THE

THE ROYAL ENGINEERS JOURNAL

DECEMBER 1992 VOL 106 No 3

Guidelines for Authors

The Editor is always glad to consider articles for publication in the *Journal*. Guidelines for prospective authors are:

Subject. Articles should have some military engineering connection but this can be fairly tenuous, specially if an article is well written and interesting.

Length. Normally approximately 4500 words (five A4 pages single line text plus illustrations. Blockbusters can sometimes be serialised.

Clearance. The author must clear his article with his commanding officer where applicable.

Copy. Ideally text should be double space typed and include the author's pen picture, photo and captions for artwork.

Computers. Articles typed as straight text only, no indents or tabulation, using text wrap ie do not use enter/return key at end of each line and **saved to disc as an ASCII file** (check your word processing package manual for details on how to do this) with the file extension .TXT **are most welcome.** File on an IBM compatible 3.50 disc. Mrs Juliet Scanlan would be pleased to assist with queries – ring Chatham Mil 2299 or (0634) 842669.

Photographs should be black and white. Coloured photographs rarely reproduce well unless they are excellent quality with sharp definition. Slides are not acceptable at present.

Line Drawings, if possible should be drawn in proportion with the page size (145mm x 205mm).

Rewards can be generous. The Publications Committee has about £250 in prize money to allot for each issue plus valuable annual prizes. All authors receive £5 to help cover costs.

Pseudonyms may be used. They will not be revealed by the Editor under any circumstances.

Contributions should reach the Editor by:

23 February for the April 1993 issue
Early June for the August 1993 issue
Early October for the December 1993 issue

Submissions before the deadline will be particularly welcome.

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Editorial

THE majority of the changes under Options for Change have now been announced and indeed during the year we have seen the sad loss of several units from the Corps Orbat and the re-roling of others as the implementation plan begins to bite. As you are aware we are to lose the Postal and Courier Services (PCS) in April 1993 on their transfer to the Royal Logistic Corps. We plan to record this important event in the Journal and it is hoped that many from PCS will continue their links with the Corps through the Institution and the Sapper Magazine.

Despite the reduction in our strength our worldwide commitments continue unabated with Sappers returning to Saudi Arabia in support of the Royal Air Force, who are helping to enforce a no-fly zone in Southern Iraq, and detachments deploying under the auspices of the United Nations to Cambodia and Yugoslavia. Indeed as I write this editorial we are preparing to deploy a large Sapper force to the latter country in support of the Battalion Group that will be tasked with assisting the UNHCR in the distribution of humanitarian aid. Brigadier Hooper's article, Cambodian Mine Clearing, gives us our first insight into the difficulties that are being faced as United Nations troops and civilian firms begin the task of charting and clearing the heavily mined areas in Cambodia.

As part of our series, 50 Years On, the articles by Brigadiers Moore and Myers on mine clearance at El Alamein and operations in occupied Greece respectively have relevance to today's activities. Sadly, Brigadier Moore has since died and we publish a full obituary of the quite remarkable career of this gallant officer in the Memoirs section of this Journal. Similarly Colonel Payne's article, A Goat Between Two Lions, articulates the reasons for the Soviet involvement and failure in Afghanistan which illustrates the danger of getting sucked into an internal conflict albeit our Yugoslavian involvement is in very different circumstances.

On a more cheerful note it is with great pleasure that I have begun to implement our Council's decision to extend Associate Membership to the Warrant Officers in the Corps. A personal letter was sent to every Warrant Officer in the Corps during October. This move is in recognition of their technical expertise, and reflects the widening of Membership being encouraged by other similar Institutions. This is seen only as a first step as there is considerable expertise among our technical SNCOs which it is felt should be tapped in due course. I am sure that our members will do all they can to encourage Warrant Officers to take up this offer and subsequently to take advantage of being able to submit articles for publication and to attend our various meetings.

The Publications Committee has been concerned recently about the lack of articles for the Journal from serving officers. I have taken steps to try to improve the situation but I would encourage you all, in particular our younger officers, to put pen to paper. It is important that our successors are able to continue to draw from the lessons of history in the same way as we are able to do from the editions of the Journal, dating back to 1871, which are held in the Corps Library.

We said farewell to the previous Editor, Lieutenant Colonel Beringer, in July this year and we all wish him well in his retirement. Prior to his departure he oversaw two important changes; the introduction of desktop publishing, and the concentration of our Corps publications including the Sapper Magazine, under one mantle. We are already beginning to see the benefits, certainly in financial terms, of this reorganisation.

In conclusion, may I wish you all, and your families, a peaceful Christmas and a Happy New Year.

Mine Clearance – El Alamein

BRIGADIER P N M MOORE DSO** MC BA

THE following is an extract from a talk given by the author to the Royal Engineers Association, Cardiff in 1969, and was forwarded by Brigadier Moore earlier this year for publication in our 50 years on series. Sadly Brigadier Moore died in July. His obituary appears in the Memoirs section of this issue.

INTRODUCTION

GENTLEMEN, it is a great honour to be asked to talk about my impressions of the Battle of El Alamein to such a successful and active branch of the Royal Engineers Association. I thank you very much for coming to listen to me.

Now, there were a great many sapper squadrons and Company Commanders at El Alamein in October 27 years ago, and I am sure that many of them had the same sort of problems, hopes and fears about the battle as I did, and probably a good deal more beside. However, each of us can only see one very small part of the battle as it effects his own sub-unit, and perhaps one or two units nearby. To get the larger picture we need to go to the high-ups with infinitely greater responsibilities. They have wider horizons and can assess the relative merits and importance of what was done. I make no attempt to describe the battle as a whole, nor to draw any great lessons from it. This should be left to the military historians. I can only tell you what I heard, saw and felt both in the preparations for the battle, and the battle itself. This will inevitably lead to rather a lot of the personal pronoun, but if you want personal impressions this is, I am afraid, unavoidable.

I have perhaps been fortunate in that after I rather rashly agreed to talk to you, I dug out of an old uniform case in an outhouse, a folder which contained not only copies of my warning order for the battle, but my pencilled notes for the opening address at the 8th Army School of Minefield Clearance. So I have been able to soak myself in these and relive not only parts of the battle, but more importantly what we wrote and thought about it beforehand. This has helped me to bridge the gap of 27 years, and to look back without putting on rose-tinted spectacles, which is not always easy.

PREPARATION FOR BATTLE

IN the middle of August 1942, I came out of hospital and instead of going back to my unit, the 3rd (Cheshire) Field Squadron RE, which was refitting in the Delta, I was told to report to Headquarters 8th Army as Brigadier Kisch had a special job for me. I was a bit fed up at not rejoining my unit, as I was terrified somebody else might get the job where I was very happy. But working for Brigadier Kisch was always worthwhile and I soon forgot my fears.

Kirsch was a wonderful man of whom sappers can be intensely proud. I have heard it said that every sapper in the 8th Army felt that he [Brigadier Kisch] was personally interested in what that sapper was doing at that very moment. This cannot, of course, have been true, but he was well known to us all.

He got me into his caravan and told me that I was to open the 8th Army School of Minefield Clearance. He said that the nature of desert war had changed. There was no longer an open flank and there were continuous deep minefields right across our front, which we should be prepared to force our way through against heavy opposition. A drill must be devised for clearing mines, just as there was a drill for loading and firing field guns.

The existing methods based on detailing sub-units, giving them a mine detector, if available, and leaving them to get on with it, were all right for clearing minefields not under fire, or those met with during a night approach march, for extracting vehicles from our own minefields or for getting through very shallow minefields. The lack of a uniform method had led to Divisional Engineers being asked to perform impossible tasks or being asked to make gaps which were quite inadequate for the tactical operations in view. CsRE also had no reliable data on which to give advice to their divisional commanders.

CsRE had therefore been tasked with setting exercises designed to produce useful ideas and from these the main lessons learnt were that:

- The Detector, except on very rocky ground or in newly laid fields, was the quickest means of clearing mines, and the only reliable one.
- The choice of ground for any proposed gap was extremely important.

- Tapes were required to keep clearance parties going straight.
- Operation of the detector itself was an important skill which must be taught as a drill.

Reliable Detectors were now reaching us in large numbers and these helped ease our mine clearance teaching drill programme.

After examining and discussing all the reports with Brigadier Kisch, a minefield clearance drill was adopted, the main features of which can still be recognised in some of today's drills.
The basic ideas were:

- Breaching a minefield under close enemy observation required darkness, smoke or heavy covering fire.
- The first task was for a recce party of about five (led by an officer) to find the near edge of an enemy minefield, mark it with a shielded blue light and then go straight through to the far edge and mark that also with a shielded blue light facing our lines. The party also had to find and neutralise any tripwire operated 'S' mines as these, with their hundreds of steel balls, were murder to detector operators who had to stand up and swing their detector coils in front of them. Great attention was paid to the training of these parties.
- Initial gaps were to be 8yds wide, to be widened to 16yds as soon as possible.
- Three detector operators (No 1s) were each to sweep an 8ft lane and be echeloned back at 10yd intervals. This echeloning was most important as it ensured that a mistake by one detector operator would not write off all three. They could advance at a rate of 3yds a minute, or three times as fast as it took to locate mines by prodding.
- Each detector operator had an assistant (No 2), who paid out a tape to the left of the detector's swing and pegged it down, put half inch nails through the safety pin holes of 'S' mines with horns and marked all mines with a conical hat, light enough to be safe but robust enough not to be blown away. We soon found incidentally that laying out the tapes was best left to a separate party. Altogether we required an NCO to supervise, a man (No 3) to pull mines while everybody else lay down, a party to mark the edge of the gap with gap-marking signs and coloured lights, a medical orderly and four stretcher bearers, a reserve party of one NCO and six sappers, to replace casualties, plus an OIC gap and four sappers in a control party. We also needed a party carrying the heavy gap-marking stores, although, under certain conditions, these could be carried on the back of a dingo scout car.

So for making one 8yd gap we had three No 1s, three No 2s, one NCO and three mine pullers; these were known as the Detector Party. One NCO plus 12 in a Tape-Laying Party. The OIC gap plus four in a Control Party, and one NCO plus six in the Reserve Party.

Pilot vehicles were available, which were trucks with heavily sand-bagged floors under the drivers legs. They were useful for determining the near-side of enemy minefields and for proving whether wired minefields found in unlikely places were dummy or real. Extracts of some notes on the Tactical Employment of Pilot Vehicles, compiled in September 1942, speak for themselves: "Pilot vehicles are one-shot vehicles. Drivers of pilot vehicles are subject to considerable nervous strain of a peculiar nature.".

In three of four courses which extended from the last week of August to the end of September, men from every engineer division in 8th Army had gone through the Minefield Clearance School, and the time came for me to hand over the school and train our own units. Refinements and improvements were made all the time by individual divisional engineers. Perhaps the biggest and the best of these was the establishment of a Minefield Clearance Task Force by 1 Armoured Division with an infantry battalion headquarters, a close infantry escort of at least a company, provost, line and wireless communications as well as sappers to clear the mines. This recognised the truth of the saying I heard as a young officer "Sappers can either work or fight, they cannot do both at once.".

One of our greatest difficulties at the time was communications. Radio was on wavelengths between 60 and 120 metres. The sets used a lot of power, and were often almost completely blacked out by static at night. We had the 18 set as a Manpack set, and the Sappers had only two or three per squadron. They were extremely heavy, of limited range and exceedingly unreliable. With so many tracked vehicles moving freely in all directions, telephone lines were very soon torn up. We had a 19 set at Squadron Headquarters but Sappers were nothing like so radio conscious in those days, and in its soft skinned vehicle the 19 set was too vulnerable to take far forward.

I rejoined the 3rd (Cheshire) Field Squadron RE at a camp in the desert about halfway between Cairo and Alexandria, and there we trained and trained and trained. We did a lot of slimming down too, returning large quantities of stores we were unlikely to need, to a depot in Alexandria. Lieutenant Colonel S A H Batten put us through our paces, and set exacting standards, but he was, unfortunately, taken ill and Lieutenant Colonel McMeekin took his place, whom everyone was very happy to welcome.

Time flew, and we were soon moving up with 10th Armoured Division to a concentration area about five or six miles behind the Front. We still did not know when or where we would take part in the battle which was being prepared, but it was obvious from the air of suppressed excitement that something big was cooking.

About this time we lost Captain Edwards on promotion, Captain Croft on transfer, and Squadron Sergeant Major Pretty, Sergeant Boag and Lance Corporal Hughes went to the Middle East OCTU. SQMS Booth became Squadron Sergeant Major and Captain H S M Graham became Second in Command. Graham was an oil man, a scot and a splendid Second in Command – I often wonder where he is today.

Troop leaders and Troop officers were:

1 Troop	–	Lieutenant Hague and Lieutenant Jarvis
2 Troop	–	Captain Leese and Lieutenant Keighley
3 Troop	–	Lieutenant van Grutten and Second Lieutenant Eley

The Plan

At last the CRE was able to tell us roughly the outline plan for our division, and we planned three reconnaissance parties, arranging for them to go out on the Seaforth Front, some 3000yds from the Miteiriya Ridge.

We were told that the Australian, Highland and New Zealand Divisions of 30 Corps were to assault enemy defences at 2140 hours on 23 October on a wide front in the North Central sector. Through this two corridors were to be cleared by 10th Corps Engineers, one almost due West by 1st Armoured Division and the other in a West South-Westerly direction across the Miteiriya Ridge by 10th Armoured Division. The armour was then to establish itself on what was known as the Pierson bound some 2000yds beyond the infantry objectives and fight off the inevitable German counterattacks. The Royal Engineers had a vital part in clearing a passage for the armour through enemy minefields.

At the last minute permission for reconnaissances on the Seaforths' Front was withdrawn as no one from 10 Corps was allowed to go forward from the forward defended localities. This made our job more difficult, but I am sure the decision was right. Too much was at stake, and if the Scottish Front was found to be swarming with sassenachs the enemy was bound to smell something. As a special concession I was allowed to go out with a Seaforth Patrol for 1000yds. We saw nothing but a frightened Italian running away in the moonlight, and some wire fences which might have meant anything. The professional performance of 2 Seaforth, which had only been in the desert a short time, was most encouraging, and personally I learnt a lot about how night reconnaissance patrols should be conducted.

The CRE's task with 3 Field Squadron plus 571 and 573 Army Field Companies under command, was to open four lanes through both minefields. These were to be 8yds wide and later widened to 16yds.

Starting from the right we were to open routes as follows:

Bottle	–	573 Company less one section
Ink (Spare)	–	1 Troop 3 Field Squadron plus one section 573 Company
Boat	–	2 Troop and 3 Troop 3 Field Squadron
Hat	–	571 Army Field Company – less one section

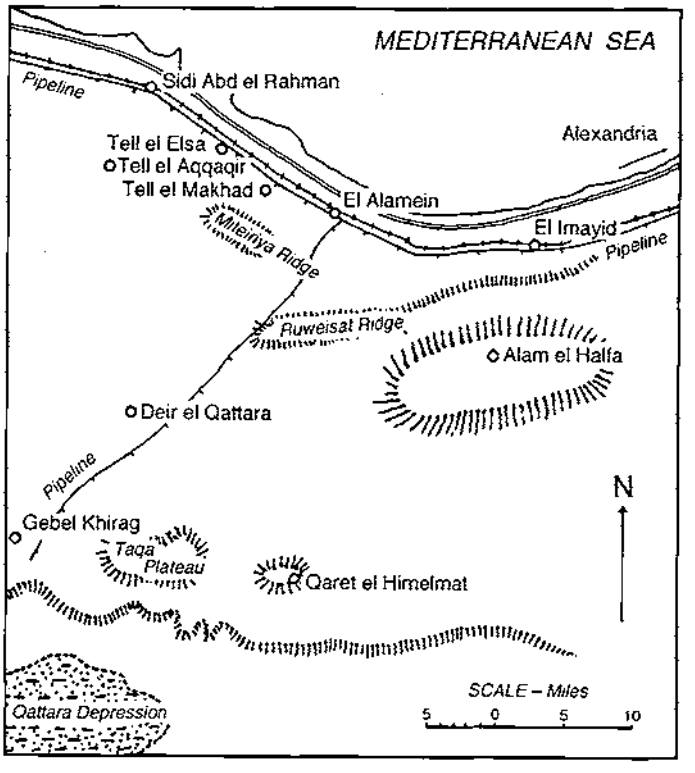
We could see that this was going to be a much more closely controlled affair than had been usual up to this time. It was an immense help to be able to say to a troop: you will provide a Detector Party. The troop leader could then go and detail Sappers to No 1 and No 2, and everybody knew exactly what they had to do. This was all part of the stage management of the battle to which the Army Commander attached so much importance, and there is no doubt it paid the most handsome dividends.

Another innovation was complete security up to the very last moment and then very thorough and comprehensive briefings to every man, of the outlines of the Army Commander's plan. There is no doubt that this gave great confidence

and produced a wonderful determination on everybody's part to make the plan work.

The time then came to assemble ourselves in the 2 Seaforth Battalion area which we did on the night of 22/23 October, and during the day in driblets. This all went without a hitch but that day of 23rd, stuck in a shallow trench near 2 Seaforths Battalion Headquarters, was one of the hottest, thirstiest and most anxious I can remember. I kept thinking: "had I forgotten anything? What could go wrong that I could have prevented?".

The inevitable anxieties about whether essential stores would arrive or not, came and went, and the CRE Lieutenant Colonel McMeekin, came to see us all just after dark. His visit was followed by a hot meal which we all needed, although I can't claim to have had a tremendous appetite.



Battlefield of El Alamein.

Now I will describe the battle as well as my memory serves me, but memory plays tricks at this distance in time, and if there is anyone who was present and thinks I am mistaken in any respect, I would be very interested to hear from them.

The Battle

The confirming reconnaissance parties were due to pass our own minefields at zero plus 30 minutes and the working parties at zero plus 45 minutes. We all formed up with plenty of time to spare before zero hour, checked our equipment and waited. Suddenly at 9.40pm, I believe, there was an earthquake behind, and the sound of shells whistling through the air over our heads, white flashes behind us and reddish flashes in front. The barrage had begun. After ten minutes we suddenly realised that the guns had lifted. In fact four minutes on the FDLs, just enough to get the enemy to call down his defensive fire and therefore get the German gunners onto their guns, then all guns which could reach fired concentrations on enemy batteries, and it was for this reason that we suffered relatively little from enemy shelling during the night, because we had inflicted such casualties to his gun crews.

I stationed myself (with a scout car following me) slightly behind the Boat gap party. After about three-quarters of a mile we saw the blue light of the confirming Recce Party ahead. Just as we were about to start deploying, the pilot vehicle hit a mine and lost a wheel. The driver, Sapper Shaw, was fortunately unhurt. We soon saw that this was probably a rogue mine some yards in front of the main minefield, a fairly common German practice. Still, to make certain Captain Leese started our gapping drill at about the same point as where the vehicle had gone up.

At this moment, just as the tape laying and detector party had deployed, a stray enemy shell hit the stationary pilot vehicle and set it on fire. An enemy heavy machine gun also opened up on it and was, I think, on our left front.

This was a set back as we were illuminated in a most uncomfortable way. After we had put the fire out (an exciting few minutes) Lieutenant van Grutten and his confirming recce party went off and silenced the machine gun posts. I am told that van Grutten personally shot the gunner and the rest ran away. It was a rapid, business-like performance and I heaved a sigh of relief when

they were back safely. It was taking a risk to use a confirming recce party, which would be needed for the second minefield as infantry but in the event I was lucky and it paid off.

Work went steadily on. The great thing about our drill was that I never had to issue an order, every member knew what to do, and could go on doing it in his sleep, I was therefore able to reserve my energies for when something went seriously wrong.

I was able to walk over to the Ink gap where 1 Troop under Jimmy Hague and Bernard Jarvis and a very business-like section of 573 Army Field Company under a Second Lieutenant Smith, had everything well under control.

We had very few vehicles with us, I think five vehicles in all including three scout cars. We were very dependant on them for moving heavy stores. We used scout cars not because we expected to fight the enemy from them, but because their engines and transmission were invulnerable to shell splinters and stray bullets. Movement in no-man's-land at night in a vehicle positively invited being blown up on a stray mine, and vehicles therefore kept to the marked routes which went from back to front. Nearly all sideways movement had to be done on foot.

It was while clearing this first minefield that we had an eerie experience. Suddenly long lines of men in line abreast appeared behind us with rifles at the high port and their bayonets shining in the moonlight. Their faces seemed blackened and they spoke to one another in an unintelligible tongue. They were in fact a Maori Rifle Company of the 6th New Zealand Brigade, and they swept through us without incident from any antipersonnel mines. This field was gapped and marked by about 1am which was pretty well up to time, three hours for about 200yds sweeping at 3yds a minute.

Meanwhile it was clear from the noise and flashes in front that the New Zealanders immediately to our front were having a hard fight for their *OXALIC* objective on the Miteiriya Ridge, and as soon as it was clear that the first minefield had been well and truly breached, I went forward with Squadron Sergeant Major Booth to see how van Grutten, with the confirming recce party for the second minefield, was getting on.

My recollection is that we were by then not more than 30-40 minutes behind time.

Allowing 30 minutes for the next 200yds, I got to the Miteiriya Ridge at about 1.30am. Van Grutten returned to say that he had erected the blue light at the far end of the minefield, but that he and his party had had to crawl all the way back as there were quiet a number of enemy machine gun posts on the other side of the minefield. However, the near edge of the enemy minefield was clearly below the crest on our side and I left instructions to get started while I went to try and find the local New Zealand Company Commander's Headquarters. In this I was quite unsuccessful. I found a platoon just on the edge of the ridge whose members were in great heart and ready to give us covering fire and I was able to tell them what we were trying to do. They had, in fact, been halted temporarily.

I went to the Ink gap and found Jimmy Hague just about starting his gap without too much interference, although there was quite a lot of tracer, mostly rather high.

I went back to Boat gap and found them having a very rough time indeed, in spite of a brilliant little action by a New Zealand Infantry Section. My recollection is hazy at this point, but Captain Leese was firmly in control of the situation, and Sergeant Stanton was a tower of strength. It was in some cases necessary to operate the detectors crouching or kneeling to let the tracer go harmlessly overhead. I remember going back to my control vehicle behind the ridge, and finding a field telephone on which I tried to talk to the CRE. I then met Bernard Jarvis, the second officer on Ink gap, and we saw a covered approach in the form of a tongue of low ground running through the minefield. We started a recce of this in the bright moonlight as a possible alternative route, and it was here that he stopped me putting my hand on the horns of an 'S' mine as we crawled forward. The Germans had obviously thought of this approach too, and we abandoned the idea.

There was nothing for it but to press on. This we did on Boat and Ink gaps, but the work was very slow. Corporal Herring was fatally hit and several sappers were wounded. Eventually we found indications that we had reached the far side of the minefield. The blue light had been long since shot away. As Sergeant Stanton was hammering in the last of the mine markers in an 8yd gap, I ran though the gap in a tearing hurry. There were by my estimate less than 20 minutes left before dawn would break, and then it would be like the 9th Lancers' casualties South of the Mreir depression in the July battles.

We found the leading squadron of the Sherwood Rangers all ready to go, and guided

the leading tank up to and through the gap as first light was coming.

Almost immediately the first tank was hit. I remember six tanks deploying left and right at the end of the gap engaging some enemy antitank guns with their Besas. By this time it was getting light and I remember how odd a coloured light looked in the grey dawn. It was also becoming clear that the Sherwood Rangers could not get forward. Several tanks were hit and a crash action by a Royal Horse Artillery Battery in the open could not silence the enemy antitank guns.

I decided that I must collect our men and get them behind the ridge. We could see no indication of scattered mines beyond the gap, although events the next night proved that there were some.

Leaving a party with the unenviable task of keeping the gap marking signs in order we withdrew behind the crest and brewed up some breakfast.

During the course of the morning the nearside of the ridge became increasingly unhealthy for anyone not dug-in or in an armoured vehicle, and when the order came we were all very willing to go back and get a few hours' sleep, although when it came to it, a lot of us were still so keyed-up that we couldn't sleep – I know that I couldn't.

After a quick meal we were glad to welcome our transport, and the Squadron set to work to do any necessary widening of gaps in the first minefield.

That night 24/25 October, the 2nd Field Squadron under Major Perrott, did a tremendous job in clearing virtually two completely new lanes through the minefield on slightly different axes. Those who were there will remember that an enemy air attack caught the ammunition and petrol dump of one of the 'A' Echelons of 8th Armoured Brigade which caused heavy losses and some disruption. However, the Staffordshire Yeomanry got through and went right on to the Peirson Bound, but were unable to maintain themselves there after suffering very heavy losses from enemy antitank guns.

So ended the first phase of 10 Armoured Division operations, those in which Sappers were most intimately concerned. We had breached the minefields as ordered, but that first night had been just not long enough. Whether another hour would have given the armour a clear run, I don't honestly know. The cost in Sapper casualties was considerable. We had 25 in my squadron on the first night alone, out of a deployed strength of about 150. We were, though, wonderfully fortunate that of these only five were then, or subsequently, fatal.

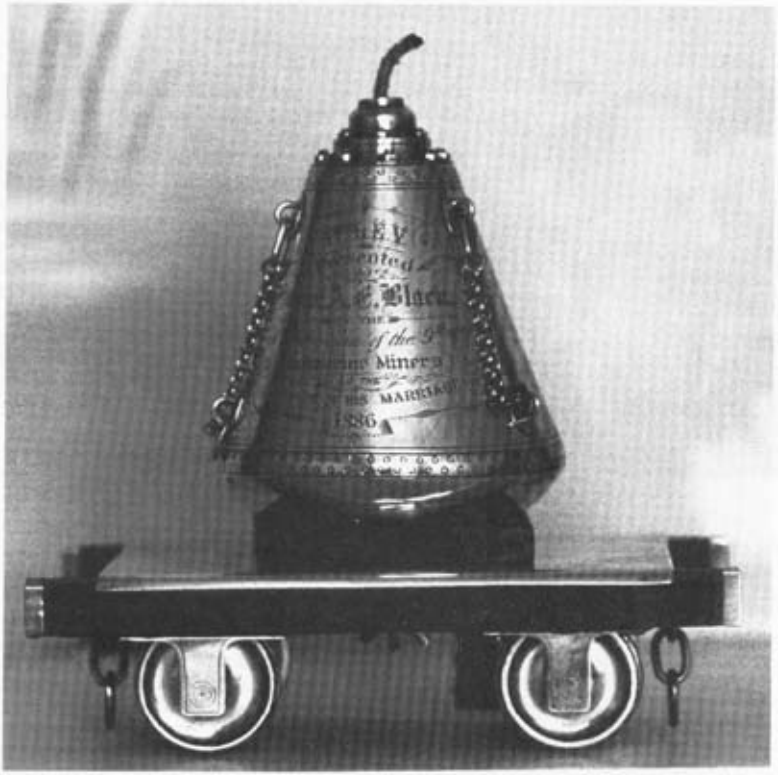
Conclusion

In fact, we had failed. We Sappers of Boat route had done our part, but we had not done it in time. I often consider how we could have done better. I think I was obsessed with getting Boat gap through against opposition. We might have done better to concentrate all our resources on guiding the armour over to Bottle and Ink gaps. On the other hand I was very much less happy about the presence of scattered mines beyond those gaps, and side-stepping two armoured columns in the middle of the night was an extremely difficult and risky operation, and would have been a complete departure from the prearranged plan with all the dangers that it involved.

From my little view of the operation, what we had needed was infantry ready to hand to deal with the opposition that had been holding up our work. Above all, we had needed a better communications system than one major on his feet. Whilst I had been able to control my Sappers without difficulty, arrangements for reporting back, calling for support and calling up the army had left much to be desired. The CRE had been unable to get through with his wireless from his armoured car because it had sustained a direct hit.

However, it must be remembered that our division had had limited resources, and no very high frequency wireless sets which could operate properly at night – this innovation had been at least a year away.

Sea Mine Table Lighter



A CHANCE telephone call to the RE Museum has resulted in the purchase of an intriguing new item of Corps property. In 1886, Captain A E Black RE, serving with the Lanarkshire Engineer Volunteers (which later became the Clyde Submarine Miners RE), took to the wedded trail.

His NCOs and men presented him with a model of a 100 LB Electro-contact Sea Mine mounted on a miniature dockyard carriage, the whole fashioned as a table lighter. The photograph shows the inscribed face view of the whole.

Apart from the Brennan Torpedo Cup (currently the Winter Games Trophy in BAOR) and a recently discovered smaller replica of the same, no other item from the Submarine Mining days of the Corps is in existence ... unless readers know otherwise!

The editor would be pleased to hear of any other pieces, particularly the whereabouts of a fine cup (with smoking accoutrements attached) which was presented to the Clyde Sappers by the Town of Glasgow in 1891.

Sea Mine Table Lighter (p199)

A Goat Between Two Lions: Afghanistan and the Superpowers

COLONEL M J PAYNE MA MPHIL

Colonel Mike Payne was commissioned into the Corps in 1960 and went up to Trinity College, Cambridge, to read engineering. His early service was with 32 Armoured Engineer Regiment for its first rebirth and with 11 Squadron, in the Far East, supporting the Commonwealth Brigade and building roads and airfields in Thailand. After Camberley, he commanded 9 Squadron when it was still independent, 39 Engineer Regiment when it was in 19 Brigade and was Commander Royal Engineers 3 Division. He has filled a variety of staff appointments, including working in Operational Requirements, for the Military Secretary, teaching at Shrivenham and most recently working as Deputy Chief of Staff Eastern District. He returned for the second time to Cambridge to read for an MPhil in 1989 and this gave him the idea for his second career, as a Cambridge bursar, which he has just started at Newnham College.

INTRODUCTION

"WOULD you like to do an MPhil at Cambridge?" the man from the Military Secretary asked. I didn't hesitate and a year later I found myself back in the university after 25 years' absence, reading for a Masters' degree in International Relations, with the added bonus that it took place during the upheavals on the international stage of 1989-90 when the contents of the day's lectures were discussed nightly on television.

The course is outstanding – but somewhat under-advertised – runs for a year and, unlike the better known defence fellowship, leads to an academic degree, is always at Cambridge, is run for 60 to 70 people and in my year there were six servicemen, including one each from the Royal Marines and RAF. The great majority of students come from around the world, with hugely varied backgrounds: diplomatic, commercial, political and a few military, so that there is a marvellous opportunity to make international friends as well as enjoy the delights of being a very well paid student: although the May Ball tickets at £140 made us blanch, even if the undergraduates seemed to take it calmly! The course is in two halves: the first is devoted to a lecture course on international history and politics, strategic studies – such as guerrilla warfare and nuclear strategy – economics and international law, given by a highly distinguished group of dons and visiting speakers. This leads to an examination in which one has to produce four 2000 word essays over three days: not least, it is a test of stamina. The second half consists of a dissertation on a topic approved by the Faculty, (and, in the case of service students, also by the Ministry of Defence) and presents what seems to be the daunting task of researching and writing a 25,000 word thesis on some aspect of international affairs; in the event, most of us found that the problem was to keep down to that length. I decided to write about the Soviets in Afghanistan and to try to show understanding of why they invaded and why they left.

Not the least of the many advantages of the course is that MOD funds are available for research travel and I was able to go to Pakistan for three weeks to interview Mujahideen and Pakistani players in the war. In my 'viva' I was criticised for taking a somewhat one-sided view of the conflict but I can only plead that a cautious Foreign Office rejected my application to visit

Photo 1. Disaster in 1842: the last stand of the 44th at Gandemak.

Kabul. Instead, I was superbly looked after by members of the British High Commission in Islamabad who arranged a series of remarkable people for me to meet.

This is an account of what I concluded about the Soviets' intervention in Afghanistan.

Afghan History and Geography

One aspect of Afghan history that puzzles many people is why so remote and poor a country – landlocked, few natural resources, thinly populated and very mountainous – should have been the bone of contention between superpowers for so long: the "goat between two lions" referred to in the title of this article. That was a description of Afghanistan by its 19th century ruler, Ammanullah, the Iron Amir, alluding to the 'Great Game' then being played out between what might be described as the two 19th century superpowers, Russia and Britain; but it applies equally to that between the Soviet Union and the United States in the late 20th century.

Afghanistan had the misfortune to find itself in the path of two expanding empires in the late 19th Century: the Russians started to push southwards into what are now the five independent muslim republics of Central Asia and, at the same time, the British in India were drawn northwards up to the Himalayas into what is now Pakistan. In neither case was there a grand design but rather the instability that always existed just beyond imperial control which seemed to demand intervention, frequently against orders, as in the conquest of the Sind by Sir Charles Napier and his famous signal Peccavi (I have sinned). Having arrived at the borders of Afghanistan, both superpowers began to think that they were threatened by the other and sought to eliminate that influence by intervening, with disastrous results. In 1842, the grossly mismanaged retreat from Kabul *(Photo 1)* was the end result of the British attempt to replace the pro-Russian amir, Dost Mohammed, with one more friendly to British interests. This pattern was repeated in 1880 when the Russians seemed to have even greater influence as a result of formally annexing the territory immediately to the North of Afghanistan. This time it was only the skill of Lord Roberts that rescued the British from another disaster. However, politically, they were more successful and Russian influence gradually declined so that in 1894, Lord Curzon was able to make a state visit to Kabul. Successive amirs found it convenient to play off the two superpowers in their bid for help in modernising the country, very much as Third World states were able to do so during the Cold War. When the British left India in 1947, the Afghan rulers thought that they could substitute the Americans for the British but the United States was not really interested and the Afghans learnt to their cost that they had invited in a dangerous house guest, culminating in the 1979 Soviet invasion.

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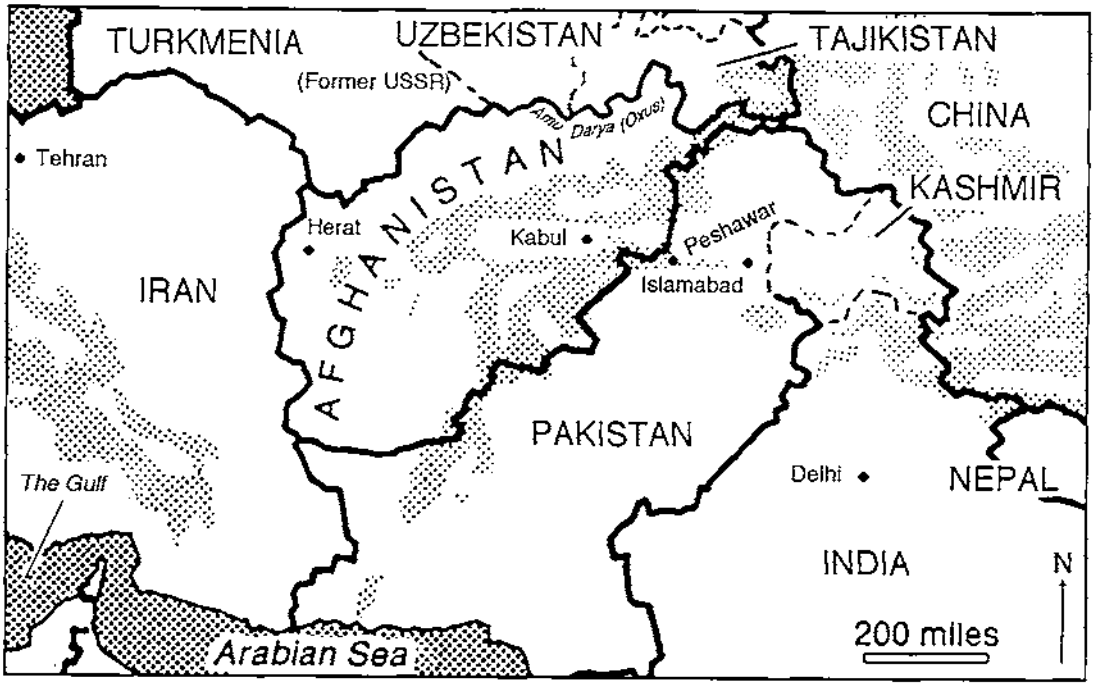

Map of the area covered in the article.

As the map shows, Afghanistan is today surrounded by some fairly disparate states. To the North is the 1500 mile border with the former Soviet Union and, despite being separated by the wide Amu Darya, or Oxus, river, the people on either side have more in common with each other than with the parent state: there are Tajiks, Turkmen and Uzbeks in both the former Soviet Union and in Afghanistan. To the East is Pakistan but the border, drawn by Sir Mortimer Durand in 1893, splits in half the Pathan (or Pushtun) people, so that these too have much more in common with their Pakistani cousins across the border than with the central government in Kabul: this is why the three million Afghan refugees have settled so relatively easily in Pakistan and one reason why they are so reluctant to return home. Durand also created the "pan-handle" up in the northeast, the Wakhan corridor, which provided a buffer between British India and Czarist Russia and a link with China. To the West is fundamentalist, Shia, Iran whose version of Islam is also followed by about 20 per cent of Afghans (the remainder are Sunni muslims, as are the people of the former Soviet muslim republics).

There are 13 different ethnic groups in Afghanistan, speaking 20 languages but the main one is Dari, the Afghan version of Persian; mountainous terrain has mostly prevented racial mixing. The country was only united in 1747 and has stayed together by a combination of a complacent central government in Kabul accepting that it has limited jurisdiction over the countryside and the occasional strong – and brutal – amir ruling by both terror and guile: President Najibullah, just deposed, followed a well trodden path in Afghan history. Perhaps the most graphic description of Afghanistan was by an American CIA man who said of the country that it is "25,000 self governing villages". Another aspect is the division between city and country: city dwellers are quite well educated and sophisticated and tend to be less influenced by tribe and religion; those in the country are in the grip of both the landlords and of the muslim clergy and fiercely tribal so that rural society is still largely feudal. The surprise, therefore, is that the country has stayed together rather than that it is as divided as it now is.

Soviet Influence in Afghanistan up to 1979

To understand why the Soviets invaded one must realise that Afghanistan was not a remote country for Czarist Russia or its successor, the Soviet Union. For 150 years it has been very much in the 'back yard' enjoying, or suffering,

a relationship rather like that of Mexico with the United States.

Afghanistan's position in relation to the Soviet Union and the strong cross-border links with the Soviet muslims meant that Moscow had to be very concerned about its turbulent southern neighbour: and they were right to be so, for after the 1917 Russian revolution resistance to communism in the muslim republics was orchestrated from across the border in Afghanistan, in the Basmachi Revolt of the 1920s and 30s. After 1947 and the British departure from India, the realities of geography meant that the Soviets were dominant and the United States had little influence; state visits by Krushchev in 1955 and 1960 demonstrated this. Trade agreements were signed, roads, airfields and port facilities on the Amu Darya were built and the Soviets began to develop the copper and natural gas deposits in the country so that Afghanistan became increasingly tied economically to the Soviet Union.

Along with the economic development went attempts at political and social reform. Afghanistan has had a succession of rulers since World War Two of widely different persuasion but they have all been wrestling with the same problem, namely how to bring an essentially feudal, Islamic society into the 20th century.

When Soviet influence started to increase in the 1950s, the Prime Minister was Prince Daoud, the cousin of the king, Zahir, and highly autocratic. He tried hard to balance the Soviet and American influences but the latter gave him little help so that he was driven to rely more and more on the Soviets, to the extent that he was nicknamed the 'Red Prince'. His attempts at reform failed and he was dismissed in 1963. In 1965, the Afghan communist party was founded and called the Peoples' Democratic Party of Afghanistan (PDPA); its programme was equally concerned with reform: such matters as the reduction of interest rates, sharing out of land and the abolition of the bride price, seen by many as selling women into marriage; without the "communist" label, it sounds just like any other liberal, reforming party. The difference was the brutality with which it tried to implement its programme when it came to power. In 1973, Daoud returned to power in a *coup d'état* that sent his cousin, King Zahir, into exile in Rome. He invited PDPA members into his government but little progress was made in the countryside with the reform programme and armed resistance began to grow, despite the increasing numbers of Soviet advisers.

The PDPA became frustrated with the lack of progress and in April 1978, with a little help from the Soviets, staged the Saur Revolution (Saur is Dari for April). Daoud was killed, Taraki, the leader of the PDPA, became president, with the real power lying with his deputy Amin and they began a ruthless implementation of PDPA policies, under the tutelage of the Soviets who started to pour in massive aid, directed by thousands of advisers. Zealots went out into the countryside to force the reforms onto the people but this simply served to maximise opposition which by now saw that a godless regime was being forced onto them. Bands of holy warriors – mujahideen – began to form to fight the changes. In one fracas in Kabul, the US ambassador was killed and in another in Herat in the West, a whole division of the Afghan army mutinied and 50 Soviet advisers and their families died. The Soviets were thoroughly alarmed by the way that Taraki and Amin were handling affairs and so they masterminded a second coup in September 1979, hoping to dispose of Taraki and Amin, replacing them with their preferred choice, Babrak Karmal; but this went wrong and instead Taraki was killed and Amin took over.

