the Corps strength from their wide range of civilian skills; many are engineers whose acumen, experience and skill in up-to-date practice is needed by the Corps. The Officers and SNCOs also provide the vital element of group cohesion, so essential to a fighting unit (5); this cohesion arises from long acquaintance with each other assiduously fostered by the wise "old soldiers" who attend the gatherings to commemorate wartime service in the units, and is aided by the continuity of long familiarity with the area of likely operations in, say, Germany. Yet one neglected area is their lack of training in leadership although this is improving by the greater stress placed on TEWTs, YO, SNCO and NCO promotion courses and by the introduction of JDSC-type training for Officers.

Attached to the skeleton are *sinews* provided by the permanent staff: Regular WO and SNCO Instructors (and Officers at RHQ), non-Regular permanent staff such as the Administrative Officers and the small band of civilian staff who provide full time clerical and MT administrative support. The Regular element is the catalyst for that action which ensures good quality TA training since they guide the TA instructors and provide the example. It is largely due to the high standard of the Regular Army Permanent staff that the TA and Regular Army are now so closely integrated. Nevertheless, some Permanent Staff Instructors join the TA expecting a *doddle* and are not fully prepared to deploy their initiative in the broad field in which they find themselves instructing and also arranging details of formation, unit and individual training and unit administration, including engineer resource provisioning. It is hoped to arrange induction training to assist those newly posted to the TA. Intensified operational commitments (including up to six week-long visits to BAOR per year by the Regimental leadership) and the implementation of tight managerial controls on the use of resources has caused an extra burden of work for the military and civilian permanent staff which has been carried with fortitude and goodwill despite civilian manpower reductions; the TA is grateful for their efforts.

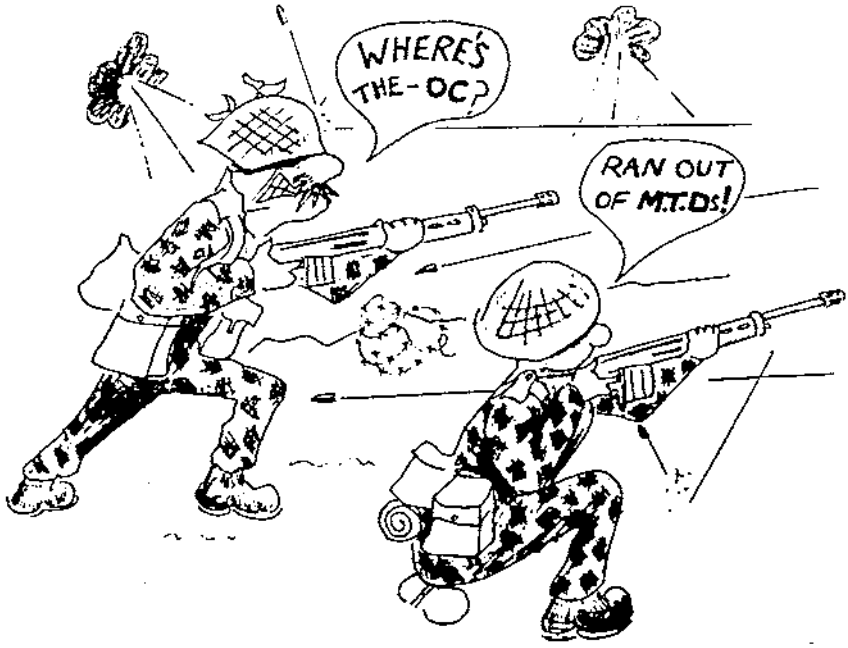
Onto the skeleton and sinews, *the flesh and muscle* is added by the men. Unlike its Regular counterpart, each TA unit is responsible for recruiting its officers and men and is responsible for selection of the potential soldier for the subsequent initial and basic training; in common with Regular units, the TA unit is also responsible for continuation training and grooming for promotion. Units are assisted by UK District HQs which provide Potential Officer schemes, selection boards and TEWTs for Officer Cadets and Officers. In addition, the Corps provide fortnight-long courses for YO's at RSME and for recruits at 11 Engineer Group. Because TA units recruit direct from the street, of six potential recruits who go to the drill hall, most units only attest four; of these, three go on to complete a Recruits Course and only two become regularly attending soldiers. Thus each TA sub-unit spends a lot of effort recruiting and on initial and basic training. The TA Sapper is deemed "trained" if he has attended the two-week long Recruit Course and attended sixteen days training. To become "fit for role", he must be Class 3 in his combat trade which normally takes about two years for the regularly attending soldier doing his military training (Shooting, NBC, First Aid and Battle Skills) and progressing through the module system of the Revised Career Structure; it takes five years for him to approach the standards set for Combat Engineer 2. This slow learning curve and consequent low level of combat skills within the TA must be appreciated by those tasking them; TA units are comparable to a typical Canadian Regiment which fought successfully in NW Europe in 1944 despite the fact that less than half of its combat soldiers had more than an equivalent of three month's consecutive training whilst 174 of them had received only one month or less (6). Clearly units would be better trained if able to retain more men for longer periods to develop their combat skills and strenuous efforts are being made to ensure this.

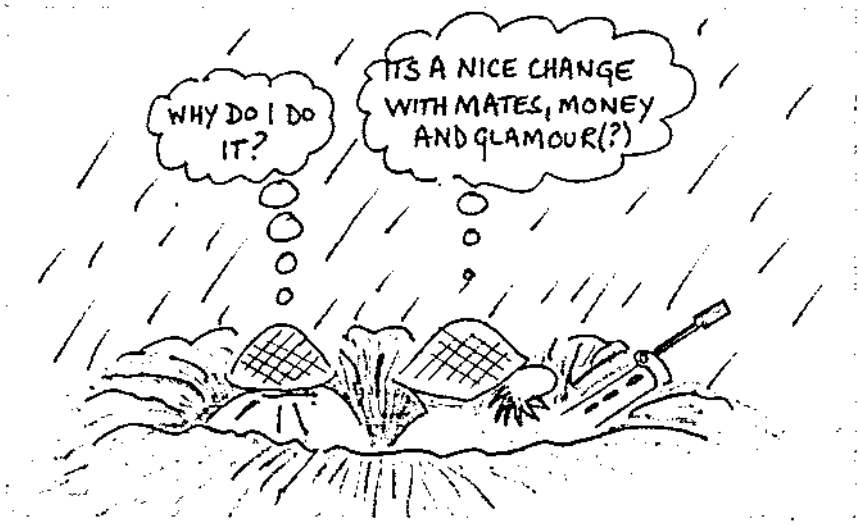
For *brain power* to the body built up so far, the TA relies on its Field Officers. Limited by their concentration on recruiting and basic training and with little time available, the Officers lack the depth of knowledge of military affairs of their regular counterparts; an Officer Commanding a Fd Sqn RE (V) will typically have served

eighteen years in the TA yet had only five week's course training, some at RMA Sandhurst and the rest at RSME supplemented by perhaps ten TEWTs over weekends—he will have picked up further knowledge by learning on the job and whilst participating for about a week each time in, perhaps, ten FTXs in BAOR. Hindered by his lack of formal training an OC finds his problem exacerbated by lack of time to organise and administer the Sqn; he is fortunate and very dedicated if able to find the ideal of three "equivalent" days per week for such activities—the term "equivalent" used for the totting-up of two weekday evenings, Saturday, Saturday evening and Sunday. Because of this, an OC should not normally, in peace, whilst in the UK, be required to advise Brigade HQ since he must devote all available time to his Sqn. Also TA Officers need to be given clear guidance on priorities to be accorded to training and need programmes carefully scheduled often many months ahead. What must never be eroded is the advantage they enjoy of being required to train solely for war without carrying the full weight of peacetime administration since it is shouldered by the permanent staff and without the inhibitions imposed by, say, training for peace-keeping operations.

## Resources

But it is the resources to sustain the "body" which cause most concern since starvation leads to a degradation of strength. Without sustenance TA units could wither as keen enthusiasts become disillusioned. *Man Training Days* (MTD) in the TA are allocated against strictly defined targets and Commanding Officers are accountable for their use to GOCs UK Districts; these MTD are for the "full time" training which is in addition to the once weekly "drill nights"—a two hour unpaid session in the Drill Hall at which regular attendance is essential for the development of group cohesion and for the practical and classroom training preparatory to the weekend module sessions. In FY 1982/83 forty-two MTD are being provided per head of unit TA strength; of these fifteen are for expenditure at Annual Camp (biennually held in BAOR for Sapper independent units), twelve for obligatory training so designated in advance by Commanding Officers, twelve for voluntary training and three held in UK District Pools for use at the discretion of the GOC.






Translated into everyday terms, this allocation of MTD means that finance is sufficient to enable each person in the TA to attend an Annual Camp lasting two weeks (or do course training in lieu of Camp if necessary), attend six weekends designated obligatory training and attend six other weekends voluntarily. In other words, over the year, the individuals in a unit train during a two week Camp and one weekend per month to consolidate the weekly "drill night" training. Even though this allocation is not much, Commanding Officers are able to divert to those Officers and SNCOs who lead, organise and administer the voluntary MTD unused by soldiers who do not attend regularly and yet still keep within the MTD target expenditure. Thus, it is not surprising that the TA takes a long time to reach basic standards of training since the allocation of MTD is meagre and even if that were increased most individuals are anyhow unable to find the time from their other commitments to do more than the training budgetted for in estimates.

Of the other controlled resources, *fuel* is perhaps the one with the greatest impact. Contrary to the popular image portrayed in the cartoon, the men actually join the TA seeking a disciplined environment in which they can progress in a structured career whilst satisfying their often unspoken desire to serve the Nation—in the very highest traditions of Voluntary Service of which we are justly proud. As part of their progress they expect to be busy—out and doing things in a practical way. Travel is a most necessary part of their perception of being busy and unit training must get them away from their Troop Drill Halls—most units arrange weekend training twice each month at a local Weekend Training Camp within 100 miles of the Drill Hall. Only at these Camps can Squadrons shake down into the posture of a recognizable unit and get on with meaningful training. Fuel is a vital resource for this activity since, even if coaches lift the men, military vehicles are needed to provide driver training, CVs and administrative backup. With low allocations of fuel, training is often limited to a particular Camp (sometimes heartily disliked with a consequent lowering of attendance.)

Furthermore military vehicles are needed to collect equipment with which training is conducted. Also equipment is often limited to that which is available locally, since long runs during the week to collect items from Engineer Parks are wasteful, especially when the equipment is for only a few men undergoing a Combat Engineer Class 3 module. The problem of equipment collection is exacerbated by the limits on MTD since TA Sappers cannot be used even if unemployed and PSI's consequently spend their time not to best advantage acting as storemen and drivers. The collection problem is further exacerbated by the limited amount of *engineer equipment* avail-

able to the UK Army for training. Since TA Sappers need engineer equipment on which to train and it seems more economical for it to be moved to the weekend Training Camps, rather than scattered throughout the UK for intermittent use, it is proposed to arrange for Regular soldiers to deploy from a central location with engineer stores to join TA Squadrons at weekends. To these limitations on TA training must be added the little known fact that TA Sapper units are only able to maintain in UK a *training scale* equivalent to one third of their unit equipment. The limitation arises not so much from their lack of intimate knowledge of the tools, vehicles and radios with which they will mobilise, but more because the TA cannot easily exercise in the UK with sufficient plant and do not have their CVs (at all levels), nor are they able to maintain wholly up to date such important documents as REME Publications.

### Sponsored Units

As mentioned, most of the preceding paragraphs apply specifically to independent TA units which are similar to Regular non-mechanised units and include sub units not found in the Regular Army such as the Plant Squadrons and 873 Movement Light Sqn RE (V). But others, the sponsored units, exist to capitalise on those scarce civilian specialists who cannot find the time to devote to independent units but are willing to serve the Nation in times of necessity. These meet annually at a two-week Camp, for two weekends and a pool of voluntary days; in this time they are meant to learn sufficient about military life to survive whilst practising their civilian skills in the Rear Combat Zone; they concentrate on learning to shoot, surviving in an NBC environment, applying the basic principles of First Aid and using military manuals and equipment. Central Volunteer HQ at Minley Manor commands a sponsored Engineer Regiment, ten sponsored STRE (V) specialising in such topics as Bulk Petroleum, Works and Railway construction and a pool of specialist Officers in such disciplines as geology and public utilities. In addition the Corps maintains a roster of volunteer Officers who do not train regularly but are specialists, some very eminent in their fields, in the Engineer and Railway Staff Corps and the PSA in BAOR.

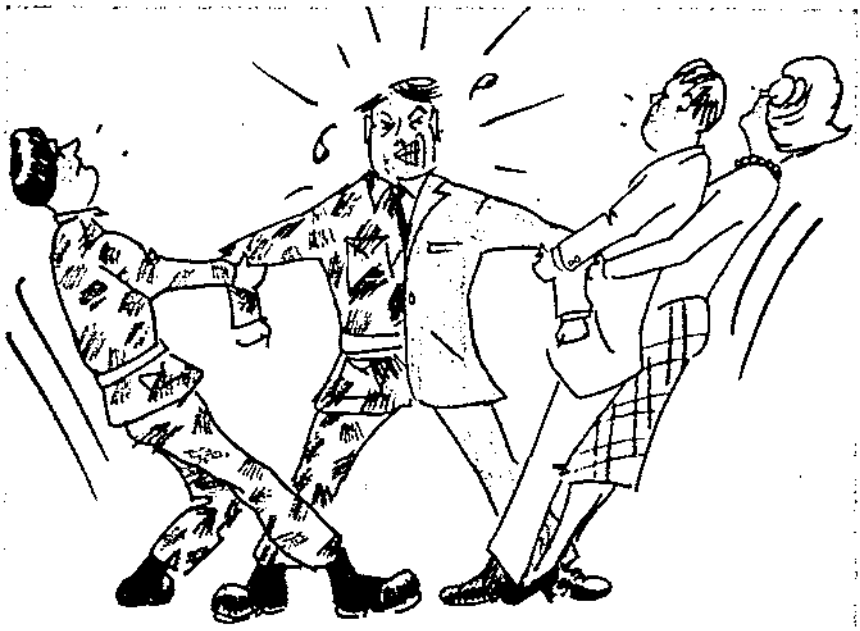
### The Nature of TA Units

Thus independent TA Sapper units are composed of enthusiasts, the most senior of whom have long service and many have up-to-date engineering experience vital to the Corps. But all need more formal leadership experience rather than relying on biennial FTX in BAOR. All units work hard to be fully manned but are barely trained above basic recruit and Class 3 combat standards; with the limited time available, TA units cannot be expected to reach the same standards as Regulars. The enthusiasm of individuals is constantly being challenged in the struggle to arrange training to meet their likely operational tasks in the face of limits imposed on MTD, fuel allocations and a shortage of engineer training stores and equipment. They are also hampered by the constraints of having Unit Equipment pre-stocked in BAOR and by commitments to their families and employers which must take priority before TA service.

Sponsored units suffer resource limitations to their activities also but since they are composed of officers and men expert in their speciality as civilians, the constraints do not bear so heavily on them. It is hardly surprising that TA Sapper units are sometimes found wanting in their command and control systems and in their performance of combat engineer tasks, especially when under stress, since they have little training time and, with the regime of financial stringency, are limited in the wherewithal to train.

### What Regular Sapper Officers Can Do

Now aware of the parameters within which TA Sappers train, those Regular Officers exercising operational command should do so with sensitivity, giving units a chance to shake down into a military organisation and practise their skills in slow time before



commitment; Commanders should also be aware of the limits beyond which TA Sapper units should not be pushed in the early days of mobilisation. Those Regular Officers supporting TA training should foster and cultivate the existing links, affiliations and training responsibilities and, without "wet-nursing the TA", increase the assistance provided by the Regular Army wherever possible so as to harness to best advantage the talent and enthusiasm of the TA in the service of the Nation. Those able to influence opinion in high positions, especially within the MOD, should now do so with understanding; formed, well manned units should not be lightly re-organised for the sake of neatness; Commanding Officers need their hand strengthening by the judicious increase of Regular permanent staff to ensure the maximum training value is extracted from each hour on the programme; the leadership ability should be enhanced by better Officer training and, possibly (7), by the automatic posting of ex-Regular trained leaders into TA units as Reservists to bolster Officer and SNCO strengths, held as supernumeraries up to, say, 20% of establishment.

The "great body" of independent TA Sapper units need the flexibility to allocate available MTD to the most cost effective and productive areas, they need sufficient sustenance in the form of financial allocations for fuel and the provision of adequate quantities of engineer training stores.

Serving the TA, we each hold in trust a fine tradition in which Volunteers serve in peace to be ready against the eventuality of a Queen's Order embodying the TA for employment on specific tasks at home and overseas and to meet the unexpected when required by the Nation. The TA structure must also be maintained and its military leadership abilities enhanced in order to accommodate and train those additional volunteers who will flock to join in times of international tension. Constant vigilance should be exercised by all in contact with the TA to ensure it is treated with sensitivity. The TA should not be suppressed nor allowed to wither (8) in the face of the adverse conditions in which its enthusiasm struggles to survive the contrary and higher priority demands of family, employer and, now, severe financial constraints.

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(1) *Report of the committee on the Study of Wastage in the TAVR.* Major General P C Shapland CB MBE MA. D/DVT & C/27/53/12 of 7 Jun 78.