The situation in Afghanistan was now anarchy and the Soviets were faced with a choice: either pull their 4000-man adviser team out, abandon a strategically important country to its own devices and lose considerable face in the Third World (they had the evidence of the damage the Vietnam pull-out did to the Americans' reputation); or they could reinforce their presence in Afghanistan. It is now beginning to emerge that the decision to invade was taken personally by the geriatric Brezhnev and just a few members of the Politburo: plenty of people are now claiming that they advised against it but whether they really did is less sure. Anyhow, on 27 December 1979, six Soviet divisions drove South into Afghanistan and installed Babrak Karmal as president. The Soviets took elaborate but ultimately futile precautions to make it look as though they had been invited in: carelessly, they broadcast the request for intervention from Tashkent in the Soviet Union! They were taken by surprise by the unity with which the world combined to condemn the invasion.

Various ideas have been advanced as to why they took what turned out to be a disastrous path, including the 'warm waters' theory which

Photo 2. Mujahideen preparing mines for ambush use.

postulates a southwards Soviet expansion through Afghanistan – and presumably Pakistan – to the warm waters of the Indian Ocean. Study of the map shows that if they wanted to make such a move, the terrain through which lines of communication would have to pass could hardly be worse. In fact, the pressures to intervene because of the level of existing Soviet commitment and of the importance of the country were enormous. The Soviets thought that Afghanistan was unimportant to the West, by contrast, and anyway, relations between the superpowers in 1979 could hardly get worse: but they did.

The War: 1979 – 1989

For ten years there were four protagonists in the war that ensued: the Afghan army and the Soviets on one side and the Mujahideen and their coalition of external supporters, lead by the Americans and the Pakistanis on the other. The Soviets arrived in Kabul astonishingly ill-equipped for anti-guerrilla operations in a mountainous country: of the six divisions in the initial invasion, five were standard motor rifle divisions, at 15 per cent cadre strength and brought up to full establishment by the mobilisation of reservists from the Central Asian republics. They were equipped with the full general war complement of tanks, APCs, air defence and chemical defence troops when only the lead 105 Guards Air Assault Division was what was really needed; the Soviets even continued their standard practice of training their recruits in the Afghan-based divisions. It was to take several reorganisations and some bitter lessons before the Soviet Army was properly organised to fight in Afghanistan. Tanks, Armoured Personnel Carriers (APCs) and air defence regiments were sent back to the Soviet Union and special forces and air assault units equipped with a generous scale of helicopters were substituted. By 1986, it was well poised and seemed to be winning the war, even though the Soviets never exceeded 120,000 men in theatre, always referring to their 'Limited Contingent of Soviet Forces in Afghanistan': compare that with the 550,000 United States servicemen in Vietnam, a country with only one sixth of the land area of Afghanistan.

The Afghan army started the war with an establishment of 100,000 but from desertions this number quickly dropped to 30,000 and became almost ineffective except for static guard duties. But by 1986 intensive reorganisation, retraining (mostly in the Soviet Union) and re-equipment were beginning to pay off and, without Soviet help, they began to inflict some severe defeats on the Mujahideen, even though desertions continued to be a major problem right to the end of the Soviet occupation.

The Mujahideen are an extraordinary collection of fighters, owing allegiance first and foremost to their commander in the field and representing every faction of ethnic and tribal element in the country. Militarily, their strengths are great courage and resilience in the face of extreme hardship and a genius for ambush, making extensive use of mines to block roads; *(Photo 2)* but they are not good at operating sophisticated equipment and weak at the coordinated, all arms operation such as was needed to take Jelalabad, immediately after the Soviet withdrawal in 1989; there was no equivalent of the regular North Vietnamese army to deliver the *coup de grâce*. Factionalism also prevented the establishment of a Mujahideen high command to give overall direction to the war until, incredibly, 1991, 11 years after the start of the war. Each commander in the field owed a loose allegiance to a political party based in Iran or Pakistan. The Pakistani-based parties set up their headquarters in Peshawar and

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it was these that I was able to meet. All their spokesmen were charming, intelligent and highly articulate but the divisions between the parties were all too obvious. There are seven parties now but I was told that there had been 52! (The Pakistanis reduced them to seven by the elegantly simple solution of shutting 45 of the Peshawar offices). Two of the more significant parties are the moderate Jamiat-i-Islami, of which Ahmed Massoud is a member (but not the leader, who is a professor, Rabbani) and the fundamentalist Hezbi-i-Islami, led by Gulbaddin Hekmatyer; both of these two are trained engineers, as are many of the best educated commanders. Massoud is the only commander with a doctrine of guerrilla war and his military ideas reflect very much those of Mao tse Tung. Since the Soviet withdrawal, these two parties have spent as much time fighting each other as the Afghan army. In the West, there are eight Iran-based parties but representing only 20 per cent of the Mujahideen strength.

The final players in the war were the foreign backers and arms suppliers of the Mujahideen. This brought together a remarkable coalition: United States, China, Britain, France and Saudi Arabia, all channelling aid through Pakistan, and Iran which operated very much in isolation. The reasons this "rainbow coalition" was able to be assembled lie firstly in the appalling state of relations then between the superpowers, so that the West saw Afghanistan as a stick with which to beat the Soviets; secondly in the anger of the Third World, and especially the muslim states, at an attack on one of their number. It was an extraordinary achievement of the Soviet Union to be able to unite the United States and Iran against it. Training camps were set up in northern Pakistan, directed by the powerful and independently minded Pakistani Inter Services Intelligence department (ISI). A huge arsenal of weaponry was supplied to both sides. *(Photo 3)*.

This article is not about the course of the war but about the political factors behind it; suffice it to say that the war went through three distinct phases. From 1979 to 1983, the Soviet army had to fight hard to prevent the Afghan regime from collapsing completely and at the same time, they themselves had many hard lessons to learn about how to fight a guerilla war: about the organisation and equipment needed and especially about the importance of good low level leadership and high morale. From 1983 to 1986, the tide slowly began to flow in the Kabul regime's direction, with improved tactics, better organisation and some notable defeats inflicted on the Mujahideen as a result of the aggressive use of air mobility. Had that trend continued, the Kabul regime might well have remained in power today but the Mujahideen managed to persuade first the British to release Blowpipe to them and then the Americans Stinger *(Photo 4* over the page) and this totally changed the course of the war: air mobility was far more difficult to implement, even though the Mujahideen are thought only to have shot down some 270 aircraft with these missile systems. The war now entered a period of stalemate in which the Mujahideen controlled most of the countryside and the PDPA the towns, with the roads between them in dispute.

Photo 3. A mujahideen supply column in the mountains.

The Soviet Withdrawal: 1986 – 1989

It has often been suggested that the introduction of Stinger and Blowpipe caused President Gorbachev to begin the process of withdrawal but this is not so. He first broached the subject of withdrawal with Babrak Karmal at a meeting in December 1985 and it was not until a year later that surface to air missiles were beginning to have a decisive effect. Gorbachev came to power in March 1985 and immediately carried out a review of domestic and foreign policy. It

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Photo 4. The American Stinger missile operated by a mujahideen fighter.

was clear to him that the Soviet economy was in crisis, with output almost static. He realised that he needed completely to restructure the economy – *perestroika* – and that the greatest obstacle to this was the huge bureaucracy – or *nomenclatura*, so he decided to appeal over their heads to the people through *glasnost*. But the effects of the war in Afghanistan had so far largely been concealed from the people by a total censorship of news and by such devices as keeping wounded soldiers in Kabul for up to two years, until they were fit enough to return home. Implementing *glasnost* for domestic economic purposes would blow the secrecy surrounding the war totally.

Gorbachev also concluded that he had to reduce expenditure on nuclear and conventional arms and for this needed better relations with both China on whose border the Soviets had 50 divisions and with the West whose help he needed in the economic modernisation process. The Soviet presence in Afghanistan was a major obstacle to good relations between the superpowers and President Reagan had made withdrawal a litmus test of Soviet intentions to the rest of their relations, refusing to make any progress in Strategic Arms Limitations Talks until there was some sign of progress here.

Gorbachev announced the decision to withdraw in a speech in Vladivostock on 28 June 1986 but he was determined to salvage what he could and it was two and a half years before the last Soviet soldier left Afghanistan. The Soviet and Afghan armies gave the Mujahideen several bloody noses and a major effort was made to build up the Afghan army, with a huge airlift of supplies into the country that continued after the withdrawal. The Soviets also replaced the by now alcoholic Karmal with the KGB's protégé, Najibullah, a ruthless, energetic and highly intelligent man who had run the Khad (the Afghan equivalent of the KGB) and he set about preserving the regime and driving wedges between the various factions of the Mujahideen. Karmal was, incidentally, the first Afghan ruler to leave office alive for 16 years.

After the Soviet Withdrawal: 1989 – 1992

That the Najibullah regime survived until April of this year was a matter of great surprise to nearly all Western intelligence agencies. In fact it was a tribute to the extent that the Soviet Union's programme of re-education had worked, to the energy of President Najibullah, but above all to the level of military and economic support that the Soviets continued to provide – estimated by the US at $4 billion per year. Sadly it was also a mark of the disunity of the Mujahideen, whose Peshawar-based Afghan Interim Government rapidly fell apart, and of their inability to mount successful attacks on the larger fortified bases. The Soviets for their part kept a friendly regime on their southern border and they did not suffer the domestic or international costs of having their army at war; although Pakistani and Saudi support continued, that from the US declined and from China stopped immediately.

The end for the Najibullah regime was signalled in January this year when the Soviet Union and the United States finally ceased all arms supply, whereas support from Pakistan and Saudi Arabia continued. It could only be a matter of time, and the end came quickly for Najibullah in April 1992, soon after the Soviet Union itself collapsed.

AFTERNOTE

MPhil. courses are advertised in DCIs in about March each year and applications are processed by the personnel branch and MS2. It is not necessary to be a graduate and the age limit of 34-45 is fairly liberally interpreted: as in my case!

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Australian Adventure – Part I

MAJOR S LOVE DSO* MC CROIX DE GUERRE AVEC PALME

MAJOR STUART LOVE DSO and Bar, MC, Croix de Guerre avec Palme, five times Mentioned in Despatches, Royal Engineers and later Royal Australian Engineers, was born in Melbourne in 1884. Graduating as a mining engineer at Ormond College, he obtained his diploma in 1906 at the Royal School of Mines, London, having gained experience of tin mining at Redruth and Wheal Bassett. He then worked at Broken Hill and Mount Morgan in Australia and at the Tavoy Wolfram mine in Lower Burma.

IN 1910 on horseback, Stuart Love made a 1300 mile tour lasting four months, surveying for minerals in Arnhem Land.

The fascinating autobiography of this much travelled and adventurous man is perhaps best illustrated by his quotation from R L Stevenson:

"My mistress still the open road and
the bright eyes of danger."

For good reasons, Love declined a tempting offer to join Professor Sir David Masson's first expedition to Antarctica, and in 1911 he became surveyor to the Taquah Gold Mining and Exploration Company on the Gold Coast, then the "White Man's Grave". He later became manager of the Abbosso Gold Mining Company employing 70 Europeans and 3000 locals from 16 different races speaking 300 dialects. Eight months on station and four months leave was the notional pattern of life. He regarded the hazards of mining with some detachment, and noted in a letter to his parents: "Death and dead bodies do not put me out at all, but injured people upset and unnerve me.".

Having enjoyed the services of ten company servants, Love voluntarily came to England in February 1915 when, through the good offices of a friend, he was recommended for a commission in the Royal Regiment of Artillery. The interviewing Gunner Colonel had the very good sense to refer his application to our Corps of Royal Engineers.

Love was duly commissioned in the 4th Field Company RE, 47th (London) Division – The Bowbell's Division – and 20 days after his arrival from the Gold Coast, he went with his Company to Le Havre.

In July 1915, he was promoted to Captain and in December to Major as OC 2/3rd Field Company; he had the good fortune to survive in this appointment until the end of the war.

We are indebted to two people for their invaluable assistance in helping us to publish this autobiography. First to Major Derrick Vernon (who coincidentally was briefly in 507 Field Company, 47th Division in 1944 – memories of exercise Eagle *with 15th Scottish Division!) for completing the huge task of condensing the manuscript into a suitable size for the* Journal, *and second to Brigadier Michael Calvert DSO who let us have the manuscript. The full text with pictures is lodged in the Corps Library.*

Brigadier (then Captain) Michael Calvert went to Australia in 1941 and met Major Love, who had been appointed Commandant, 7th Infantry Training Centre at Foster Wilson's Promontory, Victoria. 7th Infantry Training Centre was the cover name for what was a Guerilla Warfare School and the photograph over the page shows Stuart Love with Captain Michael Calvert and Captain Freddie Spencer Chapman, Seaforth Highlanders.

1915

"There is a tide in the affairs of men,
Which taken at the flood, leads on to fortune."

THE truth is that the tides in our lives ebb and flow without any regard to us. If they are flowing, it is they which lead us on to fortune without any effort on our part. If they are ebbing, swim as manfully as we may against them, they bear us out to dark and stormy waters.

In 1915, the tide was running strongly with me, as it was also, if not quite so strongly, in 1916.

Though I didn't know it, I had arrived in France at the most opportune time possible – time for any junior officer to get quick promotion if he had any stomach for war, any natural aptitude for the Profession of Arms and was lucky enough to "dodge the straight 'uns'".

The only divisions in France for the first half of 1915 were Regular and Territorial. I suppose

Captain F Spencer Chapman 5th Seaforth Highlanders(Left), Major Stuart Love DSO* MC (Centre) and Captain Michael Calvert RE (Right), outside 7th Infantry Training Centre, The Chalet, Wilson's Promontory, Foster, Victoria.

the Regular divisions were kept up to strength both in officers and men – but the Territorials were starved for reinforcements, simply because their depots were so busied building up fresh divisions for France they could not spare trained officers and men for those in the field.

In early 1915, Territorial divisions were being sent to France at the rate of one every fortnight. Our Division was in France by the middle of March. It had been preceded by the 46th. Late in March it was followed by the 48th, and in early April by the 49th. Then followed the 50th and the famous 51st (Highland) Divisions; I've forgotten how many more.

Our OC, Major Marsh, was killed by a shell when the Company was being introduced to trench warfare. We had been in the line only two or three days: he never knew whether he had taken a good risk or a bad one on me; I did not have time to know him well, he was certainly a brave and gallant officer.

The command was then passed to Blogg, who, in civil life, was Black Rod in Waiting at St James's Palace; it was Blogg who taught me war as I don't think that Marsh ever would, or could, have done.

Our first independent front was just South of Neuve-Chapelle. We were the only Company with the Division at the time (the 3rd Field Company rejoined us a few weeks later), Blogg had to work both sectors of the front and Birch – as the senior subaltern – and I went on detached duty to do the RE work on the northern sector.

The front line here consisted of breastworks, and there was a communication trench in the part in which I was working. I was instructed to lay out and dig a communication trench through an orchard, which was on slightly higher ground than the front lines and could, therefore, be drained. I was given two battalion working parties, one to work from 2000hrs till midnight and the other from 0030hrs till 0430hrs, my Section working for eight and a half hours.

Up till now I had, naturally enough, leaned heavily on my serjeant. Serjeant Barlow was about 40, quiet, capable, efficient and well trained. I have no doubt it was he who taped out the trace of the communication trench we were to dig that night.

As each working party would be at least 800 strong, we arranged that Serjeant Barlow should supervise one and I the other; I took the forward half. We also arranged that at midnight we should change over, merely to vary the monotony of a long and tedious night. My half

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got a good many "overs", which made it rather uncomfortable, though no-one had been hit. At midnight Serjeant Barlow reported to me. As I was taking him along my part of the trench to show him to what depth it had been dug; an "over" hit him in the middle of the forehead and he dropped dead. This was Thursday night, the 29th of April. I was deeply grieved, for I had a very real affection and respect for him. I detailed two sappers to carry his body to our rear, whence it could be taken to our billets by the transport. So now I had to stand on my own feet, for my corporal did not inspire me with any great confidence.

From this sector we moved to Festubert. Here I had my first taste of action, going over with my Section with the Infantry, which attacked and took the enemy front line, which in this area consisted of breastworks. My function was to repair breaches, build fire-steps and any other work the Infantry required. We were under fairly heavy shrapnel fire, which worried my sappers a good deal, as they had to fill their sandbags in the open behind the breastworks; fortunately there were no casualties. The operation was only minor, but the behaviour of my corporal left me with a strong suspicion that he was not steady under fire. From here we moved further South to Vermelles in hot summer weather.

Our next move, again further South – for the British having now more divisions in France, were steadily taking over fronts previously held by the French – was to the Maroc-les-Erebis sector and the Company was in Engineer charge of the left half of the front, immediately opposite Loos.

It was here I really got to know Blogg, my OC, and to admire him more and more the better I knew him. He was a tireless worker, though he always looked tired, as he probably was. He had great charm of manner and was *persona grata* with the brigade and battalion commanders. He taught me war here and certainly instilled into me – not by anything he ever said, but purely by his example – that "the place for the Sappers is in the front line or in front of it"; the latter is where he put and kept me! Whether this was because he thought I wasn't much good anywhere else or whether it was because he recognised a kindred spirit who, like himself, found a strange fascination in "the bright eyes of danger", I don't know; but the fact remains he kept my Section continuously on wiring the front line, which the French had left without any wire at all.

In those early days British wiring was all done on stout wooden pickets about 4ft 6in long, driven in with a heavy, two-handed wooden maul. It was a hot, dry summer and in that chalk country the mauls had to be swung vigorously to make the pickets secure, consequently the work was very noisy.

It was peaceful enough at first for at the right of our front where I commenced work with two of the other sections, one of which worked for only one night and the other for two, the lines were pretty far apart; our combined efforts for these two nights had wired 680 yards of front. However, the lines were now only 100 yards apart and the enemy became extremely interested harassing us with rifle and machine gun fire while they kept us floodlit with Verey lights. The work went on in spite of interruptions, except when we were under machine gun fire when the whole Section would be lying flat in the open beside the wire till things got a little quieter and we could get on with the job, even though there was spasmodic rifle fire.

In all, my Section wired over 1800 yards in 14 nights – that is completing one row of wire along the whole of our subsector and then returning with a second line of wire. This took us till early July.

Even on those first quiet nights my worst suspicions about my corporal were confirmed, but I could not fasten anything definite on him. However on the very first night on which we really came under fire, he solved my problem.

It was normal practice, on finishing work, for the NCOs and sappers to make their way by the communication trenches to the forward dump where they would hand in their tools and then fall in under my corporal who, having called the roll, would report "all present and correct". On this particular night I found the Section fallen in but no corporal. I called out – "Where's my corporal?" A voice from the ranks replied – "Here Sir. I'm throwing in my stripes." To which I replied – "You can do that in the Orderly Room later today. At present you are NCO in charge of this Section, you will come out here at once and call the roll." Which he did, rather sulkily.

I reported this to Blogg at breakfast and told him of my ever growing suspicion that my corporal was completely unreliable under fire and, by his bad example, a thoroughly unsatisfactory NCO.

The Orderly Room was brief. My corporal agreed the report was correct and he wished to revert to sapper at his own request; Blogg agreed to recommend this to the CRE.

After this was over I had a chat with Blogg and asked him to recommend the promotion of one of my second corporals to serjeant and the other to corporal; this was done very promptly.

I was now thoroughly on my feet, had a most excellent serjeant and corporal and a loyal Section. (The set up of the four sections of dismounted men at that time was that numbers one and three each had one serjeant, two corporals, one second corporal, two lance corporals, while numbers two and four each had one serjeant, one corporal, two second corporals and two lance corporals. All four had, in addition, 30 sappers. On the march or on detached duty, each section was followed by a double limber tool cart, drawn by two pairs of horses, each pair being controlled by a ride-and-drive driver, and one forage cart drawn by one pair of horses with a ride-and-drive driver.

I think second corporals (written II Cpl for short) were peculiar to the RE. They wore one stripe only, but had more authority, responsibility and pay than a lance corporal.

There were some important changes during this period at Maroc. Birch was posted to command the 3rd Company and Booth was invalided home – which left me as senior subaltern.

Meanwhile we had two reinforcement second lieutenants – Fisher, who can't have been more than 20, was a most promising and willing officer, and Second Lieutenant Goodswin. Fisher stood six feet, was athletic and a good looking young man of the Anglo Saxon type; fair hair, grey eyes and a pinky white complexion.

Just at the time we moved into Maroc subsector, Lieut Colonel Kenny, our first CRE, went home and was replaced by Lieut Colonel Crookshank, who later, some time after the War, became Major General Sir Sidney d'Aguilar Crookshank and Colonel Commandant of the Corps. "Crooky" as we called him, was a friendly man with a most attractive personality, having a long experience in India and in military and civil affairs.

At this time, as a junior officer, I had little contact with him. Later, when under his direct command, I was to discover his very sharp eyes quickly noted any defects or shortcomings. He was an ideal commander, equally quick to praise work really well planned and executed and to encourage one with fresh heart and strength when tired, worried or overworked.

He turned the Divisional Engineers into a really effective body. Over many months, he instilled into me a pride in the Corps and taught me to realise it was my duty and responsibility at all times and in any circumstances, to uphold its traditions and honour.

Any efficiency I may have had as a company commander later in the War was due to the early training of Blogg and "Crooky" – Blogg, who taught me war, and "Crooky", who made me proud of being a Sapper.

On the 25th June, the 2/3rd Field Company under Major Agar, joined the Divisional Engineers, and so completed the establishment.

Number 3 Section of this Company, under their senior subaltern, Lieut R R Goulden (already a noted sculptor in civil life), was attached to the 4th Company for nearly a month and Goulden and I became very friendly – a friendship which was very useful to me later, and which was to last until his premature death in 1932.

My first leave was in July and took me to a London very little changed from the prewar London I had known so well. It was lovely weather and I felt "on top of the world". During the four months I had been in France I had settled down happily in the army: and although I knew very little drill, I knew that I could do anything required of me. I had got my Section thoroughly in hand and had very good NCOs. I was out to enjoy every moment of my seven days' leave and make the most of my fleeting days.

I stayed in great comfort at the RAC in Pall Mall. It was here whilst waiting for Carmen to join me for lunch, I was desolated to read of the death in action of my great friend of Abbosso days, John Atchison. A second lieutenant in the 5th King's Own Yorkshire Light Infantry he was the 32nd boy of Edgbaston Oratory to fall in the War.

THE CALL

In Flanders Fields

In Flanders fields the poppies blow
Between the crosses, row on row,
That mark our place; and in the sky
The larks still bravely singing, fly
Scarce heard amid the guns below,
We are the Dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved, and now we lie
In Flanders fields.

Take up our quarrel with the foe;
To you from failing hands we throw
The torch; be yours to hold it high
If ye break faith with us who die,
We shall not sleep, though poppies grow
In Flanders fields.

John McCrea

So passed John Atchison, whom I loved more than I have ever loved any man.

On the last day of leave, Isabel and Margaret came to afternoon tea with me at the club. Isabel congratulated me on my promotion to captain, which her sharp eyes had seen gazetted in her morning paper – I, of course, hadn't looked at any paper and wouldn't have looked at the *Gazette* anyway.

I was, naturally enough, very pleased to get this step and still more pleased that Blogg had thought me worthy of promotion, but I was not at all happy about the new duties. In a field company of those days, the captain was the "Q" man. He was in charge of 60 NCOs and drivers of the Mounted Section, responsible for 60 or 70 horses, for the daily supply of rations, fodder, RE stores, the transport of rations to detached sections and of stores to the forward dumps. As a subaltern I was perfectly happy; but I knew nothing whatsoever about the Army drill of "Stables" three times a day: and while, of course, I could ride and knew a good deal about horses, I knew nothing about the Army set up in such matters.

I went to my tailor in Sackville Street to get a third star sewn on the flaps of my cuffs, and a second band of braid around my sleeve – and that evening I returned to France.

When I got back, Blogg, with only two young and inexperienced subalterns, used me wholly for line work, which gave me a respite from my proper duties as Captain; on the 9th August he went on leave, leaving me as acting OC.

At this time the battle of Loos was being planned, to be preluded by a discharge of chlorine from cylinders dug in under the parapet of the front line. The Division was to move to the left but on the left half of our front was a very deep re-entrant from which it would be quite impracticable for our Infantry to attack. The answer was to dig a new front line joining the tips of the re-entrant. The length to be dug was over 600 yards and, for most of the distance, it was over 300 yards in front of our existing front line and a good deal less than that from the enemy lines.

The digging of this called for very careful organisation – and, if the *Boche* were at all active, for considerable determination. As Blogg was always given the most difficult and exacting work to do, this fell to his lot.

On the 23rd August, Blogg was given compassionate leave on account of the death of his father. The next day the Company was ordered to move to Les Brebis, opposite the front to be dug.

On the 26th the Division moved to this front and next day I was very busy. In the morning I examined the front with the Divisional Commander, the Brigadier General concerned, and the CRE; I had the rest of the day to make arrangements for digging the new front line that night. Fortunately I had done some preparations already – the assembly of the picks and shovels for the Infantry working parties.

The job itself was simple enough – except for possible enemy action – but care for all minute details of organisation was essential. Blogg, had he been there, would have had me relieve him of much of the detail, but I had no-one to whom I could delegate.

I had conferences with Hamilton, the Adjutant of 18th Battalion (The London Irish), which was to dig for us, and worked out with him how many men would arrive at such and such a time to draw tools – their arrival at this point had to be carefully spaced – and with the Battalion Commander, who was to supply the covering parties and patrols to cover the gaps between the covering parties.

I could leave the sorting out of the tools for the working parties to Goodswin, who would hand them over as they reported and would supply the OIC of each party with a guide to take them up to the front line, there to hand them over to Fisher – Fisher had three sections, divided into squads, to lead the Infantry out and to set them to work.

I spent the afternoon making these arrangements, checking every detail and taking a very careful compass bearing of the far tip of the crescent – a matter of some importance – for the lines there were only about 15 yards apart and were joined by a sap, most of it held by the enemy, with a double block, manned on each side by bombers.

I returned to company headquarters for a hasty meal, sent off Goodswin and Fisher and all four sections at 1600hrs, following them myself a little later.

I made a final check of the compass bearing while it was still light and then, when twilight fell, having sent out a patrol to cover us, I went out with two NCOs and two sappers. I marched on the compass bearing while my small party, following closely, ran out and pegged down a perfectly straight tape line. The *Boche* didn't trouble us much until we approached the sap, where we came under methodical trench mortar fire, which delayed us a little; but the layout of the line was completed without casualties.

Following close behind was a carefully selected party of NCOs and sappers under my best serjeant. This party laid off the traverses with tape, the traverses being of given dimensions and at set intervals; and following them, the Infantry working parties were extended by Fisher's sappers and set to work.

Everything went without a hitch; and so, when all the troops had been withdrawn and the covering parties and patrols had come in, I went back to our Headquarters well pleased, snatched a couple of hours sleep and went into the Orderly Room to deal with "the paper war".

As I entered, the Serjeant Major reported the CRE had come in at 2000hrs the night before, and that he was exceedingly angry I had not detailed a sapper as a guide and orderly for him, as he had instructed me.

This report shook me and I sat down at my table. There were two piles of papers – one, general, which had been opened by the Orderly Room Corporal, and the other unopened – the secret and confidential. Turning to the latter, I found near the top an envelope addressed to me in the CRE's familiar handwriting and marked "Personal". It was a brief note instructing me to detail a sapper to act as guide and orderly for him, as he wanted to see how work on the new trench was going. It was timed in at 1700hrs – half an hour after I had left.

Just as I had finished reading this, in came the CRE's orderly bringing me another "urgent" handwritten memo – an absolutely devastating "strafe". I held his runner while I wrote a reply, saying I had spent the whole of the previous day preparing for the job; that I had gone up the line again at 1630hrs and that every NCO and sapper of all four sections had preceded me. I gave him a brief account of the work done during the night.

When he got my reply, "Crooky", being the just, generous and warm-hearted man he was, and realising for the first time I had to do all the organising of the work single-handed, came straight over and told me he had not realised how hard up against it I had been; that he was very sorry he had written me this unmerited strafe, which he told me to tear up and forget, but to be sure to leave him an orderly that night.

He duly came and was very pleased with everything, particularly to know the trench could be manned when our work that night was finished.

My diary entries for the next three nights are laconic:-

Saturday, the 28th of August – Digging continued by 18th Battalion, 360 strong. Shelling and sniping.

18th lost two killed, three wounded. Bed at five, up at seven.

Sunday, the 29th of August – Up line in morning. Digging continued at night by 18th, 350 strong. Shelling continued. 18th lost one officer wounded, one man killed and eight wounded. Bed at five, up at seven.

Monday, the 30th of August – Digging continued by 19th Battalion. 525 strong. Shelling and heavy sniping. One officer killed and some other casualties. Bed at five, up at seven.

On the 31st Blogg returned from leave to my great pleasure and relief. I went up the line with him in the afternoon and again for the night, I was happy indeed with his very generous appreciation of my work.

The digging of the new front line, finished before Blogg returned, was only a small part of the total digging to be done. An assembly line had to be dug immediately behind the new front line and connected to it by numerous short trenches; it was from the front line that the chlorine was to be discharged for the first line of attacking troops in the assembly trench immediately behind it. Three new communication

trenches had to be dug from the old front line. Emplacements for the chlorine cylinders had to be constructed under the parapet of the new front line. The result was Blogg and I were out every night with our various digging parties. However, all necessary digging was complete on the night of the 19th September.

After a four-day bombardment the battle of Loos was joined on the 25th September, when the gas was turned on at 0550hrs followed by the Infantry attack at 0630hrs. Going over to old German lines with Blogg in the early afternoon of the 25th was my first sight of a real battlefield.

I have given the account of the preparations for Loos in considerable detail because this brought me to the CRE's close attention; and as I had done it in Blogg's absence to the CRE's complete satisfaction, it had an important bearing on my Army career. Also, I got a Military Cross and my first mention in the Despatches. (The MC was a new decoration and not very common.)

After the fighting died down the 4th Company took over a new front and I spent most of October with the horse lines, with intervals of line work until I left on the 7th November to go on leave and spend a very pleasant time in London. After a most tedious journey, I got back to the Company on the 18th to find the Division out of the line and the CRE and all three field companies at Lapugnoy, a rather depressing mining village.

On the 3rd of December, Blogg went on leave and I became acting OC.

On the 11th December "Crooky" asked me to afternoon tea – he and the adjutant were billeted in an *estaminet*, where they also had their Mess and office. Only "Crooky", the adjutant and myself were at tea; but the usually genial and friendly "Crooky" was distrait and it wasn't a very comfortable party. Then Cooper the Adjutant said – "Weren't you going to say something to Love, Sir?"

"Crooky" went on to tell me that Major Agar, commanding the 2/3rd Company was going to Base Hospital on account of rheumatism, that he was posting me to command Agar's Company; and as Kinsey, their captain, was senior to me, he was cross-posting him to the 4th Company.

It was obvious to me, even at the time, that he had originally decided to do this – hence my invitation to tea. Promoting an officer to field rank, who had had no military training at all and who had merely nine months experience in France behind him? Quite possibly he changed his mind at the last moment when Cooper spoke up; and like Major Marsh, nine months before, he decided to "take a risk on Love". Thank God I never made him repent that risk and before he left the Division, we became very great friends. I got plenty of raps over the knuckles from him as well as words of praise and encouragement, he taught me to be a competent company commander.

I can't say that I was very happy at first about this promotion, one can but try – and I certainly didn't want to leave Blogg.

Next morning, the 12th of December, I went over to the 2/3rd Company and met my new subalterns, I was already friendly with Goulden, the senior subaltern and now my 2IC. I had a talk with Agar, who took me round before his departure. So commenced my command of this fine and very gallant field company, a command which I was to hold for the remainder of the War, just two years and 11 months later.

Agar was not evacuated to England, as the CRE and Medical Officer expected, but was sent to the warmer climate of the Riviera. As he was still in France, he remained on the strength of the 2/3rd Field Company, which blocked my promotion to Major and Goulden's to Captain.

This has an important bearing on an episode which occurred months later. As there was no-one senior enough to take command of the 4th Company, the CRE told me to look after both companies till Blogg returned from leave.

When I looked over my new field company I realised my extreme good fortune very quickly. The 3rd and 4th Companies were Territorials, the majority of personnel being men who had given their time in peace to do training. They were fine types mostly in their thirties; but also men who remain essentially civilians in uniform. The 2/3rd was entirely different. The majority had joined in August 1914 and most were quite young, some had joined at under 18 (on a false age of course) and one, who was to make a splendid NCO and serjeant, had joined at 16. They were of the right age to make soldiers of them; they had a long training in England; they were very keen and smart. I realised all they needed to make them as fine a field company as there was in France was

leadership and to be taught war as Blogg had taught me. I set about doing it.

On the 14th of December I marched them to billets immediately behind the line, a subsector known as "the Hairpin": I could not have had a better one for my purpose. We had extremely good Bavarian troops opposite us, alert and aggressive. Almost all our work was in the front line or in front of it, the latter in laying out and digging a new front line to cut out a re-entrant, and various other lively pursuits.

One night I visited a section, which was supposed to be wiring across "the Hairpin" – no great distance, but the lines here were only 15 yards apart. They had got some concertina wire out, but had abandoned the work as being too dangerous. I said to the sapper nearest to me – "Come on! Over the top" and led the way and we had got the wire out about halfway across (concertina wire was quick and easy to get out) when a sniper started deliberate fire, while another *Boche* kept us illuminated with Verey lights. We lay out, conspicuous against the white chalk, for about five minutes till a Verey light failed and, in the momentary darkness, we slipped back into the trench. After about ten minutes we went out very quietly and got the wire right across where I left the Section to festoon it with barbed wire while I went on to the next job. It was a good object lesson in how I wanted work to be done.

My nightly route to the front line was to bicycle up the Vermelles-Hulluch road to the support line, where my orderly and I dumped our bicycles and proceeded on foot over the top to visit the sections on their various jobs. The road was broad pave with the shattered remains of elm trees on either side, and ran at right angles to the front. It was not a very pleasant ride, for it was shelled and machine-gunned from time to time. As we were on a salient "overs" from half-left whistled about our ears or plunked into the elm boles on one side of the road or the other.

One of my orderlies said to me one night "When Major Agar was here, the sergeant major used to detail his favourite sappers as the OC's orderlies but he doesn't do it now!"

I got an unsolicited testimonial as recently as 1955 from one of my former serjeants who, writing to Budenberg and not expecting him to send it on to me, wrote – "I enjoyed seeing you (at a Company reunion). To hear about Major Love was indeed a treat, how I used to envy him his quiet calm when up the line and his contempt for shells etc, he certainly did show an example to us, but I did wish on one occasion that he had not picked me for his runner, nevertheless I am still alive and so is he." That last remark refers to a night in "the Hairpin" subsector.

Blogg's training and example were bearing fruit; and so a wet, cold unpleasant winter wore on.

(Part II to be published in the next issue of the *Journal*)

Reality and the TA Sapper

LIEUT COLONEL R G SELBY-BOOTHROYD TD

Richard Selby-Boothroyd is an independent training and communications consultant and an Army Cadet Force Commandant. His 26 years in the Territorial Army started with four years in the University of London Officer Training Centre to which he returned 20 years later to serve for two years as 2IC. Commissioned in 1968 in the Royal Engineers (Territorial Army Volunteer Reserve), he served in 217 (London) Field Squadron RE(V) for nine years and then 873 Movement Light Squadron RE(V), which he commanded for three and a half years. Nine months as 2IC of 73 Engineer Regiment(V) and another three and a half years as a CRE Home Defence were also significant parts of his chequered Territorial Army Sapper career.

Introduction

It was brave of Major Willis to submit his article under that broad title *Motivation and the TA Sapper* (August *Journal*). Knowing something of the variety of strong opinions held by many of my former TA colleagues, it is probably quite rash of me to seek to widen his arguments, but I do believe that some of the valuable points he raised about motivation can bear further examination. My contribution leads to a similar conclusion as his, but set against a background of the reality of life for the TA sapper.

The TA Sapper

The TA sapper may live with his parents, or with his wife and children, or with his girlfriend, or alone. He may live in an inner city high-rise flat, or in a suburban semi or on a village estate. He may be an employee, self-employed or unemployed. His civilian occupation, if he has one, may be unskilled, semiskilled, clerical, professional or even managerial. He may live or work close to his unit or he may travel a long time to get to or from the drill hall. He may have served for some time in the Regular Army, he may have belonged to a cadet force or some other youth organisation, or he may have had no experience of any disciplined organisation before joining the TA. He may be highly ambitious or he may be content to be a time-server.

Whether or not individual members or units of the TA ever have to face the reality of war, their ability to perform effectively will arise solely from the preparation – the quantity and quality of the training and practical experiences – which they will have received.

Motivation

The important issue in invoking Maslow's well known hierarchy of needs to help us study motivation in the TA is to realise that, just as in the reality of living, each lower level of need in the hierarchy must be satisfied before proceeding upwards, and the deprivation of lower level needs rapidly brings people back down again. People's needs must be satisfied at all levels up to and including the one that seems to be the driver at the time. Sometimes, even surprisingly low level needs can be a prime motivator. The motivation of an impoverished university student in attending an Officer Training Centre (OTC) training weekend may well start with the promise of several substantial (free!) meals, and unemployed TA soldiers are also known to appreciate similar conditions fulfilling a little of their physiological needs.

Lt Col R G Selby Boothroyd TD
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While the pinnacle of Maslow's hierarchy, self-actualization, may just possibly be recognised by the kind of TA officer who attends management development seminars, it is through the recognition and achievement of the middle order of the model – belonging, identification, social activity and friendship – that a great deal of the motivation of the TA goes on. When that is functioning well, individuals can reach the self-esteem level – status, success, recognition and confidence.

So, a look at motivation theory suggests that there are several levels of activity that need to be managed effectively if TA people are to be motivated.

Two other, important pairs of distinctions need also to be drawn:

- Some individuals in the TA may have received significant periods of their preparation while serving in the Regular Army – they may be regarded, on selection for mobilisation, as though they are Reservists. Because of their different sets of experiences, Reservists and Territorials may perform quite differently, and their motivations tend also to differ markedly.
- Few occupations in the TA are practised by professionals in their field; those that are (medical, catering, maintenance, postal and public information) are as much reality in the life of the TA as they are in civilian life. Were not some of those the very occupations for which TA personnel were called up for service in the Desert two years ago? Little else which is done in TA training has its exact equivalent in civilian life. There is another marked difference between the respective motivations of, on the one hand, those who choose to practise their civilian occupations in the different environment of the TA and, on the other hand, those who choose to do something in the TA which is, for them, quite different from the rest of their reality.

Recruiting

There has been a tendency to expect too much from some recruiting campaigns in influencing people to join the TA. The variety of messages which a potential recruit will need to assimilate before offering to join up are far too many to put across in advertisements. Advertising may help the already committed Territorial to influence his civilian associates to consider joining him in his hobby and, just as important, help him convince his family and employer to allow him to keep on doing it. If recruiting campaigns for the TA seem to have "hit wide of the mark" it is because there is no specific mark to hit. It is the variety of ways in which the TA may meet a variety of individual needs which is the reality the TA has on offer, and that offer is best made by a Territorial whose needs are being fulfilled.

Pay

In any discussion about pay in the TA, as many different opinions can be heard as there are TA people in the room at the time! Those approaching retirement age will, of course, assert that there should always have been a pension scheme, just like the US National Guard. Others will say that the TA, unlike their Regular counterparts, get bounty payments which could always be invested to make up for the lack of pension. Some will point out that TA pay rates are less than Regular pay rates by virtue of the X factor, but because virtually all TA activities are conducted in unsocial hours, they deserve to have that bit back. The occasional barrack room lawyer will have spotted that Regular pay rates are themselves already reduced to take account of employee pension contributions, but the TA member still receives no pension benefits. Occasionally, an officer faced with pruning out an older generation within his unit will be grateful that there is no pension scheme to add to the pressures on the old and bold to stay on.

Once in a while, a lone voice will suggest that real volunteers should not seek to be paid. His TA colleagues tend then to give him a swift, practical lesson in Maslow's model, dropping from the rarefied level of brief self-actualization at which the utterance was delivered, right down to the more basic level of looking after his personal safety! The reality for most Territorials is that they get used to being paid and begin to rely on it. Many volunteers, from sappers to colonels, would privately admit that there have been occasions when the prospect of next month's pay slip has been the deciding factor in getting them to the drill hall on a cold and wet Friday night.

In all this, though, the one thing they all tend to agree on is that TA people feel just a bit special each year when they have earned and receive their bounty payment – tax free!

Retention

While getting the money right may contribute to keeping some people in the TA, the real challenge for the management of a TA unit is getting the soldiers to keep on coming back. It is a different problem from that of recruiting – getting them to join – or that of internal recruiting in the Regular Army – getting them to stay – because at the end of each training period, the TA soldier walks away, possibly never to return. He goes back to the reality of his civilian life. For him to become a viable member of his unit and for his unit to become operational, he and sufficient of his colleagues must be motivated to keep on coming back for more and more experiences which will build up their capabilities for eventual mobilization for war. Each of those separate experiences will take him from the real world he lives in, to act out the part for which he is being trained. Each time he attends, it will be because he has chosen, and perhaps had to work hard, to escape the reality of all the other aspects of his life and replace that, for the time being, with what the TA has to offer him.

Play

The Regular Army became sensitive about using the word **play** to describe exercise events some years ago, while some TA people have continued to use it to describe the way they see the reality of what they enjoy doing in their spare time. All children play, which is why some people imagine the word is inappropriate to describe something as serious as an army exercise. But sane men and women also play a variety of games, some serious and some frivolous, in the reality of their adult lives. Children learn through play, and so do adults, too. Playing as well as working together in teams reinforces the team spirit which is both a part of building the unit which can operate effectively and fulfilling some of the motivational needs of its members.

Those who have felt sensitive about being described as **playing soldiers** in the TA may be lacking confidence in their own abilities – they feel they are **playing at** being soldiers. Those whose training has instilled sufficient confidence in their abilities will be able to enjoy playing **by being** soldiers, fulfilling their adult need for play as well as continuing to develop their skills.

The TA sapper has a distinct advantage over other TA soldiers in the extent of the variety of activities available for him to keep on coming back for. He has, for example, among the equipment which goes with learning and practising battle skills, large sticks and strings to build things out of, huge kits to assemble in the form of equipment bridging, boats to drive, explosives to destroy things with and, for a few of us, enormously powerful torches to take out in the dark. All that may sound a little frivolous, but these are some of the games TA sappers can play while learning how to take their place in the order of battle.

Reality

In the reality of life of the TA sapper, some days he gets to do something different and to learn something new, to be away from home and to be with friends, to get paid and to gain some qualification his peers recognise, to get fed (by a cook who enjoys his work) and to have his developing skills challenged. So reality for the TA, individuals and units, right up until the moment they may be thrown into battle, is a series of episodes away from their civilian world, experiences from which they learn and develop.

There is no one, magic formula for recruiting, training and retaining the TA sapper. Reality is that they are all individuals with freedom of choice and who need to be encouraged to keep on coming back for more. Motivational needs differ between those individuals and alter over time. To keep them coming back, they must be attracted by **variety.** As sappers, they can be given a lot of that.

50 Years On – The Gorgopotamos Operation

BRIGADIER E C W MYERS CBE DSO BA MICE

On passing out of The Shop in 1926, the author persuaded the cadet one above him that he would be far better off as top signaller of his term than bottom Sapper. "Neither", he says, "ever had any regrets". In 1940 he went to the Middle East Staff College, having got a nomination to Camberley, again according to him, "as a result of his name appearing in the frame at Point-to-Points and Military Steeplechases in the early thirties". His Corps appointments in war included Commander Royal Engineers of 1st Airborne Division; in peacetime Commanding Officer of an Assault Engineer Regiment and a Chief Engineer. He held a number of staff appointments outside the Corps. On his (forcible) retirement in 1959 he became a civil engineer and built bridges instead of destroying them. He is now retired and lives in the Cotswolds.

In 1941 Churchill had directed that the Special Operations Executive (SOE) was to set enemy occupied Europe ablaze by sabotage and subversion.

This is an account of SOE's first major success in the field. Undertaken in enemy occupied Greece in November 1942, it involved the destruction of the Gorgopotamos bridge, one of three major railway viaducts in Roumeli, by a small party of British demolition experts under my command, in conjunction with a force of Greek *andartes* – resistance fighters – who overpowered the enemy bridge garrison. It was hoped that this would happily result in cutting one of Rommel's main supply routes from Europe to North Africa for weeks, perhaps months.

Because of the political differences between the two main Greek Resistance organisations, the one Communist and the other Republican, this operation was sadly the only one of any importance in Greece when we succeeded in persuading both resistance organizations to sink their political differences and join forces with us. As a result, the now annual ceremonies on the site of the reconstructed viaduct, commemorating all the wartime activities of the Greek Resistance, are of considerable political significance to the current Greek Government.

This year, on the occasion of the 50th anniversary of our assistance in this operation, the British Embassy in Athens, in conjunction with the Greek Government and the Special Forces Club in London, is organizing the unveiling of two suitably worded plaques in Greek and English outside the cave on the slopes of Mount Giona, where we took refuge for over a month whilst gathering sufficient *andarte* support. This event is planned to take place the day before the annual ceremony at the bridge.

My story beings in September 1942, when plans to drive Rommel out of Egypt had reached an advanced stage. On 4 September SOE HQ in Cairo had been asked by GHQ Middle East if they could cut Rommel's supply route to North Africa from Europe via Greece. By 21 September arrangements had been made to send a small party of demolition experts to two different bands of *andartes* understood to be operating in the mountains of central Greece.

My party consisted of nine officers and three wireless NCOs. Four of the officers were sappers, two of whom were Royal New Zealand Engineers. A total of four of us spoke Greek. I didn't speak a word. The plan was for my second-in-command, Monty Woodhouse, who had already spent several months in enemy occupied Crete and who spoke Greek fluently, to take two officers and a wireless

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Map of area covered by article.

NCO in one of the only three Liberator aircraft then available for SOE operations in the Middle East and drop onto a Colonel Zervas, believed to be operating in the area of Valtos. The rest of my party in the other two Liberators would hopefully drop the same night onto a Professor Seferiades, commanding another independent band of *andartes* in the vicinity of Mount Giona. In each aircraft we would carry enough explosives and accessories to blow up any one of the three major viaducts, of which I was given some old photographs. We would all join forces for the operation. Afterwards Monty Woodhouse, with one of my officers, Themi Marinos, a young Greek officer with a temporary British commission, and two of our wireless NCOs, would stay with Zervas in case further sabotage was later required. The rest of us would be evacuated by submarine from the West coast of Greece.

On the evening of 28 September we took off for Greece from the vicinity of the Suez Canal. Unfortunately there was no intercommunication between our aircraft, nor between each of us and base. My aircraft flew the length and breadth of the mountains of central Greece without any sign of a pre-arranged signal of bonfires. The other two aircraft had similar experiences. So, in accordance with my instructions, we all returned to Egypt. The aircraft could not be maintained in time for a further attempt until two nights later.

On the evening of 30 September we took off again, this time determined to drop blind if necessary, as any further delay would result in waiting three weeks for the next period of moon. From my aircraft we saw no signals. So we dropped blind, into a wild, fir clad mountainside.

The first three weeks of our time in the mountains, avoiding half-hearted sweeps by the Italians trying to find us, can be summarised as frustrating. We soon learnt that Seferiades, the *andarte* band leader on whom we should have dropped, had been captured and his band dispersed a few days before our arrival. It was a month before we got our wireless link with SOE Cairo to work even intermittently and to find out that our third aircraft had only dropped its stores, none of its personnel, until a month later. After some ten days we had succeeded in joining forces with Monty Woodhouse and his party, who had also dropped blind, a hundred miles away from the Valtos mountains, where we believed Colonel Zervas was operating, but only two days walking from us. His wireless set could not be got to work either. The only *andarte* support we had by then obtained numbered a mere four self-styled fighters, who found that being members of the Resistance was helpful to their normal cattle thieving livelihood. The only local *andarte* leader with

any sizeable band, know as "Aris", apparently wished to avoid all contact with us. In those early days we knew nothing about any political rivalries within the Resistance. There had been no mention whatsoever of such problems during our Cairo briefing.

By the end of October I had eventually heard by runner from our Agent in Athens that Zervas was in fact in the Valtos mountains, nearly a week's journey on foot from the cave in which the eight of us were then living on the slopes of mount Giona, near a village called Stromni.

I immediately sent off Monty Woodhouse to enlist Colonel Zervas's support with at least 50 *andartes* to be back at the latest by 18 November, to enable us to attack one of the railway viaducts in the next full moon period. Meanwhile I set off with Denys Hamson, one of my toughest Greek speaking officers, with a local Greek guide, to select the most suitable viaduct to attack. The Gorgopotamos appeared to be the clear winner, both on the grounds of the vulnerability of the enemy defences and of its suitability for demolition, three of its piers being of steel rather than masonry. On my return to our cave we all set to, preparing our plastic explosive charges to fit onto boards obtained from a local woodcutter, to enable them to be carried on mules to the vicinity of the railway, some ten miles away.

On his way over the mountains to find Zervas, Monty had learnt that the elusive Aris was in a neighbouring village and that he had with him some British soldiers, presumably those from our third aircraft. Monty had written a note to John Cook, the senior officer in the aircraft, telling him where we were and instructing him to join me forthwith; also a note to Aris, asking him to meet Zervas and him on his return journey in a few days time.

At last luck began to turn in our favour. Aris apparently decided that, contrary to instructions from his Communist superiors in Athens, he should accept my presence in the Greek mountains, rather than risk being left out in the cold and leaving the field to his Republican rival, Zervas. Without further ado he had despatched John Cook and his party, whom he had been caring for since their belated arrival, to my Stromni cave, escorted by a band of a dozen of his *andartes*.

Monty was in luck too. A few days later he found Zervas, who had immediately agreed to come to my assistance with no less than 150 of his *andartes*. On their journey eastwards to me they had met Aris, who told them he would also come to my assistance with a further 100 *andartes* unless he received specific instructions forbidding him before our actual attack on the railway. Zervas had then sensibly split off a 100 of his *andartes* to act as a diversionary force to the enemy. With his remaining 50 fighters he marched on with Monty towards me, one day ahead of Aris and his 100. Shortly before midnight on 18 November Monty, with Zervas's Cretan Adjutant, Michalli Myriadikis, who turned out to be a brilliant soldier, arrived at our cave, his task magnificently achieved to time.

The next day Zervas himself reached our cave. Favourably impressed by his personality and enthusiasm for our joint attack on the railway, I soon got down to explaining to him the details of the plan I had evolved to destroy the Gorgopotamos, based on my reconnaissances of all three viaducts, supported by a considerable quantity of locally gleaned information.

The approximately 200 yard long viaduct carried the single line standard gauge railway southwards to Athens and Pyraeus on a curve and a slight downhill slope on five masonry piers and, on the southern end, two four-legged piers of steel and a further dwarf steel pier, the three of them ideal for rapid demolition. In winter it bridged a 15 feet wide unfordable torrent, which was unbridged for over a hundred yards both upstream and downstream.

A guard totalling some 80 Italian soldiers was established behind barbed wire and concrete defences at both ends of the viaduct. Their living quarters were in huts at the South end. There was a reserve Italian battalion in barracks 20 miles away, which I reckoned would take nearly two hours to reach us on the viaduct whether by road or by rail after being alerted.

I explained to Zervas that my plan was for two small parties at the outset of the operation to isolate the viaduct by cutting the telephone lines a thousand yards North and South of the bridge. They were also to prepare the line for demolition in both places. Should there be no attempt by enemy reinforcements to reach the bridge by rail, they were to cut the line on signal by Very light fired by our HQ for the general withdrawal.

There would be two entirely separate main attacking parties at each end of the bridge to overpower the enemy guards at zero hour. There would be a reserve of *andartes* under our HQ command, prepared to reinforce either main attacking party if necessary. There would be an entirely separate demolition party under my control to go in with its explosives as far as possible on mules as soon as the attack began. I anticipated that we would need a second demolition to make a good job of our work by cutting the fallen span.

Gorgopotamos Viaduct before demolition.

Subject to the agreement of his and Aris's group commanders as a result of a reconnaissance, Zervas readily agreed with my plan. He foresaw no difficulty in getting Aris to agree with it as his own. He and Aris would be in joint command. When I offered to be his staff officer for the operation, he said I would also be in joint command. Rather at a loss as to how a triumvirate could be in command, he said "Don't worry. In reality I will be in command. But I will consult Aris on all major planning decisions." So I left it at that.

To allow time for the reconnaissances by the different *andarte* leaders, the attack was fixed for the night of 25 November. Our final plan remained largely unaltered, except for the increase in size of the main attacking parties due to the unexpectedly large numbers of *andartes* now available. Zero hour was fixed for 2300hrs, which would give us sufficient time after dusk to move from our forward rendezvous in single file and for each party to peal off to its separate attacking position.

Late on 22 November the reconnaissance parties returned safely. They were satisfied with all they had seen. So, early on 23 November, Zervas, Aris, Woodhouse and I set out with a small bodyguard to carry out a final reconnaissance for the benefit of Zervas and Aris. The main body would follow the next day.

We spent that night surrounded by a foot or more of snow in a tiny primitive shepherd's hut high up in the extensive fir forest around mount Oiti, over a mile from the Gorgopotamos and some 3000 feet above it. At dawn a thick mist ruled out any possibility of obtaining a good view of the final approaches from lower down the mountain. But the following morning, 25 November, low moving clouds were ideal for our purposes. From within a few hundred yards of the viaduct we were able to obtain some excellent glimpses of it. I was able to explain to the others details of the final approaches I had studied during my daylong hide in a nearby copse on my own reconnaissance. We clambered back up Mount Oiti to meet the main body at a pre-arranged rendezvous on the edge of the forest, some two thirds the way up the mountain.

It was damp and a little eerie as, late in the afternoon, the main body silently appeared out of the mist. They were given a cold meal. No fire or noise was permitted. Monty Woodhouse was invaluable in checking that every party was in order and understood its job. At about six o'clock we began our tediously slow final approach, led by a guide who knew the area intimately. Immediately behind him, in single file was the party whose job was to cut the communications and railway line a thousand yards beyond the bridge. Last to move off was the demolition party under command of a brilliant New Zealand Sapper, Tom Barnes, with his explosives on eight mules, which would not be allowed nearer than half a mile from the viaduct until after zero hour.

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A few minutes before 11pm our small HQ party peered over the crest of a gently sloping ridge, behind which our reserve was sheltering. In the hazy moonlight the viaduct looked huge and gaunt. A double-headed train noisily approached from the South and trundled on its way, hopefully the last for many weeks. Then complete silence, minute after minute of it. All sorts of questions raced through my mind. Had both main attacking parties lost their way? Suddenly pandemonium was let loose in front of us. I heard too many enemy light automatics for my liking. After a few minutes of intense enemy firing, our *andartes* attacking the North end of the viaduct were beaten back. Judging by the cheering of Zervas's Adjutant, Michalli, in command of the southern attacking party, all was going well there. So we decided to reinforce the northern party with the whole of our reserve, some 35 *andartes*, under Zervas's stalwart second-in-command, Comninos Pyromaglou, whom we instructed to take complete charge of all further attacks on the North end.

Zervas now began to get steadily more worried. We would soon run out of ammunition if the present rate of our firing at the North end continued for much longer. He called for the Very pistol and said he would fire the general withdrawal signal, a green light, if the bridge was not captured in the next ten minutes. For he feared we had been betrayed and the enemy garrison had been reinforced. Fortunately the pistol had been inadvertently taken forward in Pyromaglou's pocket. I ordered Woodhouse to retrieve it and keep it in his sole charge until I gave permission for it to be fired.

Shortly afterwards the situation improved. A white Very light went up from the South end of the viaduct. This indicated that it was in our hands and sufficiently safe for me to order the demolition party forward and to begin work. Meanwhile the battle went on at the North end. I explained to Zervas that with my sappers' preparations now partially complete, there could be no question of firing the general withdrawal signal. With a personal body guard given to me by Zervas, I then went forward to join Pyromaglou. Half an hour later Tom Barnes indicated by whistle that he was ready for the first blow. Our firing around the North end ceased as we put our heads down. So did the enemy's. Two minutes later there was a tremendous explosion and I saw the end of at least one 70 foot steel span leap into the air and Oh, what joy! – drop into the gorge below. Seconds later a white Very light went up from the North end of the viaduct. All opposition had been overcome. But at that moment a large explosion, followed by rifle fire, was heard coming from the North. Obviously enemy reinforcements were trying to arrive by rail. Hopefully Themi Marinos and his small party was holding them up, after derailing their train.

Having failed to cross the torrent to join Tom Barnes's demolition party, I retraced my steps and, clambering onto the North end of the viaduct, walked along it until I reached its now jagged end. Forty feet below me the torrent raged. But at last I got Denys Hamson to hear me. He told me that Tom Barnes needed another 40 minutes to fell the remaining pier, which, although damaged, was still upright. Shortly afterwards Monty Woodhouse shouted to me that he was having the greatest difficulty in refusing Zervas's requests to fire the general withdrawal signal. I told him that Tom Barnes must be given at least another 20 minutes and passed the situation on to Tom. Fifteen minutes later Tom was ready. I went back to the end of the bridge and took cover. There was another huge explosion. I couldn't see exactly what happened. But I distinctly saw a fallen span jump and subside again. Seconds later Monty fired the green Very signal.

Everyone had been instructed, on the firing of the general withdrawal signal, to make their shortest way back to our forward concentration point on Mount Oiti, which my bodyguard and I reached about seven o'clock in the morning. Hunting out Zervas whom I found with Aris and Monty, I congratulated them warmly on their magnificent achievement. A few moments later, as they were keen to get deeper into the forest, we moved off, making for some woodcutters huts, some six hours away to the West. We were enveloped in thick mist and it soon began to snow again. The heavens were on our side. No enemy aeroplanes would have any chance of picking us up in such weather. About 3 o'clock in the afternoon we reached the huts where a hot meal, protection from the elements and a long overdue sleep were our rewards.

Within a day news of the destruction of the Gorgopotamos would almost certainly be widely spread in Greece. But as our wireless was still not working properly, the next day I sent off a

Photograph taken a day or two after the demolition.

runner to our agent in Athens, asking him to tell SOE Cairo about our success and giving them all the necessary details for the submarine coming to pick us up from the West coast.

Sadly, Aris decided not to join forces with Zervas, but to stay in his own self-allotted area in Roumeli. Zervas was keen to get back to his home region of Valtos, nearly a week's journey to the West. As those of us due for evacuation would be travelling the same route as far as Valtos, I decided we would accompany him that far. Before separating from Aris I told him we would arrange for him a supply drop of boots and winter clothing as soon as possible.

Our journey as far as Zervas's HQ in Valtos was uneventful. The enemy made no serious attempt to interfere with us. Zervas was fêted in every sizeable village in which we spent the night. But from Valtos onwards, in spite of the fact that Zervas had given us an escort of a dozen *andartes* under command of his faithful adjutant, Michalli, nightly living conditions became steadily more difficult. With as yet no Resistance organization, the villagers were afraid to harbour us, for fear of betrayal by neighbours to the Italian police. We never entered a village for overnight shelter and food until after dark and always left before dawn. We eventually reached our pre-arranged rendezvous, a small rocky cove on an isolated stretch of coast about ten miles South of Parga and opposite the island of Paxos. In spite of Michalli's efforts on our behalf, we were suffering from many days of under-nourishment. By day we hid in the open, protected from the worst of the wind and rain by some shrubbery. But it was difficult to sleep. At dusk we went down to the cove and took it in turn to signal out to sea. After our third night of abortive signalling, we dejectedly returned to our hide-out at dawn. It was Christmas Day. Shortly before leaving for the cove for our last night of signalling, a runner reached us from Zervas's HQ. He handed me a message in Monty Woodhouse's handwriting. "There will be no submarine. Fresh instructions await you at Zervas's HQ." This information may have heralded the development of a British Mission to the Greek Resistance but for all of us awaiting evacuation, it was bitter news and marked the end of the most miserable Christmas Day in our lives.

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The Royal Paravolian Battalion – Crete 1941

MAJOR (SURVEYOR OF WORKS) S PATTERSON MSM

THE author was at one time Chief Clerk of the Institution of Royal Engineers and spent over 50 years in the service of the Corps. He died in 1969 and a full Memoir was published in the September 1969 edition of the Royal Engineers Journal.

Major Patterson, the son of a Royal Engineer, joined the Corps as a boy in 1917 at Chatham. He served with the Bengal Sappers and Miners, and had tours at home and in Malta before the outbreak of World War Two. He was one of the few to survive the sinking of the RMS Lancastria *in June 1940 and not long after was off to the Middle East. In 1941 he was commissioned Lieutenant (Surveyor of Works) in Cairo then sent with RE Intelligence to Greece and was among the last to leave the island of Crete on HMS* Phoebe *to Alexandria. After a spell in Palestine he returned home, before going to Düsseldorf, where he was awarded the Meritorious Service Medal in 1951.*

Retiring in 1955, he became an instructor in the Construction School at Chatham and then Chief Clerk of the Institution until his retirement in 1968.

THE following narrative is a simple summary of some of the events as seen and experienced by a Surveyor of Works during the invasion of Crete. It could not be other than simple for one would require a more adequate pen than mine to place on record the courage of semi-trained troops who, lacking proper arms and equipment and with a shortage of food bordering on starvation, held up for 11 days the cream of the German Army in its one desire to capture and occupy the island of Crete whatever the cost.

The attack was not unexpected. Its commencement broke the tension created during the previous fortnight by constant monotonous vigil for parachutists and a lack of authentic news of happenings at home and on other fronts.

The evacuation of Greece had taken place four weeks previously and on arrival, the Deputy Chief Engineer of Force *Lustre* had assumed the role of Chief Engineer Crete. He found that the occasion hardly called for the services of an Inspector of RE Materials (IREM) or Senior Surveyor of Works and these two officers were left to their own devices pending a passage to Egypt. This was not to be, however, for nearly every ship which sailed for Crete apparently "collected" on the journey or was "dealt with" by the Germans in Suda Bay and other ports.

Nights were bitterly cold, the one blanket issued hardly sufficing to keep off the heavy dews falling at that time of year and which sparkled on the young vines as one awakened stiff and frozen in the dawn of the spring mornings. The mountains had not yet shed their mantle of snow.

Rations had been cut to a minimum – later to nothing at all – NAAFI stocks had been sold out and tobacco and cigarettes were at a premium and soon to disappear altogether. During the whole of this period the German Air Force had been busy on reconnaissance flights over the island and, by way of a change, had carried out bombing raids chiefly on the ports of Canea, Suda Bay and the capital, Heraklion. An alternative to bombing was low level machine gunning and cannon raids over olive groves and such natural cover that would suggest con-cealment for troops.

A decision had been made to collect the remnants of all headquarter units irrespective of their normal functions, and incorporate them into one formation of approximately battalion strength which, for purposes of indentification, was to be known as the "Paravolian Battalion" (so called after the Cretan village of Paravolia). The Battalion was commanded by Captain Peter Page of the 3rd Royal Tank Regiment, with Captain Clarke, of the Bedfordshire and Hertfordshire Regiment, as second in command. As the birth of the battalion had taken place on the eve of the battle no disposition had been detailed, and it was not until the morning of the attack that the various commands were allotted and the role of the battalion made clear.

From first light on that May morning of 1941 the air had been filled with the sound of aircraft, bursting ack-ack shells and the deeper ominous sound of heavy bombs. Now, an hour later, a hush had descended on the surrounding countryside as if all noise had been shut off by someone pressing a switch. The reason for this

was not long delayed. The skies had not been entirely bereft of aircraft and the awe-inspiring sight of hundreds of parachutists dropping like thistledown in the middle distance had momentarily lulled us to inactivity.

The sounding of the general alarm was a signal for activity and in what seemed the space of a few minutes, I found myself in possession of a rifle, with a bandoleer of ammunition round my shoulders and manning a ridge with one sergeant and 40 men under my command – "D" Company of the Paravolian Battalion had been formed.

The ridge overlooked a valley where we could see the dropping zone at Malame Aerodrome which units of the depleted New Zealand Division were defending. "D" Company's position was on the extreme right of the Battalion; its role was to defend the road and bridges into Canea on the New Zealanders' Lines of Communication (LofC). We were being heavily blitzed from the air and had no tools with which to dig in. It was necessary to withdraw from the ridge and seek cover under the centuries-old olive trees; the thick trunks could be used as cover by circling round in such a manner as left the tree between the aircraft and oneself, a good means of self-defence against machine gunning from the air.

On the second day of the attack we were issued with two picks and three shovels per company to dig slit trenches. Our positions were changed each night by extending in echelon to the right. Being on the right sector of the Battalion, our unit had the misfortune to forego any chance of sleep because of the necessity for new trenches, while other units found positions prepared for them.

We had already accounted for 40 of the parachutists who were apparently sent to sabotage the New Zealanders' LofC, and who were in possession of explosives necessary for carrying out this task. The action took about six hours and was made more difficult due to the Germans seizing a small farmhouse and using it as a blockhouse. There were casualties on both sides and the fact that the parachutists were in possession of heavy and light automatic weapons, against our rifles, gave them a momentary advantage. The prisoners, numbering 14, were listed and sent to the rear and it is believed were embarked on a destroyer for Headquarters Middle East Force, as a sample of German Parachute Troops. A congratulatory signal was received from General Freyberg's Headquarters as a result of this episode, to the effect that from now on we would be known as the "Royal" Paravolians. This was our one and only real action.

As each day came and went our rations became scarcer and we suffered from continuous air attacks of growing ferocity.

I had been called on to make several reconnaissances and on these occasions had left command of the unit in the capable hands of Lieutenant P J Uden our IREM. Uden and I had served in Malta together, had seen service with the British Expeditionary Force, and were together again in the Western Desert and in Greece.

I was sent on one occasion to a Royal Marine Unit with a view to making all necessary arrangements for the Battalion's withdrawal through their lines at night. After enjoying a Woodbine – the first for weeks – I was being taken over the route we were expected to use when my guide and I were the subject of an attack. We dived under a low stone dyke with Jerry spraying the other side. After a few moments we got up but only to see him turn and come along the side upon which we were standing. We were over the other side and down just as the first burst arrived. This continued for at least three runs and reminded me of the old gym game "On the bank, in the pond. On the bank, etc.".

After my guide and I had parted I was wending my way to our lines deep in thought over the arrangements which had been the result of my journey when I ventured to look up and saw a squadron of planes ahead of me but crossing my front. I made no move until I saw the rear plane peel off and head in my direction. I was on a main road with peasant cottages on one side and, as the plane came, I ran to a cottage and sheltered behind a huge millstone the likes of which are usually found in front of Cretan dwellings as a survival of the days when feuds were normal occurrences – I only just made it. Such was the air superiority of the enemy that he could afford to expend ammunition without any great return for there was no other target in the vicinity.

Another task which fell to me (because I was a Sapper) was to erect a mile of barbed wire fencing on the left sector of the Battalion.

The troops allotted for the work comprised gunners, drivers of the Royal Army Service Corps and New Zealand Service Corps, and a few privates of the Royal Army Ordnance Corps and New Zealand Army Ordnance Corps. I had

to do some quick thinking as to how to set about the job, and by the time the stores arrived (heralded by the sound of the lorry being chased by a plane with all guns firing) I had a fair idea of what was required and how I intended to complete it.

The wire was brand new and had a finish like chromium plating! As the work was being carried out in broad daylight it was necessary to apply a mixture of earth and water with brushes made of grasses and twigs as the wire was being paid out.

I had posted sentries to give warnings of the approach of anything likely to interfere with the task and we had got about a quarter of a mile of double fence erected when we were signalled to take cover. This we did in nearby olive groves and saw the fence literally decimated as if a number of bangalore torpedoes had been used to demolish it. Fortunately we received no casualties although a New Zealander, who was spreadeagled round the bole of a tree, had an incendiary bullet cross his posterior burning a track on the seat of his pants as it passed, which split them wide open without even touching his skin!

The attack lasted about half an hour after which I was ordered to pack up all stores as the scheme was to be abandoned.

It appeared that up to the morning of the third day the defence was more than holding its own on the island, but it then gradually deteriorated. Germans were landing with clockwork regularity and were able to supply and maintain their troops to a better degree than we were. It was therefore inevitable that one evening Company Commanders were called together by Captain Page, who informed us that we were to rendezvous at midnight, receive three days'rations and 50 rounds of ammunition and were to make for a small port near Suda Bay for evacuation.

I had just been issued with an antitank rifle and had posted an NCO and two men on a bridge at the outskirts of Canea. They had to be recalled and Uden said he would collect them. We arranged to split the unit into two, he taking the Infantrymen and I the Corps troops; we would then meet at the King's House. Alas, he failed to turn up and after receiving a broken packet of biscuits, a tin of "Bully" between two men and no ammunition, my party set off with the rest of the Battalion.

The night was pitch black and apart from occasional halts made necessary by Jerry dropping reconnaissance flares, we made good time across the broken countryside. At last we came to the main road skirting Suda Bay and it was on this road that Uden and I joined forces again. He suffered from bad feet and suggested a ten minute break to which I agreed although the desire to sleep seems to have taken a hold on us and it was more like a 20 minute halt. Once again we set to and made the most of the remaining darkness to forge ahead, and at dawn I noticed that Uden and his party were nowhere to be seen. The road was completely deserted.

We were warned to hide up in daylight, travelling only by night in order to prevent the enemy from surmising the port of embarkation. Our first day's hide was an olive grove. Unknown to me the grove was adjacent to an ack-ack site proving to be a thorn in the side of the Luftwaffe. Whether our movement had been seen or not I cannot say but we were blitzed by every form of air attack possible during our stay in this area. I was however able to obtain a fresh supply of socks, underwear and even boots, for the men and myself from the quartermaster's stores and these put new heart in us. Of food there wasn't even a biscuit.

We set out at dusk having taken the pre-caution to send out two sappers of the field survey to reconnoitre a goat track which I considered might save a few miles round a headland. My surmise was correct and after crawling for a hundred yards beneath a wall on the other side of which blazed boxes of ammunition, we eventually reached the track. Unfortunately my new boots cost me my rifle as I slipped on a boulder and, on landing 20 feet lower, found that the bolt of my rifle had received a knock rendering it useless. We later came across a deserted army truck where packets of biscuits were found and enjoyed – our first food for 24 hours. An hour's march brought us to a New Zealand Dressing station, where we received instructions on how to reach the port. The advice was to shed all equipment not required as there were 52 miles to cover in three nights to stand any chance of getting on board a ship. I ordered the destruction of all gas masks and surplus kit which helped lighten our load for the task ahead.

We hid up successfully each day, the warmth of the sun helping us to sleep. Food was still our main worry and although water was the only thing which passed our lips we managed to get over the mountain pass and to the point of rendezvous for the port of Spakhia within the time limit. Hundreds of troops had already

arrived. My troops had seen their parent units and expressed a desire to join them again thinking that the allocation for embarkation would prove more favourable that way, the Embarkation Staff Officer agreed.

I had been suffering from dysentery for the past 24 hours and was beginning to feel the effects. After spending two days in company with others (still without food and water) my condition gradually worsened. I was given a passage allocation on HMS *Phoebe*, by a Major Gibson of the Welch Regiment and thus I found myself on the last convoy to leave Crete on the morning of 1 June 1941. I was admitted to the 8th General Hospital, Alexandria, having completed my third evacuation within 12 months. Fortunately Uden too had been evacuated a couple of days earlier and could also claim to have taken part in three evacuations.

I would like to take this opportunity of recording how Uden's humour and willingness to undertake any kind of job at any time proved such an asset to myself and others in the unit. Neither could I close without paying a tribute to our OC, Captain P Page, who deserved the Military Cross bestowed upon him for his services during the operation and who was evacuated only to lose his life in action at Sidi Rezegh in the Western Desert the following November. Mention too must be made of the two Army Chaplains Kirk and Smith, who proved themselves stalwarts in upholding the morale of officers and men alike throughout the whole of the period in Crete. The way they worked under the most difficult conditions to alleviate suffering and distress was a most creditable example of unselfishness and gentlemanly conduct.

August 1992 *Journal* Awards

The Publications Committee announces the following awards for articles of special merit published in the August 1992 *Journal:*

No 1 and No 2 Military Ports
by Major S P Murphy ... **£75**

The End of Mussolini's East African Empire
by Brigadier M W Biggs CBE ... **£50**

The Threat – To Be or Not to Be
by Lieut General Sir David Willison KCB OBE MC ... **£50**

Jordan Revisited
by Brigadier J Constant ... **£25**

Young Officers's Course – Commandant's Essay
by Second Lieutenant R G Beaumont ... **£25**

NEW AWARD – 1993

The Publications Committee intends to make an additional award specifically for an article written by a junior officer not above the rank of Lieutenant at the time the article is received by the Institution. The award will be worth £25 and will be made for each issue of the *Journal* where the Committee deems the article worthy of it. It is hoped that this will encourage young officers to write for the *Journal*.

Cambodian Mine Clearing

BRIGADIER J H HOOPER OBE

Following commissioning into the Corps in August 1951and training at the Royal School of Military Engineering, he saw active service in Egypt and Cyprus with the Parachute Brigade. He attended the Canadian Army Staff College, and was then appointed brigade major of a parachute brigade. His next command was of an engineer squadron in Germany prior to attending the Joint Services Staff College course. During the command of an engineer regiment he saw active service in Oman and Northern Ireland. Whilst on the Staff of the ANZUK *Force in Singapore he was involved with the withdrawal of the British presence. Promotion to Colonel brought the appointment of Chief Engineer of an armoured division in Germany, and promotion to Brigadier the appointments of Deputy Commander, Wales and later as Senior Adviser and Commander of the British Military Mission to the Saudi Arabian National Guard. On retirement Brigadier Hooper was initially an adviser to the Crown Prince of Saudi Arabia before becoming Chief Executive of AAC.*

At present he is a Joint Honorary Colonel of the Royal Monmouthshire Royal Engineers (Militia).

THE mine problem in Cambodia is fairly well known to most Sappers although the rest of the UK population seems to have only the vaguest idea about the matter. Sadly very little is being done about the problem and some two to three hundred mine casualties are occuring every month.

I was able to go to Cambodia under the auspices of the Halo Trust, which is a charitable trust with humanitarian objectives set up by Lieut Colonel Colin Mitchell of Aden and Argyll and Sutherland Highlanders fame. Lieut Colonel Mitchell, as a war correspondent in South East Asia and Africa, saw the devastating effects caused by the debris of war and determined to do something about them. The Halo Trust was the outcome of his efforts. It is run on a shoe string and funded by various organisations upon which Mitchell has prevailed to part with some money. The main activity of the Trust is the removal of the life threatening debris of war such as mines and unexploded ordnance. It is currently operating in Cambodia and Afghanistan and, up until the time I left Cambodia is doing more to reduce the dangers of mines in both countries than all other agencies both non-governmental, governmental and international put together.

In a small country like Cambodia, (only about twice the size of the island of Ireland), the effects of mine-laying over the last 20 years are enormous. Except in very few cases minefields are not recorded and even then the pattern and nature of the mines are not detailed. Within a matter of days after arriving in the country our teams had recovered seven different kinds of antipersonnel mine and three antitank mine types. Later activities raised these figures considerably. In the four Western provinces alone there were literally hundreds of minefields and our records for those located, using one sheet per minefield, resulted in a report over two and a half inches thick!

The mines started to be laid in Cambodia in the early days of the Vietnamese war. The Ho Chi Minh Trail ran through the North East corner of Cambodia and the various base camps along it were defended with Vietnamese laid mines. The various factions which later developed in Cambodia and which have fought one another with varying degrees of enthusiasm ever since have all laid every conceivable type of minefield. The fighting and minelaying is still going on despite any UN assurances to the contrary.

So used are the peasants of Cambodia to mines that it is quite common to find a peasant has recovered antipersonnel mines from a field or from an abandoned dump and laid them himself to protect his rice crop from marauders of which there are many. Various disaffected members of the community have formed bandit gangs quite unrelated to the various factions. These gangs,

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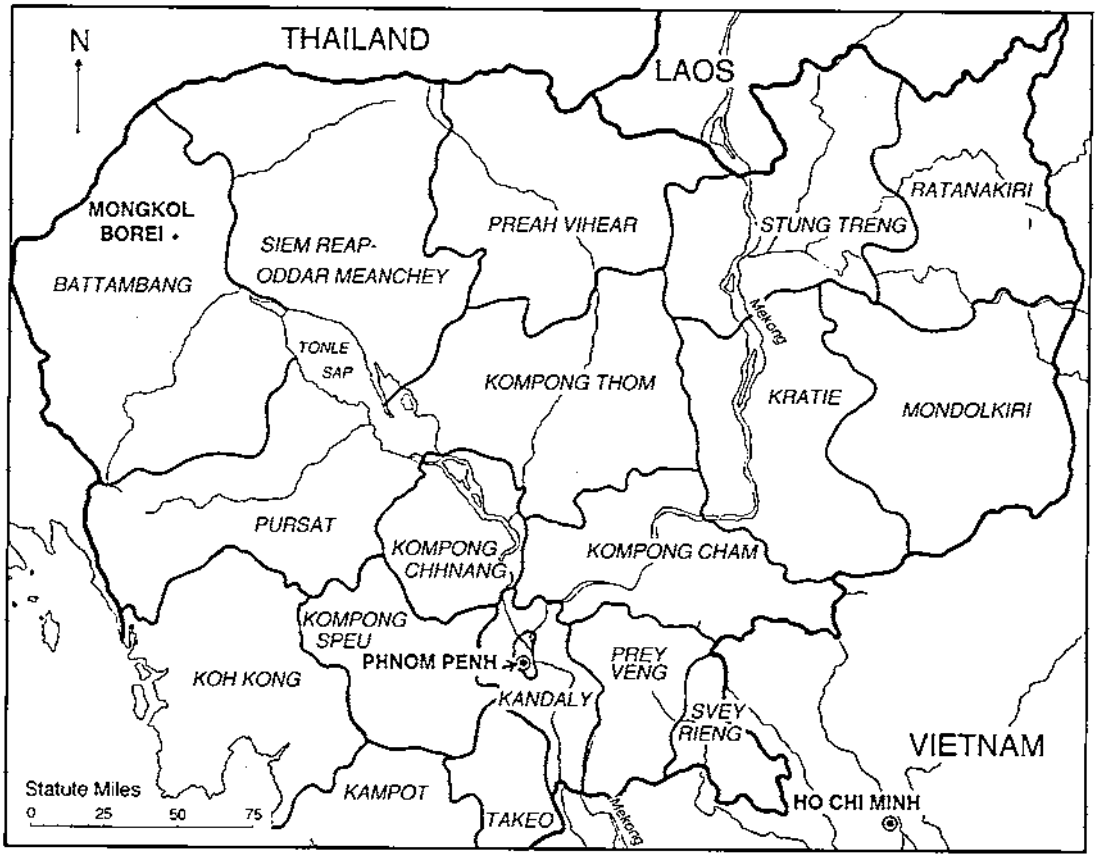

Cambodia, showing provinces.

amongst a variety of other antisocial activities, lay antitank mines on the roads and demand money from travellers before removing them to allow passage – mine warfare private enterprise at its very best. However this familiarity with the mines does not prevent the regular large toll of casualties. Economic necessity forces peasants to enter known minefields to gather firewood, or to recover a cow or buffalo which has strayed into the field. They know how to cope with the mines they see but, of course, it is the unseen mine which causes the casualty.

On almost our first day in the country Halo members were taken to a minefield by soldiers of the State of Cambodia faction. The field was marked only by the nature of the vegetation: long grass, scrub and a general air of having been undisturbed for a long time. On being asked what mines were in the field one of the soldiers trotted off to recover one. While we waited there was a loud bang and one or two of the other soldiers appeared to be slightly concerned. We assumed the worst. Back came the soldier with two of the more common mines, PMN2s. One of our team disarmed one mine to start the collection of differing types while the soldier, much to our amazement, tried to explode the other mine by throwing it in the air. We decided this was an activity we could watch from a much safer distance and withdrew.

I was not present while an investigation of a potential minefield was taking place by one of our expatriate (expat) members. He had enquired about the outer edges of the field which he had been given to understand contained antipersonnel mines. The ex-soldier under interrogation said he could vaguely remember helping to lay the field many years ago and thought it started fairly near their current location. Not satisfied with this approximation he picked up a long bean pole like piece of branch and proceeded to thrash the ground with it in front of him as he walked forward into the minefield. Knowing that POMZs were likely to be on the menu, he was persuaded that enough was enough and that we would settle for what his experience led him to believe was the edge of the field.

Sample of life-threatening debris of war.

The Halo Trust went to Cambodia with limited funds to try to relieve the situation as best it could. Rather coincidentally, it picked up a job from the United Nations High Commission for Refugees (UNHCR) which was to survey and locate minefields in the Western provinces so that safe areas for the resettlement of external refugees and internally displaced persons could be identified. This is what Halo started to do in January 1992.