(2) *Report on the Study of the Application of the Revised Career Structure for the TAVR.* Major I G Le Phillips RE and WO2 A J Fisher RE. Encl 4 to 148/43 (Engr 6) of 9 May 79.
(3) *Statement on the Defence Estimates 1981.* Cmd 8212–1 Apr 81.
(4) *The UK Defence Programme: The Way Forward.* Cmd 8288 Jun 81.
(5) *The Sharp End of War* by John Ellis (David and Charles 1980). page 340: "The Second Army psychiatrist, in Normandy, was even more to the point. In July 1944 he averred: "The emotional ties among the men, and between the men and their officers . . . is the single most potent factor in preventing breakdown."
"Other observers were equally emphatic about the vital role of such ties within the platoons and squads. An American General, S L A Marshall, who devoted himself to a study of the ordinary soldiers' reactions to modern combat was quite unequivocal on this point: "I hold it to be one of the simplest truths of war that the thing which enables an infantry soldier to keep going with his weapons is the near presence or presumed presence of a comrade . . . He must have at least some feeling of spiritual unity with him . . . He is sustained by his fellow primarily and by his weapons secondarily.'"
(6) *Ibid.* page 338.
(7) *RUSI Journal* Volume 126 No 4 December 1981. *The Reserve Army and Leadership.* Major General H G Woods CB MBE MC MA
(8) *Hansard* 28 Apr 80 Column 1013: Mr Francis Pym speaking:
"Winston Churchill, as he then was, speaking of the Army, said: "The Army is not like a limited liability company to be reconstructed, remodelled, liquidated and refloated from week to week as the money market fluctuates. It is not an inanimate thing, like a house, to be pulled down or enlarged or structurally altered at the caprice of the tenant or owner; it is a living thing. If it is bullied, it sulks; if it is unhappy it pines; if it is harried it gets feverish; if it is sufficiently disturbed, it will wither and dwindle and almost die; and when it comes to this last serious condition, it is only revived by lots of time and lots of money."
"What Churchill said 75 years ago is as true now as it was then. . . . It is true of those who give up their weekends and other spare time to serve in the reserves."

# A History of Steam Road Traction in the Royal Engineers—Part Four

LIEUT COLONEL J E NOWERS RE, B Sc (Econ)

*Chapters 1 to 8 were published in the last three issues of the* RE Journal

## 9. The Electrical Engineers

In October 1899 the Boer War began and the War Office encouraged Crompton to raise a detachment of the Electrical Engineers to go to South Africa with Lord Roberts. A considerable sum was granted to allow the purchase of small traction engines, portable searchlights, arc lights and field telephones.

Crompton re-enlisted and was commissioned into the Royal Engineers from whom he asked for help in raising his contingent. He was given Captain Lloyd RE as Second-in-Command and Warrant Officer Brown as Sergeant-Major. Much of their equipment was designed by the Officers themselves. The contingent camped near Crompton's Chelmsford Works, and had send-off dinners at Princes Restaurant in London. Captain Lloyd sailed with the first contingent from Southampton aboard SS *Tagus* on 15 January 1900.

Crompton equipped his unit with three Burrell Traction Engines. Works No 1599 was a single crank compound engine of 6nhp named *Scott*, built in 1892 and purchased second hand. It was christened *EE1*. The second engine, Works No 2262, was a double crank compound of 6nhp, purchased new, and christened *EE2*. Both were fitted with whistles, new front wheels and fly wheel, and a dynamo bracket. Laurence Scott and Company of Norwich built the DC generators which were mounted on the front bracket, each weighed 14½cwt. Originally the generators were to have been driven by silent pitch chains but belt drive was finally adopted. The first two engines were delivered on 25 January 1900. The 3rd, *EE3*, Works No 2267, was delivered on 7 March.

The searchlights were mounted on field carriages by the Woolwich Arsenal Carriage Department. Power was produced by the generators on the traction engines. The detachment was also equipped with a large number of BSA 8in crank bicycles. Some of the bicycles carried reels of insulated wire which paid out behind the cyclists. These wires were to be used for telephone work and this was the first recorded use of field telephones.

The main body of the Corps under Colonel Crompton sailed from Southampton aboard SS *Canada* on 16 March 1900, arriving in Cape Town on 3 May. The contingent included the son of the Under Secretary of State for War as a Lieutenant.

Colonel Girouard, in charge of the railways in South Africa, asked for the Electrical Engineers to assist with railway repairs. Captain Lloyd, who had been working on the Orange River Crossing, rejoined the contingent at Bloemfontein and worked on the bridges over the Vet and Zandt Rivers.

Crompton reported for orders to Lord Roberts at Kroonstadt on 13 May. Roberts remembered him from India and gave him two railway construction trains. The railway repair gangs had running fights with the Boers from Kroonstadt to Viljoens Drift on the Vaal River from 21 May to 23 June. On the night of 14 June, Crompton's repair party was attacked by Boers at Leeuwspruit. They prevented the Boers from cutting the line and Crompton was subsequently awarded the CB for his part in the action. The Royal Engineer Officers serving with the Corps were Captain Leggett, and Lieutenants Micklem and Barstow. The Duke of Norfolk was also attached for a time.

In July, Crompton reported to Roberts in Pretoria and organised the amalgamation of his traction engines with 45th Company into one Mechanical Transport Corps. Crompton worked under Colonel Ward, who was in charge of supplies, and

reported to Roberts each morning about the transport work. This kept him away from the Electrical Engineers who were split into a number of detachments, working on telegraphs, in railway repair shops, and at hospitals providing light and power for the new X-ray machines.

Then an episode occurred which gave Crompton great satisfaction. "About the middle of July an Artillery Officer got into difficulties with a twelve-ton gun which was being moved by one of Templer's traction engines. In crossing a water-course in Pretoria the engine and gun stuck fast, and, although neither gun nor engine was then under my command, Lord Roberts sent for me and chose to consider that I was responsible. He used very strong language, saying it was a scandal this gun should be derelict in the middle of Pretoria; then suddenly jumping up, "Now" he said, "I shall expect you to show what you can do, and show yourself smart about it". This was at 9.30am. I took a detachment under Sergeant-Major Phillips with two small traction engines and some hauling gear, and I got the gun out within two hours and reported to Lord Roberts. A few days later this same gun and a second twelve-ton gun were transferred to my charge, as it was found that the Artillery Officers did not understand the traction engine business sufficiently to work them properly".

At Deerdeport, east of Pretoria, guns and engines were disabled under Boer fire. Crompton went out, got the guns, shelled the Boers and drove them off. After this he was responsible for fighting the guns as well as moving them, much to Kitchener's annoyance. West of Pretoria Crompton got one gun up on top of a kop and got it into action before the Cavalry escort arrived. Kitchener threatened him with Court Martial!

At the end of September, Roberts ordered Crompton back to England to advise the War Office on the future of mechanical transport. He sailed on SS *Saxon* arriving at Southampton in November 1900. Captain Lloyd assumed command of the Electricals and brought the original contingent home on SS *Norham Castle*, arriving at Southampton on 6 December 1900. Later drafts to South Africa expanded the Electricals to five Companies.

At the end of the war, the three Burrell traction engines were transferred to the Searchlight Section which remained at Pretoria working closely with the South African Railways. Later these engines were sold.

During the war, the Searchlight Section had operated a number of Light Steam Passenger Cars carrying the Searchlights.

## 10. The End of the War

The war ended on 1 June 1902. By this time, Steam Road Transport (SRT) had grown to 730 All Ranks, consisting of 10 Officers, 261 Sappers, 18 RE Drivers, 47 other Soldiers, 156 Civilians and 230 Natives. The transport fleet consisted of forty-six traction engines, representing twenty-one different types despite the fact that forty-one had been built by Fowlers. There were also the two steam lorries and about 250 assorted trucks and wagons. Twenty engines were on order from England but arrived after the end of the war. At the end of the war the engines were based upon nine stations. At other stages of the war there were up to twice this number in use.

After the war Captain Scholfield wrote a detailed account of the activities of SRT. This report was forwarded to the Inspector General of Fortifications by Lieut General John French, commanding the 1st Army Corps at Aldershot, on 22 January 1903, with these comments:—

"I beg to forward herewith a complete report from Major Scholfield, Royal Engineers (lately Director of Steam Road Transport in South Africa), on the working of the Steam Road Transport in the late war.

"I also attach remarks on the same by Major General Sir Elliott Wood, KCB, in which I generally concur."

Elliott Wood, now commanding RE 1st Army Corps, was CRE Army in South Africa. His comments were as follows:—

"(1) This excellent and exhaustive report is full of information and of suggestions which should prove very valuable.

"(2) Excellent as the results of this transport were, yet they would have been made better if it had been:—

(A) Possible to employ only new engines of good and uniform type, with a full proportion of trucks.

(B) If the personnel had been more fully trained.

(C) If the employment of the engines had been more governed by expert advice in the earlier stages of the war.

(D) It also greatly tends to the economical and efficient working if SRT trains travel independently of other transport.

As regards this latter point, the immunity of such convoys from attack during the late war was remarkable, even when no steel-plated defensive trucks were in the train of trucks.

"(3) A great amount of highly technical skill, and works, was involved in completing, working and repairing all the many types of engines in use. In connection with this, the standardisation of engines and parts is specially to be desired for service in the field."

In the middle of June 1902 the complete equipment of SRT was sold to the Civil Administration in South Africa for £110,000. This included all rolling-stock, shops, tools, spares and stores on charge on 1 July. It excluded horses, carts, saddlery, harness, barrack and camp equipment, the engines, trucks and spares already en route to South Africa in SS *Lombard* and any other future arrivals. These were to remain the property of the War Department.

The two steam lorries and a few traction engines considered to be of an experimental nature were transferred to the Searchlight Section at Pretoria for further trials. Trials went on for a further two years but there are no reports of significant progress being achieved.

45th Company returned to England in 1902. Some time later, auditors were appointed to wind up the affairs of the Army in South Africa and to check the accounts kept by the Army during the war.

Their report on the accounts rendered by Steam Road Transport was published on 30 July 1903 and makes fascinating reading:—

"(1) The Central Depot of the department (which was under the control of Colonel J Templer) and the workshops were at Cape Town. Depots also existed at Klerksdorp, Victoria Road, Sanna's Post, Bloemfontein, Krugersdorp, Kronstadt, Pretoria and Kimberley. Each rendered a separate account.

"(2) At the end of the war all stock was taken over by the Central South African Railways (see Secretary of State's telegram 14239 of 18 August 1902 to GOC Pretoria).

"(3) 53 engines and 356 trucks were held, received mainly from England. One engine was purchased locally and two commandeered.

"(4) 48 engines were sold to the Central South African Railways. 4 were retained by the Royal Engineers. One is lying at Johannesburg Goods Station to be sold as scrap.

"(5) 333 wagons were sold to the Railways."

In their final comment, the Auditors complain that all Officers had left South Africa before the accounts could be approved!

The subsequent history of the engines which remained in South Africa is rather vague. Captain Sewell RE became Superintendent of the Railway's Road Locomotive Department and recorded some details in his reports:—

"£110,000 was paid for the plant, and so much traction engine support has been imported since that it is (now) of little value".

A new 8hp spring engine at that time sold for £1000 or less. A driver who inspected the SRT engines reported they "had been used up by the Army. No repairs have been done since peace at any rate".

**Photo 9a.** Fowler No 8062 standing derelict on the veldt near Blomfontein several years ago

At the end of 1902, thirty-nine engines and 291 trucks were still on hand at Pretoria, Johannesburg, Bloemfontein and Standerton, and they were valued at £58,905. Two engines were used on haulage service, from Winburg in the Orange Free State, to Peka's Drift on the Caledon River, but this was not a success. Another service ran from Standerton to Ermelo but only 180 ton was shifted. Later the engines were used to haul grain into the Transvaal from the Basutoland border. A loss of £3583 was incurred before this enterprise closed down. A pair of engines ran from Pretoria to Rustenburg and hauled almost 700 ton before they ceased work. A Marshall, said to be ex-Army, was hauling coal at Pietermarizburg, Natal, in 1903. The armoured engines went to the North West Frontier in India as mobile workshops.

Only one engine seems to have survived into recent times. This was a Fowler B4 works No 8062, built in 1899. It was found a few years ago lying derelict on the veldt near Abrahams Kraal. (Photo 9a). The Bloemfontein War Museum was encouraged

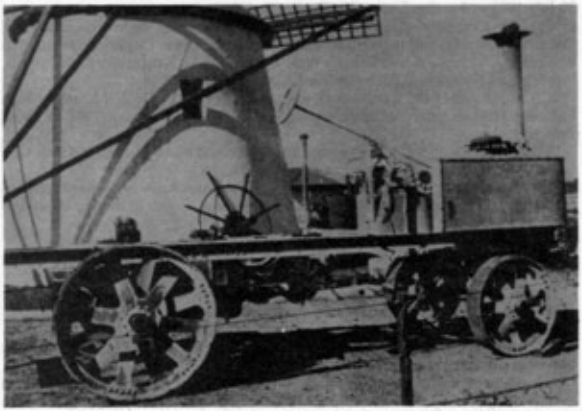


**Photo 9b.** Thornycroft No 6, a 3-ton steam lorry, under restoration

A History Of Steam Road Traction In The RE Part four
9a 9b

to recover and restore it but sadly there were no funds available and the engine was just a bare, rusting carcass.

The only other known survivor is the Thornycroft steam lorry, Works No 6. After the war it was engaged in transport work at Jagersfontein diamond mine, driven by a Mr Davies. It was left lying derelict in a yard at Jagersfontein in 1920. Before the Second World War it was hauled by a team of donkeys to Edenburg. During the war all its bronze and white metal bearings were removed. After the Second World War it was found by an enthusiast, Mr Hugo of Cape Province, and he is restoring it to working order. (Photo 9b).

## 11. Templer's Later Career

As was noted earlier, at the end of October 1900 Templer was warned to return home from South Africa. The war was then thought to be virtually over. Even the Commander-in-Chief, Lord Roberts, was being recalled. Captain Scholfield, OC 45th Company, was to succeed Templer as Director Steam Road Transport. Templer arrived home early in 1901. He was successfully operated on for an internal complaint and returned to duty as Superintendent of the Balloon Factory at Aldershot in February. (Photo 10).

On 15 July 1901 he addressed the Aeronautical Society on the part played by balloons in the war in South Africa. This address was published in the *Aeronautical Journal* for October 1901. In December 1901 he visited Paris and met Alberto Santos-Dumont who had just flown round the Eiffel Tower in his airship. Templer wrote a report of his visit for the War Office in January 1902 in which he confirmed that England led the world in balloon construction but that France was ahead in developing dirigible, or steerable, airships.

Templer resolved to embark on the development of a British dirigible airship and the Army decided to expand its balloon force. Estimates for the financial year 1901–2 allowed for six sections, five of them to be fully operational. The site at Aldershot was inadequate for such an expansion of activity and Templer started looking for a new location of 13–20 acre. Weedon near Northampton was considered as was the Rugby area. On 4 June 1902 Templer wrote that he thought he had found a site near Woking.

Whilst he was busy with these plans for expansion the first attempts were being made to curb Templer's activities. The Balloon Section as part of the Field Army came under Aldershot Command. However the Balloon Factory was a War Office Establishment and Templer was responsible to the Inspector General of Fortifications in Whitehall. This division of responsibility puzzled some in authority.

A Minute of 25 September 1901 from the Financial Secretary to the War Office, Lord Stanley, ran:—

"Can you tell me under whose authority the Balloon Factory is. I am given to

**Photo 10.** Steam Sapper with balloon train. The horse-drawn waggon is carrying the balloon basket, the envelope and, at the rear, the winch. Col Templer is standing in the centre of the

understand that certain work has been done by the factory for Woolwich—is this so? I think the Balloon Factory, being situated in Aldershot, should be under the control of GOC Aldershot—that their work should be entirely confined to making and repairing balloons—and that no expenditure should be authorised unless it has the sanction of the GOC Aldershot. I would like to have an account of all monies spent in the last two years".

The Minute was answered on 23 October by the Deputy IGF, Colonel Charles Watson (Watson Pasha):—

"The Balloon Factory at Aldershot is under IGF in the same way that the factories at Woolwich Arsenal are under DGO and the Brennan Torpedo Factory at Chatham is under the IGF. The arrangement was made some years ago and has worked satisfactorily.

From time to time we have been asked to do work in the Balloon Factory for other departments, and as this was for the good of the public service the requisitions have always been met where possible. The cost of the work so done is always shown in the annual accounts of the Factory.

"The expenditure for the last two years has been abnormal on account of the wars in South Africa and China: the one Balloon Section which existed before the war in South Africa having been expanded to six. The strain on the Factory was great but all demands were met."

The Financial Secretary replied next day:

"This is not satisfactory, to me at all events, and I cannot see what a Balloon Factory has to do with water mains* (unless this is a balloon engineer's job) and steam transport. I think that the Balloon Factory should be put directly under GOC Aldershot, and that the Factory should be confined to balloon work. Yearly estimates must be put forward and the amount required must be seen and approved by me on the advice of the GOC Aldershot. I shall pass no other accounts for the future except those so approved if the views I have expressed meet with the concurrence of the military authorities."

The IGF, General Sir Richard Harrison joined the argument, writing to the Secretary of State for War, St John Brodrick, on 4 January 1902:—

"I do not know how far past history has been considered. I venture to draw attention to the fact that the Factory was originally under GOC Aldershot; but the arrangement was so unsatisfactory that it was given up in 1897 under the authority of Lord Lansdowne.

"The Balloon Factory, like all other factories, works for the whole Army at home and abroad—not only for Aldershot Command."

In the event the Factory was placed under the Directorate of Fortifications and Works, part of MGO's Department, as part of the reorganisations of 1904.

In 1902 Templer began building the first British military dirigible balloon. It was to be 122 feet long, 26 feet in diameter and contain 55,000 cubic feet of hydrogen, costing £230 for each inflation. The envelope of gold beaters skin was to cost £2000 and consume 200,000 cattle.

About this time Templer became concerned about his circumstances. He had been Superintendent of the Factory since 1897 at a salary of £700 per annum. He wrote to the War Office in October 1902 and again on 29 December:—

"As I shall have completed a term of six years in the appointment of Superintendent of the Balloon Factory on the 31 March next, I should be much obliged if you would be so good as to let me know in what position I stand as regards tenure of appointment, and also as to the rate of pension which will be due on retirement. If I am to continue for a further period it appears to me that I should receive an increase of salary, as the work has extended very much and responsibility increased since my appointment in 1897."