A base was set up in Phnom Penh from which administration, resupply and general coordination could be effected. A forward base was also set up in Mongkol Borei, in the North West part of the country, from which the survey teams operated. The teams consisted of an expat, an interpreter and a driver, mounted on four-wheel drive vehicles, with some pretty inadequate radio communications. The communications improved when previously ordered, but much overdue, radios arrived from Australia purchased from our woefully inadequate funds. Some of the vehicles were provided on loan by the UNHCR. These were Japanese Land Cruisers while the Halo owned vehicles were Land Rover Defenders. Although the Japanese vehicles provided an easier ride the general concensus was that in a tough spot the Rovers were best. Subsequent events proved the value of the Defenders when we were travelling long distances over appalling country.

A lot of liaison was effected with the various factions and in many cases teams were able to get hold of soldiers or ex-soldiers who had been involved in laying minefields. Apart from one or two members of the International Red Cross Committee, our people were the first to cross lines between the various factions with any degree of regularity. Great care was taken to ensure that information on the minefields was kept confidential to Halo and the UN so that no faction felt that information on its fields was being passed to another faction. However this care backfired later as our reluctance to pass information, without a promise to protect confidentiality, was misconstrued by some people. The matter was resolved locally but it wasted time and did not help relationships in the area.

The extent of the minefields was determined by a combination of questioning local people, especially local soldiers, noting changes of vegetation and in some cases entering the suspected minefield to determine the edges and contents. As most of the expats were young ex-servicemen they could determine likely minefield sites from a knowledge of the tactics historically employed. However, some of the expats had no previous military service and in one case, the field manager, was an ex-submariner whose knowledge from the Royal Navy was of a somewhat different kind of mine. They were all well up in their knowledge of mines from Afghanistan and had real hands-on experience which not too many can boast these days. The International Committee of the Red Cross (ICRC) had some splendid and co-operative people who kept records of mine casualties which gave positive locations. The nature of the injury gave a good indication of the type of mine which had caused the casualty. These records were made freely available.

The recce teams travelled over some appalling country to get to the suspected fields and let very

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little stop them. In many, many cases they were the first people to travel up tracks which had not been traversed for ten years or more. A trip to Mongkol Borei for instance, about 200kms, took from ten to twelve hours due to the state of the road. The best I ever managed was nine and a half hours although some of the younger team members with less regard for ageing bones shaved half an hour or more off that time. All the bridges had been blown at one time or another and repaired with varying degrees of expertise, none of it high. It was quite normal to be held up while a lorry which had broken the bridge was recovered and the bridge patched up, yet again.

Once the minefield limits had been determined the field was recorded on a computer using grid co-ordinates to establish the perimeter. Where possible the nature and number of mines were also recorded and a mass of relevant information on approaches, bridges in the area and the names and whereabouts of local people with especial knowledge were also recorded. Halo graded the various areas into M1, M2, or M3 which indicated free of mines, mined or heavily mined respectively. Usually the mined areas (M2) were essentially a safety area around the heavily mined areas (M3). The information was also put onto maps which were later in great demand by all kinds of agencies in the country. Sadly, despite very early pleas from me, the UN were unable to get hold of Taci Print or similar machinery to reproduce maps and therefore laboured and probably inaccurate traces were produced.

Eventually all the information was collated and a full report was produced for UNHCR. It was now apparent that our initial feelings expressed after only six weeks were more than justified – there was insufficient land available on which to resettle the refugees.

There were some 350,000 refugees in Thailand and about 170,000 internally displaced people to be resettled. Each family was to be given a four hectares patch of land, rice for a year and a half and tools with which to farm the land. The land had to be unoccupied, fertile, accessible, with water and, of course not mined.

At the six week point we had made our misgivings known and suggested that perhaps UNHCR should consider a survey of the other provinces of Cambodia. This suggestion was rejected. Having completed the survey of the Western four provinces some people were sent to Afghanistan to open up operations again after the winter and others went on leave. At this stage

Off route mine in Siem Reap province.

UNHCR required more provinces to be surveyed but Halo could not respond immediately.

I left Cambodia before the problem was resolved but while discussions were going on Halo started mine clearing in earnest. The policy was to lift mines which would give the biggest return in terms of making land available for use, for the least effort. We decided which mines were to be lifted and then arranged necessary clearance with the various factions involved. It would not do for us to lift mines laid by one faction if it appeared to that faction that another faction would benefit from the activity! The matter was usually resolved on the ground but in Phnom Penh I made sure that the political and military heads of the factions knew what was going on. I also had to let the British Ambassador know what was happening as well as the relevant UN officials.

Mine clearers were trained by UN military personnel in the basic techniques of mine clearance. The New Zealand Sapper contingent trained the first teams and Lieut Colonel Mike Warren RE arrived to get a grip on mine training generally. Halo then took over as many mine clearers as it could afford to pay and supervise. There was a short assessment course to ensure that the mine clearers performed to Halo standards and the clearers then signed a contract which covered terms of service (compensation for injuries, pay, hours of work) and some pretty strong stuff about observing drills and safety precautions. It worked well on the ground and there was no shortage of people wanting to work for us.

The mines were detected using a German Ebex 420 locator, sensitive enough to detect the

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Sample of an anti-personnel mine.

firing pin of the Chinese 72 series. Of course, it detected everything else metal in the area too and as some patches had been fought over many times there was no shortage of spent rounds and cases to find. Once detected the mine was uncovered by probing and blown up *in situ*. This was done immediately and was a Halo rule, not taught by UN military. The UN teaching was to save uncovered mines up until several could be blown at one go and although this is clearly quicker than our method we had learned from bitter experience that a man, having crouched for some time can stagger off balance on rising with sad consequences if uncovered mines are left unblown behind him. The one exception to the blow immediately rule was the POMZ. It is relatively safe to disarm and if blown adds another few thousand potential contacts to the detection problem. The blow *in situ* response is clearly safer than attempting to disarm the other mines especially as the Chinese 72A pressure and 72B tilt operated are identical to the eye.

The real problems arose in Phnom Penh where politicians, senior army personnel and faction leaders were located.

Halo personnel worked for very little money in most cases; in my own case for expenses only. Much higher salaries could be obtained from commercial organisations working in the mine clearance business. In addition, UN personnel were on allowances over and above their pay, which in fact was well known to the Cambodian authorities who wanted a share of the UN money. Negotiations on pay for mine clearers therefore started with a State of Cambodia three star general asking for $250 per day for his men; his basis for this amount being that it was what UN officials were getting for the work they were doing. I countered with the fact that I got no pay, my drivers got $60 a month (despite the fact that UN drivers got $120 a month), and that I had no trouble getting the drivers I wanted so could we start again please. After a lot of wrangling we got down to $250 a month. I had expected to pay about $75 a month with a food allowance.

In the meantime a splendid retired Sapper, Mike Croll, who was running the Halo sharp end from Mongkol Borei had unilaterally taken on a troops worth of ex-soldiers at $70 a month and arranged with a local headman to have three meals a day prepared for the mineclearers. Mike had also provided each man with a blanket, hammock and mosquito net and a roof over his head in the shape of the local pagoda (temple). I decided that I would not mention this in further negotiations. At least the Phnom Penh officials agreed to the contract which I had drawn up even if we could not agree over pay.

Negotiations moved from the Ministry of Defence to the Ministry for Foreign Affairs where I discussed the matter with the Deputy Foreign Minister. He seemed settled on $250 a month as well and told me he was having awful trouble with the Ministry of Defence who wanted more. We argued around the problem for days and it was clear that whatever sum was settled on it was not going to the mineclearers initially if at all. It was going via various officials in the Ministries. In the meantime Mike was putting cash into the hands of the mine clearers with highly satisfactory results. The great joy of an organisation like Halo is that you can get on with the job and sort administrative details out later.

Halo is clearing mines still and offers young men an opportunity to see a foreign country, get some adventure and shoulder a lot of responsibility early in life. It really gives a young man what a short service commission used to give one a generation ago. When your boss is a few hundred miles away and the communications are bad a fellow can get on with things. There's not much wrong with the younger generation when people like Mike Croll are prepared to work the same hours as other employees, for peanuts and produce such excellent results. Colin Mitchell seems to find plenty of young men willing to give up a few months or even a year or so in a good cause despite the discomfort and risks attached to the job.

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Letters Home

MARTIN HOTINE

THIS is the last of the three series of letters which Margaret Hotine edited for the *Journal*. Sadly Miss Hotine died earlier this year. The Institution acknowledges the great debt they owe her and her family in enabling us to publish these fascinating chronicles.

AFTER his return from India in 1920, my father was sent to Magdalen College, Cambridge, by the Army, to study engineering. His rate of pay was not enough to allow him to get married – he also reckoned the course had nothing to teach him! – so he left without a degree. He married my mother, Kate Pearson, in August 1924, while at Chatham, and was appointed as Research Officer of the Air Survey Committee in 1925. In 1931, his Surveying From Air Photographs *was published, and the same year he was sent to East Africa to survey along the 30th Meridian of longitude in what is now Tanzania and Zambia.*

He wrote the unit log which, with all the detailed letters he sent home, were kept intact, and are now on microfilm at the Imperial War Museum. Selection from the letters – unedited length approximately 95,000 words! – was not easy!

He arrived in Dar-es-Salaam with Urquhart on 23 November 1931, and Mullinger and Frost, the NCOs arrived the next day. They proceeded to Kigoma on Lake Tanganyika, and started the first safari for the primary triangulation, northwards to the Belgian border on 6 December. After completing this, they worked southwards along the lake and into Northern Rhodesia (Zambia), reaching Abercorn on 3 April 1932. The parties for the secondary triangulation began to leave Abercorn on 20 April 1932. He left on 28 April. Mbaa was the site of a station set up in July.

Mbaa, 2 September 1932.

THERE is a distinct improvement in the weather, and work here and at Mtantwa is close on finished. Just now is the most difficult job we've had; organization of scattered parties with a slight sheet of water in the way to stop communications isn't as easy as it may look and the said sheet of water also makes observations more difficult. However, I've finished the long seventy mile shot across the Lake to Kampemba.

To give you an idea of the difficulties of this sort of work, in thick weather, we have to get lights (helios and electric beacons) accurately radiating from a forward station towards our observing stations, and these moreover must be accurately aligned in three dimensions if they are to be seen at all. An NCO arrives on a forward station and can see about five miles with the naked eye. He knows and we know the directions and elevations roughly from previous reconnaissance and then we play at hide-and-seek with lights and telescopes; I, for instance, search the country on the rough bearing and the NCO searches for me also with a light. At the same time we search for the other fellow's light with a telescope. If I catch a glint of light I can correct the alignment of mine and give him more chance of seeing it. As soon as he sees mine, he sets his ready for observing and shines it continuously as a sign that it is correctly positioned and oriented. In some cases this little game involves days of wearing work searching through fog which wouldn't allow the most powerful light to be seen, even if it were correctly aligned – but that you don't know, the haze may be close to you and look a good deal thicker than it actually is so you miss the boat if you chuck your hand in and don't try.

We have had the haze across the Rukwa which puts out the direct beam from a ten-inch heliograph a mere fifty miles away, although the beam was aligned by theodolite very accurately. You can imagine that haphazard methods would mean days – even weeks – wasted at this hide-and-seek game. The main difficulty is in fact getting a simple foolproof organization for light setting so that everyone knows what to do and when, without being shouted at. When you've got all your lights, you've still got many measures of angles to make between them and of course the haze hampers that too – they can never be seen with the naked eye and that means hours of running round them with a telescope day and night in case the haze has let up sufficiently in certain directions for them to be seen.

Finally we have to leave lights accurately set up in charge of native rear parties for the back observations. These native parties have to be carefully drilled and arrangements made for them to be brought forward quickly as soon as the forward observations to them are completed. In clear weather all this boils down to a couple of sheets of tabled orders for the whole job and nothing much can go wrong, but it is vastly more difficult in thick haze.

Kalulungu, 15 September.

... A RUNNER came in with the news that a village near Namanyere had gone up in the night and the whole of their year's food supply had been destroyed. In spite of the fact that they had the usual clearing round the village, there was such a high wind that sparks had been carried over to the grass huts. I also had the usual clearing round the station here but this made me think it advisable to burn the whole hill in sections, taking care not to let the fires spread and make the observing conditions still worse. This was so successful and such good fun that I decided to take the Army for a walk across country and see how many other fires we could put out. The idea was to burn patches which could easily be beaten out again, in face of the oncoming fire and thereby rob it of fuel. The first attempt wasn't too good. We chose too long grass which went up with a roar and made us run like hell up wind to start yet another fire to put out our fire. And we only just did it too. Some of the natives are quite good at this and I suppose would have done better if I'd left them alone, but I didn't see why they should have all the fun. I should have thought that the grass would have got too hot for something on four legs in it, and had a weapon handy, but we didn't see a sign of life. Outside the film reserves, I don't believe there's any game left. One arrives back from a bout of fire breaking very much like a sweep and with a peach of a thirst; it's far better fun than surveying and looks as if it might help the surveying along a bit too.

It is amazing how quickly these fires travel. Even against a strong wind the flames will creep low down along the roots. With a strong wind, I doubt you could run as fast, but I haven't tried and don't propose to. The crackle and roar of long grass going up is terrifying enough even when you're up wind from it at a safe distance. Long grass in this country doesn't mean a lush meadow either, but straw as thick as a little finger and ten to fifteen feet tall... In most villages, fires are never put out except when the chief dies. A new fire is kindled by the incoming chief and carried by runners with burning brands to all his villages. The Wafipa also have a stool of succession, somewhat like the Throne of England, except that anyone who sits on the Throne of England doesn't necessarily become King of England. But it is said that the forbears of the present House of Fipa arrived as wayfarers from Urundi, sat themselves on the stool, managed to avoid violent death in the next half-hour and promptly inherited. Seems simple, doesn't it? A brace of beautifully dressed hangers-on of the royal House got mixed up in a brawl in Sumbawanga the other day, Harris (District Officer) got mad with them and sent them out as porters to us so's they shouldn't think themselves too royal. I noticed that they got themselves the jobs of King's messengers as soon as they got here to avoid taking the creases out of their pants; no-one else was in the least inclined to invoke a hoodoo by making them work, and I didn't think it was up to me. I have enough minor mutinies of my own, so to all seeming, I haven't the least idea what they do.

North Terminal, Kate Base, 5 October.

THE gear only arrived here four days ago – but some essential parts haven't arrived and will land us in for time-wasting expedients. Contrary to common belief, his Majesty's Corps of Royal Engineers are not much better than other people at making bricks without straw – much less measuring a geodetic base without tapes – and things become a shade too difficult when the straw arrives incomplete three months behind schedule.

10 October.

IN the first fortnight, it was obvious that night lamps were the whole key to rapid working and that we should scrap helios altogether. From Sunzu, I asked the Colonel to get a dozen made up for us, to take electric bulbs and nothing else. These could be much lighter than acetylene, because they don't have to withstand the heat, and for the same reason they could be provided with a simple reflector. In haze, a higher power bulb could be put in in a minute. I told the Colonel that this was of paramount importance. Given these lamps by the end of November, we would organize to work entirely by night

throughout the rains and would finish for the money next March. Without lamps, we should still try but I could guarantee nothing.

Apparently, I didn't rub it in enough. The Colonel passed it on to stores and nothing at all got done until the Colonel got another letter from me. Old McCaw, who had invented an acetylene lamp to use in Uganda in 1906, hasn't tried electricity and doesn't believe in it. I get a wire saying "Can obtain Watts acetylene lamps for twenty one pounds but nothing cheaper available. Must you have electricity at all costs?" I have answered, "Cheaper and more efficient alternative conversion of Lucas Lamp Signalling Daylight to two and four watt bulbs. Lamps are standard military store in use here costing ten pounds."

These Lucas lamps are not what I wanted but they are far and away better than acetylene in anything. They weigh less than a fifth, cost half as much, run on cheaper and lighter fuel and will give a longer range. In Uganda, McCaw spent three weeks at every station using a mixture of helios and acetylene. Why is it criminal to try and lower that sort of chronic waste by using modern inventions?

South Terminal, Kate Base, 27 October.

(THE Colonel) tells me that the Colonial Office has definitely decided not to find any more money just yet. I am to shut down next March or April (when the money is supposed to run out) and come home. I shall interpret this by finishing up to the Urundi border, even if it does overspend a few hundred, and the financiers can sort it out afterwards. If I played the office jack prettily and asked for leave to over-spend, we should waste far more sitting about while the CO writes despatches. So it is a question of the glass to the sightless eye, financial ineptitude and a kick in the backside afterwards. No OBEs or other flowers. Also no feasible alternative.

The cost of this show (apart from pay and transport, which have to be paid anyway, and tax labour) is about a thousand a year. We can't afford that much on the foundations of Empire development, but we can afford (is it?) fifteen times as much on Mrs Snowden's operas. We are so depressed that we can't salt down a thousand a year to make future prosperity within the Empire possible. Almost unbelievable isn't it? Obviously what is wanted is someone who can cut the cackle of the backside bureaucrats, and talk to a Cabinet Minister in bed...

North Terminal, 15 November.

WE arrived here on the 10th, thus completing the second measurement of the base, and by now have restandardized tapes, cleaned up and packed up the gear. So that, by the mercy of Allah, is that. There have been some torrential rains during the last two days and if these had come a week earlier we should have been done.

...Urquhart and I have still to do some more observations at Mbaa and Mtantwa, but everyone will be on the move North early next month. The whole job in fact is more than two thirds finished (in less than a year) and we shall shortly be in the home straight.

At about five to eleven on 11 November (Greenwich Meantime) a runner arrived from Sumbawanga with poppies for sale. How's that for worldwide organization? We paraded all the old *askaris* – of which we have four on our strength – laboriously explained what it was all about (I never before realized that I didn't know myself very clearly) and invited them to buy one. They cogitated for some time over this latest sample of the white man's foolishness. Then an ex-Corporal of the Kenya African Rifles offered ten cents for a shilling bunch "if I would guarantee that they would last". He explained that he had a new wife who might like them, but she lived four days away. As for the price, ten cents was plenty to spend on a woman, even a recent acquisition.

The natives of Ufipa don't believe in war and never have. Who shall blame them? An incredibly short time ago they grew food and wives expressly for the benefit of the more warlike tribes to the South; the good things of Ufipa were in fact so well known that marauders came all the way from Bangweulu to get them. The *mzungu* (white man) started a private row of his own in which they had no share. Von Lettow ran around the place bringing plenty of matata (an untranslatable word meaning roughly trouble for nothing) in the shape of heavy loads to be carried for a kick in the sump. The British Navy occupied the Lake, which enriched the hated Arab Slaver now turned shopkeeper, but did no-one else any good. And now, they are convinced beyond all denial, the *mzungus* have sent an advance party to measure up the country for another ruddy war. The *mzungus* are indeed a highly diverting race with all sorts of comic gadgets, but they have no proper appreciation of the purpose for which one's backside was

really provided; they must always be up and doing some damn foolishness or another.

When we were clearing a lane for the base measurement, the NCOs reported that they had to cut one patch themselves because no-one else would go near it. Arriving in the centre, they found charred human remains, which have since proved a fairly considerable obstacle to measurement. No-one will go within miles of them. At first I thought a murder had been committed or some infectious disease (necessitating burning) had broken out and had an enquiry; no administrator handy so I whistled up all the headmen of the surrounding villages and held it myself. At long last, I got the whole story. The remains were apparently those of a woman of Senga village who died of a chest. Then her husband fell unaccountably sick of a chest, and her father could get no sleep of nights on account of her awful wailing around his hut. Obviously, little as they suspected her of it in life, she must be a witch and would promptly occupy the body of the first child to be born in the village. Only one thing to be done. They whistle up the witch doctor, who carries on his trade very much undercover these days, but nevertheless does carry it on at a price, and arrange for an exhumation and burning on the first occasion when the moon and whatnots are propitious. Some of the ashes are sprinkled round the father's hut as a soporific and some are chewed up and spat on the husband's chest. Both survive – such is the power of Faith – and that proves it. And all for the price of a couple of cows, that being all the family has.

Many of our porters are Christians but would they carry a tape within a yard of the remains? We were visited by Kate Mission yesterday. I told the Father Superior, a white-bearded old man who has been in this country without a break for thirty years, about it and asked him what he thought. With the wisdom and tolerance of his kind he merely shrugged his shoulders and said (in french) "Witchcraft in this country is centuries old; Christianity a bare thirty years. These people will run after a snake and run away from the remains of a witch. If you and I had lived with snakes and witches for centuries we should probably do the same.".

Mtantwa, 27 November.

As you see I am at last parked on a hill top again. I have started the habit of walking a mile or so after breakfast to get some exercise, smoking a pipe on a rock and usually getting rained on, on the way back. The country is a marvellous sight these days after rain. All the smoke and filth of the grass fires have gone and, except when it is raining or preparing to rain, the visibility is crystal clear for a hundred miles or more, right across to the Congo on the one side and the Rukwa escarpment the other. The parched brown grass of the dry weather is all burnt and replaced by short very green growth; it is just as easy now to walk across country as it is over the Downs, although in a few months' time the grass will be head high in most places. In fact, the country between here and the Lake looks exactly like the English Downs; rolling grasslands undulating downwards, wooded valleys and chalk outcrops. Then the lip of the thickly wooded escarpment down to the Lake, a vast sheet of water terminating in the purple and blue hills of the Congo. All very perfect if one had nothing else to do but to think and write poetry.

There is of course another side to this. There are continual clouds which make it impossible for us to work off helio beacons by day. But I foresaw this and arranged to work mainly at night, though we have helios installed in case there should happen to be one fine day while we are here. We are observing the angles at both ends of the base from Mtantwa and Mbaa (which completes tying in the base and is the end of all work in Ufipa). This requires six electric beacons and we have just that number, though two are high power signalling lamps running off accumulators and will only last this chukker. We observe usually (either on beacons or stars) from seven till midnight.

We are apparently to get electric beacons after all. Watts, the maker of McCaw's acetylene lamps, came forward after he'd got the order for acetylene and offered to make a better and brighter electric model. This he did, and the Colonel took it out himself on the Hog's Back, tested it against acetylene and found it at least twice as bright. Old McCaw still disagrees – he knows what he knows. Well, well, I daresay if anyone suggests atomic energy when I'm his age I shall do the same, but I hope not.

Kasanga, 9 December.

WE arrived here on the 6th, having finished all work in Ufipa. On the way here I put in a day with Bostock, a retired Gunner Major who is settling at

Chapota. We were both inclined for talk and put in most of the night doing it. I was intrigued to hear how he got his land only two years ago, when the Plateau had for some time been closed to white settlement. It appears there was a large tree there, the remains of which I saw, known far and wide as Mweni Chapota and worshiped by the natives. Three years ago, some strangers decided to chop it down, hollow it out into two big canoes and drag them down to the Lake. They worked hard at it all day – it is exceedingly hard wood – but the next morning found that the tree had filled all their efforts during the night and was practically unscarred. They fled. Shortly after, the fire got into the tree and it fell, whereupon the witch doctors proclaimed that the spirit of Mweni Chapota had departed from that country and the natives must clear out to avoid the wrath to come. So Bostock got the land on the evidence that the natives didn't want it. No native will live there. Bostock's labour comes every day from villages six miles away and returns at night. Although the timber would suffice for all his buildings, he can get no-one to cut it. A reed ghost house was built near the roots one night – though no-one will admit to building it – to house the spirit of the great chief who once inhabited the tree, and frequent offerings of food are also found there.

An illustration of the way the simplest actions can be misunderstood among a superstitious people. Bostock is a friend of Swinnerton, one time the Game Warden and now the Director of Tsetse research, who had taken blood slides from natives suspected of carrying sleeping sickness. All this, together with the fact that Bostock had for some time stayed with Swinnerton, spread right across the country to this remote corner and lost nothing from frequent repetition. Bostock carried a game scout around with him and both were armed always with hunting knives; he also had a habit of sending his porters off to the nearest village and sleeping alone in the bush. Therefore he became *Bwana Chinja Chinja* (freely translated as the Cut Throat King), whose job was to kill natives at night and send their blood to the Government for some awful witchcraft. His *askaris* (which he didn't possess) hid out in the hills in the daytime and came down at night to assist him in the grim business. Guards were posted at all villages within a night's walk of his camp and no native would drop his spear in his presence – a sure sign of unfriendliness. The *Boma* got to hear of it, held a *baraza*, proclaimed the superstition rubbish and made the use of the expression illegal. This made precisely no difference.

The first Bostock himself heard about it was when he happened to be stalking a reed buck with rifle at the ready, and came upon a native who promptly fell down and begged for his life. Eventually, Harris (the DO) suggested that he should keep a native woman in his camp at night, who, according to the native mentality, would be a trustworthy witness that he spent the night in bed. This he did, and eventually the superstition died out. But if, during all this time, a native had been found with his throat cut by any agency at all, then nothing could have saved Bostock's life. Harris told me all this some time ago.

NEXT day he returned briefly to Abercorn, and then went, by river boat to Karema, arriving for Christmas, 1932, which was spoiled for Mullinger and Urquhart by measles and a high fever respectively. However, they soon recovered, and work started measuring the northern section at the Karema Station on 6 January 1933.

Lubangagulu, 28 January.

I LEFT Kantembe on the 21st and walked down to Ikola on the Lake shore – distance of about eight miles only as the crows flies, but we all know about the crow. Without wings, a crow would have taken six hours on end at it, the same as I did. And put fifty pounds on the crow's head and he would take ten hours over it, the same as my carriers did. At one place we had to fell a tree across a pleasant little stream too deep to ford, and although I had done this before often enough I hadn't walked over it with quite such muddy boots. I fell off, of course, but as I was soaked through already that didn't matter much. Still, there is something to be said for the bare feet and prehensile toes of the native – none of the loads fell in.

The next day, I got aboard the *dhow* after sending porters straight to Lubangagulu, and hoped to make Isonge that day. We might easily have done so with a following wind but with a head wind, we did maybe rather less then ten miles in ten hours. There are eight oars in the *dhow* made of flat bits of wood, tied to long poles. As nearly as I could gather the only principle used in their construction is this. Smart Alex No 1 (they call

themselves *baharias* which, as you will recognize from the Arabic, has something to do with the management of ocean-going craft) realizes that the bigger his flat bit of wood is, the harder he has to putt. So he cuts a bit off all round, and enjoys life for just so long as the next fellow finds that this gives him all the work to do. Smart Alecs Nos 2-8 then cut off bigger bits all round, and the whole process is then repeated until the process of rowing amounts to no more than a succession of more or less tuneful songs in the vernacular. Discipline is non-existent. To be sure, there is no *nahoza*, whose job is to play with the rudder, but the real command devolves on the other eight. All eight Captains explained to me in detail that a *dhow* isn't meant to be rowed anyway; it sails with a tail wind and it is only a question of waiting a week – or perhaps maybe a month – till you get a tail wind. If you get there fast you only have to go somewhere else, so what's the sense.

We camped after the first ten miles and I listened carefully to this flood of oratory. My intelligent interest was of course mistaken for sympathy and the Tanganyika Navy quite thought they were going to sit hard until a suitable breeze rolled up. Instead I told them they weren't going to camp or even pull in the oars again until we got to Isonge. They could either make fresh oars and get there in a reasonable time or they could take all night over it. I didn't care. I could sleep quite well on anything so long as the oars were going, but I should certainly be woken up the minute they stopped. We didn't quite take all night. In fact we ran aground at Isonge quite early at three in the morning. A draw.

(Arrived at Lubangagulu next day) we start work and damned hard work it is too on first occupation of a station.

Instruments have to be unpacked and tested, emplaced, the observing tent pitched, bearings taken and observing lists made out, lights aligned and tested, and arrangements made for dumping food ahead for the next move. In the middle of that, someone usually comes along and thinks he hasn't had his share of beans – will I please count them. Or Porter Kazimbaya has found a hole in his blanket. Can he have another. No? Well Porter Saa Nane hit him the day before yesterday, so would the *Bwana* punish him by taking his blanket away and give it to the plaintiff; Saa Nane won't part with it otherwise. No? Well, anyway, he knows a sure thing in the game line a couple of hours away. What about a spot of meat?

That night I was glad it rained cats and dogs and I could go to bed with a clear conscience.

This wouldn't be a bad job if one could get on with it, but we've struck a bad patch of weather. I've only seen the Kakungu light for about ten minutes in three days and have done practically nothing for the last two days on account of rain and low-flying clouds. We should be utterly sunk without night lights.

Kakungu, 14 February.

I FINISHED Lubangagulu and Mwesi in the teeth of worse weather than ever. Here the weather hasn't been so bad. In fact, I've managed to finish off all I can do in three nights, which is a record so far. At the moment I'm sitting a couple of days while the unknown 5353 station is being located and lit up. Sgt Mulliner will be having the time of his life hacking his way into it – damn good for him an' all – but he should be there tomorrow.

I finished up about ten at night at Mwesi and wanted to leave at dawn the next morning. The porters were singing away merrily in their camp, so I invited them to come up "and say it with the stones" while they built a cairn by moonlight. Dead silence while the messenger told them, then a babel of protest for a few minutes. Then they came and carted stones for a bit in moody silence. I told them to sing: they wouldn't. So I put 'em in a circle with a stone each and told them I wanted to see what a stone dance was like (an *ngoma ya mawe*). This was a new idea and they couldn't resist it. In two minutes they were putting rocks on the cairn to music and dancing away for more. A weird sight by moonlight. After, the Swahili experts improvised a few songs for my benefit while the other ninety per cent added the accompaniment. The chorus was mainly about *watu Bwana* Major *hawalala hatta kidogo* (the *Bwana* Major's men never sleep) and the verse a jumble in which *Mwesi* – the station – and *Mwesi* – the moon – got a bit mixed up. *Mawe* – the stones – was used with double entendre; it also means something else in the spherical plural. That's the best of these primitive languages – there are only about 300 words in them, albeit some thousands of gestures and facial contortions. The end of

the story is that they got so worked up that they continued the *Ngoma* in their own camp till about three am – but I didn't have to wait long for my revenge.

To get here, we started early from the tiny village of Itindakusia, about sixteen miles away on our old friend the crow, but a good twenty and some 4000 feet of pretty steep up, on the flat feet. This is longer than the regulation for porters for a day's safari, but the fact is that, at their own pace, they can go on more or less for ever. I told the men we were going to sleep on the top of Kakungu if at all, that they could have my loads at dawn and could arrive when they liked. Double rations would be issued on top of the hill. Carrying only a rifle and haversack, I arrived myself at about four pm, pretty much the worse for wear, and felt I'd over-reached a bit and would have to sleep standing that night. But the last load arrived soon after eight, SINGING. He explained that he had to sing to keep off the wild beasts, and to listen to him, I haven't the least doubt he was adequately protected. No-one died; no-one even sick. It's no good lining them up on parade to march in step with ten minutes halt every hour. Mass discipline is only of use when it gets you somewhere.

The craving for the outward and visible signs of wealth are just as great here as in similarly uncivilized countries, such as the United States. Among most African tribes, this takes expression in the ownership of cattle. Here the Tsetse fly prohibits that, so among the Wabende, wives are collected instead. The result is that the old men own most of the wives, family life as we know it does not exist, and the birth rate has been declining since the year dot. The country is now all but uninhabited. The missions know this but have so far lacked the funds to touch this country; the Administration do not know it and are unlikely ever to learn. One man with only his own resources could not live here a week. Ten thousand could produce enough economic resources to provide themselves with hospitals, schools and the other better bits of civilisation. But what hope when the Missions, the only people who are in the least likely to spread the doctrine of monogamy and family life, are viewed with suspicion by the Administration. Possibly it would be a good thing for the Wabende to die out. Outside Karema Mission, I daresay I know them as well as anyone and I don't think so. If there is anything in the Brotherhood of Man, I personally would sooner have them as brothers than the inhabitants of Moscow and New York.

Muloli, 23 March.

WE are now within in a fortnight of finishing. I move to Kavula tomorrow, and Mullinger is already at the last station in Belgian territory. Urquhart moves to Kinyika today. So despite sickness and clouds and what-not, we look like finishing about up to the estimated time and cost.

Kumaniniri (just across the Tanganyika frontier), 5 April.

I LEFT Nyakawembe – our last station and the first in Belgian territory – this morning and re-crossed the frontier. The day after tomorrow I shall be back in Kigoma. Urquhart is still out – on Kifizi – but with all his lights going and observations started, so I felt it safe to leave him and get the squaring up process started in Kigoma. Within a week we shall all be concentrated there and that will be that. Now that the job is as good as finished, I find I don't derive a great deal of satisfaction from the fact. I do not look forward to three weeks of office work in Kigoma, though I shall be glad to get under a roof again for a spell. Just at the moment I feel a bit sick at not being able to take the triangulation through the Paradise of Ruanda and Urundi and connect with Uganda.

BEFORE he had finished the office work, an order was received from the War Office to add on a triangulation from Mbeya in the South – a job he has suggested but had not expected to happen. There was now a rush to get this planned and done before the rain and haze made it impossible. His last letter, written when he was recovering from an attack of "flu" at Kambole Mission, was written on 5 October, and he returned home to the UK in November 1933. Two years later, he built on the experience he had gained in East Africa by commencing the retriangulation of Great Britain.

He published technical details of his work on the East African Survey in articles in the Empire Survey Review – The Layout of the East African Arc E S R No 12 Vol II 1934; The East African Arc: II. Marks and Beacons E S R No 14 Vol II 1934; The East African Arc: III Observations E S R No 16 Vol III 1935; *and* The Eastern African: IV Base Measurement E S R No 18 Vol III 1935.

Together into the Breach

LIEUTENANT COLONEL R W GLENN

Lieutenant Colonel Glenn graduated from the United States Military Academy, West Point, in 1975 with a commission in the Corps of Engineers. He has served in Virginia, Kansas, the Republic of Korea, California, New York and Germany. During the Gulf War he was Chief, G3 Plans and Exercises for the Third (US) Armored Division. Lieutenant Colonel Glenn is a graduate of the United States Army Command and General Staff College and the School of Advanced Military Studies. He has completed Master of Science degree studies with Stanford University and the University of Southern California. Military awards include the Bronze Star, Meritorious Service Medal, Army Achievement Medal, Southwest Asia Service Medal and the Kuwait Liberation Medal. He is a qualified parachutist and is a graduate of the United States Army School of Infantry's Ranger and Pathfinder courses. Currently he is assigned as American exchange officer and is accompanied by his wife, Deirdre and sons Russell and Andrew.

Introduction

It was only five years before Queen Victoria's birth that the British set fire to the White House. It was a year prior to her death that American and British Army forces fought their first engagement as allies during the Boxer Rebellion. The former event has generally been forgiven if not forgotten. The latter was the inception of one of mankind's closest military alliances. As British and American armies are likely to share future battlefields, it is wise for each to understand the nature of the other's forces. This article addresses that issue by explaining ongoing changes to the engineer structure in US armoured and mechanised divisions.

American engineer tactics, equipment and organisations must support United States Army military doctrine. Currently that is Airland Battle (ALB) doctrine. ALB's expression of the Army's approach to war fighting has four tenets:

- **Agility** – the ability of friendly forces to act faster than the enemy.
- **Initiative** – setting or changing the terms of battle by action.
- **Depth** – the extension of operations in space, time, and resources.
- **Synchronisation** – the arrangement of battlefield activities in time, space and purpose to produce maximum relative combat power at the decisive point.(1)

The Current Organisation

A single organic engineer battalion per division has been the structure in the American Army since before the Second World War. This framework failed to meet the demands of the ALB tenets (recalled with the easily remembered if not poetic acronym AIDS) in mechanized and armoured division operations. Engineer support relied on augmenting the division's organic battalion *(Figure 1)* with others from corps *(Figure 2)*. The divisional battalion consisted of four line companies with the equivalent of both field and armoured engineer units in each, a bridge company, and a headquarters company. A line company supported each of the three manoeuvre brigades normally found in US divisions *(Figure 3)*. The fourth line company supported the divisional cavalry squadron. The engineer battalion commander was both commander of his unit and the primary engineer advisor to the divisional commanding general.

During World War Two, the demands of combat normally required augmentation of a division's single engineer battalion. Corps would then provide one or more engineer battalions from its assets. A brigade-level HQ sometimes accompanied these additional units to manage the large number of engineers in the division. Often the additional battalions came without a

Lt Col R W Glynn
Together into the breach (p240)

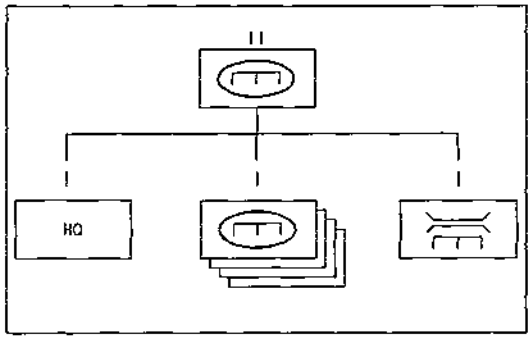


Figure 1. Division Engineer Battalion before restructuring.

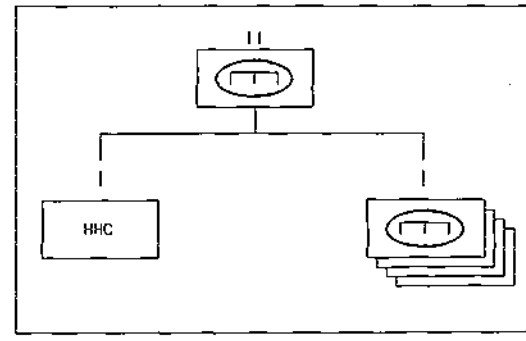


Figure 2. Corps Engineer Battalion before restructuring.

higher HQ; the divisional battalion commander's span of control became rather unwieldy.

Postwar studies of engineer support concluded that the engineer structure in support of divisions was inadequate. The organic complement of engineer troops was seldom sufficient to ensure mission accomplishment; continuous augmentation was necessary.(2) Unfortunately the resulting recommendation for creation of a divisional engineer regiment was discarded during postwar force reductions and in the development of doctrine for a nuclear weapons-dominated battlefield.

Yet the Second World War's engineer problems once again became apparent on the exercise plains of Germany and during mock combat in the desert of the National Training Centre (NTC) in southern California. Engineers were not keeping pace with mechanised infantrymen and tankers. They were well trained, but their low numbers and wanting command structure precluded successful support of manoeuvre forces in the ALB environment. Manoeuvre commanders had to have sufficient engineers at the critical location on the battlefield if they were to be agile enough to gain and maintain the initiative critical to victory.

Changes in the United States Army's engineer structure were necessary to ensure effective support of manoeuvre operations on the ALB battlefield. The shortcomings which precluded the engineer force from matching its infantry and armour counterparts in combat agility fell into the categories of quantity, command and control, and synchronisation.

Quantity: There simply were insufficient divisional engineer units to provide the support needed. For example, American tactical doctrine generally requires that each battle group has a minimum of one breach through any minefield encountered during an attack. Much preferred are two or more per battle group. For a brigade

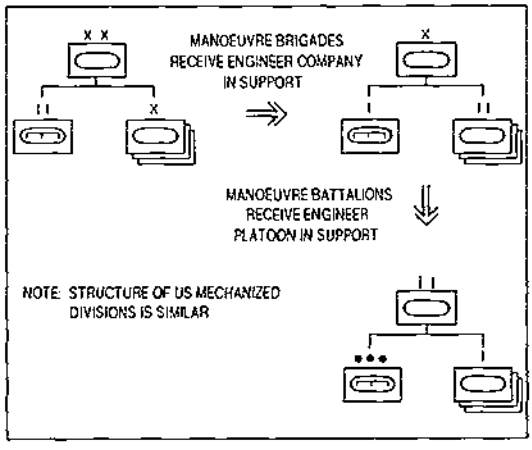


Figure 3. Engineer support to armoured and mechanised divisions before restructuring.

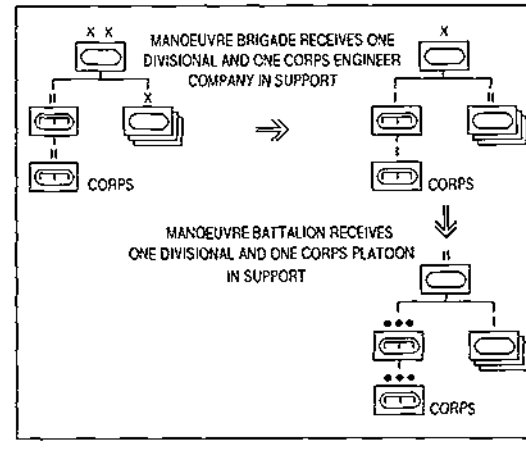


Figure 4. Engineer support to armoured and mechanised divisions when division augmented by an engineer battalion from Corps (before restructuring).

leading an attack with two battle groups forward, this means a minimum of two, and preferably four, minefield breaches. Even if the division has a corps engineer battalion augmentation, this still means each battle group has only two engineer platoons in support (*Figure 4* on previous page). These platoons suffer attrition and their speed of execution is degraded as they encounter obstacles in depth. The division or brigade commander can compensate by task organising to provide greater support where it is needed. The resultant cost of weighting the main effort is loss of engineer support elsewhere. If engineers are forward supporting a breaching effort, the all arms force assaulting through these breaches is short or devoid of engineers. They are subsequently handicapped when encountering a defence in depth or are otherwise in need of engineer support. The apparent solution is that they pick up engineers as they move through the breach (called "task organising on the move" in American battlefield jargon). The experienced engineer cringes at the thought. Engineer units attempting such a reorganisation must consolidate (perhaps under fire), link up with the assault element, and execute all coordination and reorganisation necessary to provide effective support to this new unit and do so during its attack. Engineers quickly become exhausted as they are passed from unit to unit in support of continuous operations. The reorganisation also takes time, again degrading the agility of the manoeuvre commander and impacting on his efforts to seize and retain the initiative as he conducts offensive operations. American commanders found that reorganisation on the move was not effective in demanding training environments.

Command and Control: Compounding this problem of an insufficient number of units was the related level of engineer leadership at each level. Platoon leaders were the engineer advisors to battle group commanders. These second lieutenants frequently lacked the experience necessary to maximise the potential of their asset on the all arms team. The second lieutenant also suffered the same dual demands on his time as did his battalion commander. Both were commanders of their units and primary engineer advisors to a manoeuvre headquarters. Their command structures were barely sufficiently robust for these two tasks. The command structure quickly became overburdened with the addition of augmenting engineer units. A divisional battalion commander could be commanding his battalion, advising the division commander, and coordinating the assets of one or more augmenting engineer units. Synchronising the engineer effort with other all arms team operations became very difficult.

Synchronisation: This inability fully to synchronise the engineer force with other elements of the all arms team was not simply due to an inadequate command and control structure. A postwar investigating board reviewing American Second World War divisional engineer support concluded that "organic battalions provided better teamwork with other elements of the division than strange supporting battalions. One of the greatest assets of any team of combined arms in a joint action... is confidence in one another, a familiarity with the limitations and capabilities of one another. With the organic engineers in the division, this necessary teamwork, confidence and knowledge of personalities was soon developed; with the ever-changing, strange supporting engineers, it was not."(3) This comment applied to later ALB operations as well. All arms operations with divisional engineers were generally well synchronised. The same could not always be said for operations with augmenting engineer units. These units were of the same quality as their divisional counterparts, so why did they not perform as well on the field of battle?

The reason was habitual relationships. Divisional engineer companies supported the same brigade whenever possible. Their platoons were assigned to the same battle group when such was feasible. Each trained with the same unit with which they would fight in war. Engineer radio men, equipment operators, and leaders knew the standard operating procedures of the unit with which they trained. They knew their manoeuvre counterparts' personalities and therefore better understood their intentions. The augmenting corps engineer units often could not achieve this relationship. They were frequently at posts remote from the division or suffered demands which precluded their supporting divisional exercises. Manoeuvre commanders found them slow to respond at critical times; corps engineers simply could not know the intentions of these commanders as well as those who always trained with them.

The New Organisation

A new engineer structure was needed to enhance agility. Manoeuvre commanders needed a potent engineer capability available on short notice. Equally as important, they needed an engineer command structure which could plan for future operations to ensure the engineers were in the right place when needed. This combination of quantity and enhanced control would provide the means to synchronise engineer operations with the rest of the all arms team. The solution had been proposed forty years before. Mechanised and armoured divisions needed not one engineer battalion, but rather an engineer command with three battalions and a commander and staff to manage this vital battlefield asset.

The result is the Engineer Restructuring Initiative (ERI). Neither the dollars nor the manpower are available simply to add more engineer battalions to the army, but a solution is available by remodelling the "normal" support a division would receive in combat (its organic battalion plus one additional battalion from corps). Corps and divisional battalions are very similar; the major difference is that corps battalions lack a bridge company. By reorganising these two battalions of four line companies each and creating three battalions of three line companies each, a division has an organic engineer battalion to support each of its three manoeuvre brigades. The companies are smaller so as to provide the manpower for a brigade headquarters, an additional battalion headquarters, and the ninth engineer company (two battalions of four companies each gives only eight of the nine companies needed for three battalions of three companies each. *(Figure 5)*. The ERI brigade is achieved without an increase in the number of engineer personnel in the division. The combined strength of the pre-restructuring divisional and corps battalions was 1719 men. The ERI brigade total strength is 1354 personnel. The triangular nature of the ERI structure makes sense as most US divisions have three brigades. Thus the one-to-one habitual relationship which aids agility and synchronisation on the field of battle is achievable in training and war. Looking at the ERI structure with regard to the shortcomings of the previous (one division engineer battalion) structure:

Quantity: It was not the number of personnel so much as it was the number of units and their capability that were lacking before restructuring. ERI divisional engineer battalions are much smaller (433 versus 899 men), but the battle group commander who previously had to breach an obstacle system with a platoon of 30 engineers now has the support of a company of 103 men. Sustained operations are feasible without excessive reorganisation on the move. The engineer company also comes with greater equipment capability. Whereas the platoon of old had only two Armored Combat Earthmovers (ACE, similar to an armoured bulldozer) for breaching, the ERI company has four AVLBs, four Mine Clearing Line Charges (MICLIC, akin to Giant Viper), and seven ACEs *(see sketches below and over the page)*. Responsiveness has been significantly upgraded with this positioning of more engineer assets closer to the line of contact.

Command and Control: Not only are more engineers forward, manoeuvre commanders have the additional benefit of more experienced

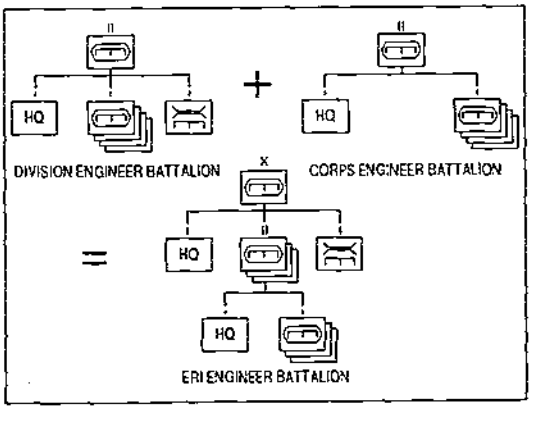
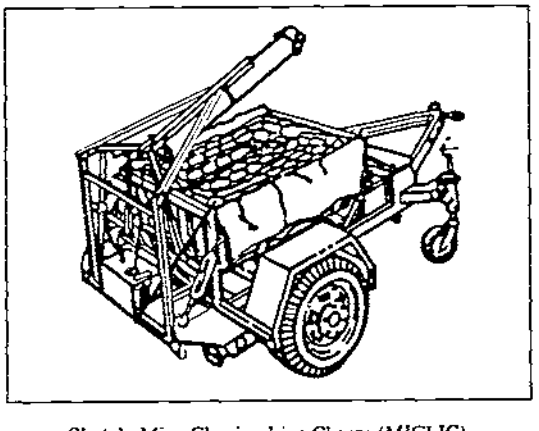
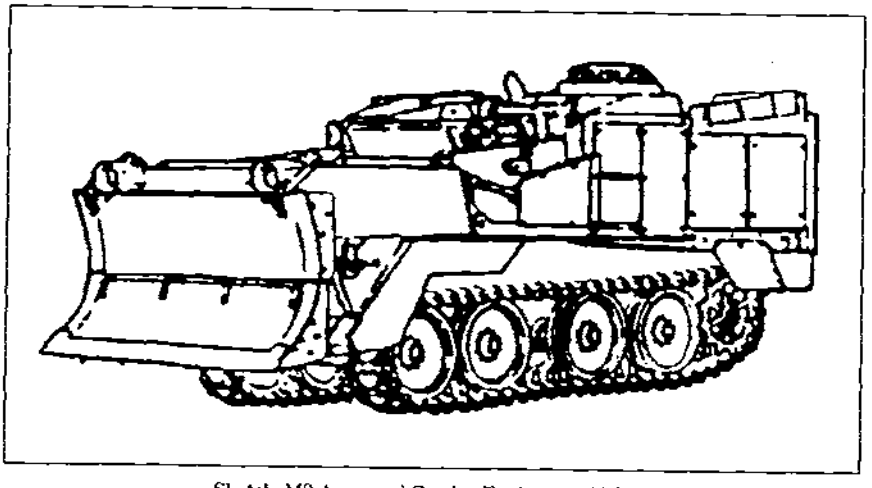


Figure 5. Designing the ERI Brigade.



Sketch. Mine Clearing Line Charge (MICLIC).



Sketch. M9 Armoured Combat Earthmover (ACE).

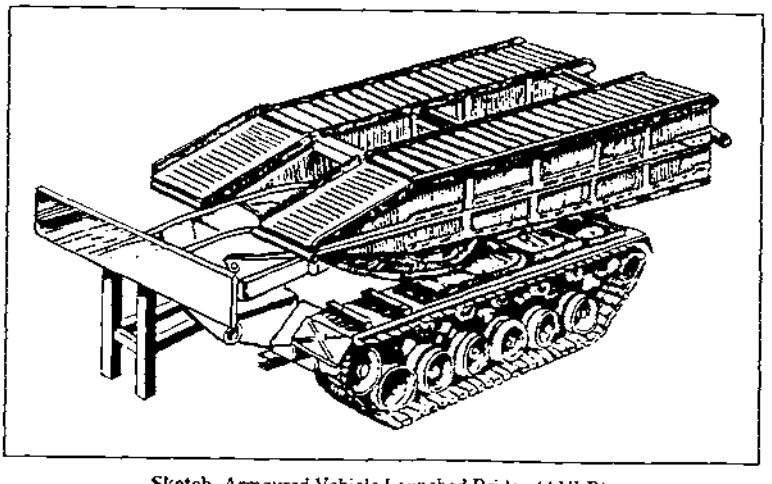
commanders as their primary advisors. The battle group commander has a captain (captains command engineer companies in the American Army) as his advisor, the brigade commander a battalion commander (lieutenant colonel). The division commander is better served as he is now advised by a colonel and his staff. He has an engineer command and control structure responsive to his needs as his division seizes the initiative and operates throughout the depth of the battlefield.

Synchronisation: Manoeuvre commanders still have the units training with them in peace that will accompany them to war. The brigade commander deploying to war will be supported by the same artillery battalion, the same air defence battery, the same engineer battalion, and the same units from other branches that supported him in the months of training before deployment. These habitual relationships are disrupted as missions demand but are maintained when possible. The payoff in synchronisation, and thus increased battlefield agility and initiative, is indisputable.

Conclusion

The United States Army Engineer community used the ERI structure in the Middle East. Two additional battalions and a brigade headquarters augmented American mechanised and armoured divisions fighting in the Gulf War. Pre-combat training in the desert established habitual relationships be-tween these battalions and their manoeuvre counterparts. These divisions proved themselves able to synchronise large engineer forces; ERI brigade staffs were critical to effective engineer preparations for combat and successful operations during the conflict.

The response from *Desert Storm* division commanders was unanimous: keep the ERI structure. The American Army did so. By 1995 all American mechanised and armoured divisions will have a brigade of engineers.



Sketch. Armoured Vehicle Launched Bridge (AVLB).

ENDNOTES

(1) Department of the Army. *Operations.* Field Manual 100-5. Washington, DC: US Government Printing Office, May, 1986, p15-17.

(2) William A Carter, *Employment and Staff Procedures of Engineers with Division, Corps, and Army.* United States Army, First Army, 1945, p10.

(3) US Army. *The General Board: Study No 71: Engineer Organization.* US Forces, European Theater, 1945, p19.

Corps Library Report

COLONEL J E NOWERS BSC FIMGT

WHEN Major C W Pasley arrived at Chatham in 1812 to found the Royal Engineers Establishment, one of his first acts was to set up a professional Library. Pasley stated that the object of the Library "...is to enable officers of engineers to study their profession in any part of the world to which they may be ordered, without the trouble and expense of moving private libraries, which would exceed the means of any individual. None but books of deserved reputation are admitted; and of the most useful works several copies are provided, in order that more than one subscriber may read such works at the same time. The expenses are entirely defrayed by a small monthly subscription of members present only, no entrance being charged.".

Over 30 years later it was proposed that a central Corps Library be established. This proposal was extended to include the formation of professional libraries at home and abroad, supported by a general subscription throughout the Corps rather than separate subscriptions at each station.

The Annual Corps Meeting of 1847 confirmed these proposals and directed that they should come into effect as soon as possible. By 1862 libraries were established at 16 home and 19 overseas stations, excluding India.

Bookcases were authorised for purchase from official funds and WD transport could be used to carry books to outstations. Books could also be sent by mail using official postage. This generous privilege, granted in 1847, was finally abolished in April 1953!

The Central Library was established in London in the offices of the Inspector General of Fortifications in Pall Mall. In 1871 the Library moved with the Inspector General to Horse Guards.

Professionally printed and bound catalogues were published from time to time. The first was entitled *Catalogue of Books, Maps and Plans in the General Corps Libraries of the Royal Engineers* corrected to 1 April 1866. It listed the contents of libraries at Aldershot (sic), Auckland New Zealand, Bahamas, Barbados, Bermuda, Cape of Good Hope, Ceylon, Colchester, Devonport, Dover, Edinburgh, Gibraltar, Guernsey, Halifax, Nova Scotia, Hong Kong, Jamaica, London, Malta, Manchester, Mauritius, Montreal, Newcastle-on-Tyne, Newfoundland, Pembroke, Portland, Portsmouth, Quebec, St Helena, Van Diemans Land and Woolwich. It excluded the libraries at Chatham and Dublin which were founded long before the General libraries and published their own catalogues.

Later editions of the catalogue appeared in two parts – Part I: Name Catalogue and Part II: Subject Index.

Each edition commenced with a statement of the object of the libraries.

"1. The object of instituting Corps libraries is to enable officers, whether serving at home or on foreign stations, to peruse and refer to the best authorities on any of the multifarious duties which they, as Engineer Officers, are liable to be called upon to perform; such works being of necessity more numerous and more expensive than an officer can be expected to possess, or to carry with him.

CHARACTER OF BOOKS

2. The character of the Books will be strictly professional. The libraries are to contain works on Civil and Military Engineering, together with the most useful compendiums on Geodesy, Mineralogy, Chemistry and Geology... The best maps, which have reference to the several stations, will likewise be furnished, together with such periodical publications, Parliamentary Reports and Scientific Papers, as may bear upon the duties of the Corps.".

There followed an undated history of the library movement in the Corps. Thus we find that in 1869, Auckland closed and its books were sent to Singapore. The Bahamas closed and its books went to London. In 1870 these books were used to set up a new library at Sheerness. Montreal closed and its books were distributed to Quebec, Halifax, Bermuda and London. In 1871 Newfoundland closed, its books going to Halifax and Bermuda and the New Zealand Library was lost at sea in transit to the Straits Settlements. In 1878 a new library opened in Cyprus with books

from Newcastle-on-Tyne, Sheerness and London. In 1883 books went from Portland to Weymouth. In 1896 the Cyprus Library closed and Alershot became independent. In 1897 a library opened in Cairo and, in 1902, in Esquimalt, Canada. In 1903 Barbados closed, its books going to St Lucia and in 1904 a library opened in Pretoria. In 1906, libraries closed in St Lucia and St Helena. Halifax and Esquimalt also closed, the books being donated to the Royal Canadian Engineers to start military libraries there.

It must have been very difficult to keep track of all these moves. A Central Library had been proposed at various times but this did not materialise until just before the outbreak of the Second World War when all books were moved to Chatham and stored wherever space was available.

In 1951 a scheme was prepared to house the library in the old Lecture Theatre in the Institution Building at Chatham. The room was gutted, the tiered seating removed and a balcony, sunken floor and shelving were installed at public expense. The new Library was opened by Lieutenant General Sir Philip Neame on 24 November 1954.

In addition to being a lending library it was to be a first class, up-to-date technical reference library including the technical reference books from the SME Schools and Publications Branch. However in 1964, Schools and Wings took over their own technical publications, and the Library assumed the form that one sees today.

Thus the Library and its collections are a reflection of the history of our Corps. Although some material has been purchased, much has been presented over the years. Bookplates and fly-leaf dedications provide a fascinating glimpse of history!

In 1870 it was decided that all books intended for the General Libraries should be "substantially bound" before issue. As a result the Library contains some beautifully leather-bound books. Unfortunately, with the numerous moves over the years and the use of frequently unsuitable accommodation, many of our older books are in less than perfect condition.

In addition to its books, the Library holds a magnificent collection of photographs. A Photographic School began at Chatham in 1840 and the collection includes much early work by school students with portraits of fellow officers and contemporary local scenes.

The Library also holds an extensive archive of Corps history including CRE Letter Books from various stations from as early as 1758, minutes of Corps committees and Corps sports reports, and a large collection of maps and plans.

To conclude, the Library we have today is the product of past generations of the Corps. To ensure that all parts of our history are properly represented we rely on donations of suitable material. Please, before throwing anything away, consider whether it could be of use to the Library – or the Museum. If in doubt, send it and let us decide.

Museum Report

COLONEL G W A NAPIER MA

THE RE Museum courtyard is now open to the general public and was the scene of a fine display to mark the tenth anniversary of the Falklands War. Pride of place goes to the Harrier GR3 acquired by the Museum in February 1992 as a gift from the Ministry of Defence, in recognition of the long association of the Corps with the Harrier Force. Harrier XZ964 actually took part in the Falklands campaign and has become an established part of the collection now that the Falklands temporary exhibition is closed.

In due course the courtyard will contain a permanent display covering the postwar story of the Corps, including counter-insurgency operations in Malaya, Cyprus, Aden, Kenya and Borneo as well as the Cold War from 1945 to the collapse of the Warsaw Pact in 1991.

The Falklands exhibition was opened by Lord Shackleton on 24 June 1992 and on the same day a well attended and fascinating presentation was given in the Brompton Study Centre by Brigadier R Macdonald MBE and Lieut Colonel D R Burns MBE, both veterans of the war.

Earlier in the year the Museum reopened the mid-19th century galleries which had been closed for refurbishment. Three of the cases have been generously sponsored by donors in memory of members of their families and a special ceremony was held in April to mark these gifts. The Museum is particularly grateful to Major Tom Flower, Mrs Désirée Battye and the Clark family (Lieut Colonel Bill Clark, his father Colonel J H Clark MC and uncle Colonel S H Clark OBE).

Two more galleries await refurbishment in this programme. The Gibraltar room will be converted to a section of tunnel replicating Sergeant Major Ince's original gallery. Finally the Boer War gallery will be opened with a representation of a blockhouse and some other interesting new material. This work will be completed early in 1993.

Further development will be held up until more funds can be accumulated. Capital fund-raising has been difficult during the recession but some notable contributions have been received particularly £20,000 from Rolls Royce and £15,000 from the J C Bamford Trust. Many Sappers have also given generously towards building up the Endowment Fund, now approaching nearly £50,000.

The visitor numbers have been most encouraging. By the end of August they showed a 37 per cent increase over the same period in 1991. Receipts have already topped £8000 which compares with only £5750 in the whole of 1991.

A visitor survey has been completed with 240 individuals questioned over ten not consecutive days in August and September. Some of the more interesting points arising were:

- 80 per cent were making their first visit.
- 27.5 per cent came from outside the Medway towns.
- Of these, 76 per cent came from outside Kent.
- 49 per cent came in family groups.
- 70 per cent spent more than one hour in the Museum.
- Ages and sex were (per cent):

	Male	Female
0-16	27.9	15.3
17-25	3.5	3.3
26-45	16.0	11.9
46-65	8.4	5.4
65+	4.7	3.5
	60.5	39.4

These are encouraging results and helpful in the Museum's marketing efforts. The Museum staff have been greatly cheered to see the crowded galleries on many days but there is plenty of capacity for more and it is hoped that all Sappers will continue to spread the word that their magnificent collection is now making something of an impact.

The two photographs below are examples of contrasting items in the exhibition which typify the variety of interest on display in the Museum today.

The Centurion Bridgelayer – a popular item with this year's visitors to the Museum.

Figures of Lamaist Gods recovered from the Imperial Summer Palace after its destruction by British and French forces during the Second China War.

Museum Report (p247)

The Engineers of 1761

MAJOR GENERAL F W E FURSDON CB MBE DLitt FIMgt

In the fast changing world of today, against the related background of the Ministry of Defence's *Options for Change*, many are wondering about the future size and shape of the British Army in general, and of the Corps of Royal Engineers in particular. It was with such thoughts in mind that recently, as I was rummaging in an attic trunk of ageing family military items, I came across what I can only describe as The Corps List of November 1761.

The Royal Engineers List of November 1991 records 1442 Serving Officers and 906 Territorial Officers — a total of 2348. The extraordinary difference between the 1761 and 1990 Lists immediately caught the imagination. It quickly fired speculation as to the day-to-day role, deployment, *modus operandi* and status vis-à-vis the rest of the Army, of the officers curtly described as 'Engineers, Rank as Officers of Foot' who numbered but 60 strong. Whereas all held Engineer rank, only seven additionally held Army rank.

The smallness of the Engineers' strength contrasted starkly with that of a very large Army comprising (in listed order of the day) a Troop of Horse-Guards: two Troops of Horse Grenadier-Guards: a Royal Regiment of Horse-Guards: four Regiments of Horse: three Regiments of Dragoon Guards: 21 Regiments of Dragoons: the First, Coldstream and Third Regiment of Foot Guards: 104 Regiments of Foot: The Fencible Men of Argyll: The Earl of Sutherland's Battalion of Highlanders: nine Independent Companies of Foot: a Corps of Rangers: seven New Independent Companies of Foot: 23 Independent Companies of Invalids: The Royal Regiment of Artillery: The Regiment of Irish Artillery: Engineers: 135 Companies of Marines and seven Generals, 68 Lieutenant Generals and 54 Major Generals — more than twice as many Generals as it had Engineers!

In 1761 there were 39 military garrisons in Great Britain. Of these, a number were in Ireland and others were in Jersey, Guernsey, the Scilly Isles and the Isle of Wight. One of the mainland garrisons was at Upnor: its Governor was Lieutenant Colonel William Deane, who received an annual allowance of £182.10s.0d. Deane was not an Engineer Officer. Overseas garrisons included one in Gibraltar: 12 in 'The Plantations' these being mainly in North America: what is now Eastern Canada: the West Indies (which included Bermuda) and Senegal. Large numbers of troops were also stationed in Germany, other parts of North America and in the East Indies.

The Engineers who in 1761 attended to the needs of this very large Army were as shown in the following table:

Rank	Name	Date of Engineer Rank	Army Rank and Date
Chief, as Colonel	William Skinner	14 May 1757	Maj-Gen 18 Feb 1761
Director and Lieutenant Colonel	John Henry Bastide	14 May 1757	Maj-Gen 21 Feb 1761
	James Montresor	4 Jan 1758	
Sub-Director and Major	Archibald Patoun	4 Jan 1758	
	Patrick MacKellar	4 Jan 1758	
	James Bramham	17 Mar 1759	
	William Green	10 Sep 1759	
Engineer-in-Ordinary and Captain	Mathew Dixon	4 Jan 1758	
	William Eyre	4 Jan 1758	Lt Col 17 Jul 1758
	George Morrison	4 Jan 1758	Lt Col 22 Feb 1761
	John Archer	4 Jan 1758	
	George Weston	4 Jan 1758	
	Harry Gordon	4 Jan 1758	
	John Brewse	17 Mar 1759	
	Hugh Debbeig	17 Mar 1759	

Rank	Name	Date of Engineer Rank	Army Rank and Date
	John Baugh	17 Mar 1759	
	Richard Dawson	17 Mar 1759	
	Richard Dudgeon	17 Mar 1759	
	William Roy	10 Sep 1759	
Engineer Extraordinary and Captain Lieutenant	C Hubert Herriot	4 Jan 1758	Captain 8 Nov 1756
	Thomas Walker	4 Jan 1758	
	Adam Wiliamson	4 Jan 1758	
	Thomas Sowers	17 Mar 1759	
	Thomas Wilkinson	17 Mar 1759	
	John Williams	17 Mar 1759	
	George Garth	17 Mar 1759	
	John Phipps	17 Mar 1759	
	William Spry	17 Mar 1759	
	Robert George Bruce	17 Mar 1759	
	Thomas Bassett	24 Nov 1760	
Sub-Engineer and Lieutenant	Charles Tarrant	17 Mar 1759	
	J Christian Eiser	17 Mar 1759	
	Richard Muller	17 Mar 1759	6 Dec 1757
	Theophilus Lefanue	17 Mar 1759	
	Archibald Campbell	17 Mar 1759	
	Patrick Ross	17 Mar 1759	
	John Montresor	17 Mar 1759	
	Thomas Craskell	17 Mar 1759	4 Jul 1755
	Henry Watson	17 Mar 1759	
	Samuel Beardsley	17 Mar 1759	
	Robert Morse	10 Sep 1759	
	Joseph Heath	10 Sep 1759	
	Abraham Daubant	22 Feb 1760	
	Frederick Mulcaster	24 Nov 1760	
Practitioner Engineer and Ensign	Elias Durnford	17 Mar 1759	
	William Green	17 Mar 1759	
	Alexander Mercer	17 Mar 1759	
	Andrew Fraser	17 Mar 1759	
	John Mar	17 Mar 1759	
	Gilbert Townshend	17 Mar 1759	
	Archibald Robertson	17 Mar 1759	
	Daniel Slack	17 Mar 1759	
	Abraham Walsh	17 Mar 1759	
	Charles Brown	22 Dec 1759	
	William Tolley	23 Dec 1759	
	Christopher Weston	22 Feb 1760	
	James Lillyman	15 Aug 1760	
	Robert Pringle	24 Nov 1760	
	Nathan Minshall	25 Nov 1760	
	James Mouat	26 Nov 1760	

In 1761 the two Engineers holding the Army rank of Lieutenant Colonel were both serving outside 'the Corps'. William Eyre was in America in command of the 44th Regiment of Foot: and George Morrison was a Deputy Quartermaster General. One would also suspect that Lieutenant John Montresor was an early supporter of the subsequent strong Sapper tradition of son following father into the Corps, Lieutenant Colonel James Montresor presumably being his father. Certainly, one assumes the 60 were kept hard at work by the huge Army in which they served: and that then, just as for 231 years thereafter, the cry was 'Never enough Sappers!'

The British Services Everest Expedition 1992

LIEUTENANT COLONEL M G LE G BRIDGES OBE

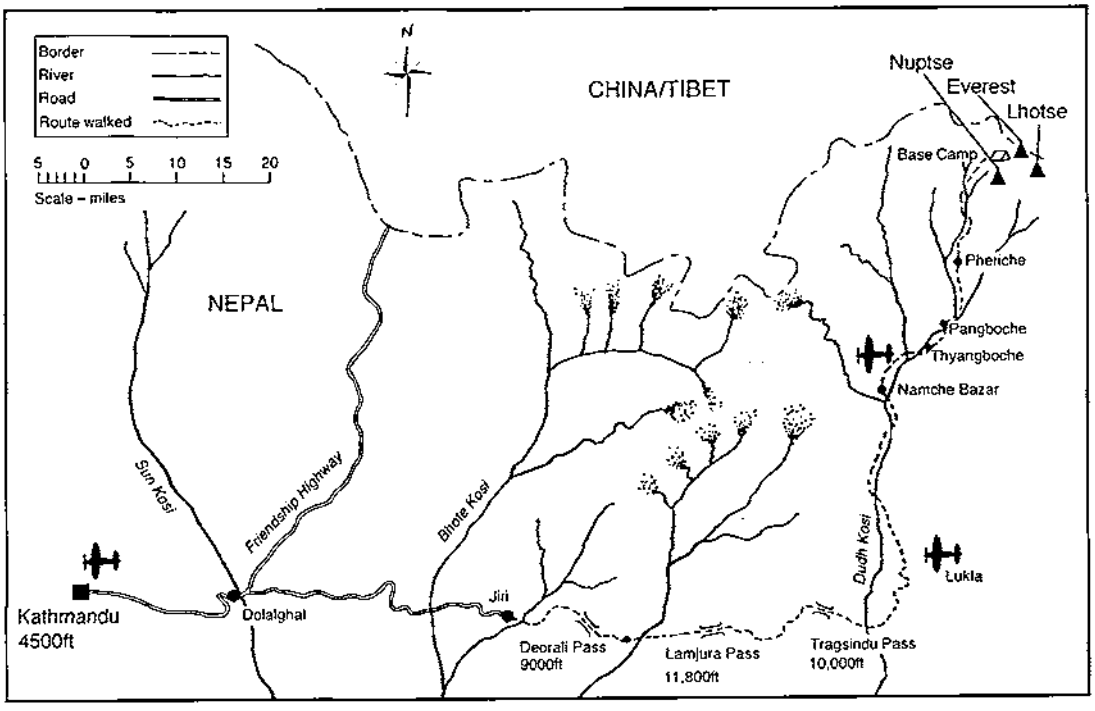
Lieutenant Colonel Bridges has pursued a career in construction engineering which has brought a series of fascinating tours, many of them overseas, but which have also allowed him to participate in a long series of climbing expeditions, seven of them in the Himalayas, including the successful Everest expedition of 1976. He was commanding the CRE(Wks) Middle East during Operation Granby *when an invitation arrived to take part in this year's expedition to tackle the West Ridge route on the mountain. The dates conveniently coincided with the completion of a tour as CRE 64 CRE(Wks), and since his return he has joined the UKLF options team as a project sponsor for £107m worth of projects.*

IN the pre-monsoon season this year a team of British Servicemen, including one Royal Engineer, attempted to climb the West Ridge of Mount Everest. This route was pioneered by an American team in 1963 and since then some 37 attempts have resulted in only six successes. It is the longest route on the mountain and one of the hardest, so considerable challenge was implicit in the venture.

Leaving on 10 February 1992, we flew by courtesy of the RAF via Cyprus, Abu Dhabi and Delhi to Kathmandu. We went early deliberately so as to be the first party to reach the mountain of 13 attempting routes on the South side that season. From Kathmandu we drove to Jiri and then walked for 11 days eastwards to Dudh Khosi valley where we turned North to Namche Bazar and Pheriche, from where we mounted our acclimatisation programme. We encountered very cold conditions on the way in with snow on the high passes, and at Pheriche at 14,000ft temperatures at night were dropping to -20°C. Our acclimatisation involved climbing two mountains of over 20,000ft, at the end of which we staggered our arrival into Base Camp. First to come were the administrators – leader, base camp manager, rations member, equipment member, sherpa liaison member, etc. Next to come was my party which had been tasked with finding a route through the Khumbu Icefall – arguably the most dangerous part of the mountain – and finally came those members whose special tasks would come up later on.

Identifying a relatively safe line through the icefall, and installing all the ladders and fixed ropes necessary to develop it into a route which would be usable by heavily loaded carriers, took from 15 to 25 March, so our initial objective of getting into the Western Cwm by 1 April was achieved with a clear margin. The icefall was in a bad state this year, and there were two sections, one just below the middle of the 2000ft cascade of ice and one at the top, in which the whole mass was moving relatively quickly, creating hideously unstable areas of towers, crevasses and loosely piled up debris. Trying to find a secure way through this lot was the stuff of nightmares. We were ever aware that when all the expeditions had arrived, there could be over a hundred people working up or down through the icefall at any one time, and the consequence of a major collapse along the route could be a disaster of appalling proportions. As it was some sections obligingly collapsed while we were not around, simplifying our problems. Others laid on spectacular displays for us which did terrible things to our nerves and which we would have been prepared

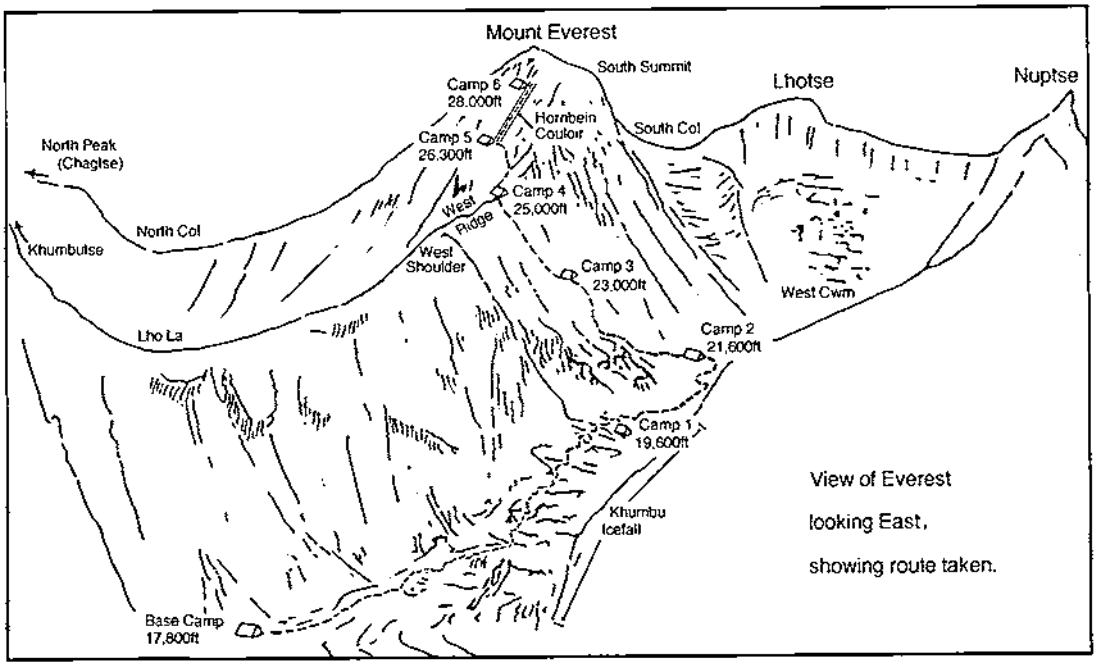
Lt Col M G Le Bridges OBE
The British Services Everest expedition 1992 (p250)



Map of area covered in article.

to miss, while still others reserved their performances for later on in the climb, though mercifully no one was hurt by movement of the ice, vindicating our eventual choice of line.

Coincident with our completing the route through to Camp 1 at the top of the Icefall, the other teams arrived – one New Zealand, one US, one Dutch, two Indian, three Spanish, one



Serac in the icefall with evidence of the 1989 US expedition.

Russian, and a confusing and volatile assemblage of Czech, Chilean and Russian climbers who most of the time seemed to comprise two teams. Finally came the French in mid-April, bent on completing a "lightweight ascent", which actually meant they relied on everyone else to establish the route and provide the ropes, fixings and ladders. It also meant later on that one of their members would have died, with his team mates powerless to do anything for him, had we not been on hand with oxygen, stretcher and rescue party, to bail them out. At its peak the number of people at Base Camp reached about 350! Meanwhile, we pressed on up the Cwm, establishing Camp 2 at 21,800ft below the Southwest face of Everest, and occupying it on 2 April.

While the weather had generally remained fine, we had had a lot of trouble with high winds at the beginning and continuously had to endure exceedingly low temperatures. In early April we were still recording temperatures of -24°C inside our tents at Basecamp, while further up –30°C was not uncommon. At Camp 2 we parted company with the general herd, and while they pursued their way on up the Cwm, up the Lhotse face to the South Col and ultimately the summit, we turned sharp left and hacked our way up a 4000ft ice slope to the West Ridge. Camp 3 was placed just under halfway up under a protecting serac, and the route continued upwards, following a gully through the rocky ramparts which guarded the approaches to the crest of the ridge. At the top we turned right and followed the ridge up to the base of the final rock pyramid at 25,000ft. Here Camp 4 was created by excavating two snow holes in a bank, since the location was exposed to the westerly jetstream winds and reliance could not be placed on the survival of tents there.

When the Americans climbed this route, they did so as a secondary thrust, subsidiary to their main effort via the South Col. As such it was a fairly lightweight climb in which two members, Unsoeld and Hornbein, set out from the site of our Camp 4 with a support party carrying their camp and extra oxygen. The camp was set up at 27,500ft in the Hornbein Couloir, and from then on the summit pair were on their own, their support party dropping back to Camp 4. Their subsequent climb to the top which included some irreversible pitches, their traverse of the summit and enforced overnight bivouac, and their descent via the South Col, involved a degree of commitment, courage and endurance which earned our unqualified admiration. However their survival depended on a level of luck, in terms of good snow conditions and fine weather, on which we would have been foolhardy to rely.

We therefore planned to install fixed rope all the way to our top camp, and to place that camp at around 28,000ft, so as to provide a lifeline for our returning summit parties. The penalties implicit in this approach were the need for an additional camp at 26,200ft at the bottom of the Hornbein Couloir, and the commitment of a lot of time and manpower to the preparation of the route. This in turn implied an extended drain on our logistic resources of food, cooking gas and oxygen and on the carriers' effort in keeping those at the front supplied. However the plan was valid, and the magnificent efforts of our Sherpas, frequently carrying double loads or lifting stores direct from Camp 2 to Camp 4, brought success within our reach. Only the weather refused to cooperate, and if the weather isn't right, you don't climb Mount Everest.

The British Services Everest expedition 1992 (p252)

In mid-April, when I took over management of logistic support on the mountain, the intensely cold weather was continuing to make life difficult between Camp 2 and Camp 3, while up on the ridge the addition of gale force winds and driving spindrift reduced any progress to a bitter battle against the elements. Camp 4 was occupied on 20 April and work started on the route beyond, which traversed upwards through a rock band via the quaintly named Diagonal Ditch, and then out across the snowfields of the North face to the bottom of the Hornbein Couloir. However the team tasked with this section failed to complete it due to delays imposed on them by the weather, and the next team, which had been earmarked to fix rope up the couloir and install Camp 6, had to be brought forward to finish the job. This they did, installing Camp 5 and in addition running out 330yds of fixed rope up the couloir, but by then they were a spent force, having been working for six days at over 25,000ft and they had to be brought down.

Getting higher – 26,000ft on the West Ridge.

With the route up to Camp 6 yet to be completed, we were forced to raid our second assault party for fit manpower to make up a team to do this, and they occupied Camp 5 on 11 May. Thus it had taken three weeks from the occupation of Camp 4 to get this far, which included two partial withdrawals from the mountain when conditions prevented any constructive work and we needed to conserve stocks in the high camps. The extended delays had played havoc with our logistic support plan, and camps which had been adequately stocked initially to meet the demands of the original scheme were now very thin, while our carrying effort was being stretched to the limit to keep them all supplied. We were also now committed to only one summit attempt as that was all we had manpower left for who were still capable of reaching the top. Their success would be dependent on getting a window in the weather when we needed it.

The break in the weather actually came on 10, 11 and 13 May, when a record number of over fifty people went to the top via the South Col. On one day we were treated to the unedifying spectacle of 58 people moving up the fixed ropes on the upper Lhotse face. All sense of remoteness, of venturing alone into the throne room of the mountain Gods was obliterated by the sight of these queues. One might as well have visited Lenin's tomb!

Sadly after these three days the weather reverted to its previous pattern of blowing dogs off chains with some significant snowfalls thrown in for good measure. The new couloir party failed to reach a site for Camp 6 and dropped back exhausted, so our final resource was to take the two climbers earmarked as the summit pair's support party and four Sherpas to finish it off. This they did, Camp 6 being installed on 18 May, while at the same time the summit pair moved into Camp 5 ready to go for it. They never did. The weather remained set in the wild sector and Camp 5 started to come apart at the seams – literally. By the 21st the support pair had spent six nights at above 26,200ft, the magic "8000m" mark, and in the battle to keep the snow out of the tents and to survive, they had reached the point of exhaustion. At the same time stocks of consumables were rapidly running out – there was no food at Camp 2; there was cooking gas on the mountain for one more day; there was no more oxygen at Camps 4 and 5. We were through, but the acceptance of the end of two years planning and preparation and of 72 days of continuous backbreaking effort was hard.

The British Services Everest expedition 1992 (p253)

Storm over Everest: the final curtain.

Over the course of two days we stripped our gear off the mountain. Camps 1 and 3 had gone two days before and on 22 May I packed up Camps 2 and 4 with a party of Sherpas, and together we sledged the proceeds down the Cwm to the lip of the icefall. This last effort became a re-enactment of Scott's journey to the South Pole as we fought to drag our 450lb sledge through ever deepening snow and near white out conditions. It was as well that we were the last out, having spent six full weeks at or above 21,800ft, since there was a massive collapse in the top of the icefall half an hour after we came through, and by the next day the new snow was a metre deep up on the mountain. No one high up would have got down for days after that.

So ended the British Services Everest Expedition 1992 in what could legitimately be termed honourable failure. It was doubly frustrating to have failed in a season when a record number reached the top, and to have failed by some 350m on a 8848m mountain, but if the Goddess Mother of the Snows doesn't want you to get to the top, then sure as hell you ain't going to.