He was supported by the IGF but the financiers felt any RE Officer could do the

* A reference to Templer's use of traction engines to assist with water supply on recent manoeuvres.

job and refused any increase in salary. A year later Templer opened the subject again. The new IGF, Major General W T Shone supported him:—

"We cannot afford at the present time to lose the services of Colonel Templer and I would invite attention to the large sums now expended by France and Germany in endeavouring to manufacture a satisfactory dirigible."

Templer was told that his salary would be unchanged and his pension would be half his pay. If his airship was successful consideration would be given to an award. General Shone quoted the generous treatment the War Office had accorded to Louis Brennan for his torpedo invention. He was awarded £110,000 in 1887 in addition to his salary of £1500 per annum as Superintendent of the Torpedo Factory. It was finally agreed that, from 1 April 1904, Templer would receive an annual salary of £900 with a minimum pension on retirement of £400 per annum plus £10 for each year's service from 1904 for up to five years. He was now fifty-eight years old and apparently had five years service remaining in which to complete his projects.

After the Boer War a number of Military Boards of Inquiry were established to decide upon any re-organisations needed and to reassess military requirements. The inquiry on ballooning reported on 4 January 1903.

As far as the Balloon Factory was concerned, the report recommended that all work on steam traction engines and other forms of mechanical engineering should stop. Military labour was to be employed as far as possible in the factory. Most important, it confirmed the inadequacies of the present site at Aldershot:—

"The Balloon Factory is at present on a piece of ground about 2½ acre in extent. The buildings are placed too close together; there is no room either in the factory or on land adjoining where any new building can be erected.

"The balloon house door is only twenty-two yards from a road, on the other side of which are houses, and on which there are trees, and the balloon house is built at one side of the factory ground. Filled balloons cannot be taken out without risk of damage, except on calm days, owing to the small size of the doors and the proximity of the fence and trees."

A temporary site was chosen on Farnborough Common and a balloon shed was constructed in such a way that it could be dismantled and moved to a permanent site later. This building was completed on 30 April 1905 and a description of it appeared in the *RE Journal* for July–December 1906. The old site in Aldershot was taken over by the Inspector of RE Machinery. The site was named Balloon Square and a plaque was erected there, reading:

BALLOON SQUARE
The School of Ballooning
which was then a branch of the
ROYAL ENGINEERS
was founded here in
1892

In 1962 the whole area was demolished for redevelopment and on 27 March 1963 a balloon took off from the Square for the last time whilst the RE Band played "Will ye no come back again".

Templer was fully occupied in the establishing of the new Balloon Factory and in many other projects. He was involved in the design and construction of the new dirigible airship, to be called *Nulli Secondus*, and also in man-lifting kites with S F Cody, aerial photography from balloons, signalling balloons and equipment, petrol motors and hauling gear for balloons and kites.

In the midst of all this activity, the GOC Aldershot District made his next attempt to bring the Balloon Factory under control. Templer's Superintending Clerk, Warrant Officer Jolly, was court martialled for conduct prejudicial to good order and military discipline, was found guilty and sentenced to loss of seniority. There was no suggestion that Jolly had been dishonest but the opportunity was taken to accuse Templer of incompetent administration.

On 19 October 1905, GOC Aldershot, Sir John French, wrote to the War Office:

"The District Court Martial held here on 6 and 7 instants for the trial of Superintending Clerk H J Jolly, Royal Engineers, disclosed such a disregard of administration duties on the part of Colonel J L B Templer, as Superintendent of the Balloon Factory, that I feel it is necessary in the interests of the public service, and of Warrant or Non-Commissioned Officers who may be placed in the same position as Mr Jolly was, to recommend that in future the Balloon Factory should be placed under the charge and control of an Officer on the Active List.

"While feeling that I should fail in my duty as GOC in C did I not make this recommendation, I should explain, that I in no way wish to underrate the great services rendered to the State by Colonel Templer, for I most fully appreciate all the good work he has done, and in making my recommendation, I do so only because I consider that this Officer is not sufficiently conversant with the system of military administration to enable him to control, as efficiently and according to the Rules and Regulations of the Army, such an institution as the Balloon Factory as would an Officer who is on the Active List.

"I recommend therefore his being relieved of the control of the factory, his services being utilised in their most valuable form, ie Expert Adviser, retaining his title as Superintendent, but the administration duties being delegated to Colonel Capper, Royal Engineers.

"The disclosures I refer to are contained in the attached, being a copy of the evidence as given by Colonel Templer before the Court Martial. It will be seen that Mr Jolly has been permitted to draw cheques amounting to about £60,000, and also to negotiate contracts and practically make all arrangements for carrying them out. By the evidence of Lieut Colonel Trollope it also transpires that during a period of five months, this Warrant Officer signed bills amounting to about £40,000.

"As the accounts of the Balloon Factory have frequently been audited by Auditors from the War Office, and on each occasion have been found correct, it speaks well for the integrity and ability of Mr Jolly. . . ."

Templer told the Court: "The reason why the prisoner was able to sign cheques for such large amounts was because he was my Chief Officer at the Factory. It was his duty, even though he was not an Officer. I have represented this to the Auditor, but no objection was taken. His signature to the drawing and signing of the cheques was always taken".

It is possible that the cheques totalling £60,000 were drawn whilst Templer was in South Africa. Templer had even asked in early 1904 that Jolly should be given a Commission. But all to no avail. It was decided to retire Templer on his 60th birthday. A letter was sent to him the day before, 26 May 1906:—

"I am directed to request that you will be so good as to hand over your duties as Superintendent to Colonel J E Capper, Royal Engineers. I am further to inform you that approval has been given for your retention for a further period, if you agree, as Adviser in connection with Balloon Experiments etc, with pay of £300 in addition to your retired pay". Templer accepted these arrangements. His advisory appointment was renewed for a second year at the request of Capper.

When he left Government service on 1 April 1908 he received neither award nor recognition for his services. He died at Laughton Grange, Lewes, aged 78 on 2 January 1924. His obituary, written by Major General Sir John E Capper appeared in the *RE Journal* in May 1924.

He had obviously had difficulties with the military authorities at Aldershot and stories tell how he tore out huge trees by their roots whilst testing his traction engines on Aldershot Common and how he ploughed up large areas when developing new methods of land drainage and testing his pipe-laying inventions. Never-the-less, many who knew him thought he had been shabbily treated.

The Balloon Factory, of course, remained at Farnborough Common. In 1909 it became civilian and was later renamed the Royal Aircraft Establishment.

The Balloon School became the Air Battalion, Royal Engineers, in 1911, then left the Sappers to become the Royal Flying Corps on 12 May 1912.

# D-Day August 1939

CAPTAIN (THE REVEREND) D N HOWELL-EVERSON

*Douglas Howell-Everson was a Sapper in 315 Company, 30th Searchlight Bn RE (TA). He was commissioned into the Royal Regiment of Artillery in 1940. He was ordained into the Church of England in 1960 and is the Rector of Bamford in Derbyshire. He remains a Sapper at heart.*

A TELEGRAM was telephoned to me at the office: "*REPORT TO MITCHAM ROAD BARRACKS WITH FULL KIT AT ONCE.*" So it had come at last.

Recalling the shambles of the 1938 "Munich Crisis", I handed over the stuff I was writing—I believe it was copy for "Vent-Axia" air-conditioning—to the next man; I bade the Boss and the Company a hasty farewell, and raced down Victoria Street for the train.

By the time I reached home, my Mother (ever a boy's best friend) had laid out my kit—it wasn't much—and a pile of socks, underclothes and spare handkerchiefs. She too had had a telephone message, and, whilst I was still on my way home, a duplicated card, bearing my name and the same message had been handed to her by a "Soldier on a bicycle".

I was impressed—at any rate they *wanted* me, and in a hurry, too.

I walked the three miles to the Barracks dressed in marching order with pack (Webb pattern '08), carrying a rather unmilitary suitcase, with a currant cake in my pack, and hoping my puttees would hold up.

Through the familiar gate, where now stood an unfamiliar sentry, and into the porch, where a Sergeant sat at a table: "2061683, Sapper Howell-Everson D"—he made a tick on a nominal roll. "Follow the arrows chalked on the floor" and I did.

Round the sides of the Drill Hall were ranged an endless series of "Tables, Barrack, 6-foot", behind which, like so many bar-men, stood a row of uniformed figures which I dimly recognised as being those of the PS, and that mysterious secretive group known as "The Key Men". I meekly followed the arrows to the first table:—"Sign here for your calling-up Bounty", said a voice—A whole Fiver!

Next table: "Here you are, brushes boot two, brushes hair one, brushes brass one, brushes . . . Sign here." It seemed that they were actually *giving* us things, *giving* to us the poor old TA . . . Next table, . . . "Sign here". Next table: "Next of kin? Religious persuasion? . . . It means where do you go to Church . . . Oh all right I'll put you down as C of E . . . When were you born? . . . right, next man." Next table, "Rank? Sign for a day's pay and five bob ration money". Last table: "What are you trained as? Listener and Number Four?—pause—"Right, you will be in Detachment Six, Number Three Section: Your Section Commander is Mr Handscombe (and God help you) and your DC is Corporal Wakeley: Here it is on this card—take it you fool and keep it and give it to your DC. Get a cup of char in the canteen, and then go round to the drill sheds: Number Three Shed, and look for a "6" chalked on the wall.



Captain D N Howell Everson D Day August 1939

Wait there till your Detachment is complete: Repeat all that . . . Have you understood?"

In a daze I stuffed all these wonderful gifts into my new kit-bag and tottered out to the sheds. Under a large chalked "6" on the wall stood five or six military figures: "Wotcher Douggie—'ere, look, its the Old Grey himself in our lot". I looked at our swelling detachment: Ironside the Architect, Number Six; Mitchell the gardener, Number Four; Grubby Leeson, Driver Mech; it looked a good bunch to be with.

Corporal Wakeley cast an appraising eye over his Detachment as it completed: "Well, well" he said half to himself and then "Right: the bus leaves for the Mob Stores in an hour and twenty minutes. Fall out and get a cup of char, and be back here in an hour." We were and it did.

At Guildford Mobilisation Store, the same process with detachments rather than individuals:—"Ironside, take those three and get the Sound-locator from that shed and bring it back here." "Leeson go with that chap and get the TSM and bring it back here" (Tilling-Stevens Motor, not Troop SM!) "Douggie go with Mitchell and draw the Lewis and ammo." . . . AMMO! Real bullets? Yes, a whole fifty rounds, enough for one drum, and a round apiece for our two rifles plus a reserve—of one round. But that's better than Munich, where we only got a clip of five rounds of blank.

We loaded the lorry with the usual manning stores, a bell-tent, a small array of cooking pots and knives, and proudly drove off to war—or at any rate to the hard standing.

Soon there were six of the big TSM lorries, plus two Sappers and a Sergeant riding on their own motor-cycles. A local baker's thirty-hundredweight—"The Ration Lorry" slunk, amidst caustic comment and ironic cat-calls, to the rear. Messrs Handscombe and Paine took their leading place in the latter's Morris Cowley, now bearing a proud blazon "AIR DEFENCE OF GREAT BRITAIN—PRIORITY", and we were off.

By three in the morning the Section was all in position, and prepared for action at Liphook, Hampshire.

I have never taken part in anything so smoothly organised since then.

# The Control of Demolitions: A Historical Example

LIEUT COLONEL R D GARNETT MBE, RE

*BACKGROUND*

For political reasons the country conducted a forward defence close along the international border. For most of its length the terrain suited this decision; only in the North were suitable armoured approaches. As the threat became apparent the positions, which had been planned for ten years and more, were quickly occupied by those forces which were available. These were later reinforced and the general line of the frontier was not breached by the attacker from September until February. The political leadership felt itself justified by its decision and, like Montgomery at Alamein, ordered "There will be no retreat, none whatsoever, none", or words to that effect. All proposals for the preparation of alternative positions in depth or along the next major water obstacle were rejected and those who brought them forward were condemned as defeatists. At the end of February it was clear that the attacker must break through in the North. In the early days of March he pushed through to a depth of 80 to 100km. The bridges over the next obstacle line were all blown in time in spite of various attempts to seize them intact. The attacker took the opportunity to turn South in order to cut off those defenders still held by political decision along the frontier. To their amazement one bridge over the water obstacle

remained intact and this they managed to seize from an equally surprised defender.

No, this is not yet another re-run of World War III, this is what took place on 7 March 1945 and the bridge concerned was at Remagen.

The history of this event is very well documented. In 1957 a book, *The Bridge at Remagen*, was published by Ken Heckler who was commanding a team of US combat historians near to Remagen when it happened. On the German side, General Hans von Ahlfen published in the *Pionier* Magazine 1965, a very careful investigation of the events, particularly from a technical point of view. I have also consulted a number of other sources and these are listed at the end of this article.

*AIM*

The aim of this article is to re-examine these events, not so much to re-assess events from a historic or strategic angle, but in the light of current NATO doctrine on the control of demolitions. Would our present procedures have made the loss of such a bridge less likely? What lessons are worthy re-learning?

*THE STRATEGIC PROBLEM*

As already mentioned, Hitler's insistance on "No retreat" is the basis of the events which led up to the capture of the Remagen Bridge on 7 March 1945. This decision was not so without reason as it may appear today. The Wehrmacht in 1945 were desperately short of fuel and short of indirect fire support. The newly organised Volksgrenadier Divisions were equipped with horse transport, a high proportion of machine guns (the vast majority of soldiers had an automatic assault rifle with a range of 300m, a Volksgrenadier Battalion had 28 LMGs and 8 SMGs) and a large number of short range anti-tank weapons ("Panzerfaust" range 100m and "Panzerschreck" range 200m). They were very poorly equipped with long range anti-tank weapons and were not at all suitable for open mobile warfare. In defensive actions from the Rheinwald in the North to Metz and Saar in the South, German Infantry and Volksgrenadier Divisions had shown their determination and effectiveness. The unsuccessful Ardennes offensive in December 1944 had shown all too clearly their limitations in mobile warfare. The Panzer Divisions (Pz Div) were a shadow of their former glory. In March 1945, 11 Pz Div, consisted of 4000 men, 25 tanks and 18 artillery pieces. This was considered a strong force at that stage of the war. Even this however was not able to move the 30km from Bonn to a counter-attack at Remagen for more than 24 hours due to lack of fuel, blocked roads and Allied air attack. Hitler's reluctance to give ground in these circumstances becomes more understandable. In any event, once the line was broken their mobile reserves could not counter-attack. The only alternative to positional defence proved to be surrender. During the early days of March 1945 the US took 49,000 German prisoners in the Rheinland.

It should also be remembered that in spite of the Allied breakthroughs the Germans succeeded in defending bridgeheads (Bonn and Koblenz) or destroying the bridges in time (Obercassel near Dusseldorf and Urdingen). The whole fault cannot therefore, be put down to Hitler's insistence on a "forward defence".

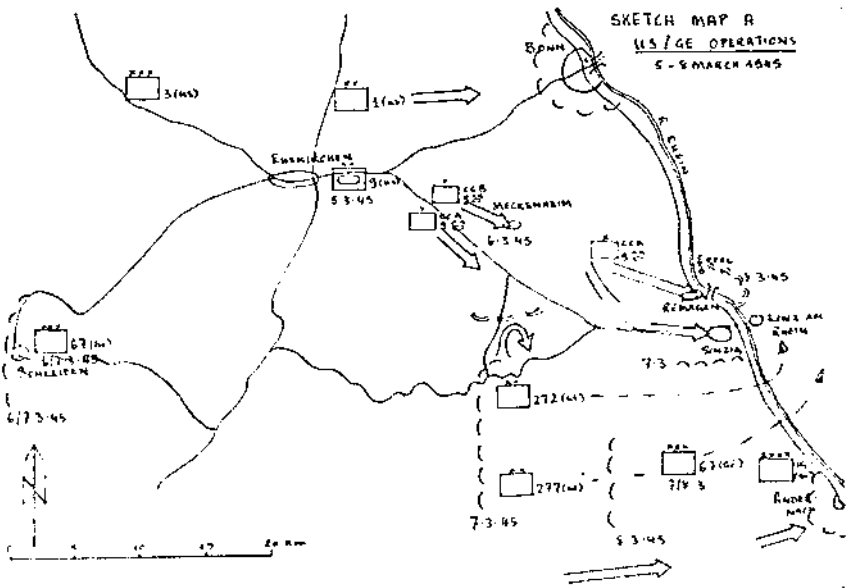
*THE OPERATIONAL PROBLEM*

In 1945, Remagen fell within the area of Army Group B under Fieldmarshal Model. As long as it remained in the Rear Combat Zone it came under the Defence Area Command XII with Headquarters at Wiesbaden. Forward along the German border the 15th (GE) Army under General von Zangen took over control of the sector from Manteufel's 3rd (GE) Pz Army at the end of February. On 26 February 15th (GE) Army found, to its surprise, that the defence of Remagen Bridge was also among its responsibilities. The situation was only cleared up by an appeal to Army Group B. On 1 March 1945 Fieldmarshal Model designated a Lieut General Botsch, with a small Headquarters staff, to act as an "Operations Staff Bonn/Remagen" under command of 15th (GE) Army. Botsch's mission was first to build up a defensive position West of Bonn with a front facing North to prevent a US breakthrough from Cologne and, second to improve the defences of the bridgeheads at both Bonn and Remagen. Already in Bonn, with the mission of defending it, was a

General von Bothmer and about a Divisions worth of troops. Needless to say he was less than enthusiastic about the new arrangement. Lieut General Botsch wished to place his HQ halfway between Bonn and Remagen, but Army Group B were convinced that Bonn was the main problem and ordered him to move North. In the event his HQ was at Dottendorf. In those days this was on the southern outskirts of Bonn; today it is the suburb in which the British Embassy is located.