The British Services Everest expedition 1992 (p254)

Parties, Prairies and Parachuting

SECOND LIEUTENANT H T RICKETTS

Second Lieutenant Henry Ricketts completed Young Officers' Course 105 in April 1992. On posting to 38 (Berlin) Field Squadron he was given a three month attachment to 'A' Squadron 14th/20th The King's Hussars as 2nd Captain for their trip to British Army Training Unit Suffield (BATUS). He has since returned to Berlin, completed exchange training in Italy and is presently preparing for Berlin's last Tattoo.

In writing this article I hope to explain why an attachment of a young sapper officer to a post such as second captain in an armoured squadron on exercise, and, to a lesser extent in barracks, not only offers an excellent opportunity to expand his general military knowledge, but can also be a great deal of fun. Many a senior officer has admitted that his best years in the Army were those spent as a subaltern. Today, within our ever shrinking armed forces the chances of travelling the globe on unusual trips are becoming rare, consequently openings of this kind should be sought out whilst one is still in a suitable position to take them up.

Towards the end of the Young Officers' Course at the Royal School of Military Engineering (RSME), I found out that I was to be posted to 38 (Berlin) Field Squadron – as desirable as a Gurkha posting to Hong Kong. I was to be the last field troop commander in Berlin. However, there was a hitch – I would have no troop to command for six months. As it happened my OC, Major Matthew Whitchurch, a man of endless ideas, had already sorted out what I would be doing for many of those spare months, and it had nothing to do with the Sappers! An ideal opportunity to forget all I had just learned loomed towards me in the guise of Battle Captain in 'A' Squadron 14th/20th King's Hussars on Exercise *Medicine Man 3* to be held on the Prairie in Canada.

After two weeks getting to know the squadron in Berlin, or more accurately, the nightlife of Germany's finest city, I was packed off to Soltau for the Pre-BATUS "beat up". Since the attachment had been made on an ad hoc basis (and it seems to take a fair portion of the Black Forest to make such an affair official), there was no specific vehicle in which I could play out my role. I was initially given command of a Challenger Main Battle Tank (MBT). For two days I roamed the area pretending to shoot at the Regiment's Recce Troop, which was acting as enemy. I had read up about basic tank tactics and was surprised to find how easy they were to grasp so long as one was not lost. Getting lost was pretty difficult as although it was my first time on the area it took all of a day to know it backwards.

Having only spent a few days on exercise I travelled down to Sennelager with the command elements of the Squadron to join up with the Queen's Own Highlanders' Battle Group at the Brigade and Battle Group Trainer (BBGT). This was my chance to discover what I would be expected to do on the Prairie. With the help of the Squadron Second-in-Command, who had been a Battle Captain during the Gulf

Second Lieutenant H T Ricketts
Parties, Prairies and Parachuting (p255)

War (Operation *Granby*), I managed to make something of the confusion that was the administration net. To be fair to the Queen's Own Highlanders, they had only been informed that they were going to Canada one week previously, and had had little time to prepare themselves.

Having seen the theory behind the mistakes that were made at BBGT we returned to Soltau whereupon I took over the heavy burden of Ambulance Commander. This was an interesting choice of vehicle for Battle Captain, but the only one available. Unfortunately I was then used as enemy, and had under my command various Light Aid Detachment vehicles (my first multi-vehicular command), and it was not until the final phase when the Battle Group (BG) exercised as one, that I actually had a chance to do the job of Battle Captain.

Whilst on Soltau I often came across the Sapper Troop. This provided me with valuable insights on two counts – first that of how a Close Support Troop operates and second how the Arms it supports, in particular the armour, view its method of operation. My first encounter was as a tank commander during a demonstration on obstacle crossing. There were various stands of different obstacles which were explained to the entire Squadron by a section commander at each. The atmosphere soon became heavy as soldiers gradually became bored, in a similar way to the effect on students of lectures given in the Churchill Hall at Sandhurst. Consequently a poor opinion was formed of the Sapper Troop. Fortunately the practical phase brought a certain respect back as the squadron vehicles were put through their paces on a circuit of five obstacles. This was first done opened up, then closed down and then at night.

The most important point that I felt arose from the "beat-up" was that there is little understanding between Arms, mainly on the employment of sapper equipment. Unfortunately, although it improved at Suffield, it still left me wondering what young officers in other Arms were taught on their Troop Commanders' Courses. I say this because the Tactics Wing at the RSME spends its entire time thrusting "big picture" ideas down the throats of us young saplings; so although we may be inexperienced we have a sound knowledge base on which to build.

I returned to Berlin to discover not only more night spots but also the Heavy Ferry in operation with the French armoured squadron. Their AMX 30s looked like Tonka Toys in comparison to the mighty Challenger. I returned to the 14th/20th King's Hussars to attend their Summer Ball (even if they were totally useless in battle, which Operation *Granby* proved they were not, I would fight for their retention since they have perfected the art of throwing parties).

I was not due to deploy to BATUS for two weeks which allowed me time to become accustomed to the cavalry way of life and also to move the Squadron plus 40 or so augmentees from the Regiment to Canada. True to form the RAF gave us many opportunities to sort out delays and having doubled the regiment's telephone bill sorting these out, I finally deployed on the last chalk, arriving in Camp Crowfoot 24 hours after the BG had moved onto the Prairie.

The problem of what vehicle I was to use had not been sorted on the BG side of life since Soltau. My OC, using various bargaining techniques and global contacts, had tried to obtain a FV432 from both sapper and ordnance sources in BATUS, but it seems as though necks grow short in the North. Just when I thought all was lost and I would have to resort to my faithful steed the ambulance, or even worse the Squadron Leader's Landrover (together with his three or four sleeping bags, and respirators mysteriously gained from tanks he took over when his broke down), I received a message from Canada saying that a Ferret had been acquired, by fair means or foul I was not bothered; maybe I should have been, for on arrival I discovered less a Ferret Mk2, more a shell on wheels! However, in true sapper style, with the help of my driver, we improvised, adapted, overcame and deployed (after a hearty lunch in the mess) to rejoin the squadron. It turned out that the freedom afforded by having my own vehicle was invaluable.

During the initial build-up phases of the exercise the pace was relatively slow which gave me time to settle down into a routine. The daily allocation of ammunition often proved to be erratic in arriving, mainly due to the rain forcing many trucks off the road. In the last phase, Operation *Gazala*, I managed to procure most of the MBT rounds, something which rather annoyed the Armoured Squadron from the Royal Hussars. Fortunately, we managed to fire them all thanks to our trigger happy gunners.

As the exercise progressed I was given extra jobs such as Squadron Liaison officer and guide.

My luxury two-seater convertible was also used as a battlefield taxi. This was not popular with me or my driver since I had to offload my kit whenever it was required and my driver got very little sleep. Furthermore, troop leaders seem to have a nasty habit of transforming all turrets they come across into municipal tips! However, the war carried on.

Throughout the exercise I bumped into the Sapper Troop but usually only to find out that, as always, their exercise was much harder than anyone elses was. Unfortunately 'A' Squadron saw very little of what they did, which only widened the knowledge gap between the two Arms. The notion that all Sapper tasks are straightforward and go without their fair share of problems is rife amongst the Cavalry. This failure to grasp what really happens means that the Cavalry are forever cursing the Sappers for getting things wrong. Little do they know that if we, the Sappers, had to rely upon them continuously in order to do our jobs, we would probably pack up and go home! This is probably too harsh a statement especially coming from a mere subaltern, however, I was amazed at the many simple armoured squadron tasks which went by either incomplete or which went badly wrong.

The main advantage of having a wheeled vehicle was in the recovery to Crowfoot. By the time I had sped along the Rattlesnake Road, washed down, showered, been fed, and parked in line for the servicing bay, the first tanks were only just rolling onto the dustbowl. After the post-exercise handover, four other officers and I hired a huge car and spent four fun-filled days in Montana on rest and recuperation, prior to my spending three weeks on adventurous training, which consisted of two weeks' freefall parachuting and five days' cycling in the Rockies.

I returned to Berlin having spent three months with the Cavalry and only five weeks in my own Squadron. This amazing opportunity to broaden my experience was both challenging and rewarding and has resulted in friends and fond memories, not to mention the pleasure of knowing that yet again the Corps has provided much needed assistance to other Arms without batting an eyelid. I was also present during the final exercise the 14th/20th King's Hussars will ever do, because in December they amalgamate with their next door neighbours The Royal Hussars.

Postscript

During my attachment, and certainly since I realised that I was fortunate to have an OC who was not only prepared to let me go off and do something outside the Squadron for so long, but who also understood the advantages to both myself and the Squadron in doing so.

The wind down in BAOR over the next few years could result in several young officers finding themselves with very little to do. Rather than being sent on service funds accounting courses or rock climbing in Bavaria, a trip to Canada or somewhere similar with another Arm may well produce a more tactically aware and mature commander who would be in a better position to take on his role in our new smaller but better army of the future.

Key Lessons

All Arms Training is invaluable to assist a sapper officer to do his job to his best ability.

Working and living with another Arm helps engender cooperation and understanding between officers from these differing backgrounds.

Seeing how other arms regard Sappers allows us to self-police our training and operating techniques.

The Young Officers' Course may be the longest and toughest in the Army but it is also the one which best equips officers to comprehend the All Arms Battle.

Squadron and Regimental commanders should plan to let their subalterns gain the type of experience described in this article. It will help make ythe subalterns more competent.

Although TEWTs are an excellent way to improve ones tactical awareness, nothing can beat the real thing. Junior Officer Training and Education Scheme 1, may then become a pleasure to pass rather than a pain.

Canada

LIEUTENANT COLONEL C E E SLOAN BEng CEng MIEE FIMgt

Cedric Sloan joined the Corps as a direct entrant at a point lost in time. Although his memory is failing, he can faintly recall periods spent in Germany, Gibraltar, the Falklands, USA and ... oh ... UK. In fact, the last just reminded him of a very happy two and half years at some place called Minley where he was occasionally allowed to command 3 Training Regiment. Since then, he has returned to North America.

MANY readers will have personal knowledge of Canada (who hasn't a relative here?), either from time spent on the staff at the British Army Training Unit Suffield (BATUS) or with a visit-ing Battle Group from 1(BR) Corps, or through an adventurous training expedition in the Rocky Mountains, or perhaps with a squadron deployed on Exercise *Waterleap* in some inhospitable part of a Canadian Forces' training area. Luckier folk might have enjoyed a longer tour on exchange at Chilliwack as an instructor in the School of Military Engineering, (Captain Andy Phillips is there at present), at the Mapping and Charting Establishment (where Captain Kevin Porter is incumbent), or on PQE exchange, such as that which Major Gareth Jones was undertaking near Dawson City in the far flung Yukon Territory. He has been replaced in Winnipeg by James Simmonds. Less adventurous (ie older and wiser) members currently represent the Corps at the High Commission in Ottawa, where Major Bruce Lawson makes a point of never wearing the same uniform as me.

Military history buffs will know of the long association that the Corps has enjoyed with Canada from the very earliest days of its development as a colony. Indeed, here in Ottawa, the exploits of Lieutenant Colonel John By RE are commemorated by the main thoroughfare into the centre of the capital, known as Colonel By Drive, and through the memorial boards at Hog's Back Falls, where John By constructed the Rideau Canal despite the ferocious winters and difficult terrain that confronted him and his small band of Sappers. Unfortunately, he made the unwise decision of naming the small settlement he founded at the junction of the Gatineau, Rideau and Ottawa rivers after himself. Bytown was frowned upon by superiors and royalty as an inappropriate title for the squalid collection of timber and stone dwellings, that is now known as Ottawa. Despite his tremendous contribution to the successful exploitation of this resource rich land, By's achievements went unrecognized by his superiors and he was even chastised for exceeding his allotted budget, in an environment that few in Britain could comprehend, never mind cope with.

But it was the failings of yet another Sapper Colonel, which prompted me to write this article (if only I had known the reputation of this place for destroying careers before I had accepted the posting!). The tale begins in a surprising place — Halifax. Known as the home of the Canadian Navy and an important sea port on the eastern seaboard, it is the largest city in Nova Scotia

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(that's New Scotland for you Sappers that have, typically, never enjoyed the benefit of a classical education — my older daughter had to tell me!). Yet Halifax was initially a military garrison, defended by the Army as a safe and strategic harbour for the Royal and Merchant Navies. It has figured prominently in our history. It was from Halifax that General James Wolfe sailed to storm the Heights of Abraham above the St Lawrence River, and seize Quebec City from the French in 1759. Early in the nineteenth century, British expeditions against the United States were launched and supplied from Halifax, including the force which occupied and burned Washington DC. It was also a vital supply base in both World Wars.

During most of this time there was a Sapper presence in Halifax and this is commemorated in the Royal Artillery Park (I know, regrettable but true), where the Canadian Engineers have erected a plaque to acknowledge our association with the city since 1749 (yes, I also know that Sapper Officers were not offered the King's Commission until 1757, but there we are). However, the most significant feature in Halifax is the Citadel, which, you will be pleased to know, is adjacent to, but overshadows, the Artillery Park. The Citadel was built under RE supervision in the first half of the nineteenth century, and is the fourth fort to be built on this commanding site, which overlooks the harbour and its land and sea approaches.

The first fort was a small stockade built in 1749 in the area of the present Citadel's southern ravelin. Built in haste as protection from Indian attacks it soon fell into disrepair. At the outbreak of the American Revolution, new fortifications were rapidly constructed. These were essentially earthworks around a blockhouse. Built in 1776, they too were in ruined neglect by 1784.

As a result of war breaking out between England and revolutionary France in 1793, the third Citadel was built on the orders of Prince Edward, father of Queen Victoria, and a keen fortifier if the results of his efforts in Canada are a measure of his interest. A traditional, four bastion fort was built atop the hill from earth and timber. Although not completed until 1800, it too was in ruins by 1815.

The present Citadel was originally designed by Lieutenant Colonel Gustavus Nicolls RE in about 1825. Apparently not a PQE, he estimated that the project would take no more than six years to complete. In the end it took 30 years and cost more than twice the original estimate. Oh, well perhaps he did complete professional engineer training after all. Now we know where our tradition originates of squeezing a regiment's work for a year into a squadron three month project.

Work on the stone fort was authorized in 1828 and commenced in the summer of 1829. A year later all looked well and the construction was on schedule until part of the main wall collapsed. It was simply not robust enough to withstand the rigours of a Canadian winter in its partially constructed state. The set back did raise questions about the validity of Nicolls' calculations and he made matters worse by concurrently redesigning the eastern side of the Citadel. Enough was enough and in 1831 poor Nicolls was despatched to Quebec City, where it is even colder than Halifax. A string of successors attempted to redesign the Citadel to a standard acceptable to London, but it was not until 1838 that a final specification was agreed and the second construction phase began. (Does this in any way sound familiar to any/every project you/I have been involved with?)

By 1848 the bulk of the work was completed. This had involved removing some six metres of over-burden from the complete hill top site to provide a large enough base area, and hauling huge tonnages of black ironstone and grey granite to the top of the mound — all by hand. The average workforce comprised some 40 Sappers, 150 Pioneers and 100 labourers with a handful of civilian masons and carpenters. The Citadel was declared complete in 1850, when the barrack accommodation no longer leaked (a likely tale), the glacis formed and the armaments mounted.

The fortification had been designed, principally, to block a land-based attack upon the harbour from the West. The three ravelins face North, South and West to achieve this. An effective, deep, wide ditch completely separates the steep glacis from the Citadel proper. Both sides of the ditch are vertical and faced with stone that contain musket loopholes. The outer ditch wall is serviced by a tunnel to allow riflemen to fire upon those scaling the inner wall. Smaller tunnels also emanate from below the ditch; these were designed as potential mine shafts. Should siege troops begin to sap towards the Citadel through the glacis, then the shafts could be filled with explosive and detonated to countermine the enemy trenches and tunnels.

Aerial view of Citadel Hill, Halifax, Nova Scotia.

The British garrison in Halifax was gradually reduced during the latter part of the nineteenth century until 1906, when the last contingent of British troops marched out of the Citadel. In 1951 the fort was transferred from the Department of National Defence into the care of Parks Canada. Since 1956 it has been designated a National Historic Park and has benefited from a major restoration project begun in 1975. Today it is a major tourist attraction with restored cannon, casements and barrack rooms, a 60 minute historical presentation, static exhibitions and live demonstrations of foot, flag and gun drills. Should any of you be fortunate enough to be in the Halifax area, do take the time to visit the Citadel and the Cambridge Military Library on Artillery Place, where many original construction documents are held.

In conclusion, I would like to pass on the best wishes of Colonel Charles Keple, the Director General Military Engineering Operations and those of his fellow Canadian Military Engineers. Many of them will be known to you as a result of the numerous exchange posts which they have filled over the years in units and at the Royal School of Military Engineering. There is still a very strong bond between our two Corps and hopefully this will be maintained, even strengthened, in the future. The recent work of 527 STRE in the Borden area of Ontario for future *Waterleap* projects, and the provision of tradesmen to support the Canadian base at Alert in the North Polar region, are certainly good indications that this will be the case. *CHIMO!*

(Translation: *CHIMO* — officially, the unofficial cry of the Canadian Sappers; thought to be a traditional Inuit (Eskimo) form of greeting.)

Strange Journeys – 50 Years On

BRIGADIER A E M WALTER CBE BA

After the Royal Military Academy Woolwich, Chatham and Cambridge, the author did a Transportation Course and an Electrical and Mechanical Course which led to posting as Electrical and Mechanical Officer, Singapore. His war Service included missions to Norway and Finland, Deputy Assistant Director Transport Middle East with special missions to Turkey and China. He then served as Deputy Director Transport British Army Staff Washington and Director Transport South East Asia Command but returned to the United Kingdom in February 1944 to become Director Ports and Inland Waterways 21 Army Group. He took personal command of the Mulberry B Port Construction Force at Arromanches and his command included the Port and Inland Water Transport Operating Groups RE which first discharged stores, ammunition and vehicles over the beaches and later through the captured ports and canals in France, Belgium and Germany and also the Port Construction and Repair Groups RE responsible for all port and canal clearance and repair throughout the campaign.

Seconded to the Control Commission in Germany, he worked on quadripartite committees in Berlin and became British member of the Central Rhine Commission. On retirement he went to the Ministry of Transport, first as an Inspecting Officer of Railways and later, on International Inland Transport work in Geneva, Paris and Brussels.

Unique Quo Fas et Gloria Ducunt. Our motto enshrines so well the ordinary and extraordinary circumstances in which Sappers find themselves serving and why to be a Sapper is the greatest privilege any man can desire.

Journey One

In mid-January 1940 I was serving as Deputy Assistant Director Transport in Transportation (DADTN) at the War Office. One day, out of the blue, I was summoned to a secret intelligence office and told to go to Norway immediately – just like that. It transpired that my tasks were:

- to supervise as far as possible, shipments of British war stores through Norway to Finland which was fighting desperately against the Soviet Union, and
- to recce the Norwegian railways and ports so that their logistic capacity to support a war could be assessed.

I was told that I would have two assistants – Captain Andrew Croft, (who achieved great fame later in the war) and Lieutenant Malcolm Munte, who was a nephew of Axel Munte the Swedish author. Between them they could speak Norwegian, Swedish and if necessary (which it wasn't) get by in Finland. My task was to keep my big mouth shut to avoid giving us away and to do the recces. After indoctrination by these two experts on string vests, Harris tweed, footwear, etc to cope with temperatures of minus 30/40° Celsius and the issue to me of a passport as a shipping agent, we took train and plane to arrive in Stockholm and report to the military *attaché*. The *attaché* promptly reduced our morale to zero by explaining that three British Navy Officers, who had been engaged in monitoring the shipments of a special and indispensable iron ore from Sweden to Germany, had just been rounded up by the Swedes and sentenced to prison. We were on our own and, if caught, no one had ever heard of us. An awesome start to two months of travelling and recce through the whole of Norway and in and out of Sweden.

The method of recce was straightforward. In checking discharges at Oslo, Bergen and Trondheim, we were able to get the layout and operating details of cranes, warehouses, power

Brig A Walter CBE
Strange Journeys - 50 years on (p261)

supply, lighterage etc, in fact all the things we had been taught at the Railway Training Centre at Longmoor and on railway courses, about ports. The recce of the railway took longer and it was only by late March that we had travelled almost every mile of the Norwegian railway and many miles of the Swedish railway. We divided the railway into sections and in each one took note of the passing loops, loco sheds, coal and water points, workshops, sidings and important and critical bridges and tunnels. At every station of interest we added a code of pencil dots to the railway timetable of the section we were travelling. It would have been difficult to see superficially the additional dots on the timetable. At the end of each series of recces, the sheets were cut out of the timetable and given to the military *attaché* in Stockholm for transmission to Transportation War Office. At the same time written reports with fuller details were made and sent to London. During some of our journeys we kept meeting up with the same shrewd looking men we had seen before and it was quite clear from their behaviour that they were German Transportation staff doing exactly the same as us.

For our last journey we went into Finland crossing the frozen river Tornio from Haparanda (Sweden) to Tornio (Finland). In Finland we were accepted as British Army officers, installed in an army mess and, to our horror, informed that Swedish intelligence had alerted the Finns that British officers were coming their way. Morale zero once more! We were told that the Swedes were giving tremendous 'volunteer' support to the Finns by allowing up to 30 per cent of certain units to volunteer to fight with them. They really only had to change their buttons to change their identities.

We were clearly in the drink as we had no visas or documents to allow us to re-enter Sweden, and yet we had to get back. A kind Fate intervened. A Senior Swedish officer had just been killed in action against the Russians, and to do him honour the Finns laid on a swell funeral at Tornio complete with band to march solemnly across the frozen river back to Haparanda. There was a large *cortège* and a lot of people following in the procession which included the three musketeers doing their best to be inconspicuous. Anyhow the *tomasha* at Haparanda overwhelmed the frontier control and we were able to get into a train, say our prayers and pray that we could reach Stockholm without being detected. We succeeded and that was the last I saw of my two splendid friends who had seen me through hundreds of miles of recce. I was indeed lucky to have served with them.

In Stockholm it was decided that I must be got back to London quickly and so I was appointed King's Messenger in charge of the bag – quite an experience. I have never forgotten the bowler-hatted station master at Dover ushering me to a special compartment all to myself on the train and locking me in, though why I never discovered. I duly delivered the bag at the Foreign Office and reverted to a humble major of no importance.

Back at the War Office I soon discovered a force was gathering to go to Norway. I naturally assumed that as I knew the ports, many of the port staffs and more about the railways than probably anyone in the British Army, I would be joining the Force and going back. Not a bit of it; after a week or two the invasions started and I was posted to General Headquarters Cairo! Perhaps it was for the best and saved my life, but at the time I found the ways of my superiors to be mysterious and wonderful.

Journey Two

This took place in Turkey in mid-1941. As above, the objective was a recce of the Turkish railways and certain ports to assess the size of a German force which could be maintained through Turkey in the event of an attack on Syria, Palestine and Persia. This time the team consisted of a Q Staff Officer, Dick Batten, a RAF officer and myself. Unlike Norway, it was all quite open. The Turks knew we were British officers and provided we didn't stick our necks out were willing to help us get around and discuss things with them. It was a very pleasant three weeks sight-seeing tour of Turkey which added to our experience. Three things I specially remember. The first was the sanitation at our first hotel – The Yeni (New!) Hotel in Adana which consisted of a hole in a tiled floor such that when you pulled the plug, all the world welled from the hole and only very smart evading action saved your shoes. The next was the never to be forgotten sight of the Sicilian Gate as the train slowly chuffed uphill on a lovely evening. The third was buying Turkish delight in Ankara. On asking for it, one was asked which of about 30 varieties you wanted and tasting started.

As the Germans invaded Turkey, the value of our recce was never tested.

Journey Three

In mid-September 1941, while still a DADTN at GHQ Cairo, I was sent on a mission to Singapore, China and Hong Kong with two objectives:

- to see if we could purchase two or three portal quay side cranes from the Keppel Harbour Board in Singapore and have them stripped and shipped to Suez and
- to purchase from the Chinese 400 open, low and high sided wagons in complete knock down condition for shipment via Hong Kong to the East India Railway Workshops in Calcutta for alterations to the couplings before being shipped to Suez for the Western Desert railway.

I was on my own. I had completed a three year tour as Electrical and Mechanical Officer Singapore in May 1939 and it was interesting to be back. Arrangements for the cranes were made but as Pearl Harbour, 7 December 1941, was not far away I don't imagine the cranes ever left Singapore. My main impression was the far-awayness of the war; life seemed much as it had been in peacetime and there was little suggestion that an attack was pending. Attack from the sea still seemed to be expected although when we built the power houses underneath the guns of the two 15in batteries during my time in Singapore, all the guns except one could traverse and shoot through 360° (the terrain obstructed one gun from shooting at Johore on the mainland).

My next mission started by flying Dakota from Singapore to Lashio in North Burma. The leg over the 'Hump' as it was known was done in a Dakota of China National Airways with an American crew to Kunming, in China. Most of the passengers were Chinese, were beastly sick and, as no sick bags were provided, it was a dirty journey. The flight was scheduled to arrive at Kunming not later than 1030 hours and on arrival we were led immediately to air raid shelters around the airfield because apparently at 1100 hours each day punctually the Japanese put in an air raid. Bombs duly dropped, there was little damage, and peace reigned for another 24 hours. Here I met the right Chinese officials, started negotiations for the release of the wagons, avoided having to go to Chunking and, a few days later, flying by night, duly arrived in Hong Kong. With the help of Jardin Matheson, negotiations were completed for the purchase of the wagons and I believe some 200 got through Hong Kong to Calcutta before Pearl Harbour. On return to Cairo I found myself posted as Deputy Director Transport, British Army Staff, Washington. Before taking up the post I was in London, after the fall of Hong Kong, when my wife received a letter (which I still have) from the War Office dated 12 January 1942. It stated that according to the records I was serving in Hong Kong when the garrison capitulated and that it would be necessary to post me as missing. Fortunately for my wife, I opened the letter. Some journey!

Journey Four

I mentioned this to put on record one of the most extraordinary lines of communication which the needs of war caused to be developed. I was serving as Director Transport South East Asia Command in Delhi in October 1943 having come from Washington. We had a large shopping list of transportation equipment which was required to mount the invasion of Burma and we could only get it from the States. So as I knew my way around in Washington, it was decided that I should return there from Delhi.

The route was Dakota from Delhi to Karachi. Then Empire Flying Boat from Karachi via Basra to Alexandria – in both cases British crews; the rest was flown by American Crews. The next lap was to Cairo by Dakota then to El Obeid (Sudan) then to Maidugri to Kano and Lagos (all in Nigeria). At each stop we were given huge plates of fried eggs and bacon plus lashings of coffee and went on after about an hour's stop at each place. At Lagos we changed to a Liberator and I was told by the skipper that he wasn't quite sure of his landing at his next stop at Ascension Island because at certain seasons the runway, which was between hills on both sides, could be covered with gulls eggs making landing tricky and slippery. I never discovered whether he was taking the mickey out of a Limey but the runway was clear when we arrived. The next stage was also over the sea to Belem in northern Brazil and so to Miami and Washington. An extraordinary way halfway round the world – a well organised line of communications but of no great capacity.

Some weeks later I returned by the normal route Goose or Gander to Scotland to Gibraltar to Alexandria – not nearly so interesting as the African route.

Lord Kitchener's Coach

COLONEL A H W SANDES MA

In 1959 Major A N Stacey MBE drew the attention of readers of the *Royal Engineers Journal* to the existence of an ancient saloon railway carriage, at that time in the care of the Royal Engineers Transportation Service on the Shoeburyness Military Tramway (SMT for short). The carriage was known as Lord Kitchener's Coach, and Major Stacey asked for information that might confirm a statement on a brass plate fitted within it, that it 'did service on the Suakin-Berber Railway' and was 'reputed to have been the saloon coach used by Lord Kitchener'. The article seems to have evoked no response, and with the passing of responsibility for military railway operation from the Royal Engineers to the Royal Corps of Transport in the mid-1960s, and the reduced importance attached to military railway construction as a Royal Engineers responsibility since about that time, the subject might have been forgotten, at least by the latter. However, it chanced that interest arose within the Royal Engineers Historical Society during its brief existence from 1979 to 1987, and although republication of the 1959 article in the *RE Journal* with a renewed plea for information proved fruitless, the unsolved legend of the coach aroused the curiosity of myself and two other members of the society enough for us to undertake further research.

Probably the main reason we did so was that Field Marshal Earl Kitchener of Khartoum and Broome, KG KP GCB OM GCSI GCMG GCIE PC, was so highly distinguished an officer of our Corps that if, as seemed most likely, the coach had been used by him in his Sudan campaigns of 1896-98, it would be an historically important link with his notable achievements there, and with those of the Corps in building and operating the Sudan Military Railway (SMR) which had been a vital element in their success. If the coach had also served on the abortive Suakin-Berber Railway (SBR) of 1885, it would be a link with a project so notorious in its time for bad management in Whitehall that it may have been important to the decision to provide the Royal Engineers with the railway capability that enabled them to serve Kitchener so well on the SMR. And if the coach was as old and unusual as it seemed, it was itself of historical interest to the railway world generally. For all these reasons it seemed desirable that its history should be established as accurately as possible, with a view to its eventual preservation and restoration if justified, and if the research turned out to be anything like as difficult as seemed probable it would prove a satisfying challenge.

The report that follows is based on work undertaken by myself with M Smith Esq FICE and Lieut Colonel D R Stenhouse MBE MA FCIT (retd), who all belonged to the RE Historical Society, and with Major A S Hill RA (retd) who was employed at the Ministry of Defence Proof & Experimental Establishment (P&EE) at Shoeburyness, which is served by the SMT. To describe our efforts as looking for a needle in several haystacks might not be too great an exaggeration, since the field of search has been huge and the results largely negative, and in the space available we can do no more than summarise the positive outcome of four years' work and make some suggestions for consideration by the Museum of Army Transport which now cares for the coach. Even if the outcome is not historically important we have found the research absorbing and believe that it may interest others. Lewis Carroll's Snark was hunted with forks and hope, and turned out to be a Boojum; the story of Lord Kitchener's Coach has something of this flavour.

We began our work by inspecting the coach at Shoeburyness in August 1986, where we obtained a copy of its Army record sheet (AFG 927W) for 1961 to 1979. This describes the coach as an 8-wheeled 36 seat Brake 1st Class Saloon Passenger Coach, in good condition: origin Suaccum (sic) Rly Co, received from Woolwich 1898; tare weight 11ton 11cwt 2qtrs; maximum axle load 3ton 6cwt; overall dimensions, length 32ft, height 9ft 10in from rail, (wrong, we think), width 9ft 6in. We prepared an inspection report with photographs, a copy of which is in the Corps Library; the main details of this are summarized as follows:

Figure 1. Photograph of Lord Kitchener's Coach in 1978.

Overall Dimensions

Length over headstocks	32ft 5in
Width at floor level	9ft 7in
Height not checked, but	10ft 9in to eaves

Under frame

Timber 10in x 4in, longitudinally and transversely braced with tie rods.

Solebars (outer longitudinals) faced with metal plate on the outside.

Running Gear

Two sets of four disc wheels, 3ft 6in diameter, at 4ft 8.5in gauge.

Axle boxes carried on axle guards and leaf springs rigidly fixed to the solebars, allowing the two outer axles a small amount of longitudinal play.

Buffer and Drawgear

Standard BR twin buffers, screw coupling and drawhook with safety chain. Leaf sprung buffers and drawhooks, the latter not connected by drawbars.

Brakes

Single external side lever operating shoes on one pair of wheels.

Body

Length 27ft 6in, divided into two compartments. The larger fitted with an upholstered seat along each side and a central table, the smaller with six wooden slatted double seats. Access by a vestibule platform at each end, each with three steps each side.

Windows lightly made, very loose in frames, secured by wooden wedges and without straps, blinds, louvres or shutters.

No heating system, lighting mains powered for use when static. Body panelling lightweight timber inside, plywood outside.

Clerestory type roof, but central raised portion only about 6in higher than main convex roof and without windows or ventilators, looking as though it has been lowered and covered over. Eaves about 3in wide.

Identification Marks

On one of the solebar cover plates, a cast iron plate reading 'Metropolitan Railway Carriage & Wagon Co Ltd Builders Saltley Works Birmingham' and an aluminium plate stamped 'Registered WD Number RCP/003020'.

On seven of the eight axle box covers, cast lettering reading 'S & B Ry'. On one pair of wheels, cast lettering reading 'L & NW Ry Co Wolverton' and dates '1892' and '1893'. On a third wheel, stamped lettering 'Kitson 1884'. On each side of the body, a painted scroll reading 'Kitchener Coach', and inside the main compartment the brass plate mentioned in this article and plastic sheets engraved with the history of the coach as previously attributed to it.

The construction and appearance of the coach seem to have changed considerably during its long life. The rather plain looking plywood coachwork of the existing body *(Figure 1)* has replaced a much more ornate and antique looking design *(Figure 2* over the page) which may

Lord Kitchener's Coach (p265)

Figure 2. Photograph of the coach in about 1952.

have incorporated very thin sheet timber faced with metal; from AFG 927 this took place in 1965. The present roof is topped by what looks like a cut down clerestory roof without side windows or ventilators, but from three P&EE photographs of rolling stock on the SMT, taken about 1901, 1906 and possibly in the 1950s, a saloon coach very similar to Lord Kitchener's except that it had only nine windows each side instead of ten existed with a proper clerestory roof up to at least 1906 but later had it cut down; this suggests that both coaches had similar clerestories originally and were of the same type but that the second had had its body shortened very early. According to the AFG 927, the coach wheels have also been changed to their existing disc type from 'Spider Spookes Iron (sic)' it had in 1898; this occurred in 1924. From photographs, the coach has had a variety of identification marks including a serial number 3/2189. Because the SMR used 3ft 6in gauge central buffer stock, whereas the SBR, the SMT and the Egyptian State Railways (ESR) used 4ft 8.5in twin buffer stock, service on the SMR would have required regauging and possibly alteration of buffers and drawgear. And as will be shown later, the coach may once have had an additional outer roof to give shade from the sun, and have been topped with 'pot' ventilators.

Before turning to the coach's links with the SBR and Kitchener, it is useful to set out what is known of its connections with the SMT. The earliest definite identification has been found in reminiscences by General H A Lewis (late RA), dating from the 1960s, about his service at Shoeburyness. He mentions that a trial shoot against armour plate at some time between 1909 and 1913 was held up by a man driving a pig over the Maplin sands, and adds, "Fortunately the Saloon Carriage with lunch and plenty of white port was ready. The carriage had been brought back from the Soudan. It had been used by Kitchener." Later it is reported to have been used by HM King George V and by HRH The Duke of Kent when they visited the ranges on 6 April 1916 and 19 May 1939 respectively. It also appears in a photograph of Winston Churchill visiting the ranges on 13 June 1941 when Prime Minister, and has since been photographed there many times. To these positive identifications may be added others that are less certain, but cumulative. It must surely be true that the coach was one of 'two Carriages Saloon, eight-wheel' recorded as held at Shoeburyness on an Army stores schedule dated August 1922, which agrees with an article in *The Railway Magazine* of April 1959 saying that it was one of a pair of 32ft clerestory coaches which in common with other passenger stock was saved from the scrapheap by acquisition for the SMT, Lord Kitchener's Coach in 1898 and the other in 1900. The acquisition date in turn agrees with that given in AFG 927, and the existence of the second coach of similar type is corroborated by the photographs that have been mentioned.

Therefore it seems almost certain that the coach reached Shoeburyness in 1898, from Woolwich Arsenal, and that it was one of a pair of similar type of which the second arrived in 1900 but was modified by then or soon after by reducing the length of the body; it follows that in considering the links with the SBR and

Lord Kitchener's Coach (p266)

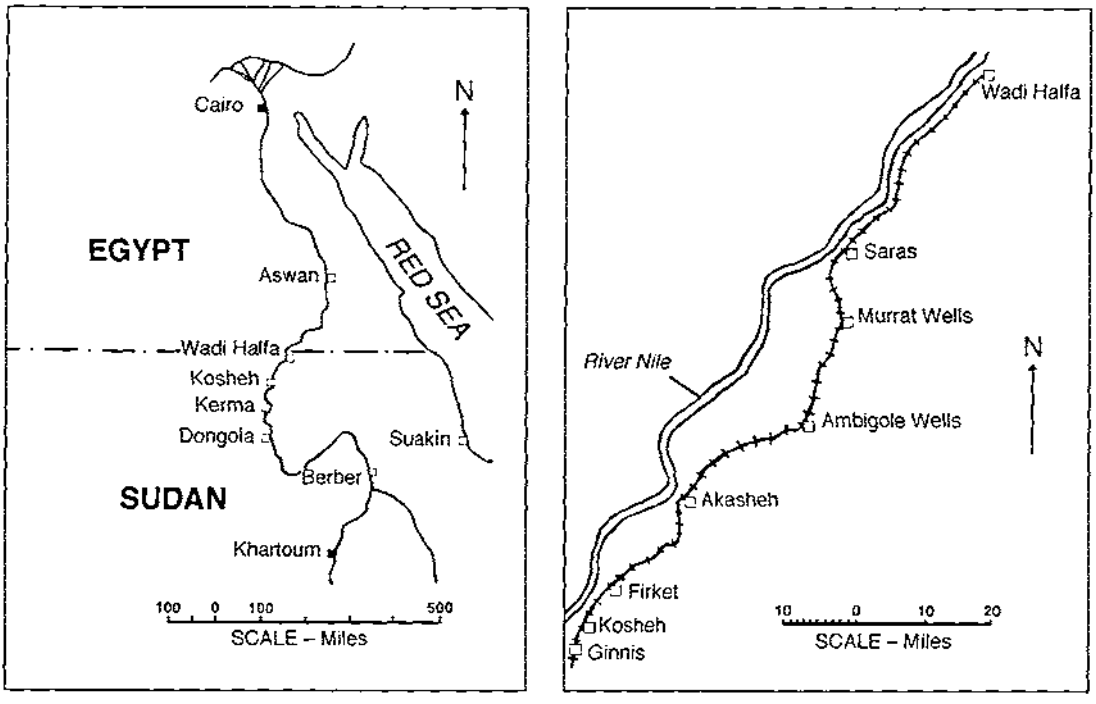

Figure 3. Sketch maps of Egypt and Sudan, and the SMR from Wadi Halfa to Kosheh.

Kitchener before 1899 evidence should be sought of at least two coaches of this type.

Nowadays, not many people may have heard of Suakin or Berber, let alone the SBR, but just over 100 years ago this was not so. In February 1884 the Inspector General of Fortifications at the War Office in London proposed that a railway should be built to connect the Red Sea port of Suakin with Berber on the Nile, (see *Figure 3* above) as a means of relieving military garrisons beleaguered in the Sudan by the revolt of the Mahdi. In June, 17 Field Company RE was sent to Suakin to prepare the port and establish a railway depot, using 18in gauge material, but no decision was taken then to build a line to Berber. Meanwhile, the Khartoum Relief Expedition had assembled in Egypt under General Wolseley and had started to advance up the Nile to rescue General Gordon, but the fall of Khartoum and the death of Gordon in late January 1885 changed Wolseley's objective to the destruction of the Mahdi. To this end the British Government at last decided in mid-February 1885 to build a standard gauge railway from Suakin to Berber, not by military engineer effort but by contract with Messrs Lucas & Aird, a well respected engineering firm based at Westminster. Although the contract was not signed until 6 March, action began extremely quickly, the first shipload of railway material leaving England on 22 February and track laying starting at Suakin on 13 March. But by mid-April the Government had decided for strategic reasons to abandon the Sudan, and on the 25th orders reached Suakin to stop work on the railway, which accordingly ended in the desert foothills only some 19 miles away. On 17 May evacuation of troops began, on the 18th the GOC reported that work on the railway had stopped, and on the 29th the contractor's staff left for England. The SBR was abandoned and little material was salvaged from it, though much was returned to England without being unloaded from the ships. Great public indignation was expressed, including a stinging technical analysis of what had gone wrong, delivered on 22 May in *Engineering*, and the Government had the embarrassment of trying to explain away a final bill after all adjustments, of £865,000. A comprehensive account of this is given in *Sudan Notes and Records* 1937, by R L Hill.