Lieut General Botsch set about his task with a will and in a very short time had sorted out the major problems of command and control. Communications were improved and Army Group B were well informed on the situation. This was disastrous at Remagen. The Demolition Guard Commander was a Captain Bratge theoretically controlling all troops in the area. In practice he had a "Company" of thirty-six convalescent soldiers. There was at this stage, a fair amount of Anti-Aircraft Artillery around the bridge (one Battery 105mm, one Battery 37mm and one Battery 20mm—all rail mounted—and on the hill above the bridge, one Battery of 20mm). This, however, was under Luftwaffe control and the rail mounted Batteries were removed on 2 March. Army Group B attempted to have them replaced by another heavy AA Battalion but this never arrived. On 5 March Lieut General Botsch was still very worried and promised Captain Bratge to obtain two Infantry Battalions (Engineer Training Battalions) and an Artillery Battalion. None of these appeared either. The next disaster came on the afternoon of 6 March. Lieut General Botsch and his staff were sent off to take command of 53(GE) Corps. All communications were broken off and liaison officers both from Lieut General Botsch and General von Bothmer, who was to take over command, could not get through to Remagen. Less than 24 hours before the bridge was seized the "Authorised Commander" was changed. No communication with the bridge was possible and no one there knew it had happened. Worse was to follow.

On the evening of 6 March 15th (GE) Army were in a critical situation, (see Sketch Map A). The 9th (US) Armoured Division had broken through and had pushed forward to Meckenheim 15km SSW of Bonn. Whilst 15th (GE) Army's northern 74th (GE) Corps had been pushed back into Bonn, its centre with 67th (GE) Corps was still up on the German border facing West near Schleiden. The 15th (GE) Army solution to the problem was to order 67th (GE) Corps, under General Hitzenfeld, both to hold its present position and to counter-attack to the NE in the direction of



Bonn. Since 67th (GE) Corps consisted of two marching divisions (89 Infantry and 277 Volksgrenadier Division) a simple time and space calculation showed this to be impossible. Not surprisingly General Hitzenfeld came back with a counter proposal "With the mobile part of the Corps displaced quickly tonight to Remagen to strengthen the bridgehead and with the main body to conduct a delaying action back to the Rhine." On the basis of Hitler's order and the Army Group intelligence estimate that the main threat was to Bonn, 15th (GE) Army rejected this proposal and insisted on the original task.

The final straw came at 0100hrs on 7 March. In addition to the other two impossible tasks 67th Corps was ordered to take over control of the Remagen Bridge, 50km to the rear as the crow flies and much further by road. The Chief of Staff was out making contact with one Division and the Corps Commander had just returned from a similar mission. General Hitzenfeld decided to send the only person available, his MA, Major Scheller, and a radio section. He had the following orders:—

"1. Form a close bridgehead with such troops as are in the area (1Bn?)

2. Enlarge the bridgehead from troops arriving there during the day wishing to cross the Rhine.

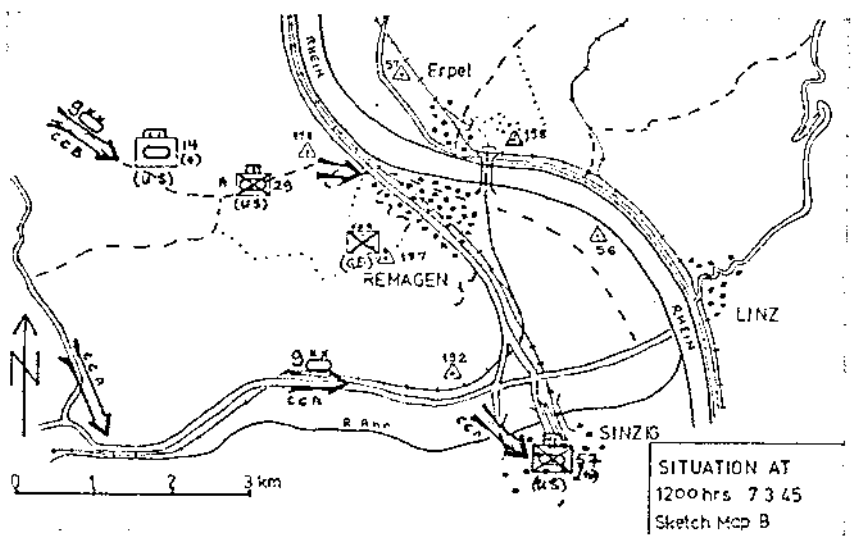
3. Find out about the technical problems and bring the bridge to State 2, Armed. Depending on the situation give the order to fire on your own initiative. The bridge is to be blown, at the latest, if the enemy reach the western end of the bridge.

4. Report by radio on arrival at the bridge."

On the US side the situation was as follows, 3 (US) Corps pushed forward with its main effort towards Bonn with the 1st (US) Infantry Division. 9th (US) Armoured Division, with forward elements in Meckenheim was given the task of pushing South to gain bridgeheads over the River Ahr near Sinzig with the aim of linking up with General Patton's thrust up the Mosel to Koblenz. No serious thought was given to seizing Remagen Bridge and the Division looked forward to a period of rest and refurbishment once the West bank of the Rhine had been cleared. The stage was set for mutual surprise.

*THE TACTICAL PROBLEM*

The River Rhine at Remagen (see Sketch Map B) has a width of about 300m and an average current of 2m/s. At this part of its course it is flanked by the Westerwald to the East and the Ahrgebirge to the West. Both of these are areas of steep hills and deep valleys with a broken road network. The Rhine river plane is narrow, not more than 2 or 3km wide, and varying from bank to bank. The adjacent road and rail lines



on both the East and West bank of the Rhine mark the edge of the escarpment. To the NW, in the direction of Meckenheim the country opens out and is suitable for armoured operations. At Remagen the Rhine is 56m above sea level and the critical ground above Erpel rises to Point 198m, ie an elevation of 142m above the East bank of the river. On the other bank, about 1km from the river, Point 187 is only slightly less dominating above Remagen. This town is the junction of the West bank railway line and that leading from the Ahr valley. The bridge at Remagen joined the West bank network with that of the East bank and was the only bridge of any description between Bonn, 20km downstream, and Neuwied, 25km upstream. The bridge itself ran on a North–South alignment. From the South the twin tracks approached on a long embankment, and crossed over two flood spans before reaching the main structure. At the Northern end the tracks ran immediately into a tunnel 383m long built in a curve round to the NW and then into a cutting before joining the main East bank line at Erpel. At either end of the bridge stood twin towers of massive masonry which were fitted for defence rather than romantic looks. The towers were connected together under the rail tracks and the pair on the Northern end seem to have been the Headquarters of the Demolition Guard Commander. Remagen itself was a small resort town of about 5000 inhabitants with the main built up area opposite Erpel and about 1km from the rail bridge over the Rhine. Erpel was only a small village but on the same bank, and about 3km upstream, is the town of Linz. This had a major military hospital and from here came the convalescent soldiers allocated to the Demolition Guard Commander.

The rail bridge had been constructed during World War I to ease the supply problems from the Ruhr towards the SW. It was of critical importance both during the 1940 campaign and during 1944. In addition to AA defences an Engineer Company, (12th Company, 12th Landes Engineer Regiment,) had been allocated since the outbreak of war. This had a strength of about 120 and had two main tasks, the maintenance of the bridge for traffic and its preparation for demolition if this should prove necessary. A number of its members were old Reservists from World War I who lived locally. These so called "Brueckenmeisters" fulfilled the same function as the present day "Wallmeisters." They knew the structure, the local terrain and the local personalities intimately. In addition to the Engineer task, the Company was responsible for the close protection of the bridge and manned a boom upstream to protect it from floating mines. The Company Commander, a Captain Friesenhahn, was the Demolition Firing Party Commander. He had been in post since June 1944. Technically he was under control of an Engineer Battalion about 40km upstream at Sayen. This had the responsibility of maintaining all crossings over a wide stretch of the river and the Company at Remagen seems to have led a pretty independent existence.

In December 1944 the Commander of the 15th Convalescent Company, Captain Bratge, was designated the Demolition Guard Commander. In an emergency he was ordered to take control of all forces in the area. Naturally there was a constant turnover of his strength and his task was made no easier by the amazing mixture of weapons allocated from all over Europe; three Russian mortars, three Polish SMGs, two English and two German LMGs; along with rifles from five different countries. One Italian anti-tank gun was also available but not apparently much ammunition. The strength of this Company was originally about 100 strong but by the beginning of March it was down to thirty-six men. Apart from the Luftwaffe Anti-Aircraft crews the only other forces which could be expected in the area was a Home Guard Battalion of 600 men, but these had no weapons.

The Demolition Guard Commander's assessment seems to have been as follows:

(a) Relative Strength. Any attempt to hold the bridge against more than reconnaissance patrols must require about a Battalion. The best role for my troops is to prepare positions on critical ground, secure this before the arrival of reinforcements and act as guides etc later.

(b) Ground. The bridge itself is the Vital Ground. It is dominated by the Erpeler

Lei Point 198m, to the North and by Point 187m to the South. Point 198 is on the "home" bank and is permanently occupied by Anti-Aircraft units. If the enemy seize Point 187 and bring small arms fire on the bridge, it can neither be used nor can the Engineers prepare it for demolition. With 120 men the Engineers are in a position to provide close defence for themselves. My force must therefore occupy Point 187 to:

(1) Warn of enemy approach

(2) Secure it against light forces

(3) Form the framework for eventual reinforcements, wherever they come from.

(c) Reinforcements. Even if no formed bodies are allocated to form a bridgehead it should be possible to gain reinforcements from those troops attempting to cross over. These will have to be fitted in piecemeal to the defence of the town and the approach from Sinzig.

As already mentioned he had Lieut General Botsch's promise to get two additional Infantry Battalions, an Artillery Battalion and a Heavy AA Battalion.

For communications Captain Bratge relied heavily on the Wehrmacht telephone line which ran up and down the Rhine. This was probably located in his HQ tower. On the early morning of 7 March he was still able to get through to Army Group B, to try and find out what had happened to Lieut General Botsch's HQ. He got a swift brush off by the duty Staff Captain who had told him to stop flapping—the US main effort was against Bonn. No word or explanation of the various changes in the Authorised Commander of the previous night were mentioned.

Two further setbacks were to follow. At about 0500hrs, Captain Bratge tried to reinforce his troops from forces crossing over. A largish group of parachutists appeared out of the dark. They had been cut off from their Division to the North. Captain Bratge stopped them and attempted to take them under command. As soon as he turned his back they pushed on in their vehicles and vanished over the bridge into the dark. Later, at about 0800hrs some 20mm AA guns were seen being dragged across the bridge by hand as there was no motor transport. On closer enquiry it appeared that the Luftwaffe had evacuated the position on Erpeler Lei, Point 198, during the night. These guns, from the Remagen side, had been ordered to replace them but without transport there was no way that they could reoccupy Point 198.

As the morning of the 7th moved on, US gunfire to the NW became louder and louder. The bridge was charged and at State 1 Safe. To change to State 2 Armed required the insertion of 86 electric detonators—about an hours work. White flags appeared in house windows. Demoralisation started to set in.

At 1115hrs in the morning Major Scheller arrived from 67th (GE) Corps having made a long detour to the South to collect fuel. The signals detachment which travelled direct failed to arrive and probably ran into the US forces on their way. Major Scheller took some time to convince Captain Bratge of his mission and identity, especially as he failed to bring the promised reinforcement. As the matter was at last settled, about fifteen minutes later, the GE platoon on Point 187 reported that it was in a fire fight with US armoured forces advancing from the NW.

Major Scheller set off to inspect the bridge with Captain Friesenhahn. An attempt to reinforce the bridgehead from troops crossing failed once again. At 1200hrs Scheller ordered the security platoon back from Point 187 to form a closer bridgehead but the order could not be passed. The platoon had either been overrun or had fled. Captain Friesenhahn was given the order to change to State 2, Armed, and his soldiers set to work. Also about 1200hrs the German Command Post was moved over to the Erpel end of the bridge and a firing point established within the tunnel entrance.

At 1300hrs State 2, Armed was complete and the circuits, main and reserve were checked. There were three distinct demolitions. In the embankment leading to the bridge was a cratering charge. This was planned to stop the bridge being rushed by an armoured reconnaissance force. In the event of a successful German counter-attack it would not take too long to fill in so that the bridge could be used again. Next were the main charges. These were located to drop the main span to a plan designed in

about 1935. These charges were fired electrically with two separate ring mains. Finally there was an emergency pressure charge designed to collapse the bridge in the event of a total or partial failure of the designed demolition. These three separate charges seem to have been a standard procedure for the Rhine bridges and will be discussed in more detail later.

About this time, 1300hrs, two other events occurred. The German Platoon leader from Point 187 appeared, wounded. He reported his Platoon had been captured by the US troops whilst attempting to get back to the bridge. About the same time the Commander of an Artillery Battalion appeared (perhaps the one promised by Lieut General Botsch?). Maj Scheller ordered him to get his guns across the bridge as soon as possible. The bridge was still open for traffic and although the US troops were in the North end of the town their advance was slow. Small groups of determined Germans combined with the delights of Rhine wine held things up. Over an hour later, about 1430hrs, US tanks were clear of the Southern edge of the town and firing on traffic crossing over. The German guns had failed to appear. The crater was blown at 1435hrs and the German firing party retired over the bridge. Captain Friesenhahn was knocked down by a tank shell and lay unconscious on the bridge for about fifteen minutes. Once all his force were on the Erpel end of the bridge Major Scheller still delayed blowing the bridge. It can only be presumed that he was hoping against hope that the arrival of the Artillery and other German forces would allow a successful counter-attack. The US forces were remarkably slow in attempting to rush the bridge. They seemed to be satisfied with bringing fire to bear on the tunnel entrance. At 1520hrs the order to fire the demolition was given and a suitable note made in writing. Captain Friesenhahn went to the exploder. A last check of the circuit, for resistance, had been made at 1512hrs and all was in order. First the main circuit was fired and then the reserve. Nothing happened.

There was no chance of checking the circuits under US fire. In any case they were laid in heavy steel conduit and the break could have been anywhere. A German Sergeant crawled forward out of the tunnel to the North pier and lit the safety fuze on the pressure charge. The Germans had the equivalent of detonating cord but only seem to have used it for linking charges to each other rather than setting up a whole ringmain. At 1533hrs the emergency charge went off. But the bridge still stood.

The Germans reoccupied the North towers of the bridge and attempted to hold off the US Infantry who now started to rush across in small groups supported by tank fire from barely 400m range. By 1600hrs about 120 men were across and German attempts to organise a counter-attack were unsuccessful. The US forces immediately pushed one Platoon onto Erpeler Lei, Point 198, one Platoon North into Erpel and one along the road South. By 1630hrs the Erpel end of the rail tunnel was under US fire and Major Scheller and two others broke out without having time to tell the remainder of the Germans with Captains Friesenhahn and Bratge at the other end of the tunnel. Captain Bratge's group eventually gave themselves up at about 1730hrs after it was quite clear that there was no escape.

Major Scheller's idea seems to have been to get out, to report and possibly lead a counter-attack before the US forces could get established. There is no doubt that if a properly organised effort had been made before last light, or even during the first night, it would have succeeded.

The Staff of Army Group B first heard of the capture of the bridge during the early evening of 7 March. Their first reaction was to order the 11th (GE) Panzer Division from Bonn to counter-attack. As mentioned this proved impossible due to the lack of fuel. The next solution was to order a General Kortzfleisch to organise matters. He set off in the pouring rain towards Erpel. Opposite Bonn, on the East bank he met 106th Panzergrenadier Regiment, with sixteen tanks and fuel. The Commander was more than willing to help but his orders had to be amended, he was due to reinforce Bonn. General Kotzfleisch immediately got in touch with Army Group B and spoke directly with Fieldmarshal Model. To his amazement Model played down the Remagen problem and refused to release the Panzergrenadier Regiment for this task;

Bonn was more important. General Kotzfleisch and his Operations Officer pushed on South. In the early hours of 8 March they met a Major Scheller who insisted he must report to Fieldmarshal Model. From him they learned all that had taken place but with no forces available even General Kotzfleisch could not organise a counter-attack. The opportunity was lost for good.

*THE TECHNICAL PROBLEM*

The Remagen Bridge was a three-span continuous steel bridge with an arched centre span, (see Sketch C). Span lengths were: 85m (278 ft), 156m (513 ft), 85m (278 ft). The two short side spans had hinge connections on the bottom cord. The piers were mounted on pin bearings. The roadway, suspended from the arched span, had one fixed and one roller bearing.

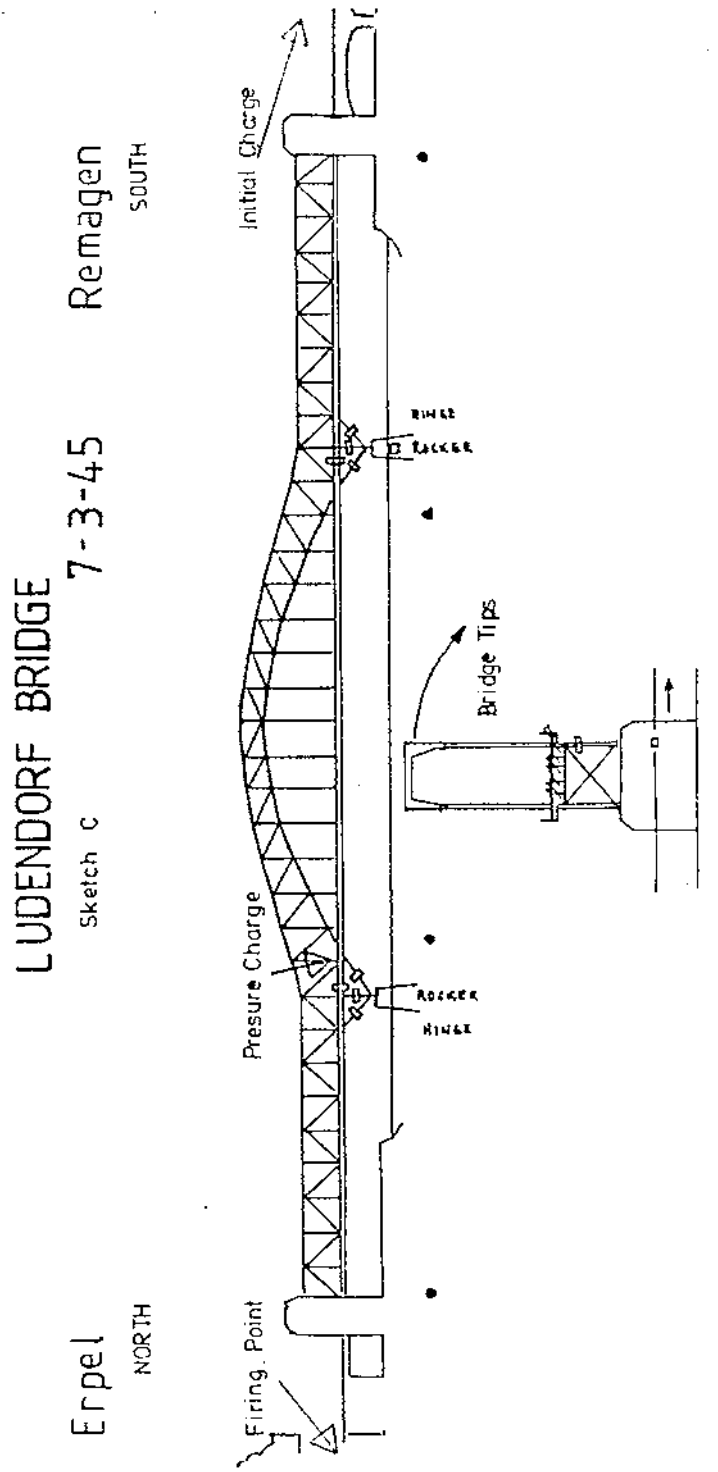
When the bridge was constructed in World War I, four mine chambers were built into the masonry piers. During the French occupation of the Rhineland in the 1920s all except one of these chambers were filled in with concrete.

In 1938, or there about, the Wehrmacht carried out peace time preparations for demolition on all Rhine bridges. The collapse mechanism chosen for Remagen was to tip the bridge off the masonry piers to the downstream side. Cutting charges were calculated for the downstream truss supports and for the mine chamber. Charge boxes and staging were fitted; special TNT charges were cast to fit the girders. An electrical ring main with main and reserve circuits was installed in steel conduits. From the start of the war until the end of the 1940 campaign in France, the charges were held locally and exercises held in loading them. Since no threat to the bridge remained they were removed to a Central Ammunition Depot at Darmstadt.

In June 1944, with the Allied invasion of France, it was decided to recall the explosives and store them locally. Unfortunately the original cast charges had disappeared but they were replaced by normal military explosive. There were two types of explosive in issue, "Explosive Powder O2" which was TNT and "Grenade Filling 88" which was picric acid. Both were packed in a variety of impregnated cardboard boxes with identical weights and dimensions. Their performance was equal and only different coloured stickers on the charges showed any difference in the contents. There is, however, a major difference. TNT is not affected by water or damp, picric acid is. It becomes insensitive. The German demolition manual, current in 1945, specifically forbade the use of "Grenade Filling 88" under water, and it is known that the mined charge was in fact tamped with water. General Ahlfeld's account states that the charges were in fact TNT, but if this were incorrect then it might explain a lot about what happened. It is particularly interesting to note that the US Engineer who disarmed the bridge, a Lieutenant Mott, stated that the detonator in the mined charge had gone off correctly but that the explosive had not detonated.

Next to the pressure charge. This was ordered by the Chief Engineer, Army Group B, on 5 March 1945 to be placed on the Erpel side of the bridge. The Wehrmacht manual recommended 1 to 3kg of service High Explosive per metre of span, that is between 156 and 468kg. In fact 600kg was ordered. This took a long time to arrive and did not appear until 1100hrs on 7 March. To the horror of the Engineer Firing Party Commander it turned out to be 300kg of "Donerite" (a civil amatol explosive used for blasting). To be effective at least 600kg of this explosive would have been required since it has a low detonating speed.

The pressure charge appears to have been placed over the roller bearing just outside the Erpel pier. The charge which exploded was on the upstream side of the truss, and blew a large hole in the roadway and cut the bottom chord. The downstream chords remained intact as did at least two of the road bearers. By decking over this hole with timber, US Sherman tanks were later able to cross over. When unloading the demolition, the US Engineers found large charges at the same point on the downstream chord. It is possible, therefore, that not all the "Donerite" exploded and that the detonating cord joining them up had been cut by traffic. In the end result no one can tell now for certain why it all failed to work.


LUDENDORF BRIDGE
Sketch C
7-3-45
Remagen
SOUTH
Erpel
NORTH
Initial Charge
Bridge Tips
Presure Charge
Firing Point
ROCKER
RINGE

*SOME CONCLUSIONS*

I am well aware that this is not the whole story. A brief explanation of the US attack is given later. The main aim of this article, however, is to look at the event in comparison with our current doctrine.

*First*; The Demolition Guard Commander did arrive on site with clear orders similar to those we might expect today. He did give the order to change the state of Readiness to State 2 Armed in good time. He did give the order to fire, and have this noted in writing, before the US troops could get onto the bridge, and the Engineers did still have a chance to fire the emergency pressure charge once the main charge failed. It would be very difficult to pin a charge of negligence on Major Scheller. This did not stop him getting shot for just that reason five days later.

*Second*; The Firing Party Commander did all that was expected of him but it is clear that there was a technical failure not a tactical failure. There are three possible reasons why the main charges failed. The one favoured by German sources is that both the main and reserve circuits were cut by fire between 1512hrs and 1520hrs. This is possible but it is important to realise that the tanks were trying to shoot at the tunnel entrance and not the bridge. The Artillery had been ordered to use air burst shells not graze fuses. The second possible reason for failure is the picric acid problem mentioned earlier and which fits in with the US Engineer report. Finally there is the possibility of sabotage. Certainly there were several claims to this immediately after the capture of the bridge but none of the means claimed seem to fit the facts. If, however, the charges were of picric acid and if they were deliberately contaminated with water, as opposed to poor storage or rain on the bridge, sabotage might have been possible. No one, however, claimed to have achieved this feat.

*Third*; The emergency charge was too small and the wrong explosive. To which Quartermaster's conscience this goes no one can tell. It is interesting to note that in an attempt by other GE Engineers to counter-attack the bridge and blow it during the night of 7/8 March, 1000kg of explosive was delivered within one hour. The counter-attack failed and the Engineer Battalion Commander and Regimental Commander were also shot six days later for not trying harder but that is another story.

*Finally*: It is important to realise that Remagen Bridge fell not because of wrong procedures, or inefficient tactical commanders. It fell because the operational commanders, at Army Group B, particularly, but also at Bonn Garrison and at 15th German Army failed to allocate sufficient resources for its defence or recapture. If war is a calculated risk, they got their odds wrong. The US forces too took a calculated risk and came up on an outsider.

*THE US STORY*

On the morning of 7 March 1945 Combat Command B of 9th (US) Armd Div under Brigadier General Hoge was in Meckenheim. The objectives for the day were given as Sinzig and Remagen (see Sketch B). No clear orders had been given with regard to seizing the bridge at Remagen but it was agreed that should it still be intact an attempt would be made to seize it.

Brigadier General Hoge split his command into two Battle Groups. The left flank with the 14th Tank Battalion reinforced with the 27th Armoured Infantry Battalion was given the task of seizing Remagen. The 57th Armoured Infantry Battalion had the task of seizing Sinzig.

The left flank Battle Group advanced with A Company of 29th Armoured Infantry reinforced with a Troop of the new M26 Pershing tanks armed with 90mm guns in the lead. Due to casualties the Company was down to three Officers and was commanded by a 2 Lieutenant Timmerman. About midday they came in sight of the rail bridge and saw it was still intact and in use. It was probably at this time that they got into a fire fight with Captain Bratge's Platoon on Hill 187 about 600m away. A reconnaissance took place and the other two Infantry Companies were brought forward. The attack on the town commenced at 1330hrs. About an hour later they had cleared the town of resistance and A Company were advancing on the bridge. At this stage the Germans blew the initial crater in the embankment.

Brigadier General Hoge had been on the scene since about 1300hrs breathing heavily down the neck of the Battle Group Commander. His orders were explicit: "Get the bridge." By 1500hrs A Company was assembled at the end of the bridge and close fire support was being provided from the Pershings who were firing phosphorus at the tunnel entrance. Shortly before, a message had been received from the 57th Armoured Infantry Battalion at Sinzig that the bridge would be blown at 1600hrs. This was almost certainly false since Major Scheller's orders gave him absolute discretion as to when it should be blown. It could, however, have been his plan to keep it open that long to allow the mysterious Artillery Battalion to cross. In any case it galvanised the US commanders. The CO of the Infantry Battalion appeared at the end of the bridge to get A Company moving. The soldiers were not at all keen to take on what seemed like a suicide mission. They could clearly see the Germans making the last preparations to blow the bridge. As the pressure charge exploded there was a momentary sigh of relief. Maybe it would not be necessary after all. Just at this stage Brigadier General Hoge received a clear order from Division to push on South through Sinzig. He ignored it.

When the smoke from the pressure charge cleared and the bridge still stood the soldiers of A Company, with their young Commander, pushed over the bridge in spite of accurate fire from the two towers. Ten minutes later the first Platoon were across and by 1600hrs the whole of A Company were over and storming the heights of Erpeler Lei. Brigadier General Hoge reinforced the bridgehead, but as dark fell and no tanks were across the US morale was very shaky. About midnight the Engineers had repaired the bridge and filled in the crater sufficiently to get the first five tanks across.

On 10 March 1945, two pontoon bridges were assembled and thrown across in a bridging operation that took just on thirty hours. By 12 March the railway bridge could be closed for repairs. On 17 March it collapsed, toppling sideways off the piers, killing twenty-eight Engineers and injuring sixty-three more.

A week later, on 24 March 1945, General Hoge forced the Rhine for a second time in the area of Mainz. On this occasion it was as Commander 4th (US) Armoured Division under General Patton. A worthy double achievement for any General but particularly one whose parent arm was the US Corps of Engineers. Perhaps their motto "*Essayons*" (Try it) had something to do with it too.

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# Achieving Visual Effects in Battle Simulations

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*Introduction*

3 Troop, 4 Field Squadron RE, was tasked to provide all the battle simulations required in the making of a new training film sponsored by DAT entitled "Soviet Encounters". The film depicts the deployment and tactics of a Soviet Motor Rifle Regiment Advance Guard as it encounters our screen and subsequently our main defensive positions. It was shot during three weeks in May 1981 on Hoenfels Training Area, West Germany.

Unlike normal battle simulations for an exercise where realism is the goal, those for this film had primarily to provide good visual effects. This requirement was new to us all. Unable to find suitable references on the subject, we were forced to experiment by trial and error. The results will be seen in the film. The methods employed are described below.

*Safety*

There are stringent safety rules governing the use of explosives. A special dispensation was obtained from these rules for the making of the film so that satisfactory effects could be produced by using improvisations. However safety was always the governing factor and was achieved by meticulous control and lots of commonsense.

*The First Problem*

Soviet tanks were used on the set. Unfortunately the Soviets were unwilling to provide us with blank rounds! Thus our first problem was to simulate these tanks firing.

The logical solution of producing sleeves of the appropriate configuration to enable them to fire available blank rounds was rejected as authority to make the necessary modifications could not be obtained. Hence a Sapper response was required.

The experience of our Regimental 2IC in Warminster provided us with our first idea. This was to employ about a cup of flash powder, initiated electrically, in a can attached just inside the barrel. Flash powder produces an excellent flash and whitish/grey smoke, a suitable visual effect. We were unfortunately unable to procure enough of the expensive powder to test this method.

The next idea was to use American Hoffman devices. These are similar to British Simfire equipment used on exercises in lieu of live fire. When placed in the muzzle



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Lieutenant O C Savereux CME DSc

and initiated electrically, they produced a reasonable flash and smoke effect. The visual effect tended to be spoilt by all the debris from the Hoffman device expelled from the barrel. This was solved by securing a camouflaged 14 gauge wire mesh lattice over the end of the muzzle to catch the emerging debris.

We also experimented with thunderflashes. However our wire mesh lattice was unable to contain the debris even though the flash and smoke effects were adequate. A further difficulty was to guarantee simultaneous and consistent ignition of more than one thunderflash.

Safety prevented the use of an improvised beehive placed in the muzzle with some Fuller's Earth to provide the smoke even though this solution might possibly have produced the gun recoil and dust cloud effect characteristics of a live shot! In the end we adopted the Hoffman devices to simulate the Soviet tank fire.

*Strike Time*

The Director asked for a fireball effect to simulate a vehicle being struck by a projectile. Various methods and fuels were tried. A half stick of explosive placed under a plastic bag containing 300ml of petrol proved to be the best solution. If the delay between setting up and firing exceeded ten minutes we had to use several plastic bags (up to five) as a layered container as we found the petrol eventually burned through the plastic.

Various safety points arose out of experience relating to the fireball charges. Firstly, the charge must be suspended on a wooden pole about a metre from the vehicle. We used a metal pole in lieu of wood once, but the flying shrapnel reminded us of our folly. Secondly, placing the charge too close to the vehicle started fires on the vehicle itself, a realistic outcome but not one which was asked for! In one such incident we set fire to a wheeled Armoured Personnel Carrier's (APC) tyres. Thirdly, never position the charge close to openings such as engine louvres, especially if the vehicle is running. A two metre distance was a safe rule of thumb. The experience of the fireball flames being sucked into a moving APC engine compartment was enlightning. Fireball charges were initiated electrically either from inside the target vehicle, if moving, or outside, if static. The latter method was undoubtedly safer for all concerned. Finally, a ready supply of on-site fire extinguishers was indispensible for any work of this nature.

*Coffee Anyone*

The method of simulating burning or "Brewing" vehicles depended on the vehicle type, the distance the scene was viewed from, and whether we could have a fire on the vehicle or not. Where we were allowed to have a fire on board, we found the use of a "medium", such as mattress linings, impregnated with fuel much superior in burning

**Photo 1.** Groundbursts during advance. Notice use of a little smoke and careful camera siting to give a "fog of war" effect.

effect than just fuel thrown on the target vehicle itself. If the fire had to be isolated from the vehicle, careful siting of a thin trench or lines of cut 5-gallon cans filled with fuel could produce a suitable effect, especially if viewed from longer ranges.

*Walking in the Rain*

We discovered the following about the visual aspects of artillery bombardment simulation. Firstly, ground-bursts were more effective and picturesque than buried bursts in the open using equal amounts of plastic explosive. We used six sticks per charge except when troops were moving in the close vicinity. The use of an unopened bag of flour on a ground burst was found to enhance the smoke but reduce the flash effect. We only had to use flour when the soil was very hard packed. Thirdly, the use of explosives covered only with light debris in damaged buildings or ruins produced spectacular results. The only drawback for the film crew was that it took time for the inevitable dust cloud to clear. There was a balance between the fog of war and the clarity of the film. Finally we concluded that simulated artillery barrages placed in woods, either aloft in the trees or on the ground were virtually invisible unless seen from extremely close ranges. The best method was to make every use of clearings and open areas along the edges of the woods to place charges, thereby simulating the intended effect in conjunction with careful camera siting. (Photo 1).

*Rotten Shots*

On a few occasions we had to simulate a round missing a target and going through the woods to the rear. One can imagine the rustling of branches and the falling of leaves. This effect was achieved quite simply by stringing up a double line of camouflaged detonating cord in the trees on the desired line of shot. The visual effect was good. A better effect was achieved by adding an exploding tree at the end of the line of shot.

*A Tee Shot*

The backblast of an anti-tank guided weapon was a simple simulation requiring detonating cord. Two strands were joined to form a "T" shape and initiated from the bottom of the "T".

Safety demanded that the weapon firer must be adequately protected from the detonator being initiated about two metres behind him. In our case the firer was very low in a trench with only a steel helmet exposed to any possible debris.

*Puff the Magic Dragon*

Smoke had come to be one of the main ingredients for our simulations. We came to prefer the small No 8 smoke generators to the larger and more cumbersome No 24's for reasons which will become evident.

The "fog of war" was produced by pulling an ignited No 8 smoke generator across the background before filming. It was pulled either slowly or quickly depending on the effect (smoke density) required. Denser smoke could be produced easily with two or more No 8s in tandem. A No 24 was too cumbersome to be dragged easily in this manner and tended to produce too dense a cloud.

Obscuration was used to our advantage in simulating woods subjected to artillery bombardment. The problem of simulating artillery barrages in woodland has already been mentioned. We found that even quite limited effects seen through a clinging, misty cloud was effective as the viewers imagination tends to fill the missing effects so that he imagines he sees more than he actually does. Mist in open areas normally dispersed easily having only a negligible effect on the visibility of the groundbursts placed there.

Over the weeks of filming the weather was inconsistent. The film crew found smoke invaluable in that its effect could be combined with that of special filters, giving an illusion which could turn a bright day into a dreary and overcast one. If the weather is not consistent from day to day one gets a disjointed film. The possible example of soaked soldiers assuming their assault formations in the rain to arrive on the objective ostensibly a few minutes later, dry and in sunshine, comes to mind.

*What's Next*

This short article is not intended to be an exhaustive reference work on how to

**Photo 2.** Our Greatest Asset.

achieve visual effects in battle simulations. It is a summary of techniques we employed one summer, for one film, to give the producer what he wanted. From the start it was accepted that we might have to sacrifice realism for spectacular visual effects. If anyone else is ever faced with a similar task, the experience we gained and described here may form the basis for further improvisation and improvement. In the last resort, our greatest asset was the flexible Sapper brain, (Photo 2), prepared to explore every solution however bizarre or unlikely.

# The Royal Engineers Step In—April 1981

STEPHEN JULIUS

*The Author—a part time Journalist while at Magdalen College, Oxford—is the son of Brigadier A A Julius the Defence and Military Attaché in Rome. He wrote this article after visiting the earthquake zone in company with his father and the Consul General. By coincidence it deals with the same area as that described by Major A I M Gregor MacGregor in his article in the December 1981* RE Journal.