From our examination of the alleged link between Lord Kitchener's Coach and the SBR, we find good reason to believe that both it and

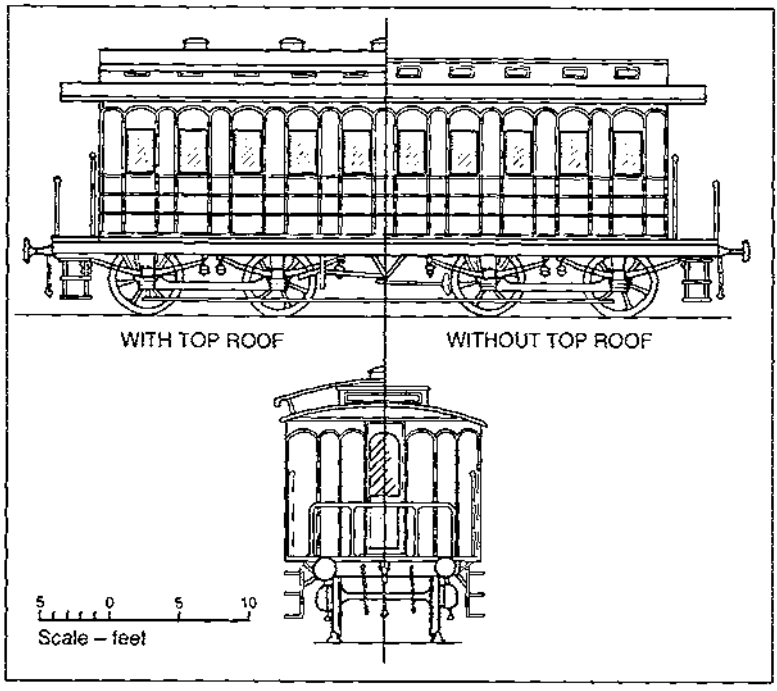

Figure 4. Sketch of the coach as it might have looked in 1885.

its companion were intended by Lucas & Aird for service on that line. The list of rolling stock which they hurriedly got together for the project included six saloon coaches. A drawing produced by the Metropolitan Railway Carriage & Wagon Company (MRCWC), preserved on microfiche at Birmingham City Library, shows the underframe of a carriage almost identical to that of the coach, with the words 'Suakin & Berver' (*sic*) written roughly beside the drawing number, which tallies with the MRCWC maker's plate fixed to the underframe and the lettering 'S & B R' cast on most of the coach's axle box covers. The drawing is also annotated 'Safety Chain same as Hull & Barnsley', indicating a connection with a concurrent Lucas & Aird railway contract. And other MRCWC drawings for SBR stock tally with other types of stock provided for the project.

It seems most likely however that Lord Kitchener's Coach was not intended originally for use on the SBR. Apart from the obvious difficulty of designing and building it in the very short time available to meet that specific requirement, it lacks the small windows, well screened against sunlight, dust and insects, and the wide eaved roof that were found on ESR carriages of the period and on the Indian pattern carriages that were later introduced in the Sudan. A clue to the coach having been intended originally for a very different purpose is that the MRCWC drawing of the underframe is listed by Birmingham City Library as for a 'Monte Video Carriage'. Since Monte Video is the capital and railway centre of Uruguay, where the railway system was built and operated during the period of interest mainly by British companies making extensive use of British built coaching stock of which some was supplied by MRCWC, and where the humid sub-tropical climate and the distances covered by journeys could well call for saloon coaches like Lord Kitchener's, it seems quite likely that the coach and its companion were diverted from a Uruguayan contract, either by MRCWC or by Lucas & Aird. Attempts to confirm this theory through contacts with Uruguay have not succeeded, but it is difficult to think of any other explanation for the seeming connection with Monte Video.

However the coaches were procured for the SBR, it must have been arranged at short notice. The contractors obtained their material from wherever they could in England, the first shipload sailing only a week after they were informed that they had the contract. Of the 38 ships that sailed, nearly all must have done so before the MRCWC underframe drawing was produced on 23 March, so unless it recorded work already done it is unlikely that there would have been time to build the coaches complete from scratch and ship them out. Moreover, the underframe drawing includes an incongruous insert, titled 'Additional Top Roof', showing a half-sectioned end elevation of a clerestory roofed coach body covered by an outer convex sun roof with pot ventilators, which suggests that the Monte Video carriage was modified at

short notice to suit it for use in the Sudan. *Figure 4* shows how Lord Kitchener's Coach might have looked in 1885, with or without the top roof and pot ventilators, and with spoked wheels such as are described in AFG 927 and were fitted on other SBR stock.

Whether Lord Kitchener's Coach, or indeed any saloon carriages, saw service on the SBR must at best be doubted. The origin of the brass plate recording such service is unknown except that from hearsay it probably dates from not later than the early 1920s, which would have been within the working life of railwaymen who could have remembered its arrival at the SMT but not perhaps been sure about its previous history. In its short life the SBR attracted much attention in the press, parliament, public records and many military and engineering periodicals including the *RE Journal*, yet only one source of the many consulted mentions any railway carriage being seen ashore; this is Winston Churchill's *River War* which says that during the Sudan campaigns of 1896-98 the debris of the SBR at Suakin included carriages amongst rolling stock of all kinds. If such a minor detail in a book of such wide scope is correct, it seems most likely that such carriages were either the open sided passenger trucks to carry 12 soldiers that were supplied from Woolwich Arsenal for the 18in gauge line in 1884, or the 'open carriages' of which one was included in each standard shipload of material for the SBR in 1885; the latter would tally with the recorded supply of 23 3rd Class carriages for the SBR contract, and with the antique type of open sided 4-wheeled carriage shown in another MRCWC drawing marked 'Suakin & Berver', and illustrated at *Figure 5*. Not only would there have been many more of these carriages available, but they would have been more useful for moving troops and railway workers and thus more likely to have been in use, whereas even if the saloon coaches had been landed the scope for using them would have been very limited on so short a line leading nowhere in particular which was soon abandoned. Most telling of all is the fact that even the GOC at Suakin, Sir Gerald Graham VC RE, who took great interest in the railway and used it at least three times, is recorded as travelling once in an armoured train and once in a guards van, but never in a carriage. On present evidence it therefore seems that Lord Kitchener's Coach and its companion were probably two of six saloons supplied for use on the SBR by diversion at short notice from another contract, but that if any of them reached Suakin they are most unlikely to have seen service there.

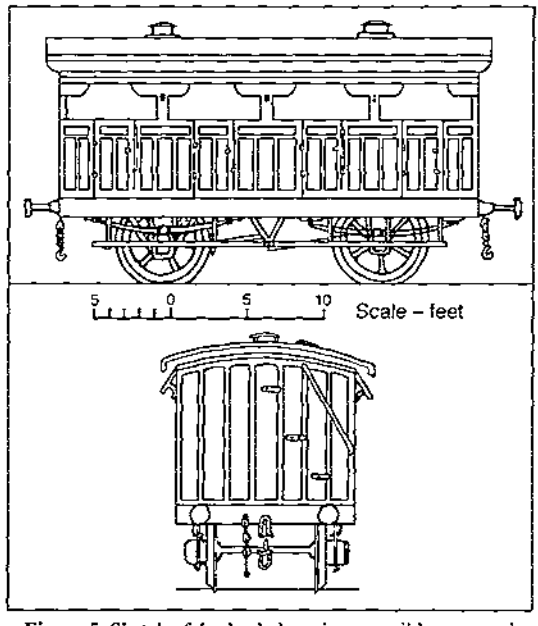

Figure 5. Sketch of 4-wheeled carriage possibly procured for the SBR in 1885.

The link between the coach and Lord Kitchener seems however to be much stronger and would probably have come about mainly between 1888 and 1898, when he was first Adjutant General and then Sirdar (Commander in Chief) of the Egyptian Army, and commanded the Sudan campaigns of 1896-98. Before 1888 he had not been widely recognized as an important personage, and afterwards as he became ever more so and the coach became more out of date and workworn it might not have met his needs: in any event the virtual certainty that the coach reached the SMT in 1898 would rule out such possibilities. But between 1888 and 1898 it seems entirely logical that he would have relied heavily on rail travel in Egypt, and from 1896 also in the Sudan, because of the great distances he would have had to journey as fast as possible, and the particular importance to his Sudan campaigns of the SMR southwards from Wadi Halfa on the Egyptian border. Yet despite the huge amount of information and comment published about the Sudan operations, and the many references to particular journeys that Kitchener made

Figure 6. Sketch *The Railway to Akasheh* by H C Seppings Wright.

by rail in the letters of one of his ADCs, Captain J K Watson KRRC, it has been most surprising and frustrating that it has only been possible to identify him with any particular coach in two instances. The first of these is a sketch by the well known war artist H C Seppings Wright, entitled *The Railway to Akasheh*, published in *The Illustrated London News* on 27 June 1896 (*Figure 6* above), but although it identifies Kitchener, Watson and other officers beside a train at a desert station, it is disappointing that the only coach to be seen looks nothing like Lord Kitchener's, having a large side door, square windows, wide eaves on a rather flat roof, and no top sun roof.

Fortunately the second source of information almost certainly identifies Lord Kitchener's Coach, and possibly its companion, and with hindsight it is not too surprising that it originates from the autobiography of the late Major General Sir Percy Girouard KCMG DSO, who as Lieut E P C Girouard, became Kitchener's Director of Railways on the SMR in March 1896 at the age of 29. So far as we know this work has not been published, and the following extracts are taken verbatim from the typed draft held by Rhodes House Library, Oxford.

Girouard records first his impressions of the SMR on his arrival. "The Railway Department had its Headquarters at Halfa. On the inception of the campaign it was administering some 16 miles of line, a collection of sun dried brick workshops poorly equipped, a tiny foundry and a water tower. A few engines in fair working order, some 40 or 50 4-wheeled goods wagons, two passenger coaches somewhat unsteady in flight, one dignified by the name of 'Sirdar's Saloon', formed the total equipment. All were relics of 1885, and a few miles out, untended except by jackal, were imbedded the relics of 1882, past repair and to remain so."

Later, in June 1896, Girouard recalls some excitement on the line South of Wadi Halfa. "Just before the battle of Firket I had the pleasure of escorting to Ambigol the Intelligence Staff, including the Director, Wingate Bey, Slatin Pasha and others, in the Sirdar's Saloon. We had the usual ten trucks of supplies, and passenger accommodation on these for several hundred Sudanese infantry. Tooling along just before dark we reached a point four miles short of our terminus. Ahead of us lay a descent of 300ft and curves of warranted crookedness. The engine became my point of lookout, we were soon hurrying to destruction at an alarming pace for the brake blocks would not hold. I did not know which was the better part of valour, to jump in the dark on the rocks, or possibly a sandy patch, or to be buried with the engine. The Sirdar's Saloon, illuminated by candles, I could see hurtling from side to side at the tail of the train like a wherry in a high sea. Presently with heavier pitch than usual complete extinction of all lights and then a crash. Fortune favoured us, two miles down there was a short sharp ascent, the tired old engine could not take it in its stride, the native driver and fireman

Lord Kitchener's Coach (p270)

combined efforts with the Director, and the engine was reversed to slide the remaining mileage to the terminus. After members of the Intelligence Staff had indignantly disentangled themselves from their luggage and documents, some strictures were passed as to the rate of our descent. 'We were making up time,' was the reply. Never were they closer to making up time for all time!"

Later again, in recording Kitchener's personal involvement in organizing emergency repairs to storm damage to the railway near Ambigol at the end of August 1896, Girouard writes as follows: "The Sirdar's thousands (of men) in a week repaired the worst of the disaster and then disappeared South to their allotted tasks. The Sirdar, one of the last to leave, was witness of an occurrence he had become only too accustomed to – Egyptian psychology, a real mixture of tragedy and comedy. One of the last battalions to leave was the 8th Egyptian who were at work on the plains above Moghrat (Murrat Wells). On giving up camp they were to march there and entrain: the regimental baggage in two railway wagons, as no engines were available, were to be handled by a fatigue party. To reach the station they had to guide the trucks down very severe gradients in a rocky gorge; drag ropes were provided and a young native subaltern was placed in charge. When on the plain the drag ropes were requisitioned but when the head of the gorge was gained it struck the young subaltern that the force of gravity might be utilised. Coiling the ropes he seated his men on the baggage which was topped off by dozens of empty water tanks. Seating himself on the leading buffer and thoroughly happy a perilous journey was begun. An onlooker described their arrival at Moghrat as usual in speed to that of an express train – all were smiles and the poor lad on buffer was waving delightedly. All might have been well for here they encountered an up-grade. Concealed however from view was an engine on the main line watering from Cholera Lake. Why none of the station staff with their usual inconsequence did not turn these wagons into the Sirdar and his Saloon stationed on the short siding of the so called station was a miracle. The wagons struck the engine at 40 miles an hour and in a flash a cloud of camel tanks and *askaris* (soldiers) went into the air. We buried the truck, the poor boy formed part of it, all others escaped with compound fractures. Through communication with Kosheh was completed within a few days and everything was being placed in readiness for an advance upon Dongola."

Girouard's record of events clearly establishes that very soon after the start of Kitchener's Dongola campaign in 1896 there was in use on the SMR a saloon carriage identified as the Sirdar's, which was a relic of 1885 and used by Kitchener as Sirdar; it could of course have got its name not only by association with him, but with his predecessors in that appointment since 1885, namely Major General Sir Evelyn Wood VC GCMG KCB (1882-1885) or Major General Sir Francis Grenfell KCB (1885-1892), but we have no information on that. As a relic of 1885, the coach must have come from the SBR project because the short length of the SMR used in the 1884-85 Nile Expedition was served by only eight passenger coaches, none of which fitted its description; four were 4-wheeled 2nd Class coaches dating from 1875, and the other four were from the Cape Railway, two being 1st/2nd Class and two 2nd/3rd Class. And even allowing for the attractions of alliteration in naming the coach, the translation from 'Sirdar's Saloon' to 'Kitchener's Coach' is so similar in meaning that it is hard to believe that they were not one and the same, irrespective of whether Evelyn Wood or Grenfell was the first user. As for the companion coach to Lord Kitchener's, Girouard does not actually identify it as such but his mention of the second 'relic of 1885' strongly suggests that the two were together in 1896 in the Sudan.

Further confirmation of the link with Kitchener may exist in the record of the coach's history which is engraved on plastic sheets fixed within it. This asserts that Kitchener was thought to have used it at Guiness (sic), 110 miles South of Wadi Halfa, which is puzzling because the only mention of such a place in histories of the period is as a battlefield of 1885, known as Ginnis. However, it turns out that Ginnis is so close to Kosheh that they might have been thought of as the same place, and Kitchener may well have intervened in the railway emergency at Ambigol/Murrat Wells from the HQ he had established at Kosheh alongside a shipyard for assembling steamers brought up in pieces by rail for use further up the Nile. According to Watson, Kitchener lived at Kosheh in tents by the river, and not in a coach, but he is likely to have used it from there for journeys North.

Having established that Kitchener almost certainly used the coach in the Sudan in 1896, but that it is very unlikely to have served on the SBR as alleged, we would like to be able to explain how it, and its companion, could have reached the SMR from England and returned at last to the SMT. We are on firm ground that the outward journey must have occurred between 1885 and 1896 and the return by 1898, or 1900 for the second coach; that both journeys must have been via Egypt because no other route existed; that the coaches could not have been used on the SMR before 1896 because it was virtually defunct until the start of the Dongola campaign; and that the coaches must have remained British Government property to have been returned to England. We also suspect that an 'antique saloon carriage with shrunken woodwork and 24 loose windows which excluded neither dust, heat nor cold' in which the Chief Engineer of the Sudan Railways mostly lived in 1900 may have been the companion of Lord Kitchener's Coach, fitted with an improvised brake compartment with extra windows which on removal would have left the body shorter than it was originally. Beyond this we can only offer informed guesses, for lack of facts. Our preferred theories are that the two coaches may have been offloaded at Suakin in 1885 but not used on the SBR; that they might possibly have been found there by Kitchener when he lived at Suakin from 1886 to 1888 as Governor of the Eastern Sudan and Red Sea Littoral, and rescued from dereliction by being sent to Egypt for semi-official use on the ESR by the Sirdar and/or himself as Adjutant General and Sirdar; that he had them transferred to the Sudan in 1896 to meet the pressing operational need for passenger stock on the SMR, and particularly for his own use there; and that they were backloaded to England and eventually to the SMT because their retention in the Sudan would have become uneconomic as peacetime standards were introduced after the war, they remained British property, and Girouard would have realized their usefulness at Woolwich from his previous experience on the Arsenal railway.

To summarise, we believe that Lord Kitchener's Coach was almost certainly the saloon carriage used by him on the SMR during his Sudan campaigns of 1896-98; that it was most probably procured with others of similar type at short notice for use on the SBR in 1885 but is most unlikely to have seen service there; that it may have reached the Sudan after service on the ESR, perhaps through the agency of Kitchener himself, who may have used it there semi-officially and sent it to the Sudan when he needed it on the SMR; and that it was returned to the SMT when no longer needed on the SMR, perhaps by Girouard. It also seems that the coach had a similar companion which returned to the SMT slightly later but which no longer exists. Our expectations of the historical importance of Lord Kitchener's Coach have therefore been fulfilled, and it follows that it should be suitably preserved and its story publicised. If in addition it could be restored to as near its original condition as possible, its interest would surely be enhanced. Lastly, it might be given a second name, 'The Sirdar's Saloon'?

ACKNOWLEDGEMENTS

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Best Endeavours

K H BEST OBE FEng

A civil engineer, Keith Best was born in 1923 in Sheffield where he was educated at a grammar school and the university. The Second World War interrupted his higher education; he served in the Corps from 1942 to 1946 and graduated in 1947.

The whole of his professional career has been with consulting engineers, 23 years with one firm, becoming a director and 20 years with another, becoming a senior partner.

Appointed OBE in 1983, he was elected to the Royal Academy of Engineering (formerly the Fellowship of Engineering) in 1984. After an energetic working life, with periods of overseas residence and travel, he has retired to live in the City of York.

This article is an extract from a complete book written by Keith Best, recounting his experiences throughout his wartime service and civilian life, and which is now lodged in the Royal Engineers' Corps Library. The extract is published with the author's kind permission.

At the age of 19, in September 1942, I reported to the seventh Training Battalion, Royal Engineers at Kitchener Barracks, Chatham, in company with 30 or 40 other teenagers, the majority of whom had been on "short courses" at various universities. We were issued with our kit, including a stiff, randomly creased battledress impregnated with some chlorine compound which left a white residue as if starched and then trampled on. I suspect these uniforms had been specially processed so that we could be easily identified by the resident squaddies as derisive objects. Moreover, we were housed in the Boys' Block and someone had painted "OCTU CRAP" in large white lettering over the entrance.

After a short time, we were transferred to Wrotham in Kent, to a unit known as a Pre-OCTU training camp. There followed several weeks of hard physical work while they tried to turn us into soldiers and at the same time check out whether we were fit to be officers. We drilled and learned about various weapons, how to ride motor cycles, how to drive Bedford 3 tonners in convoy, boot polishing, blancoing and all the other things that make up basic soldiering.

Two events during this period especially stick in my mind. Digging a slit trench, facing my partner, we were chivvied up by a NCO who warned us about the imminent arrival of the CO on an inspection. Accelerating the dig I was felled by my partner's pickaxe, top dead centre on the skull. They took me to Joyce Green Hospital near Dartford, stitched me up and afterwards put me through a series of psychological tests, ringing bells and intelligence exercises, etc, before sending me back. The other incident was a tragedy for one young man from the Lake District. He was a popular high flyer who performed better than the rest of us. Then without warning, over a short period, he became increasingly depressed until he began talking about suicide. None of us took him seriously but no-one could get through to him. One night he blew his brains out in the ablutions. Those of us who had talked so much with him were left with a feeling of failure and perhaps negligence.

Towards the end of 1942, I transferred to 140 RE Field OCTU at Bowbridge Road, Newark. We were taught military engineering, how RE officers

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should conduct themselves, tactics, ceremonial drills, battle drills, man management and all the other essential parts of a wartime sapper's makeup. We also had a lot of fun. Bailey bridging provided diverse opportunities. Apart from the mental, physical and practical experience, including carrying panels with five others, with your forearms crooked and learning how to keep your fingers out of the way of panel pins driven through holes (especially during the night crossing of the Trent at Kelham), there could be occasional hilarity. I'm not sure now whether it was at Newark, but I remember a bridging exercise over a river supervised by a young officer. Everything went according to plan until the launching. As you know, there must be enough bridge structure or counterweight on shore to balance the cantilever during launching. Well, several of us could see that this particular launching was reaching a critical stage but the order, "altogether heave," continued. What a joy it was to see the launching nose drift gently downward into the drink!

My favourite military subjects were those concerned with demolition and explosives and it was my first real introduction to calculations based on empirical principles. You had gun cotton slabs and sticks of Nobel's 808, both were cutting charges and there was a handbook which gave rules for calculating the thickness of metal, masonry or concrete that various weights and arrangements could demolish. The word *camouflet* has a pleasant ring about it, as if it were some French provincial dish out of Elizabeth David, instead of a recipe for blowing a crater. First a small borehole was driven to the required depth and a small pre-determined explosive charge was exploded at the end to make a cavity. This cavity was filled with ammonal, a low explosive which was detonated to make a crater. All the necessary dimensions and quantities could be estimated from empirical rules. And I found cordtex interesting, especially when it was arranged in circuits and ring mains to join successive charges with a single detonation.

My friend from school and university, Roy Coupe, was a contemporary at 140 OCTU. Newark is not far, perhaps 35 miles, from Sheffield so whenever we had weekend passes, we would hitchhike there. Hitchhiking in uniform in wartime was a perfectly respectable occupation and almost 100 per cent successful. We would stand on the turning beyond the level crossing to Kelham, Clowne, Ollerton, etc and would soon get to Sheffield. On Saturday nights we would to go the Brincliffe Tennis Club dances, resplendent in our battledress with white flashes on epaulets and caps. We would consume quantities of Worthington, dance with girls to the sound of Bernard Taylor's band and generally enjoy ourselves. It was there that I saw my future wife without, however, making contact at that time.

I seemed to get on reasonably well at Newark, becoming an under officer, which entitled you to wear pips on your sleeve and carried a few privileges. One of these was a separate room at the end of the Nissen hut, which I shared with Harry Yeadon, another under officer with whom I kept in touch over the years. He retired a few years ago as County Surveyor of Lancashire. My proudest moment at OCTU was being in charge of the passing-out parade – full ceremonial with the band playing. A short time before passing out, there were visits from officers, recruiting for various units. I put myself down for a parachute squadron, I suppose because I fancied myself in a red hat. In due course, I was interviewed by Captain Alan Jack and found myself accepted.

Five weeks training followed, first at Hardwick Hall near Chesterfield and then at Ringway Airfield, Manchester. Hardwick is a stately pile, built by Elizabeth Shrewsbury and the grounds had been converted into a battle course. There was a combination of hard physical exercise, learning how to fall and roll by keeping feet and knees together and constant assault coursing supervised and enlivened by a bunch of madmen using live ammunition. There was also some of the nasty stuff – unarmed combat, how to burst eardrums and break necks, how a knife to the carotid could kill in 12 seconds and so on. At Ringway, there was an introduction to parachuting using a series of fuselage mock-ups and fancy equipment to simulate jumping. The most exciting machine was known as The Fan, a kind of air brake that slowed you down just enough after jumping from the roof of the hanger. To qualify for your wings you needed eight jumps, two from balloons and six from aircraft, landing on Tatton Park. The first jump from a balloon in daylight was undeniably frightening. There was no slip-stream so you fell a considerable distance with a nibbling feeling at the shoulders before the canopy cracked open like a spinnaker and you began to feel better. In

those days the chutes supplied by the GQ (Geoffrey Quilter) Parachute Company were 28ft diameter with 22ft long rigging lines and a static line 12ft 6in long, which remained fixed to the aircraft. Unlike the modern versions, steering was limited and landings were fast and hard but when you finally got there, the exhilaration was unbelievable. The RAF instructors at Ringway were right when they told us to expect "the second greatest thrill in a man's life".

We also jumped from converted twin engine Whitley bombers which were obsolescent even in 1940. There was a hole in the floor of the fuselage and ten men, five sitting fore and five aft, would jump. When the green light went on, we jumped alternately from each side, those on the outside shuffling sideways like crabs towards the centre. The hole was 30in diameter and 3ft deep so if you were sitting aft, special attention was necessary to avoid smashing your face on the side of the tunnel as the slip-stream caught your legs. I managed my six Whitely jumps without too much incident and then there was the final balloon descent, at night. This required a big effort of willpower after enjoying fast opening canopies from aircraft. And there was the darkness and silence as four of us sat gloomily round a hole in the basket going slowly up to 500ft before a sepulchral scots voice was heard – "I canna go". Prompted by our instructor, he went, so did I and we both qualified for our wings.

After swanking around the Sheffield pubs during a short leave, I reported to the Officer's Mess, Beacon Barracks, Bulford Camp. The mess was empty except for this determined looking chap in full battle rig leaning on the mantelpiece. He was Bob Beaumont and during the last 45 plus years, I have regularly dined and wined with him, the first of a series of friendships that developed after what in present day terms would be considered short term acquaintances. There were two sapper squadrons at Bulford in 1943 – I was posted to 591 (Antrim) and the other was 3rd Squadron. Bob Beaumont was in 3rd Squadron, commanded by Major Tim Roseveare, a future partner in Freeman Fox and Partners. 591 had been a Field Company in Northern Ireland converted to parachuting and was commanded by Major Andy Wood. Peter Cox, a future senior partner of Rendell Palmer and Tritton and a future President, Institution of Civil Engineers, was a contemporary in 591 as was Tony Oliveria, who became a medical consultant on the Isle of Wight. He was a particular friend from Newark days who died prematurely in 1980. My few years in the wartime army were a fruitful source of lasting friendships.

By 1943, Whitleys were things of the past and we jumped through doors, from C47 aircraft, Dakotas, flown by 38 Wing, later Group, RAF.

During 1943 and 1944, we were exercised over and over again, sent on street fighting courses etc, and generally sharpened up. We also played hard in Amesbury, Salisbury, the Wallops, Winchester, Southampton, Ringwood and Bournemouth among many other places. Jock Hinshelwood and I were regular visitors, by motorcycle, to the Clausentum Club in Southampton and the Traveller's Club in Winchester. On Sundays we would often congregate at Sarah Ann Bundy's pub in Middle Wallop where Gordon Davidson, 3rd Squadron's adjutant, was a notable consumer. We also had some good parties in the mess at Bulford. The Bank of England had evacuated to Whitchurch, just down the road, so there was ample availability of handsome girls. Usually, our parties in the mess would end in pyramid-shaped scrums, with the object of getting girls up to the high ceilings, which they autographed with lipstick.

In 1944, a glider battalion of the Worcestershire Yeomanry joined us in the mess; they were a bit stuffy. I regret to say that we sappers, not too pleased with this intrusion of our mess, used to break up their formal dinners by singing *The CRE*, and by other disgraceful activities.

By the Spring of 1944, we realised that something was in the wind. We had a visit from the King, pep talks by Montgomery and exhortations by Major General Richard Gale, who commanded 6th Airborne. I was in 2 Troop of 591 Squadron, attached to 9th Parachute Battalion. We were given the job of building a replica of a gun battery using tubular scaffolding and hessian in farmland near Hungerford where crops were bulldozed and we worked night and day to reshape the ground to a certain specification. Then we made a perimeter of barbed wire and laid dummy mines. Secrecy and security measures suggested that the real thing was not too far away and sure enough, we were soon briefed for the operation without disclosure of the location or timing.

It was a complicated, apparently foolproof plan. A hundred Lancasters were to bomb the battery before the assault, advance parties were to be dropped to organise the rendezvous and create diversions, gliders were to crash land on the

battery, three gaps would be blown through the wire and minefields cleared by sappers; then there would be an assault on the guns which would be demolished. We moved to concentration areas by the airfield, got to know the aircrews who would be flying us and studied maps, models and aerial photographs, I well remember the final briefing by Dicky Gale. After reminding us of all the rehearsals, training, familiarisation and so on that we had experienced, he went on to say "I now have to tell you that inevitably there will be cockups and it will be up to you to find a way round them", or words to that effect.

Well, it certainly was a cockup. The Lancasters missed their target by miles, one of the gliders landed in Basingstoke, most of the RAF navigators mistook the River Dives for the River Orne, 9th Battalion was dropped over a huge area, some towards Honfleur and ultimately about 150 men out of 800 reached the rendezvous. But Lieutenant Colonel Terence Otway was deposited roughly in the right place, took the initiative with his depleted force and demolished the Merville battery. To cap it all, the guns were found to be smaller calibre and less sophisticated than intelligence had suggested. But it was a great achievement by Otway and his men, very many of whom gave their lives fighting their way out of a gigantic balls-up.

I forget which airfield we went from, near Oxford, but can remember the balloons made from inflated French letters that we tied to the aircraft. When we got across the Channel there was a lot of flak and our pilot seemed to be taking evasive action. We began to get thrown about inside and then the red and green lights came on in what seemed to be unusually quick succession and we were bundled out of the door. We carried our explosives in kitbags attached to our right legs and the drill was to release them and pay out the bag on about 10ft of line as soon as the chute opened. I was unable to get that far because as I felt for the release gadget, I hit the ground hard. Instead of a 600ft fall, it must have been round 300 and, as I found out later, instead of finding the dropping zone near Varaville, the RAF put us down well East of the River Dives and ten or 15 miles off target on higher ground near the village of St Pierre-Azif near Deauville. I expect the RAF exercised due skill, care and diligence, but there was nothing I could do about getting to Merville on time.

Of course, I initially assumed I was in the right place but it was not long before doubts set in. For a start, it was hilly and full of trees, totally unlike the models and aerial photographs and despite a lot of clicking with the signalling gadgets we had been given, I failed to make any contact with anyone. At dawn, after setting off in what should have been the right direction, I found myself in a farmyard watching a very old lady milking a cow. In full battle rig and blackened face, carrying a Sten gun and a pack full of beehives and similar fancy explosives, I stood before her. She looked me up and down, gave a directional jerk of her head and carried on milking. Soon afterwards I was joined by a chap in a black beret. With my limited knowledge of the French language, acquired at school, his instructions eventually became clear. I was to walk behind him and whenever he fell flat on his face, I was to fire my Sten gun over him.

He led me to the church at St Pierre-Azif and down into the crypt where I found a collection of odds and sods from 9th Battalion and some of my sappers. So we got ourselves organised. There were some wounded and injured who were left concealed at the church to await relief. There were some who elected to get out of uniform and try their luck getting back in disguise (they were successful) and the rest of us formed ourselves in kind of platoons, setting off westwards to rejoin 6th Airborne Division. We travelled by night and lay up during daylight; during the next week or so, my group dwindled for one reason or another from about 30 to five or six.

I cannot give a blow by blow description of everything that happened during that time but there are some things that have stuck in the mind. I suppose that in compensation for the disappointment of the Merville cockup, we tended to be looking for ways to justify our roles as invaders and liberators. I soon pooped off my stock of explosives on anything that seemed handy and we did our best to spread alarm and despondency among the enemy. Above all, I remember the unlimited hospitality and help we enjoyed from the Normans who put themselves at great risk by feeding and concealing us in daylight. *Pot au feu's* made with cabbage, ripe unpasteurised Camembert and Pont Leveque cheeses, rough cider from vats containing drowned mice, Calvados, cleaning Sten guns with butter, are memories which imprinted a lasting affection for the French. There was one occasion when I was buried in a hay loft, searched by German soldiers poking their rifles

around in the hay – quite exhilarating because they missed me. But there was another occasion which left me with a funny feeling for some years and which although diminished, continues today. In our journey westwards we had to cross a main road and there was a single German sentry. I used my knife on him.

We slowly made progress westwards, past Glanville, Branville, Douville, heading towards the River Dives which we planned to cross opposite Varaville where we expected to find 9th Battalion. One day we laid up in a ditch on a farm West of Dozule planning to cross the river that night. At dusk, there was a commotion in front of us and we saw the farmer, his wife and children walking towards us. Behind them followed a line of German troops, rifles at the ready. Behind us advanced another line who started shooting. We had become complacent on the last lap and fell for a simple deception. Our captors were real professionals from 21st Panzer Division sent in to stop the rot in Normandy.

50th Anniversary Articles

The Editor of the *Journal* would be pleased to receive further articles from anyone who took part in World War Two, with a view to their publication on or near to the 50th Anniversary of the event. Now being considered are articles about 1943, but accounts of later events are always welcome as they can be kept for publication in the appropriate issue.

Memoirs

BRIGADIER P N M MOORE DSO MC**
Born 13 July 1911, died 23 July 1992, aged 81

THE following commences with extracts from the *Daily Telegraph* obituary which appeared on 29 July 1992.

Brigadier Peter Moore, a Royal Engineer officer of legendary courage and skill, won an MC in the Western desert and an immediate DSO at Alamein, a Bar to it in Yugoslavia, and a second Bar in Korea.

The son of a Somerset inspector of schools, Peter Neil Martin Moore was born on 13 July 1911 and educated at Clifton (where he was in the rugby XV), Woolwich (26 YO Batch) and Trinity Hall, Cambridge, where he gained 2nd Class Honours in Mechanical Sciences. He had been commissioned into the Royal Engineers on 27 August 1931.

From 1935 to 1936 he served with 20 Field Company Royal Bombay Sappers and Miners in Waziristan, and was Mentioned in Despatches. He later spent a year in Quetta, before becoming Adjutant of The Royal Bombay Sappers & Miners Depot at Kirkee.

In 1939 he passed the Staff College exams, and in 1940 was Staff Captain "Q" in 7th Brigade, 4th Indian Division, in Poona and Egypt, then second in command of 4th Field Squadron RE, 2 Armoured Division, in the Western Desert.

Moore was taken prisoner in one of Rommel's lightning encirclement moves, but, with the help of a bedouin, escaped after four days. He managed to survive by draining water from the radiators of wrecked tanks. After many weeks he made his way through the German lines, and then the Allied lines (which were even more hazardous), into Tobruk. One of the first people he encountered there was a naval lieutenant, the future Rear Admiral Morgan-Giles, who did not recognise him in his emaciated state, although they had been at school together.

Moore made a swift recovery and was appointed GSO2 in 8th Army HQ, before becoming OC 1st Field Squadron, 1 Armoured Division, and fighting in the "Knightsbridge" battle in June 1942. He was also in the critical first battle of Alamein in July 1942, when Auchinleck finally brought Rommel's offensive to a halt.

Moore went out nightly to lay new minefields and to check the efficiency of others. Later that summer he was given the task of forming the 8th Army's Minefield Clearance School, which prepared and trained for the onerous task of breaching the six belts of mines in front of the German positions.

On the night of 23 October 1942 Moore, now OC 3rd Field Squadron, 10 Armoured Division, led his squadron in minefield clearance operations through the main enemy defences at Alamein. During most of the night he was several hundred yards ahead of his men, looking for mines and booby traps. (See article this *Journal*, p193.)

On reaching the first minefield, the pilot truck was hit and set alight, thus illuminating the Sappers. Moore immediately went forward and put out the fire. This involved walking round the truck several times, although it was now the target of every enemy weapon that could be brought to bear and was hit several times by machine gun bullets.

Later that night the squadron reached a minefield on the crest of the Miteiriya Ridge for which the Allies were still fighting. Moore went ahead and reconnoitred the whole minefield, although the far side was still in enemy hands.

Throughout the mine lifting the Sappers were under intense machine-gun fire for three hours.

Brig R P N Moore DSO

Moore walked up and down the whole time, encouraging his men. As they finished, dawn was breaking and, since it was vital that the tanks should pass through the narrow gap on the ridge before daylight made it impossible, Moore met the leading tank and ran in front guiding it through heavy fire. It was knocked out, but Moore then stood alone on the enemy side of the ridge and guided the remaining tanks through, while increasing light enabled enemy anti tank and machine guns to concentrate on the gap at close range.

On the night of the 27th, although completely exhausted by six days of continuous fighting and mine-clearing, Moore led a party of three Sappers in scout cars into enemy territory in order to destroy a damaged 88mm gun before it could be repaired by an agile German recovery crew.

As he stepped out of his vehicle he found himself covered by a German corporal with a machine gun. Leaping at him, Moore seized the gun, and the two fell struggling to the ground. As the other Sappers came to his aid, the Germans started throwing grenades, which injured Moore in the head and arm and wounded all the Sappers. Moore managed to recover his revolver with his uninjured hand and shot the corporal.

After a short fight the remaining Germans fled into the darkness. Moore then managed to blow up the 88mm gun and get his wounded men back to safety. In spite of his wounds and exhaustion he continued to direct the gun- and tank-busting operations of his squadron for a further six days.

The official citation for Moore's immediate DSO stressed that "the tireless energy, inflexible determination and supreme courage of this officer were an inspiration not only to his own but also to the many officers and men beside whom he fought."

Sir Fitzroy Maclean of Dunconnel Bt, recently wrote of Moore's service in Yugoslavia:

"In the second half of 1943 I made contact with Peter, then serving as an instructor at the Middle East Staff College at Haifa, and was delighted to find him more than ready to join my Mission to the Yugoslav Partisans. As demolitions and attacks on enemy lines of communication were to be an all-important part of the Mission's activities, I clearly needed an outstanding Engineer officer and there could be no doubt that Peter, both by experience and temperament, was ideally suited for the job. (See December 1991 *Journal*, p249).

We were dropped into Bosnia in September 1943 and, after in depth discussions with the demolition expert at Tito's headquarters, Peter set out on foot for Slovenia, some three hundred miles to the North. At this stage of the war it was clearly of great importance to the Germans to keep the Trieste-Ljubljana railway functioning and to us to deny them whenever possible this vital supply line for their forces in Italy.

Peter soon established exceptionally good relations with the Slovene Partisans, who greatly valued his courage, resourcefulness and expert knowledge, and whom he found very ready to work with him. His journey to Slovenia, passing from one Partisan unit to another through enemy occupied territory, gave him plenty of useful insights into the situation then prevailing in central and northern Yugoslavia, and his first hand estimates of the contribution that the Croat and Slovene Partisans were making to the Allied war effort was of the greatest value to me.

Early in 1944 Peter returned to Bosnia and for a time acted as my second in command. This gave me the benefit of his local knowledge and first hand experience in planning any operation that Allied Forces HQ or 15th Army Group might ask for in the North. This was, in particular, to stand us in good stead, when, some time later, I was instructed by General Wilson to ask Tito whether his men could attack the Stampetov bridge, one of the main viaducts on the Trieste-Ljubljana railway, the operation to be so timed as to coincide with certain moves by General Alexander in Italy.

Tito agreed immediately and undertook to send the necessary instructions to his local commander in Slovenia. After talking the proposed operation over with Peter, I decided to send him back to Slovenia, in order to provide direct liaison with the troops carrying out the operation and also to help them with technical advice, which he, as a Sapper, was well qualified to give when it came to blowing things up.

Peter was delighted, and, having provided himself with a photograph of the viaduct and all available information about it, set to work calculating the quantities of explosive which would be needed to put it out of commission. It soon became clear that the undertaking was likely to prove a formidable one. The viaduct was known to be heavily guarded: moreover, it was so constructed that very considerable quantities of high explosives would be required to make any impression on it. Arrangements were made for the necessary supplies to be dropped into Slovenia, and Peter left once more for the North with his professional enthusiasm thoroughly aroused.

For a week we heard nothing. Then a signal came from Peter to say that they had arrived, that they

had discussed plans with the local Commander, that the supplies had duly been dropped and that everything was now ready for the operation, which bore the codename *BEARSKIN*, to be carried out on the appropriate date. I passed this information to General Wilson and to General Alexander. Then we waited anxiously for news.

The news, when it came, was wholly good, and I hastened to pass it on to Tito. After a long and skillfully executed approach march, the Partisans had rushed the viaduct in the face of heavy opposition and had held the enemy off long enough for the charges to be laid and detonated. When they finally withdrew, the bridge was down, and likely to remain so for some time. Peter was full of praise for the Partisans, who, he said, were ably commanded and had fought with great dash and determination.

Later Tito received an account of the action from Partisan HQ, Slovenia. It only differed from Peter's version in that it contained an enthusiastic account of the part which the latter had himself played in the planning and execution of the operation.

We heard later from Italy that the destruction of the viaduct had achieved its purpose. As a result of it, the railway had been put out of action for some considerable time, and was thus denied to the enemy at a critical stage of the campaign. From General Alexander there came a message of thanks, which we duly passed on to those concerned. For his part in the operation Peter received a well-deserved bar to his DSO and from the partisans their own Partisan Star (first class).

In the summer and autumn of 1944 Peter took a leading part in the planning of *RATWEEK*, the series of operations to be undertaken jointly with Tito's forces with the object of obstructing the Germans' withdrawal from the Balkans." The *Daily Telegraph* obituary continued:-

In 1946 Moore was posted to Palestine as CRE of 6th Airborne Division with the task of preserving law and order during the highly volatile last two years of the Mandate.

Then, in 1951, he was appointed CO of 28 Field Engineer Regiment in Korea. When travelling in a jeep along a narrow track between minefields, he spotted an American who had inadvertently strayed into danger. He shouted a warning, but could not prevent the man stepping on a mine and being seriously wounded. Moore sent his liaison officer back to HQ to collect the minefield record and, while it was being fetched, went into the minefield himself, rescued the wounded American and despatched him to hospital.