THE bleak streets of Solofra and Serino, two remote Campanian villages in the earthquake area of Avellino, south of Naples, were filled with suspicious interest yesterday at the arrival of twenty Royal Engineers from the 32 Field Squadron RE based in Ripon, Yorkshire. They are here to erect a complex of prefabricated buildings. For the last few days large articulated lorries from the UK have been crawling through this mountainous region with badly needed aid to an area which

The Royal Engineers Step In April 1981

suffered one of the most extensive earthquakes in recent years. On Sunday 23 November, in under ninety seconds 3,000 people were killed and around 750,000 were made homeless over an area of 14,000 square km. The town clock in Solofra still marks the time of the disaster: 7.34pm.

The presence of Mrs Margaret Thatcher in Italy on a State Visit when the *terremoto* occurred seems to have predetermined British involvement. Now, four months after the earthquake, the Royal Engineers under Major John Snape are in Serino and Solofra on *Operation Vibrato* to set up £500,000 of prefabricated buildings donated by the British Government. The rescue operation is over, but there lies ahead the daunting task of reconstruction. Many parts of the two villages lie in ruin, whole wings of apartment blocks have crumbled, sewage systems wrecked and a baroque façade in Solofra hides the ruins of its church. Caravans crowd the piazzas and many people still live in cramped Army tents.

Life is easier now that the bitter February snows have given way to the hot Campanian sun. The villagers wave at uniformed British soldiers as they ride through the streets of Serino on the back of trailers carrying vast gables for the new school. Respect for British troops is obvious. War veterans waylay soldiers to describe their wartime experiences with vivid gesticulations and a "pidgin" English picked up mostly in British POW camps.

The new buildings, supplied by two British firms, C & R Ltd and Wyseplan Ltd, will include old people's homes, social and community centres, schools and an agricultural college. Now that everyone has a roof over their head, the emphasis is on buildings where villagers can congregate and escape their claustrophobic quarters. The Municipal Council is working in close cooperation with the British soldiers and all the concrete foundations have been laid. Garrison Engineer Captain David Winship was impressed: "The Italian Army have been marvellous in providing transport and backing".

The British Defence Attaché in Rome urged the use of British soldiers in December, when battalions of German, Swiss and Austrian Army Engineers arrived on the scene. The United States provided helicopter units and the French even provided dog rescue teams. The presence of Royal Engineers will not only make clear that the operation is British but will ensure the proper erection of the prefabs which might otherwise suffer an uncertain fate at the hands of local contractors. Even under Army supervision there was indignation to-day among certain families living in tents around a newly erected prefab in Solofra, that it had been requisitioned by the village priest not simply to house the Holy Tabernacle, but some of his close relatives as well. In the stifling heat of one tent where pots of *pasta* bubbled away, a woman pressed tumblers of whisky on a Sergeant and the Author at 11.30 in the morning, accusing the Communist Council of hoarding emergency stores and of ensuring that Christian Democrats were not given caravans. "*Sono tutti degli imbroglioni*" (they are all a bunch of crooks!).

British Government aid of this nature has only arrived at the climax of a private British relief project organized by the British Consul General in Naples, and former member of Popsky's Army, John Campbell. Within days of the earthquake, he set up the British Community (Naples) Earthquake Fund to raise money and channel the efforts of some 600 Britons based at the NATO Headquarters. While world attention was focused on the annihilation of villages such as Sant'Angelo dei Lombardi, John Campbell decided to adopt as British the villages of Solofra and Serino where the number of homeless—7,500 out of 16,000—was far more significant than the death figures. As tanning centres, both villages have ties with the British leather industry.

The exaggerated picture presented by the media of chaotic and corrupt dissipation of funds discouraged people in the UK from contributing to the Italian Red Cross. The ingenuity of a band of Neapolitan crooks who, bearing official armbands, counterfeit receipts and genuine expressions of appreciation, redirected a convoy of caravans off the motorway, where they disappeared, has only prejudiced British opinion. The Consul General, by concentrating on the relief of two specific towns

and supervising the consignment of goods, has attracted generous British support. In the early days, over 200 caravans were driven over by members of Rotary Clubs. Now the money is pouring in from organisations such as the Round Table, Methodist Relief, The Grand Lodge of Masons of Scotland and even Ballantyne's whisky. London Transport inaugurated a new "London to Naples" route by providing ten buses as mobile clinics. Prominent among individuals have been Sir William Walton and Gracie Fields' widower Boris Alpercovic. The £150,000 so far raised has been spent in accordance with a policy of providing the earthquake victims with essential goods and not money.

As we walked through Solofra the streets were still being cleared of rubble by bulldozers. Though 60% of the buildings were still standing, nearly all are condemned and will be demolished. Our progress was constantly interrupted by villagers who hailed and embraced John Campbell, whose obvious concern for their village they have come to recognize. "If we had not stepped in so promptly many of these people might have died of exposure or pneumonia" he told me. In the Municipal Council, now housed in the local kindergarten, he was besieged with requests for special consideration, while three teachers pleaded with him to visit their school and receive the children's thanks.

Only one day after the Royal Engineers' arrival the community centre in Solofra was taking shape. The soldiers have thrown themselves wholeheartedly into a job which is being treated as a field training operation. Their deadline is mid-April and work must continue even if the weather breaks. As two Sappers heaved a section into place, an aged onlooker spat noisily to one side and growled: "*Non si lavora cosi' nell'esercito italiano*"—(this is not how they work in the Italian Army). Old women clad in black shuffle to the building sites at regular intervals with trays of coffee for the men. They are all housed in a hotel which survived the earthquake, guests of the Italian Government.

The British Defence Attaché was eager to correct the view that the Italian rescue operation was disorganised. "Any suggestion that the Italians were slow is totally unfair". The Italian Minister of Defence, Signor Lagorio, made it clear in a statement recently that within twenty-three minutes of the earthquake the first operational centre was set up in Naples. Within three hours General Lugarese, head of the Army Southern Region, had mobilized 1600 soldiers and 900 Carabinieri. The villagers of Serino admitted that help arrived at day-break—fast, in view of the vast area and difficulty in establishing the villages affected. Many are perched on hill-tops and connected by roads which were swept into the valley by the earthquake. Later, 48,000 troops and firemen were moved 800km South to bring aid and establish a radio network. The problem is that of the twenty-four Brigades in Italy, twenty-two are stationed strategically in the North around the Alps. Asked John Campbell: "Would we have done as well if 320 towns in an area the size of Wales had been struck and aid had to be sent down the equivalent distance from Scotland?"

The Italians alone provided over 20,000 caravans for the entire region; tons of clothing, medical supplies and essential goods were sent from the industrial North and thousands of volunteer workers swarmed south. The Carabinieri thought they had made a scoop when they flagged down a lorry carrying 25,000 sticks of contraband cigarettes on the *Autostrada del Sole*. The driver was later allowed to proceed when he explained that his load was a gift to the earthquake victims from the *Unione Contrabbandieri di Napoli* (the Smugglers' Union).

The last time the Royal Engineers were in this area they were moving Northward blowing up bridges and railways. To-day they have come South bringing aid to a region which has been the victim of earthquakes, poverty and the indifference of successive governments. The fear now is that they may fail to realise that caravans and prefabricated social centres are only temporary and cannot substitute the construction of proper houses. Otherwise the people of Solofra and Serino will suffer the same fate as those of the Friuli earthquake in 1978 who are still living in prefabricated housing.

# 72 (Tyne Electrical Engineers) Engineer Regiment (V)

MAJOR L MCLEMAN TD, RE (V), DMS, MBIM

*Laurie McLeman was commissioned into 50 Div Dist RE (TA) from Newcastle University OTC in 1964. Despite serving in London and Sheffield he was back in the North East in 1967 to be accepted into 72 Regt on reorganisation. After serving as a Tp Comd, IO and Sqn 2IC he was appointed OC 103 Fd Sqn (V). In 1979 he became GSO2 (TA) Trg at NEDIST and in February 1981 he took over as 2IC 72 Regt.*

*In civilian life, after 15 years in industry, he lectures in Construction Management.*

*The author is currently engaged in writing a more extensive history of the "Tynes" and would be obliged if any reader could help with information in any way relevant to this task, especially from 1940 onwards.*

## Introduction

One of the earliest Volunteer Engineer units to be raised was the Newcastle-upon-Tyne Company in 1860. In 1868 this was affiliated to the Durham Engineer Volunteers and this complete consolidation took place in 1880 under the command of Lieut Colonel C M Palmer (later Colonel Sir Charles Mark Palmer Bt, VD).

Since the first establishment of a regular Submarine Mining Company in 1871 the War Office had attached considerable importance to this branch of defensive military engineering. By 1877 the number of regular companies had risen to five and it was not long before the possibility of this duty being undertaken in part by Volunteer Engineer units began to be considered.

## Tyne Division Submarine Mining

Once the suggestion arose that part of this work was suitable for volunteers Colonel Palmer promptly set out to prove the feasibility. Late in 1883 the requisite permission to form a "Volunteer Submarine Mining Company for the defence of the Tyne" was promised subject to the condition that "Colonel Palmer would find the necessary craft etc, at his own expense and that the men should undergo a course of training on the River Tyne": and then "if found qualified for this service his application would be granted." Colonel Palmer accepted their somewhat stringent conditions, as being quite in keeping with the spirit in which the Volunteer Force had been raised, and provided not only the necessary craft, but also a considerable part of the cost of the experiments which were forthwith undertaken at North Shields near the mouth of the Tyne. Initially sixty men were selected from the Newcastle-upon-Tyne and Durham Corps and it is reported that the energy and enthusiasm of these volunteers in undertaking their novel tasks was such that they were highly qualified for carrying out this important duty. The War Office thereupon redeemed its promises and in 1884 the detachment received official recognition, mining stores were provided at public expense for its use and instructors were sent from Chatham. Within a few years nine divisions of Volunteer Submarine Miners had been established, that of the Tyne with the highest precedence. In 1888 the unit received the title of "Tyne



Major L MCleman TD RE DMS MBIM

Division Royal Engineers (Volunteers), Submarine Miners" with an establishment of 189 enrolled members in three companies. The Headquarters moved from Jarrow to Cliffords Fort, North Shields.

The Manual definition stated that a submarine mine consisted of a charge of explosive moored at or beneath the surface of the water, intended by its explosion to damage any hostile craft when attempting to pass within its range. All the submarine mines in the British service were electrical, being fired from a powerful firing battery placed in a protected position onshore. The whole of the mines in a defence had to be connected with the shore by means of electrical cables and were harmless except when deliberately fired by order of the Officer in Charge of the defence. As the range of effective action of a submarine mine was limited it was very important to ascertain accurately when a vessel was sufficiently near any particular mine to be put out of action by it. The two methods used to judge the correct moment for firing were the "circuit closer" and "by observation". In the former method the mine itself contained a mechanism which indicated to shore when the mine case was struck by a vessel. The latter method consisted of observing accurately the progress of an enemy vessel through the mine field by means of an instrument, known as a position finder, installed in a protected cell ashore. In either case when a vessel was noted to be in contact with or sufficiently close to a given mine that mine would be fired by closing an electric circuit in the firing station. It will be evident that the duties of the Officer or Non-Commissioned Officer in charge of the observing station were of the highest importance. The Manual stated that "to follow accurately the water line of a vessel except when she is steaming slowly in a good light and smooth sea is by no means a simple matter and only an experienced observer will be able to keep the telescope properly sighted." The personnel of a Submarine Mining unit had, therefore, to be capable of undertaking a variety of duties of a technical nature including loading the mines with their charges of gun cotton, preparing and inserting the firing apparatus, laying out the mines accurately in their appointed positions in the water, and connecting up the electric cables and testing these both in the submerged junction boxes and in the test room on shore. All this demanded a rare combination of sailor, surveyor, engineer and electrician. In addition, owing to the obvious necessity of maintaining continuous communication between the shore and various boats and vessels engaged in laying out or testing the minefield, it was important that as large a percentage as possible of the men should understand visual signalling with flag and lamp.

It had been laid down that Submarine Mining companies should be composed of persons who had learned a mechanical trade. A three-year term of service was required and particular care was exercised to ensure that only men of good character were accepted. The Regulations and Orders of the Division showed that the members should be above the age of seventeen and below that of forty-nine on enlistment, five foot six inches or more in height, thirty-three inches round the chest, strong and capable of lifting heavy weights, and as a rule accustomed to boat work. On attaining the age of fifty years all members except Officers (who were allowed to serve until sixty years) were compulsory retired. For the dual service on land and sea a single pattern of uniform was not adequate. On parade the Division turned out in the scarlet uniform common to all Volunteer Engineers but distinguished by the letters "SM" and the word "TYNE" on the shoulder straps. They were also equipped with a special working dress for their duties afloat. This working dress consisted of a blue reefer jacket, blue woollen guernsey, Navy pattern trousers, leather knee boots and the Navy pattern cap with ribbon bearing the words "Submarine Miners". Every effort was made to foster *esprit de corps* and all ranks were adjured to pay "a strict and conscientious attention to their drills and to all the rules of the Corps, to which they should be proud to belong, and the honour and fair fame of which should be one of their highest objects." The Regulations and Orders of the Division constantly refer to this important matter and one particular quotation stated "The Commanding Officer strongly disapproves of smoking in the street. A pipe or cigar in the

mouth when in uniform entirely spoils the appearance. Chewing tobacco is not allowed."

It was in the 1890s that use of electric searchlights as an adjunct to the artillery and submarine defences was started. In 1895 the first searchlight to be used at the Tyne was installed at Cliffords Fort for illuminating the minefield. In the same year the establishment of the Coast Battalion RE was increased to provide personnel for duty with these electric lights and the Section at Cliffords Fort was increased to thirty-five other ranks. Within a few years it was realised that the personnel of the Coast Battalion RE was insufficient for manning the large increases in searchlight installations and in these circumstances the possibility of training auxiliary forces to take a share in these duties had to be considered. The Tyne Division Submarine Miners contained a large proportion of mechanics of just the type required for the electric light work, and, in addition, the general intelligence and education of all ranks were of a high average with the result that good progress was made in this new branch of the units work. It was in 1897 that the Corps of Electrical Engineers was formed and their first Commanding Officer was Major J Hopkinson who had previously served with the Tyne Division Volunteers for eighteen months in order to become acquainted with the working of submarine defences. The continued efficiency of the division had by now established for the unit the reputation of being the leading Volunteer Submarine Mining Corps in the Kingdom. The appreciation of this by the authorities is to be inferred from the fact that the Division was now frequently called upon to furnish detachments of men for work at ports in many parts of the Country. In the summer of 1900 the Commanding Officer received a directed letter from the War Office expressing the appreciation of the Commander-in-Chief for the detachment of the Tyne Division Submarine Miners, Royal Engineers Volunteers, which had taken part in the late mobilization of the Thames defences. In August 1900 the establishment was further increased to a total of 324. The technical instruction and experience which could be acquired by men joining the Submarine Mining Volunteers, in days when electricity was yet comparatively in its infancy, always proved a strong incentive to intending recruits and stimulated recruiting to the advantage of the Tyne Division which was quickly recruited up to that increased establishment.

This year was the first that the "Ladies Plate Competition" was held. The magnificent trophy, then valued at £60, was the outcome of a special effort made by a large number of local ladies. The trophy was presented for "annual competition between the RE Units of the Counties of Northumberland and Durham." This competition has since been continued as an annual event and always arouses considerable enthusiasm among the Units concerned. Two years later a pipe band was raised with Highland, not Northumberland, pipes. Approval was given by the War Office, the tartan adopted being that of the Clan Fergusson.

By 1904 the establishment was once more increased to seven companies with a strength of 30 Officers and 457 Other Ranks and training was carried out at the Tyne and in the South at Weymouth and Portsmouth. It was in this year (1904) that the Committee of Imperial Defence decided to transfer all the mine defences to the Royal Navy while leaving the Royal Engineers with the duty of working the electric lights at the different ports. Consolidation of the training in searchlights continued and the first mobile searchlight was built in 1906. This work proved of great value as in 1907 submarine mining work came to an end and the unit after an existence of twenty-three years was renamed the Tyne Division Royal Engineers (Volunteers) Electrical Engineers.

### Tyne Electrical Engineers RE

On 4 June 1907 Colonel Sir Charles Mark Palmer, Founder and Honorary Colonel of the Division, died and was no longer able to exert his influence at a time of need. It was in 1907 that the Territorial and Reserve Forces Act was enacted. There was no question that the passing of this Act had been a great achievement of Army reorganisation but nevertheless it was marked by a degree of uncertainty and confusion

partly occasioned by the altered nature of the Division's duties, but mainly due to the sweeping changes in the general conditions under which the Volunteer Forces of the Country were governed.

Perhaps one of the most important aspects of the new organisation in so far as it affected Coast Defence Units, was that the personnel required for the defence of any given locality were to be raised from the local population. The immediate effect on the Tyne Division Electrical Engineers was very serious because the five companies of which this Division consisted were far in excess of the numbers actually required for the operation of the few searchlights installed at the mouth of the Tyne. In the past the establishment had been allowed to grow in order to provide a source from which efficient personnel could be obtained in the event of war for the defence of other ports besides the Tyne. The new principle precluded any such employment in the future. However in 1911 the establishment was changed to allow Tyne personnel to be enrolled for service at other ports. As a result two electric companies were raised for protection of the Portsmouth and Isle of Wight defences and a third, in view of the probable lack of personnel in other ports, was organised from the surplus Tyne personnel. As all the four companies referred to were now corporate units of the Territorial Force, it was naturally desirable that they should be re-united under one title and this was effected in November 1911 when the unit was redesignated the Tyne Electrical Engineers RE. The other divisions of electrical engineers, with the exception of the London Division, then disappeared and the Army List subsequently showed only the two remaining units under the heading of Electrical Engineers being London and Tyne.