In Korea he displayed a sixth sense for anticipating trouble spots. He was soon reputed to be the best known man in the Commonwealth Division, equally respected by the British, Canadians, Australians and New Zealanders.

Moore's forays into danger zones were so hazardous that it was said that the sergeant major only had to warn people they might be detailed to accompany him to obtain rigid discipline. However, those who had accompanied him often volunteered to do so again, so great was the confidence he inspired.

The citation for the second Bar to his DSO read: "Lieut Colonel Moore's courage is a byword throughout the Division. Never once has he committed a Sapper to any task until he was personally satisfied that the task was reasonable and every possible step taken to ensure success. Wherever there has been danger, there has been Lieut Colonel Moore. Whether it was a ferrying operation over the flooded and swollen River Imjin, laying minefields in front of our own lines, or rescuing wounded from within minefields, invariably at the moment of crisis Lieut Colonel Moore appeared and, by his calm direction and cool courage, was able to ensure the successful finish of any venture. He is absolutely tireless, and well-known in every forward position along the entire divisional front. He has at all times set an outstanding example of dauntless courage, inspiring leadership and devotion to duty."

Back home, Moore became an instructor at the Joint Services Staff College and then, from 1955 to 1958 commanded the 28th Commonwealth Independent Infantry Brigade Group in Malaya, engaged in jungle warfare against the terrorists. He returned to the War Office as Brigadier General Staff (Weapons), before taking up his final appointment as Deputy Commander of the School of Land/Air Warfare from 1962 to 1963.

Moore then passed top into the administrative grade of the Civil Service, and was, until 1976, in the Ministry of Agriculture (dealing with "politics and pesticides"). Later he became a research officer with the College of Estate Management and also worked on the Agricultural Development Committee.

The only Sapper to win three DSOs, Peter Moore was the most modest of men. He flatly refused to discuss his military exploits, and never mentioned that he had acquired a pilot's licence in his youth. He was a brilliant and demanding soldier, but also kind and gentle.

Totally lacking in vanity, he had a keen sense of humour and could always produce an appropriate quotation from Dr Johnson, Wellington or

Pope. He was an all-round games player, ocean racer and fly-fisherman.

Moore married, in 1953, Rosemary, daughter of Colonel H B Stokes; they had three sons (of whom the eldest predeceased him) and three daughters.

(End of *Daily Telegraph* Obituary, amended Sep 92)

Moore had joined the Ministry of Agriculture, Fisheries and Food as a principal in the General Policy Division when aged 52. Part of his duties were to attend working party meetings of the organisation for Economic Co-operation and Development which specialised in fiscal policy and topics such as land tenure. With delegates from many nations attempting to tackle such complex subjects, copious and sometimes ambiguous reports were only produced after long and detailed explanations. Of this work for OECD, a colleague, RGAL, wrote: "Peter received these reports and displayed an ability, almost amounting to genius, to compress a pile of papers into two or three sheets. He had the sensitive intelligence necessary to spot an incorrect or unlikely translation from a contributor's original language, and, after tactful discussion with the authors, the result was as readable and succinct as such efforts can be.

At meetings, respect for Peter was so evident that some of the delegates perhaps knew of his military reputation, although his UK colleagues knew little of it at the time. His modesty and courtesy added great force to all he said, and predisposed others to accept the view he presented with complete clarity."

The Times, also for 23 July, carried another unusually detailed military obituary, and its additional appreciations (which follow), printed on 13 August, touched further on Peter Moore's life after he retired from the Army:-

Mr Peter Brook CBE, a recent Principal of the College of Estate Management, Reading, wrote:

"I first heard of Peter Moore in 1976 from a colleague of his in the Ministry of Agriculture who spoke highly of his work, but I did not really get to know Peter until he retired from the Ministry and joined the College of Estate Management.

A man of great integrity, he became not only a friend but a trustworthy and wise counsellor, and many decisions were taken only after discussion with him over a snack lunch.

A remarkable diplomat and a man of unfailing courtesy and kindness, he was an excellent ambassador for the College, highly thought of in the surveying profession and no less so by all those with whom he worked.

He rarely spoke of his military career and much of your obituary would have been news to his colleagues. It was typical of Peter that I had difficulty in persuading him that the College's prospectus and annual report should show his military honours after his name, but he did concede that his Cambridge University degree was relevant to his work and should perhaps be included."

Mrs Vivian Marsh wrote in her appreciation: "Everyone who had the privilege of knowing Brigadier Moore will want to add a footnote to your account of his incredible courage in turning the course of the war at Alamein in 1942.

It is that he was the most sincere, kind, charming human being, and an unparalleled husband and father, a combination rarer perhaps even than that degree of bravery."

It became evident, from the tributes which flowed in after Peter Moore's death, that the story of his life could fill many books. His qualities and characteristics, as most often quoted, were: Dedicated professionalism: great ability and versatility: rugged charm: high principles and standards, which he personally maintained and expected others to achieve: leadership by decisive action and by example, and willingness to listen and to learn as well as to lead: the intensity with which he waged war, evenly matched, at all times, by his meticulous attention to detail. Above all, shone out his inflexible loyalty, both to his superiors and to those under his command.

Legendary though his bravery was, Moore never wished it to be thought that he took risks unnecessarily, nor did he wish others to do so. "Unless I had taken every care of myself", he used to say, "I would not be here!"

Many of his distinguished contemporaries were amazed that Moore never reached the highest ranks in the Army, but that seemed of little consequence to Peter himself. When asked if he would write his autobiography he smilingly declined, adding, "But, if I were to write, it would be about my time after I left the Army.".

Brigadier Peter Moore will be remembered as a great soldier, the most commanding of officers, a unique Sapper, and, both during and after his Army career, as a gifted administrator and a wonderful friend.

MWB, JHSB, RLC, JC, JMLG, PL,
ECWM, JHP, DGR, CWW, AEY

ACKNOWLEDGMENTS: The Telegraph plc for kind permission to use extracts of the memoir published on 29 July; Mrs Vivian Marsh and Mr Peter Brook, for permission to print extracts from their Appreciations which appeared in *The Times* on 13 August 1992.

BRIGADIER F H LOWMAN CBE DSO BA(H)

Born 26 October 1912, died 11 July 1992, aged 79

EDUCATED at Clifton College and Peterhouse Cambridge, Frank Harrington Lowman, was commissioned (28 Batch) in September 1932. After a tour in Mauritius as Officer Commanding 43 Fortress Company and Garrison Engineer, and a number of short spells with the training battalions at Chatham and Ripon, he joined the School of Military Engineering as Senior Instructor Demolitions in 1940. He then had a brief tour in command of a field company before attending a War Staff Course at Camberley prior to becoming GSO2 2nd Airborne Division in 1942. He then raised 3rd Parachute Sqn RE and was later appointed CRE 6th Airborne Division in June 1943 and took the Divisional Engineers to Normandy where he was wounded in July 1944. He was directly involved in the planning of the D-Day operations with their many Sapper tasks of demolitions, obstacle clearance, mine laying and removal of explosives from the Benouville bridges. His planning for these tasks and his training of the engineer regiment resulted in success wherever Sappers were able to reach their targets. He was awarded the DSO in Normandy before being severely wounded and evacuated.

After the War he was on the Directing Staff at Camberley and attended the Joint Services Staff College. He commanded 131 Airborne Engineer Regiment(V), was CRE Works in Hong Kong, AA&QMG 43 Wessex Division Territorial Army, Taunton, and then commanded 2 Port Task Force, South Shields and, after appointment to Brigadier in 1961, commanded the Hampshire Sub District and Transportation Centre Royal Engineers, Longmoor until 1964. He also served on the staffs of Field Marshal Montgomery and Earl Mountbatten. He held various staff appointments including Western Europe Commanders in Chief Committee, CDS Staff and Brigadier Q (Army Equipment) from which he retired in 1967.

In retirement he was Director of the Institute of Quantity Surveyors for ten years.

Frank Lowman was brave, kind, modest and sympathetic and inspired the devotion of all who served under him. He leaves his wife Peggy and son Michael.

JSRS JCAR

Brig F H Lowman CBE DSO

ROBERT ARTHUR FOULKES MA CEng FICE MNEC Inst E&S AMIW

Born 26 March 1909, died 19 March 1992, aged 82

Robin Foulkes educated at the Liverpool Institute, 1919-1928. From there he went to Cambridge University to read Mathematics and Mechanical Sciences, graduating in 1931 with Double First Class Honours. He started his engineering experience in 1931 as a bridge design assistant with Dorman, Long & Co, occupied on the design of bridges, dams and industrial structures. In 1934 he joined R T James & Partners, Consulting Engineers, engaged in the design and supervision of the construction of large building structures, both steel and RC framed, foundations, frames and floors. Projects included Westminster Central Depot, with a large all welded portal frame roof (at the time the largest in England, and one of the earliest); Civic Centre, Walthamstow; Town Hall, Hammersmith; Cornwall Press; Bush House, SW Wing; Welwyn Stores; Barclay's Bank, Pretoria (with heavy Vierendeel girders, 12ft deep and 80ft span); sundry office blocks and residential flats in and around London. During this period he co-operated with the late Sir Ralph Freeman (Sr) on the detailed design for a new bridge at Maidenhead. He also carried out the complete design of an Aircraft Repair Depot for the Air Ministry on a large site in Scotland.

In 1940 he moved to Furness Shipbuilding Co Ltd, Welding Engineers, with responsibility for all welding on ships and tankers, and for the training of welders.

In 1942, no doubt on the recommendation of Sir Ralph Freeman, he was appointed Bridging Officer at the Experimental Bridging Establishment, Ministry of Supply, at Christchurch, working under Mr (later Sir) Donald Bailey on the design and testing of military bridges and equipment, and on the later developments of the Bailey Bridge – as described in *The Civil Engineer in War* (Inst of CE 1948), and in *Welding applied to Military Bridges* (Transactions of the Institute of Welding 1947). Between 1942 and 1948 he worked on the development of light alloys for structural use in military bridges, and on the design of a new Heavy Girder Bridge (see *The Use of Light Alloys in Structures*, Structural Paper No 21, Inst of CE).

In 1948 he left Christchurch, where the Establishment had become the Military Engineering Experimental Establishment (MEXE). He was seconded to the British Welding Research Association for research at Cambridge University Engineering Department, working on plastic design methods for steel structures under Professor J F Baker.

In 1950 Mr Foulkes returned to MEXE Christchurch and was engaged on the classification of civil bridges for military loads. He was appointed Technical Representative for NATO on methods of assessing the strength of bridges. He was also responsible under Sir Donald Bailey, for the design and construction of a bridge testing rig to apply loads up to 500 tons. In 1952 he was appointed Assistant Director in charge of a Division engaged on research into rapid methods of road and airfield construction, and the use and development of modern mechanical equipment. This involved the study of soil stabilization processes, and the development and testing of machines for cement stabilization and compaction, and the construction and testing of trial pavements (see *Soil Stabilization in Germany*, in *Engineering* of 27 August 1954). He presented two papers at a Symposium of Soil Stabilization at Sydney, Australia in January 1954.

From 1956 until 1959 Mr Foulkes was seconded to the Government of West Pakistan, under the Technical Co-operation Scheme of the Colombo Plan, as Professor of Civil Engineering at the Government College of Engineering and Technology, Lahore, and as Adviser to the Government on highway bridges. While at Lahore, he designed new bridges along the Grand Trunk Road, to make it flood proof, and three major bridges in the Province.

In 1959 he returned to MEXE as Senior Assistant Director in charge of bridging, petrol and oil distribution and storage systems, and use of explosives. He was appointed Deputy Director in 1962, Sir Donald Bailey having left (replaced by a military officer, Brigadier Jarrett-Kerr). He was appointed Director in October 1965, which post he held until March 1970, when the post was abolished in a re-organisation of the Defence Research Establishments. At that time the establishment had 85 officer grade posts (including 12 of the Corps of Royal Engineers), 250 non-industrial and 400 industrial grades, with a budget of £2 million. The work of the Establishment included the design, development

and testing of all types of military engineering equipment – bridges, ferries, electrical generating plant, water distribution plant, equipment for temporary roads and airfields, for bulk fuel handling, mechanical handling, digging and various types of earthmoving equipment and tractors.

A highlight of Mr Foulke's time as Director was the award to the Establishment in 1969 of the Freedom of the Borough of Christchurch, in which ceremony various associated military units took part, including the Band of the Corps of Royal Engineers.

In 1970 on retirement from the Civil Service Mr Foulkes moved to Dublin, as Head of Engineering of the Institute of Industrial Research and Standards, a post he held until his retirement in 1975.

For his services to the Corps he was appointed an Honorary Member of the Institution of Royal Engineers.

In 1936 Robin Foulkes married Margaret Kathleen Dews. They retired to Cambridge in 1975. He is survived by his widow and three daughters.

HATJ-K

HAROLD GILBERT WHITE

Born 3 September 1899, died 11 May 1992 aged 92

Harold Gilbert White

HAROLD Gilbert White was educated at Repton under William (later Archbishop) Temple, but left as early as he could and joined the Royal Engineers. He served during the First World War as a Lieutenant with 59 Field Company in France and was Mentioned in Despatches.

After the war he wanted to stay on as a regular soldier but it was not to be. He went up to Cambridge (Clare College), but when his father died, finished his degree after two years, joined the Southern Railway as an Engineer and was responsible for the renovation of Ryde Pier. In 1932 he started teaching at the Royal Naval College in Dartmouth. In 1941 he was again back in the Sappers and posted to 140 OCTU as Bridging Instructor. His knowledge of the Navy (and friendship with many naval officers) soon had him selected as a founder member of Combined Operations.

Thus started a period of Harold's life which was to him quite memorable. He travelled widely, first to Inverary with Combined Operations, and then to America and North Africa. Returning to UK he prepared for Overlord as a beach commander on Gold beach, landing at Arromanches within hours of the first wave. He was one of the few men with World War One medals! On D-day plus 3, he was promoted on the beach to acting Lieut Colonel and on D-day plus ten was severely wounded and again Mentioned in Despatches.

Before the end of the war he had returned to the Naval College. He applied all his former vigour to teaching and local government, becoming Mayor of Dartmouth in 1966-1967. He was Chairman of Governors of the Grammar School, president of the Royal British Legion and churchwarden of St Clements – Townstal.

He married Phoebe, eldest daughter of Lieut Colonel Walter Blunt, Royal Irish Rifles, in 1925. She died in 1987. His daughter died in 1970 and his son survives him.

MGW

BRIGADIER M G STEVENS MBE

Born 8 January 1921, died 21 June 1992, aged 71

MICHAEL Stevens was a man of unusual talents, who became a sapper almost by chance, to the mutual benefit of the Corps and of himself.

His father was a distinguished high court judge in Singapore and, as was not unusual at the time, there were long periods when Mike was separated from his family. So his school, Winchester, was of particular importance to him; and he was educated in the classics. Realizing, as so many did in the late '30s, that war seemed inevitable, he had little idea as to how he should begin his career. It was a chance conversation with his father's old friend, Lt Gen Sir Maurice Grove-White, a distinguished sapper, which pointed him towards the Corps.

He was commissioned in January 1941 and joined the 5th Divisional Engineers, then in Ulster, with whom he served continuously until 1947. This division must have been one of the most travelled of the war, moving through India (one brigade via the Madagascar landing), Persia and Iraq, to the Middle East; their first divisional operation was the Sicilian landing, and they were active thereafter throughout mainland Italy and Austria, ending up in Germany. Mike served as a lively and thoroughly capable young officer in almost the complete range of field sapper posts – section commander, intelligence officer, adjutant, 2IC and eventually OC 245 (The Welsh) Field Company. All this gave him an excellent background for the rest of his career. He was Mentioned in Despatches following the Anzio landing.

In 1947 he attended No 16 Supplementary Course, and went on to RE Staff jobs in Germany and UK. Then, after a year at Johor Baharu, he attended the Staff College in 1954. His next posting was as GSO2(Ops), HQ 3rd Division, in which he was closely involved in the mounting and management of the Suez operation. Later he was appointed MBE.

There followed two years in command of 1 Field Squadron in BAOR, and the Joint Services Staff College course. Thereafter he joined the Directing Staff at Camberley, going thence for two years to the Australian Staff College at Queenscliff, where he was universally liked and respected. Then, after two years as CRE Malta and Libya he became AA&QMG, 2nd Division in 1965. His last five years of service were in the Ministry of Defence as AAG, AG7 and, from 1970 to 1972, as Deputy Engineer-in-Chief.

After retirement he was for a few years bursar of St Catherine's School, Bramley and then from 1975 to 1984 he held the important post of University Liaison Officer (RO1) for the South of England. This last appointment gave him great pleasure, and he was just the right man to encourage good graduates to join the Army.

Such is the bare outline of the fine career of a good regimental officer and an able staff officer. He is remembered specially from every part of his long and varied career for his splendid and joyful sense of the ridiculous, which oiled wheels and broke down barriers in a way entirely his own. But there was far more behind this; he was essentially serious, and everything was calmly and carefully worked out.

If the Corps produces occasional eccentrics, we do also have men of talent; and Mike was certainly talented. At Winchester he became an exceptional pianist, playing the Tchaikovsky concerto with the school orchestra; and he played Medea in Greek in the annual classical play.

Brig M C Stevens MBE

Music drew sparks throughout his life. He sight-read the formidable accompaniment to Schubert's great song the *Erlkönig* in an Ulster pub in 1941; his Welsh field company thought him far too good a musician to be a regular soldier; and his beloved Bechstein gave him and everyone who heard him great pleasure, from Mozart to Scott-Joplin.

In all he was an exceptionally colourful and engaging man, with wide experience. With his humour, insight and carefully concealed application, he was just right in all his senior posts – remembered in Malta with affection; in Australia as "such a sunshine man to work with"; as AG7 he was the career manager for the Corps and, with his deep knowledge, good humour, tact and wit, he enjoyed its complete confidence. As Deputy Engineer-in-Chief, the anchorman who holds the fort while the General swans, his ebullient humour and incisive intelligence gave the Corps a lively image in Whitehall. The Corps was lucky to have him in these two key posts for five eventful years.

In later retirement he gave many patient hours to SSAFA and to St Wilfred's Hospice.

Mike is survived by his devoted wife Virginia, his two sons, his distinguished actress daughter Juliet (Stevenson), and two grandchildren. They were a close-knit family, the centre of his life.

He could work with anyone, and infect them with his own enthusiasm. Everyone has happy memories of him. Music apart, his talent was with people, and he put more into life than he took out of it. We are all the better for having known, worked, played and – above all – laughed with him.

JHSB, RLC, FGC, HPC, HEMLG, CHC

Memoirs in Brief

Brief memoirs are published below on distinguished men whose deaths have been notified recently in the national press and who served in the Royal Engineers during World War Two.

John Spencer Churchill, died on 23 June 1992 at the age of 83. He was born on 31 May 1909. Like his famous uncle he was educated at Harrow School but went on to Pembroke College, Oxford, and then studied at a series of art colleges. He served in the Royal Engineers in the 1939-45 war and rose to the rank of major. He was appointed to the corps of camouflage artists. He was present at the Dunkirk evacuation, where he was the only artist to produce sketches. These were published in the *Illustrated London News*. After the war he returned to working as a painter, sculpture, author and exhibitionist.

Harold Jones, the artist and illustrator, died recently, at the age of 88. He was born on 22 February 1904 and educated at St Dunstan's College, Catford. He went on to Camberwell School of Art, from where he won a scholarship to the Royal College of Art. He served in the Cartographic Section of the Royal Engineers in the 1939-45 War spending his days in a disused Pimlico garage drawing maps for the Supreme Headquarters of the Allied Expeditionary Force. He used to recall how he had had "the great fortune to draw the D-Day maps. We knew about everything months before the Generals". After the war he returned to part-time teaching and publishing until 1964 when he retired from teaching to concentrate on illustration. His notable success included Lewis Carroll's *The Hunting of the Snark, The Fairy Tales of Oscar Wilde* and *Aesop's Fables*. He also wrote several childrens books. He married, in 1933, Molly; they had two daughters.

Correspondence

ENGINEER STORES PARKS LANDI KOTAL AND QUETTA

From Major R J Francis

Sir, – I refer to the short article by Major N S Miller in the *Journal* for August 1992, and to two letters in December 1991.

I take my hat off to Major Miller and others who succeeded in that task in such adverse circumstances. However, although Major Miller's sappering was sound, his geography is a bit wobbly. The northernmost limit of Balach influence is in Quetta, some 350 miles South of the Khyber Pass, so the latter should not be described as "in Baluchistan". Furthermore, a traveller proceeding West from Peshawar would surely come first to the frontier with Afghanistan and only after that to the Khyber. Finally, the plains of Kandahar do not lie between the Khyber and Kabul, for they too are some 350 miles to the South, and belong to an entirely different zone. Is it possible that the Bolan Pass was intended, and that the Park was in Quetta, where Pathans abound?

General Ashton Wade and Brigadier Finch are infinitely more experienced than I, but in their letters in December 1991, they too generate a doubt. The route into Afghanistan from Quetta through Chaman to Kandahar (Finch) runs almost due North from Quetta. The route into Iran from Quetta along the railway to Mirjawa (Wade) runs almost due West from Quetta, and nowhere enters Afghanistan.

The historical sequence of the events in Quetta appears to have been:

- Assembly of reserves of plant in Quetta.
- The "Finch" concept of road-building to Kandahar in 1934.
- The Quetta earthquake in 1935.
- The "Wade" concept of road-building to Mirjawa before and during the war.

As regards Major Miller's photograph showing the GE(E&M) in the yard; it is thought that the GE was one Capt Joe Gardiner, and the photograph taken in 1944.

When in Quetta in 1991 I attempted to bring the history of those splendid "steamers" up-to-date, but met a blank and forbidding lack of interest in the Cantonment. It may be that some items did indeed go to the Gulf during the war, but I suspect that, if they were still in Quetta in 1944, they were sold through some disposals organisation after the operation to the Punjab or Karachi; where either they still work, or they were cut up for scrap. Yours faithfully – R J Francis.

AN INDIAN INTERLUDE 1942-43

From Major T A Tucker MBE

Sir, – I was very interested to read *An Indian Interlude 1942-43* (August 1992 issue). I was one of the subalterns mentioned in the article, the other, now sadly deceased, was Colin J Miller and the third was Jarnail Singh from Faridkot. The British Sergeant Major was Handy but the Sergeant's name escapes me after all these years. Major B A E Maude took over in Assam. Colin was the culprit who brought a collection of live Japanese shells into the mess in order to extract the propellant charges, which in open air, burnt beautifully like a Roman candle firework. I am sure it was CVJO who blew his top and not Bruce Maude, and kicked us out of the Mess *basha* into the area between the blast walls. The article brings back many happy memories, I have lost touch with Bruce Maude. Brigadier Mohan Das came to visit UK around 1980/81, if I remember rightly, and Bruce Maude organised a reunion; Colin Bruce, myself and our wives attended. We met in India House, London. It was a good evening.

My regards to CVJ. I liked the 1942 version of the photograph. Yours sincerely – Tommy Tucker.

A WALK WITH HEROES – FIELD MARSHAL SIR JOHN FOX BURGOYNE

From P F Callanan, Director, Institution of Engineers of Ireland

Sir, – I refer to the article on *A Walk with Heroes – Field Marshal Sir John Fox Burgoyne,* which was published in the August issue of the *RE Journal.* This excellent article was of considerable interest to The Institution of Engineers of Ireland because, apart from his other achievements, he is remembered here as one of the founders and the first President of The Institution of Civil Engineers of Ireland which is now The Institution of Engineers of Ireland. He delivered the inaugural address to the Institution on its foundation date on 6 August 1835. In 1839 Sir John Burgoyne as he was then, was elected an Honorary Member of The Institution of Civil Engineers.

In his inaugural address, he expressed his views on why a professional institution should exist:

"You are well aware that in spite of the efforts of many able and eminent men, the profession has been

at a low ebb in Ireland. Persons without education or skill have been frequently employed, particularly in the interior, in operations of importance and consequence has been, as might be anticipated, bad or injudicious works, wasteful or fruitless expenditure and a certain degree of discredit to the country. It will be your effort to prevent the recurrence of these evils and you are now adopting the measure best calculated to enable you to do so with effect by organising a society for your own improvement."

The Society he was instrumental in founding has prospered during the past 157 years. It received its Royal Charter in 1877 and this Charter was amended by Act of *Dail Eireann* in 1969 to extend its objectives to confirm its role as a multidisciplinary Institution. Sir John Fox Burgoyne carried very extensive responsibilities in Ireland, not only in public works but also in railways and he was recognised as a man of unusual vision. Perhaps some of that vision could be summed up in another quotation from his inaugural address in 1835 when he stated:

"We are now, whether Englishmen or Irishmen, engaged in the service of Ireland and it is our duty as well as our interest to promote its prosperity to the utmost." Yours sincerely – P F Callanan.

MISJUDGMENTS

From Lieutenant Geoff Webb PEng

Sir, – I served in the Corps from 1942 to 1946. While serving in Burma with the Madras Sappers and Miners, and with my own group the Bombay Sappers and Miners, I made three misjudgments. These incidents may be helpful and instructive to young Sappers.

Moving across country by compass with a Service Corps column of mules under command, we came to a rocky stream bed crossed by a narrow footbridge without side rails. There was a discussion as to how we should cross, the Service Corps *Jemadar* maintaining that the mules should be taken through the rock-strewn water.

I made a quick calculation of the moment of resistance of the support beams and decided the bridge could take the most heavily loaded mule without a problem.

We sent them over the bridge one by one, until almost the last mule. This animal and its load began to sway from side to side with increasing amplitude. I watched with great anxiety, hoping the mule would regain stability, but it was not to be and he finally toppled off the bridge and fell onto the rocks about 20 feet below.

I should have taken the advice of the *Jemadar* and sent the column through the stream bed!

The next incident was more of a meteorological surprise than a mistake. After crossing the Chindwin near Mawlaik we were very busy improving tracks for the advancing troops. We built a number of jungle trestle bridges and one in particular was completed over a stream with moderate flow. A Sikh regiment passed over the bridge the same day.

The following morning I returned to the site to find the bridge at an impossible, drunken angle. The stream had risen several feet overnight, due to rain in the hills, and the water had now become a raging torrent.

The downstream legs of the trestles had sunk due to heavy scouring, which did not seem to have happened to the upstream legs to the same extent. I am still at a loss to know exactly how we could have avoided this hydraulic phenomenon.

The third incident was perhaps the least excusable. After the crossing of the Irrawaddy, the advance down the Prome road became a veritable race to Rangoon. We were involved in the repair of innumerable culverts and chong crossings. Having completed a repair to one large culvert, I returned to camp only to find an angry CO who told me to go back and fix the work, since a Quad was stuck in the culvert up to its axles!

We had made the repair with bricks and stones, retaining them laterally with stakes driven into the ground. It was the stakes which had exploded outwards under the weight of the Quad.

One had assumed that any weight would be transmitted vertically downwards through the stones and bricks, not giving sufficient attention to the lateral forces generated. Lesson – one should assume that irregular stones used as fill will act very much like a liquid and that equal forces will be generated in all directions. Yours – Geoff Webb.

SAPPERS AT EL ALAMEIN

From Major J P Watson MC

Sir, – I am fortunate to be going on the El Alamein Pilgrimage to celebrate the 50th anniversary of the battle, on October 21st. As an infantryman full of admiration for the Corps of Royal Engineers, I hope to meet any of 274 Field Company RE who may be attending.

A section from that company was attached to 7th Battalion The Black Watch, 154 Brigade, 51st Highland Division, and these intrepid men lifted mines under the most trying conditions. They were held in the highest possible esteem by us all. Yours faithfully – J P Watson.

Reviews

SECURITY FOR A NEW EUROPE

JOHN BORAWSKI

Published by Brassey's (UK) Ltd, 1st Floor, 165 Great Dover Street, London, SE1 4YA – Price £35
ISBN 1 85753 040 3

THE invasion of Czechoslovakia by Warsaw Pact troops in 1968 took the West largely by surprise. Part of the reason was that the pre-invasion concentration of troops, which everybody had known about, had been passed off by the Warsaw Pact as an exercise: the troops remained in place after the exercise and then, instead of returning to barracks, they invaded. The lesson was learned. After the dust had settled, negotiations began towards what became the Helsinki Final Act of 1975. This gave formal shape to the Conference on Security and Cooperation in Europe (CSCE) (which now has 52 members) and included a modest package of "confidence-building measures" (now known as Confidence and Security Building Measures – CSBMs). This provided for mandatory notification of manoeuvres exceeding 25,000 troops, and for voluntary observation and notification of troop movements and smaller scale exercises.

A huge further step was taken at the Stockholm Conference resulting in an accord which went into effect on 1 January 1987. This brought down the size of exercise requiring notification, greatly increased the notice to be given and afforded each state the right to conduct on-site inspections without a right of refusal by the inspected state. It was the first tangible sign that *Glasnost* at the international level and the unwinding of the cold war were for real.

The book under review is written by an acknowledged expert on CSBMs. It starts by reviewing the implementation of the *Stockholm Accord:* all States seem to have complied almost to the letter. It then picks up the story at the point where a fresh set of negotiations was put in hand: lasting from March 1989 to November 1990 they were issued in a new set of CSBMs known as the *Vienna Document 1990.* This was promptly blessed by the Heads of State and Government meeting to approve the *Treaty on Conventional Armed Forces in Europe* (CFE Treaty) and the *Charter of Paris.* At the same time a further round of negotiations was set in hand which in turn produced the *Vienna Document 1992* which came into effect in May this year.

The resulting regime, which falls short of a treaty but is "politically binding", provides for exchanges of information on military forces, weapons systems, deployments and budgets; consultation and cooperation regarding unusual or hazardous military activities; hosting of visits, particularly to air bases; military contacts and demonstrations; prior notification, observation and inspection of military activities; annual calendars; constraining provisions; communications and evaluation assessment meetings. The *Charter of Paris* (21 November 1990) also set up a Conflict Prevention Centre in Vienna to provide permanent staffing for most of the foregoing activities and to sponsor regular seminars on military doctrine.

This book contains a round-by-round description of the negotiations up to September 1991 and largely anticipates the contents of the *Vienna Document 1992.* While perfectly straightforward and free from jargon it is rather heavy going: a book, dare it be said, for the 'serious student' rather than the general reader. Nevertheless for those who persevere it paints a fascinating picture of the unravelling of the Warsaw Pact and the way in which NATO, almost in spite of itself, came to realise that security in Europe would take a radically different form in future. For those who want to understand the institutional basis of the new security arrangements this is an indispensable archive. It is detailed, scholarly and, so far as I can detect, error-free.

WGHB

RIVER KWAI RAILWAY

CLIFFORD KINVIG

Brassey's (UK) Ltd, 1st Floor, 16 Great Dover St, London SE1 4YA – Price £19.95
ISBN 0 08 037344 5

A MOST excellent history of the Japanese war in Southeast Asia, which covers in some detail the reason for the construction of the infamous railway (Railway of Death) from Nong Pladuk in Thailand (Siam) to Thanbyuzayat in Burma. The book also gives an excellent insight into Japanese mentality, their culture and their attitude as soldiers to life itself, which was and is dominated by their religious teaching and to a lesser extent today of their samurai origins. Posterity will be

indebted to General Kinvig for producing such a well documented book which outlines Japan's history mainly from the 19th century onwards. With one exception Japan completely isolated itself for centuries from the rest of the world. Its emergence in the mid-19th century was influenced immensely by Western (and USA) methods of manufacturing and military systems. As history shows they were quick to assimilate both industrial and military knowledge to their own need. Our complacency and complete lack of military intelligence on Japan's vast expansion of industry and military might between the world wars was possibly due to the false sense of security engendered by the then League of Nations, and for which we paid dearly. I found Clifford Kinvig's book fascinating to read, it explained many queries I had as a POW particularly as a member of the ill fated *F Force*. It also confirmed my opinion of the Japanese Railway Engineers, they were competent and professional, with prior railways construction experience in many countries including the UK and USA. For those POW still surviving the book will be of considerable interest and provide a real understanding on how the West developed such a false sense of security towards Japan. The book should also make a valuable history reading for schools and libraries.

DW

BEST ENDEAVOURS

KEITH BEST

Published by Keith Best
Can be purchased from: The Book Shop, Institution of Civil Engineers, 1 Great George Street, London SW1P 3AA – Price £15.00
ISBN 0 951 95610 8

THESE are engineering memoirs with a difference, written by a wartime sapper officer. There are descriptions of the design and construction of bridges, radio telescopes, harbours and industrial plants, written in a style and language that will attract the layman or woman. For example, the technical account of the building and demolition of the bridge on the River Kwai is accompanied by vignettes of Sam Spiegel, David Lean and the principal actors in the film. And later, when describing road and bridgeworks in the northeast, the author recalls some brushes with Nicholas Ridley, then Secretary of State for Transport.

Apart from a technical content, there is a human interest in this autobiography. After childhood memories of life in Sheffield, including the wartime blitz, there are stories about army life and parachute training. He then gives an insight into life in Oflag 79, a prison camp in Brunswick. Returning to civilian life, he takes his first job in a family firm. His "love-hate" relationships during the rise and fall of this firm weave a pattern that extends throughout the book.

There are also personal opinions, among others about institutional affairs, bureaucracy, committee systems, the Finniston Report, the Engineering Council and the professional ethos of engineers. Despite a thoughtful approach, however, there is a general good humour and readers should enjoy more than a few chuckles.

BR

Editor's note: An extract from the book is included in this edition of the *Journal*.

STORM COMMAND

A Personal Account of the Gulf War

GENERAL SIR PETER DE LA BILLIÈRE

Published by Harper Collins, PO Box, Glasgow, G4 0NB – Price £18
ISBN 0 00 255138 1

GENERAL Sir Peter de la Billière is one of the greatest commanders that Britain has ever produced. He demonstrates extraordinary ability to understand and react to high level political intent whilst at the same time never losing touch with ordinary men and women under his command. The open way that he approaches problems and people alike, his wide knowledge and experience, coupled with a total lack of prejudice and a willingness to accept new ideas are an inspiration to those working under his command. He has now written his first book, *Storm Command*, a personal account of his own experiences as the Commander of all British Forces in the Middle East during the Gulf War.

He was born in 1934, and joined the King's Shropshire Light Infantry in 1952. After commissioning into the Durham Light Infantry he served in Japan, Korea and then for two years in the Suez Canal Zone and Jordan. In 1956 he joined the SAS and fought in Malaya. In 1959 he led his troop during the legendary assault on the Jebel Akhdar, where he won his first MC. From 1964 to 1966 he

commanded 'A' Squadron 22 SAS on operations in the Radfan and Borneo, gaining a bar to his MC. He later commanded 22 SAS Regiment. During 1969-1974 he commanded operations in Musandam and Dhofar. During this period he was appointed a Member of the Distinguished Service Order. In 1977 he assumed command of BAT Sudan. From 1979 to 1983 he commanded the SAS Group, a period that included overall command of the release of hostages from the Iranian Embassy and Special Forces Commander in the Falklands War. He was appointed CBE in 1983 and KCB in 1988. He was the most decorated serving officer in the British Army.

Saddam Hussein's forces invaded Kuwait just before his retirement in 1990. The Americans, closely supported by the British, responded vigorously. There was a need to find a Joint Force Commander for the British Forces building up in the Gulf and thankfully General Sir Peter de la Billière was chosen.

Storm Command begins as he, and his wife Bridget, are planning their retirement. He takes us through the difficult period of the build up in UK, when a headquarters was being formed without a commander, and the problems he had to deal with when finally given command. This section of the book gives the reader an insight into the author's intellect as he integrates political need and military requirement into a single profound analysis.

The following seven chapters deal with the difficult period when the force built up in the Gulf and changed its purpose from defence to be ready to attack Saddam Hussein's forces. General Sir Peter de la Billière recognised that maintenance of the coalition was his principal aim. He describes brilliantly how he galvanised support from the Arab leaders and integrated himself and his command into the formidable US fighting machine. The personal relationships that he forged during this period were critical to this process. At the same time he made a great effort to shield his subordinate commanders from political interference.

He did not forget the effect that his presence would have on the soldiers, sailors and airmen and women that made up the British Force. He travelled widely, visiting units, ships and airfields. The care he took to manage the British Forces' Christmas celebrations in a sensitive Islamic country is of particular interest.

On the low side, he had to deal with civil servants who "rate-capped" his force and interfered in detail with his plans. He also had to ameliorate a disadvantage of the British Regimental System, interference from Regimental Colonels and others trying to build up their own presence against his wishes.

The war in the air is dealt with in only one chapter. This is not surprising because the book is an account of the author's personal involvement in the campaign. Every RAF aircraft was integrated into the overall US air plan and therefore he was not able to influence the plan in quite the same way as with the British land and sea elements.

Chapter 10 moves away from strategy and the operational art and deals with one particular SAS operation. This is an absorbing diversion from the world of politics and strategy and demonstrates the author's expertise in Special Forces operations as well as his interest in the individual service person. The book gives far more detail on SAS operations than is usual after recent British military campaigns. It also explains how the SAS were used strategically, hunting mobile Scud missile launchers. This was a critical task, for had it failed, Israel might have entered the war and the Coalition could have broken up.

The ground war is covered within chapters 10 and 11. Much of this material should be familiar to military readers. His defence of the decision to stop the war is of great interest. This decision has not caused as much controversy in the UK as in the USA. The reason for this is that the political objectives, as explained to the nation, were much clearer here. British citizens knew that the purpose of the war was to free Kuwait from occupation and to enable the Kuwaitis to have access to their oil. In the US, President Bush built up Saddam Hussein to be the devil incarnate. So much so, that the average American citizen thought that the purpose of the war was to remove Saddam from power. This is why so many Americans believe today that they did not win the war!

The final chapter deals with clearing up and withdrawal. This gives us another insight into General Sir Peter de la Billière's understanding of the political process and the national interest of the UK. Reading between the lines you can understand why the British withdrawal was not as orderly as the Americans' and we can also see why British industry did not pick up the number of contracts in Kuwait that it might have hoped for.

This is an outstanding book. The simple, me/myself, style is deceptive. It is the best articulation of high level command I have ever read. *Storm Command* has remarkable depth and breadth. It has something

for everyone and should appeal to a wide audience. I recommend it as essential reading for all army officers, no matter what their rank or experience.

I very much hope that the success of this book will encourage the author to write further about his experiences. We have much to learn from him and he has much to contribute to the human knowledge field.

RM

VICTORIAN COLONIAL WARFARE AFRICA

DONALD FEATHERSTONE

Published by Cassell, Villiers House, 41/47 Strand, London, WC2N 5JE – Price £16.99
ISBN 0 304 34174 6

DONALD Featherstone is a well established author, particularly on the subject of wargaming at which he is an acknowledged expert. He has set out to produce accounts of the campaigns in Africa, excluding Egypt and the Sudan, told largely through the personal accounts of soldiers and correspondents who took part, together with contemporary published accounts.

Each war or campaign is economically described presumably with accuracy and enhanced by a few maps and liberal quantities of pictures, mostly war artists' impressions of people, places and incidents from the *Illustrated London News*, *The Graphic* and contemporary books. The author assumes that most readers will have a fair knowledge of the battles. Isandhlwana, for example gets no description at all, merely a series of disconnected contemporary accounts. This treatment sometimes makes events hard to follow and the book can not therefore be recommended to anyone looking for detailed accounts. Nor is it set out chronologically, each chapter covering several campaigns in a geographical area.

The book is in a large format (nearly A4) and hardback, so it is not very convenient to carry round. However, this format suits the style of the contents which will be enjoyable to anyone seeking either the flavour of soldiering in Queen Victoria's African Empire or a general overview of campaigns. One particularly useful function it serves is covering and explaining the smaller border conflicts such as the 'Kaffir' wars. In all, this is useful supplementary reading but not a mainstream reference book.

GWAN

BICESTER MILITARY RAILWAY

and the Army's Central Railway Workshops

E R LAWTON AND MAJOR M W SACKETT

Published by Oxford Publishing Company, Sparkford, Near Yeovil, Somerset, BA22 7JJ – £18.99
ISBN 0 86093 467 5

AT its peak the Ordnance Depot at Bicester in Oxfordshire had almost 50 miles of railway track in operation. The book describes the construction and operation of this system from its beginnings as 'X' Depot in 1940 up to the present time.

The part played by the Corps in the design, construction and operation of the Bicester Military Railway is described and there are detailed accounts of the engines and rolling stock used and the control system.

The book is well illustrated with a wide selection of photographs and drawings and is bound to be of interest to any Sapper who served at Bicester during the Second World War as well as to railway enthusiasts generally.

JEN