It was at the same time that special War Office authority was obtained for the Officers of the unit to have the word "TYNE" embroidered on the scroll beneath the RE grenades worn both on Service Dress and Mess Dress. On the uniforms of the Regular Officers of that period this scroll bore the motto of the Corps of Royal Engineers, "UBIQUE", but this honour had not yet been earned by members of the Auxiliary Forces and in all other Territorial units the space was left blank. Subsequent to the Great War Officers of the Royal Artillery and Royal Engineers of the Territorial Force were authorised to adopt the motto "UBIQUE" and to wear this on the scrolls of their collar badges, but the change was not made in the badges of the Tyne Electrical Engineers. Many of you will have noted that Officers of 72 Engineer Regiment still wear the word "TYNE" embroidered on the RE grenade of their Mess Dress.

## The Great War

The Tyne Electrical Engineers were only thirteen men short of the full establishment when, on 4 August 1914 Great Britain formally declared war against Germany. The Territorial Force was embodied by Royal Proclamation and the remaining personnel of the Tyne Electrical Engineers were mobilized up to full strength. The personnel required to complete the Portsmouth and Isle of Wight companies, together with the Special Company, left for the south of England and the remainder, No 1 Company, prepared for the activities and defence of the Tyne. From the very outset demands were constantly received by the unit to carry out or superintend technical work not only throughout the garrison but also at other stations in Northern Command. In addition to their normal coast defence electric lighting and telephone work, No 1 Company personnel were now undertaking the electric lighting of billets, hutted camps and various military hospitals in the district as well as other electrical and mechanical work of considerable importance, including the erection and maintenance of the electrical plant in the naval wireless station at Tynemouth Castle. In certain billets and camps where electric supply was not available the Tyne Electrical Engineers condescended to install gas lighting, but the fittings were carefully selected to resemble electric light fittings as far as possible! It is no exaggeration to state that whenever any special or unforeseen work of an engineering nature was required to be done in the Tyne Garrison, the authorities applied first to the Tyne Electrical

Engineers. The unit was ready at all times to take on whatever was required and in this way upheld the reputation which it had earned in time of peace.

Although Cliffords Fort remained the official Headquarters of the Tyne Electrical Engineers, it was from the Gosport companies that the great expansion of the unit was destined to take place. During the four and a half years that the Depot was established at Haslar Barracks, the strength of the unit was multiplied nearly fourteen times and the four companies which mobilised in 1914 gave birth to more than sixty subordinate units scattered from Cromarty in Scotland to the banks of the Piave in Italy.

One of the earliest tasks was detailed after a fault developed in the submarine cable connecting the Portsmouth HQs to the Sea Forts. The cable ship operated by the Post Office was fully occupied at other parts of the coast and volunteers from the Tyne Electrical Engineers Telephone Section, who had previously served as submarine miners, were able, despite atrocious weather, to recover both ends of the cable and make a satisfactory joint. Within a few months the entire military telephone system for the southern coast defences (which included Portsmouth, Southampton and the Isle of Wight) had been handed over to the Tynes.

In mid 1915 some 120 men from the Tyne and London Electrical Engineers volunteered for service with oxy-acetylene searchlights to be used to detect raiding parties crossing "no man's land". The actual production of the light was a complicated business involving the most careful preparation beforehand of crucibles filled with a rare earth rammed and baked to a hard smooth surface, no easy matter in the damp of field conditions. Further, as only a weak beam was produced it was necessary to install them as far forward as possible, in most cases in sap-heads forward of our own barbed wire. Despite the Light Detachments being covered by specially sited machine guns they quickly earned the universal sobriquet of "the suicide brigade" and after some success the service was ultimately discontinued.

It was also in 1915 that the lack of specialist units to service the increasing amount of machinery in the field was felt. The first of the Electrical and Mechanical (E & M) Companies was sent to France in September 1915 and was designated No 1 (London and Tyne) Electrical and Mechanical Company RE (TF). It is well recorded that being the first Company of its kind no "mobilisation stores table" existed and the War Office asked the Company for suggestions. The list was subsequently approved exactly as submitted by the OC and accounts for the somewhat lavish equipment of small tools and stores which the Company was able to take with it to France. The range of work was extensive however and the Company was involved in electric lighting of hospitals, water supply, printing establishments and the first trench locomotive.

Although coastal defence, with the assistance of searchlights, was by now well established, anti-aircraft defence was very weak. It was not until early 1916 that the ground defences were effectively organised when the War Office took responsibility for the entire Country against air attack. One of the earliest actions of the new organisation was the formation of mobile anti-aircraft brigades which included a Searchlight Company of three Sections each of four lights. As the organisation developed fixed Company locations were given in vulnerable areas and by July 1917 forty-two anti-aircraft searchlight companies were established, fifteen of them manned by Tyne Electrical Engineers.

Between the wars the unit continued as originally a Works Company and an Electric Light Company. In 1924 the Works Company was redesignated as 307th (Tyne) Anti-Aircraft Searchlight Company RE (Tyne Electrical Engineers). Recruitment was excellent and 307 AA SL Company were runners-up in the Daily Telegraph Cup for the unit in the Territorial Army with the best attendance at Annual Camp (with over 98%)—they were runners-up to Tynemouth Heavy Brigade RA! In 1937 the AA SL Company expanded to become 37 (Tyne Electrical Engineers) Searchlight Battalion RE and along with the other units prepared for another war.

1940 AND ON

With great dismay 37 SL Bn RE was compulsorily changed to 37 Searchlight Regiment RA (Tyne Electrical Engineers). Fortunately the Tynes name had been continued and the unit moved to the BEF in France. They had hardly seen action before France was over-run. Evacuation from St Nazaire was ordered on the troop-ship *Lancastria*. This was sunk in the channel with the loss of 4000 lives and although the unit lost some men the numbers were low. The Regiment served almost all the remainder of the war in defence of the Gloucester area and rose in strength to an establishment of 65 Officers and 2000 Other Ranks.

The Electric Light and Works Company had become 128 E and M Company and after initial training served four years in the Middle East. The range of their work and the ground covered was enormous.

1947 saw the TA reconstituted and the Tyne Electrical Engineers were fortunate in being reformed with the following units:

104 Army Engineer Regt RE (TA)
128 E and M Sqn RE (TA)
537 SL Regt RA (TA) and
86 (Fd) AGRA Workshop REME (TA)

The many reorganisations which the reader will be aware of since that date have taken their toll of units but the thread of the "Tynes" has remained strong.

The last reorganisation in 1967 saw a great reduction in the North East Sappers. 50 Div Dist RE (TA) became 103 (1st Newcastle) Fd Sqn (V), 118 (Tees) Const Regt RE (TA) became a Squadron and 128 Corps Fd Pk Sqn RE (TEE) TA became 105 Plant Sqn RE (V). These sub-units are now grouped within 72 (Tyne Electrical Engineers) Engineer Regiment (V) and cover the counties of Tyne and Wear, Durham and Cleveland. In addition to 72 (TEE) Engr Regt (V), 124 Rec Coy REME (V) carries the title of Tyne Electrical Engineers. Both units are well recruited and play a vital BAOR role on mobilisation. We all look forward to the Centenary of the official recognition of Colonel Palmer's work given by the War Office in 1884.

# Microcomputer on the Way In

CAPTAIN W S BAKER RE

*The author joined the Corps in May 1960, and has served in Cyprus, Aden, Northern Ireland, Germany and UK. Commissioned in May 1980 he is now employed as the Base Accountant with 3 Postal & Courier Regiment RE in Germany.*

*BACKGROUND*

During the course of the BAOR Long Term Automated Data Processing (ADP) Study, a number of functions of the Postal Accounts Branch, 3 Postal and Courier

Captain W S Baker RE

Regiment, Dusseldorf, were identified as *prima facie* tasks for computerisation. The Study Report recommended the conduct of a formal ADP Preliminary Study of the Accounts Branch Activities.

*ACCOUNTS BRANCH FUNCTIONS*

The Field Post Office (FPO) organisation operates as the agent of the Post Office (PO) in UK, undertaking a range of PO services over the counter of some forty-eight FPOs in North West Europe. The number of FPOs is expected to increase to fifty-one, and both figures exclude the temporary FPOs established for exercises. Accounts of the counter transactions in respect of stamps, postal orders, National Savings Certificates, Premium Bonds and Gift Voucher sales, various encashments, and National Gyrobank and Savings Bank are closed and reconciled daily at FPOs.

These accounts are forwarded weekly to Accounts Branch, BAOR, which is co-located with, and administered by, 3 Postal and Courier Regiment, Dusseldorf. Here each weekly account is further checked, reconciled with Commerzbank credit advices, and consolidated into an overall Command Account. This latter document, which forms the basis for assessment of agency fees payable by the PO, must be forwarded weekly to the PO in UK, together with detailed and separate schedules of the various transactions; copies are retained for internal audit in BAOR and to permit queries on individual transactions to be answered.

*PROPOSED SYSTEM*

The new system would, without significant procedural alteration, automate the current arithmetical checking and production of the Command weekly account and related regular summaries for the Post Office. At the same time it would eliminate the need for multiple transaction of figures and be capable of producing management information, both regular and *ad hoc*. With the introduction of a procedural change the system would also be capable of automatically generating the routine stock replenishment requirement and documents for FPOs although quantities calculated by the machine would always be subject to the judgement of management to meet anticipated needs. The ability to meet urgent stock requirements outside the weekly cycle would be preserved.

The new system will allow reversion to a manual system in emergency, by providing a weekly dump, either in hard copy or magnetic form, and the capability to take on any new tasks necessary, for example Child Benefit, and increases in the volume of business, increased use of Giro, introduction of new items of stock.

*SCALE OF OPERATION*

The proposed system could be supported by a microcomputer and store, three Visual Display Units with full keyboards, a printer and small disc (or possibly cassette tape) drives.

*ACCOUNTS FUNCTION*

The main user interface with the proposed system would be three full keyboards with Visual Display Units (VDU), two for operation by clerks and the third for use of the supervisory staff. At the beginning of the weekly cycle of work the main computer files would hold all the information currently entered on the FF 26, the FPO Balance Book, in respect of each FPO but with the addition of a detailed record of stocks held; stocks are only recorded by cash values at present. The figures would represent the closing balance as at the end of the previous week. A similar record would exist holding the Command Account. As at present FPOs would send their weekly account and supporting documents to the Accounts Branch but with one significant difference; instead of a form of Requisition for supply of stock a similar form showing the stocks held would be substituted. This return would not require additional work at the FPO since the information is already included in the normal account checking.

Prompted by displayed formats on the VDU screens the information from each form and voucher would be entered by the clerks via their keyboards. The computer would perform all the arithmetic consistency checks currently employed and store the information, outputting error messages or acknowledgements of acceptance as

appropriate. Finally the computer would check the entries and balance of the FF 26. Depending upon the type or degree of error detected it would be investigated either by the clerk or the supervisor using his own terminal as necessary. The new "Stock Holding" form entries would be input in full, processed by computer to check the "Stock Unissued" entries on the FF 26 and stored for subsequent automatic production of stock replenishment figures. When all FPOs accounts were satisfactorily checked and the additional data input in respect of the Command, eg "Bulk Stock Received", then the consolidated account could be printed automatically together with all other regular outputs. Current versions of the mail file records of both FPO and Command Account would be created and recommended stock replenishment figures calculated. Detailed information supporting the accounts would be achieved weekly for use in enquiries and management returns. When individual FPO recommended stock replenishment figures had been reviewed and accepted or adjusted, the computer would print a consolidated list of stock for withdrawal from the bulk store and itemised combined Issue/Receipt vouchers for each FPO. It would also automatically adjust the bulk stock account.

The supervisor would use his terminal for the following purposes:—

(a) To investigate errors and discrepancies detected without interrupting the flow of work at the clerks' terminals.

(b) To review and adjust the recommended stock replenishment figures.

(c) To check progress of the weekly cycle of work.

(d) To investigate queries arising in respect of previous weeks.

(e) To supplement the data input process if necessary.

*PROPOSED TIME SCALE*

(1) Study Report completed August 1981.

(2) Programme design and development January–June 1982.

(3) Purchase of equipment—April 1982.

(4) System running "Live"—July 1982.

*CONCLUSION OF THE FULL ADP REPORT*

The introduction of a microcomputer system to undertake the consolidation of FPO accounts and to assist in the allocation of Post Office stock to FPOs will provide a more efficient service and produce overall cash savings of at least £169,546 over 10 years.

*ACKNOWLEDGEMENT*

I am grateful to Mr W Barnett of the ADP Development Team (BAOR) in the assistance given to produce this article.

# Correspondence

Colonel D R Whitaker
The Dower House
Chawton Nr Alton
Hants GU34 1SB

## Dress

Sir,—The following is an extract from a recent E-in-C's Newsletter:

"*Dress*

a. *Ties*. There has been some delay by Messrs Gieves and Hawkes in obtaining the uniform tie for wear by Officers. Ties are now available from Messrs Gieves and Hawkes, 1 High Street, Camberley, price £8·75, to whom application should be made direct."

My first reaction on receiving it was to query whether it was not supposed to be £8·75 *per dozen*, the cost of the better and smarter standard issue braid tie being but a

fraction of this. Alas! It is for a single tie as the February Supplement confirmed.

My sympathy goes out to all those Subalterns who will have to work for half a day to buy such an unnecessarily expensive item. I only hope a good cross-section of them were consulted about the change.

I am told that a move is also afoot for us to wear tarted up (there is no other word for it) "woolly pullies". If we are setting out to ape those Regiments of the Army who have always been noted for their sartorial elegance, why do we not do the job properly? Can I propose Barrack Dress trousers striped in the Corps colours, patent leather shoes with brass buckles, and a more distinctive head-dress? "Peep-toe" wellies would indicate to outsiders that even on a work site we have our fashion foibles, (and incidentally would let the water out) and a more elaborate, gold braided lanyard should not cost more than a few days' pay.

There is nothing wrong with regulation Army uniform, and the Corps should stick to it as it always has done. It will be a sad day when Sappers need to hide behind a peacock appearance.—Yours faithfully, David Whitaker

Brigadier E C W Myers CBE, DSO, BA, C Eng, MICE
Wheatsheaf House, Broadwell
Moreton-in-Marsh, Glos GL56 0TY

### 7TH ARMOURED DIVISION OFFICERS' CLUB

Sir,—This time last year you kindly published a letter from me, drawing attention to the slightly disappointing Sapper turnout at the 1980 Dinner and asking ex-CsRE and OsC 7 Armoured Division Field Squadrons RE to roust around in order to increase our representation at the 1981 Dinner.

I am glad to be able to report that at this Dinner, in the words of Christopher Milner, the Club's Hon Secretary, "there was a wonderful turnout of Sappers": in fact, eleven, including three Generals and five old members of 2nd (Cheshire) Field Squadron RE (TA), the original Sappers of this remarkable Division. The total turnout was once again a record: eighty past and present Desert Rats having gathered together for another very happy reunion.

This year's Dinner is due to take place on Wednesday, 1 December 1982, as usual at the "In and Out" Piccadilly. I understand that the FMs John Harding and Mike Carver, also Gerry Duke (who had to cry off the 1981 Dinner at the last moment), have already indicated their intention to attend, so will you please mark up your diaries accordingly.

Any past and present Desert Rats who are not yet members of the Club (Annual Subscription still £1·50 per annum) are invited to join now.

The President is "Pip" Roberts, the Hon Treasurer is "Ackers" Cowley and the Hon Secretary's full name and address are:- Major Christopher Milner MC, Mill Lane, Radford, Inkberrow, Worcester WR7 4LP. Tel: (0386) 792262.—Yours sincerely, Eddie Myers

Colonel A H W Sandes MA C Eng MICE
The Clock House
67 Upper Hale Road
Farnham, Surrey

### RE TOOL CART

Sir,—I am grateful to Lieut Colonel Brazier for drawing attention (March 1982 Journal) to the historic importance of the horse-drawn Section Tool Cart. Perhaps it is too much to hope that an actual specimen still exists anywhere, but as I understand

that there are drawings in the RE Museum and a model in the Field Engineer Wing at RSME, it could well be worth considering the production of an exact copy.

I am asking whether any members of the RE Historical Society would be interested in such a project, but would also be glad to hear from anyone else who could contribute information, advice, practical help or funds. I assume of course that it would be impossible to undertake the work as trade training, but would be delighted to be proved wrong?—Yours sincerely, Adrian Sandes, Chairman REHS

Colonel J L Nicholson OBE
Chawton Lodge
Chawton Nr Alton
Hants GU34 1SL

## RE Oficers in Command of Infantry

Sir,—When I read Colonel Thompson's query in the Journal I thought he was asking about Sappers in command of Infantry units and not of Sappers in an Infantry role. However since mention has been made of "Perowne's Rifles" it should be noted that during the last two or three days before the surrender at Singapore a unit of battalion size was formed under the command of Lieut Colonel H M Taylor, the Commander of Fortress Royal Engineers.

The unit consisted of 36 Fortress Company RE, (Major J M Montresor) and three Indian Sapper and Miner Companies. I have forgotten the numbers of these but I think one of them was 15 Company commanded by Major R B Muir which was an experienced and well trained company. One was under Major Elkington and the other either Major R Dinwiddie or Delme-Radcliffe.

36 Company had disbanded its Malays who had been allowed to merge with the indigenous population, but had under command a Section from HQ Fortress Engineers and was composed of Regulars who were very staunch and steady soldiers. Two of the Sapper and Miner Companies were very "Green" and jumpy not perhaps surprising in view of their experiences during the long retreat down Malaya.

This RE Battalion was put under command of 1st Malaya Infantry Brigade and occupied a position astride the Alexandra Road.

During the morning of 15 February the Japanese launched a probing attack on 36 Company. This was preceded and accompanied by a fairly heavy mortar barrage during which part of one S and M Company panicked and had to be stopped and redeployed. 36 Company caught the Japanese in enfilade crossing a monsoon ditch and repulsed the attack. A later working party found 20–30 corpses at this point.

The Company suffered one killed and two or three wounded who were evacuated forward (ie through or towards the Japanese lines) to Alexandra Hospital. Not perhaps the most routine of procedures but it does illustrate how flexible the battle lines were. During the last 36 to 48 hours of its existence the Battalion had occupied three separate positions in conformity with the movements of 1st Malaya Infantry Brigade. After the repulse of the probing attack I don't think that there was any further activity on the Composite Battalion front. News of the surrender was received about 1600hrs on 15 February.

After the surrender, Brigadier Williams, Commander of 1st Malaya Infantry Brigade wrote as follows to Lieut Colonel H M Taylor:

"May I express to you my deep appreciation of the services rendered to the Brigade under my command by the 36th Fortress Company RE under Major Montresor, forming part of the hastily organised RE Battalion placed under your command.

"I was always conscious that this Company was on the extreme right flank of the Brigade and I knew that there was always a possibility that contact with other formations might not be constant. I felt certain, however, at all times that the belief

that Royal Engineers would remain wherever they were ordered to remain was a safe one. This Company upheld the traditions for courage for which at all times the Royal Engineers have been famous. Please thank them for their services to my Brigade which were most fully appreciated by me. In conclusion may I thank you for your support and assistance in a very difficult situation."

The rather fulsome tone of this letter is perhaps due to the fact that during the previous two months troops supposed to be supporting the flank of a position were only too frequently conspicuous only by their absence. The information in this letter comes partly from my own observations, partly the official History but principally from John Montresor.

I do not know if there is an official record of this incident but there is no doubt that Lieut Colonel H M Taylor should be added to Lieut Colonel Thompson's list.—Yours sincerely, John Nicholson

Major J W Mann RE (V) TD B Sc C Eng MICE
9 Belgrave Crescent
Bath, Somerset

### Railway Construction Past and Present—There *IS* A Future

Sir,—As a railway engineer in both civil and military life, I read Major Johnson's article on railway bridging with considerable interest. I agree with his analysis but not with his solution. (Nor, incidentally, with his title!—which, in deference to the existing railway repair organisation, should have been "Railway *Bridge* Construction . . ."). The PW Troops and the STRE, as he points out, are geared to permanent way work only: there is simply not the manpower to take on board additional tasks and responsibilities. A small amount of bridging expertise resides in the STRE by virtue of the civilian skills of its TA personnel but this is certainly not a prerequisite of entry into the unit.

To employ the Specialist Team as a unit on railway bridging would be a gross dissipation of its collective abilities; to use it piecemeal for supervising other units would be as undesirable as (say) building HGB or EWBB using untrained troops with minimal experienced supervision. Therefore I contend that it is not realistic to look to the existing railway repair organisation to plug the gap in our capability which Major Johnson has so lucidly exposed.

It seems to me that there are three possible courses of action:—

(1) Ignore the problem and—in peacetime—it will go away; returning in war to ride rough shod over bland assumptions about host nation assistance. (This is no reflection on the host nations, rather an acknowledgement that the extent of the damage is likely to compel RE assistance.)

(2) Raise a specialist railway bridging unit or units.

(3) Train existing field squadrons on railway equipment bridging.

Of these, the first is unwise, the second uneconomic and the third unattractive. There is also the problem of deciding which pattern of available equipment best satisfies the military requirement.

In the best traditions of the Corps, *improvised bridging* would enable us to cross most of the smaller gaps, and the addition of suitable data to the *RE Pocket Book* is surely a sound practical step which at least acquits us of the charge of ignoring the problem. Perhaps the Engineer & Railway Staff Corps could give some advice?

The Royal Engineers must face up to the question: Do we wish to retain (or rather restore) our railway bridging capability? I say firmly that we must. If we discard it, we shall be failing in our duty of "helping the Army to fight, to live and to move". Can we afford to run our resupply system without railways? Because, if we cannot rapidly replace damaged bridges in war, this is what it would very soon come to.—Yours faithfully, J W Mann

Major I L R Page TD, RE (V), C Eng, MI Struct E, MI Mun E, MIHE
32 Goldney Road
Heatherside, Camberley
Surrey GU15 1DW

### Railway Construction Past and Present—Is There a Future?

Sir,—It was with much interest that I read the article written by Major Johnson and as a Military Railway Engineer, I would like to comment on some of the points that he has raised.

During WWII, the railway networks of Great Britain and the Continent although severely damaged by bombing, were I believe never paralysed, and traffic was always able to be re-routed. This situation has changed dramatically in the UK with the closure of many miles of track over the last twenty years, but on the Continent, line closure has been much less severe since the war, with the result that there is still a good re-routing capability. However, as the Author indicates, the vulnerable points, the bridges, will be subjected to sabotage or aerial bombardment and a proportion of these will have to be replaced in order to provide routing alternatives. During MV (Military Vigilance) this responsibility will lie with the national railway organisation of the host nation who can call on industry to undertake the reconstruction.

However, on the outbreak of hostilities, although this responsibility will devolve to the armed forces of the host nation, the British armed forces will demand that through passage is maintained for the traffic of essential supplies and will look to the Royal Engineers for this capability. Major Johnson has indicated some bridge types that may be used, but I consider that, for transport and erection at this time, they are too sophisticated. Also, they are "over designed" for our requirement, being designed for the through running of all combinations of commercial traffic. I would suggest that we should seriously consider undertaking the design of waybeams of up to 15m span, capable of rapid fabrication from readily available steel sections, to cater for anticipated military traffic loadings, travelling at walking pace. Such a system could be extended to bridge larger gaps by the use of trestling towers, would be readily transported and easily erected.

I agree with Major Johnson that we must also have a knowledge of the construction procedures for the erection of commercial bridge decks, since on the cessation of hostilities, we will be called on to undertake the rapid replacement of damaged bridges to cater for civilian traffic.—Yours sincerely, I L R Page

Brigadier S A Stewart CBE, MICE, FIStructE
Friday's Farm
Warninglid
Haywards Heath, West Sussex

### Solar Heaters

Sir,—I wonder if any reader can help over a question about solar heaters? Following initial trials in Egypt and Cyprus in 1955–56, 100 sets of solar heaters were made in UK and sent to the Middle East in about 1957. The intention was for these to undergo extensive trials in Married Quarters in Aqaba, Cyprus, Cyrenaica and Tripolitania. The Suez crisis however caused drastic modifications to be made to the Garrisons in all these places, and the installations were not therefore proceeded with at the time.

Does anyone know what happened to the sets? Trials by Lieut Colonel Guyon in UK have tended to confirm our original opinion that almost any form of solar heater will work in tropical or sub-tropical climates, and it would be interesting to hear if this has been borne out by any further trials in the Mediterranean area or elsewhere.

Any information on the fate of these sets, and any results from them, would be gratefully received by the writer. Yours sincerely, S A Stewart

# Memoirs

## LIEUT COLONEL G L BAKER

*Born 4 November 1901, died 20 November 1981, aged 80*

GUSTAV LEFFLER (CHESSER) BAKER served in the Corps for twenty-six years and was a Member of the Institution for well over fifty years. He was educated at Uppingham and RMA Woolwich. He served in India, Palestine and the Western Desert (where he was Mentioned in Despatches) and was captured at Tobruk in 1942 while busy blowing up the docks as the Germans took over. He spent the rest of the war in Oflag IX A/H. A keen tennis player all his life he represented the Army, and won an Army Veterans Championship in his retirement.

CM

## LIEUT COLONEL R T SMITH OBE, RNZE AND RE

*Born 4 July 1895, died 3 March 1981, aged 85*

REGINALD TREVOR SMITH was born at Thames, New Zealand. His early education was at the local schools there and his interest in engineering could possibly have stemmed from the close proximity of the gold mining school in the town and the local foundry which was one of the main industries in the area. His first taste of military life was with the Thames School Cadets between the years 1909 and 1912.

After leaving school he joined the Public Works Department (PWD) and started on a civil engineering career. This took him away from Thames and when the war clouds began to appear he felt that his part was to be played elsewhere. He joined the Army at Kaikohe and went before a Medical Board at Ohaewai which was the site of one of the earliest clashes between the military forces of Great Britain and the Maoris in the 1840s.

He was posted overseas on 24 June 1916 with the 14th NZ Reinforcements and served for nearly three years, rising from Sapper to Corporal, with the 1st Field Company, NZ Engineers in France, Belgium and Germany. He was twice wounded in 1917 and was a gas casualty as well.

On return to New Zealand he rejoined the PWD and resumed his career. In 1921 he married Miss Rita Judd who for the next forty-two years shared his life and all the moves which entailed when working for the Department. He was the Resident Engineer at Wairoa at the time of the Napier earthquake and it was during this period that he developed the strong characteristics of leadership and determination which were to become his standards of the future.

Shortly after he was transferred to Greymouth on the West Coast of the South

Lieut Colonel R T Smith OBE RNZE RE

Island where he was responsible for roads and bridges and where he was able to enlarge on his knowledge of roadmaking skills in a difficult environment.

In 1939 Trevor Smith was the District Engineer at Whangarei (almost in the same area where he joined the Army for the First World War). Shortly after the outbreak of war he took leave from the Department and entered camp at Ngaruawahia, at the age of forty-five, in 1940 with the rank of Major as OC 13th NZ Railway Construction Company. On 27 August 1940 he embarked with the 3rd Echelon for service in Egypt where he was to see the tide of war ebb and flow over the desert sands for the next three years. His outstanding services during the critical period July–October 1941 after the return of NZ Forces from Greece and Crete were recognised by the award of the OBE. In late 1942 he was promoted to Lieut Colonel and posted to HQ NZ Railway Construction and Maintenance Group where he took up the appointment of CO on 26 December. In July 1943 he was sent on furlough to New Zealand and attached to Area 10 at Napier. By this time the war had moved from the desert and the Railway Construction and Maintenance Group were no longer required and were disbanded. He was then discharged and returned to the PWD. However it was not for long as he felt that he still had something to offer to the Engineers.

On 24 March 1944 he was appointed to an Emergency Commission in the RE, and saw service in India with 101 CRE (India), moving later to Burma, Malaya and Singapore. Just after being commissioned into the RE he received notice of the award of a Mention in Despatches for gallant and distinguished service in the Middle East. He was Mentioned a second time whilst he was in Burma covering operations from 16 February to 15 May 1945. He returned to New Zealand after his second overseas tour of duty on 13 May 1946, and once more took up duties with the Department of Public Works.

His connection with the Corps were not severed at the conclusion of hostilities. On 1 January 1949 he was appointed Colonel Commandant of the Corps of Royal New Zealand Engineers and maintained a deep interest in all matters concerning the Corps. He was by now Assistant Engineer-in-Chief of the Department and as such was involved with many major projects, including being Chairman of the Main Highways Board. Typical of this man of action was his reaction to the rail disaster at Tangiwai during the Royal Tour of 1953. He was on leave at the time at Taupo and immediately cut short his holiday and went to the disaster area to organise the resources of the Department, knowing full well that they would be called to assist in searches and recovery of bodies and rail stock. In 1955 he was awarded the Efficiency Decoration and on 1 May 1957 stood down as Colonel Commandant of the Corps to be succeeded by Colonel Andrew Murray. (see March 82 Journal)

He retired from the Department, by now known as the Ministry of Works, in 1955 at the age of sixty. He was still active and took up an appointment with Wellington City Council to oversee the conversion of public transport from trams to trolley buses. This task required considerable skill and tact bringing conflicting points of view to a common point and finally achieving agreement with all parties. His wife of forty years died in 1963 after a lengthy illness. In spite of all his many activities he had looked after her at home with the assistance of nursing help and friends. Some time after, to the joy of his friends, he married Nell Kidd with whom he shared his many outside activities.

Trevor Smith was a man who never really did give up work. He was a man dedicated to service and giving service and for his great interest we give thanks.

DJO'B

# Book Reviews

## BRITAIN IN THE MEDITERRANEAN AND THE DEFENCE OF HER NAVAL STATIONS

QUENTIN HUGHES

*(Published by and obtainable from Penpaled Books, 10A Fulwood Park, Liverpool L17 5AH. Price £11·50 post free)*

It is becoming more and more difficult for academics to get books published and subjects which have a limited interest and Dr Quentin Hughes has published this himself. I am delighted he did.

Britain's affair with the Mediterranean began in the 17th century and ended some 400 years later. It was always a love-hate relationship. When in March 1979 Britain withdrew from Malta, the relationship was over.

To operate successfully the Navy required a series of well-placed and well-defended shore establishments. This is the story of the way Britain acquired, maintained and defended those naval stations so that her fleet could operate effectively.

The book, well illustrated with photographs, diagrams, plans and maps, is scholarly but not dull and will fascinate many readers particularly those interested in fortifications, as one would expect as the author is the Editor of the Journal of the Fortress Study Group.

EEP

## COSTUMES AND CHARACTERS OF THE BRITISH RAJ

EVELYN BATTYE

Illustrated by Cecil Elgee with Introduction by M M Kaye

*(Published by Webb and Bower Publishers Ltd, 9 Colleton Crescent, Exeter EX2 4BY. Price £6·95)*

It is rare indeed to include the Author, Illustrator and the writer of the Introduction in the "head" but in this case it is necessary. All three ladies, who obviously loved India, have played their part in producing a fascinating book. The magic of India in the eyes of all three lay in its people—in their mass each was an individual, each a character.

Mollie Kaye, internationally known for her two best selling novels, *The Far Pavilions* and *Shadow of the Moon* offered to write the Introduction, firstly, because Cecil Elgee's delightful paintings and sketches illustrate the lost India-of-the-Raj which she can clearly remember from her youth and, secondly, because Evelyn Battye's text that explains and accompanies the eighty plus paintings, drawings and sketches is written from a ring side seat.

The book covers different castes and creeds, rich and poor, people from cities and villages. The descriptive writing is interspersed with anecdotes which keep the book flowing and make it difficult to put down.

For anyone who has served in the sub continent this book is a must as it really brings their India alive again. For those who have not visited India it will either be an equal success or it may give a slightly uncomfortable feeling that possibly the Raj could have done better for the people of India. This is not the fault of the book but of certain changes in attitude in some quarters.

All three collaborators are to be congratulated on capturing the magic and lure of India.

The *koi-hai's* may well know the Author as Désirée Battye wife of Major General Stuart Battye late RE.

BP

## BOOK NEWS FROM INSTITUTION OF CIVIL ENGINEERS

*All books in this section are published by Thomas Telford Ltd and are obtainable from Marketing and Sales Dept, Thomas Telford Ltd, 1–7 Great George Street, London SW1P 3AA.*

### APPROPRIATE TECHNOLOGY IN CIVIL ENGINEERING

*Proceedings of a Conference in London April 1980: Price £24·00*

ATTENTION is now being focused on the ways in which development in the Third World can be most appropriately accomplished. The techniques and equipment employed are dependent on a number of factors including the availability of foreign exchange and of adequately trained staff both for operation and maintenance.

This volume highlights the problems and examines the ways in which civil engineers and others, by using appropriate technology, can better assist in less developed countries, taking full account of the social and economic constraints. The book relates experiences and expresses views on a wide range of subjects related to many countries.

### EARLY VICTORIAN WATER ENGINEERS

*G M Binnie: Price £9·50*

STEPHENSON and the Bruneis are household names but their contemporaries who pioneered the early water supply schemes for our great cities (and indeed all over the world) are little known. This book attempts to give the early Victorian water engineers the recognition they deserve and of which they have hitherto been deprived. It recounts the story of the grudging acceptance of the need for constant unpolluted water supplies and the many, both human and technical, problems involved. Although written from an engineering viewpoint, the book is not highly technical and provides fascinating sidelights on little known aspects of the march of civilisation.

### FLOOD STUDIES REPORT—FIVE YEARS ON

*Proceedings of a Conference in London July 1980: Price £20.00*

SOME readers will be familiar with the five-volume Flood Studies Report published by the Natural Environment Council in 1975. The book under review focuses on the use that has been made of the report both at home and abroad in the five years since then. It is not a book for the majority of Military Engineers but the PQE's in particular will find it of interest.

### SENSORS IN HIGHWAY AND CIVIL ENGINEERING

*Proceedings of a Conference in London February 1981: Price £10·00*

DEVELOPMENTS in electronic and electro-mechanical devices associated often with solid-state technology, have prompted a range of interesting applications in highway engineering. This book covers a number of areas of interest to the PQEs and Surveyors, in particular: Laser control of construction equipment; Sensors for road pavers; Dynamic assessment and control of piling operations; Measurement of road surface shape; Land Survey and setting out using EDM equipment and electronic processing. For "specialists" only.

### THE FIDIC CONDITIONS

*John G Sawyer and G A Gillott: Price £8·50*

THIS is a digest of Contractural Relationships and Responsibilities. For "specialists" only.

## REVISED PRICE LIST FOR HISTORY OF CORPS

BECAUSE of reprinting the prices of Individual Volumes and Sets of *The History of the Corps of Royal Engineers* have been revised. The policy of the Institution is still to recover costs only from Members.

PRICE LIST 1982

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The set will be despatched on receipt of Bankers Order, *plus cheque to cover p&p.*
Sets for non-Members can only be purchased by a single payment of £59·00, *plus p&p.*

# straight to the point...


The rapid deployment of armour could be the difference between the success or failure of your mission.
Scorpion provides what you want, where you want it, when you need it.

- **Straight to the point – by helicopter.**
- **Straight to the point – by parachute.**
- **Straight to the point – two vehicles aboard C130 Hercules.**
- **Survivability enhanced by a low profile and small thermal target.**
- **Light, fast, amphibious, mobile on any terrain under the severest weather conditions.**
- **Running costs comparable to similar class wheeled AFVs.**

Out of Scorpion's basic concept a whole range of vehicles has been created to suit any specific requirement – command, support, reconnaissance, casualty evacuation, anti-tank, anti-aircraft, anti-personnel, internal security; other variants can be made to meet other user requirements.
Logistics are simplified: the Scorpion range of vehicles uses common engines (gasoline or diesel), transmission and suspension.
Airportability is a feature of all variants in the Scorpion range.
Scorpion is proven in service in many parts of the world.

Range includes:
**SPARTAN** – armoured personnel carrier;
**STRIKER** – armoured guided weapon carrier;
**SULTAN** – armoured command vehicle;
**SAMARITAN** – armoured ambulance;
**SAMSON** – armoured recovery vehicle;
**SCIMITAR** – armoured 30mm gun, anti-APC vehicle.

## a day in the life of SCORPION-NOW

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