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Editorial

FOR the first time in many issues, sufficient articles have been received to allow me more than just a copy editorial function. One can see that the Corps is as busy as ever and with this in mind, it is anticipated that articles will be written on the deployment and actions post 11 September 2001, covering the contribution made by members of the Corps to this ever-changing world. In this issue the article *Immediate Response Team (IRT)* highlights the continual commitment to FRY, and the challenges of dealing in a multi national services environment. Also, *A Spark on a Wire* written by one of our new Warrant Officer members, explains how real work is still being carried out by 25 Regiment in Northern Ireland.

I am pleased to publish two articles from serving Brigadiers, *Joint Force Engineering* by Brigadier Mark Mans, the immediate past CRE LAND (now titled CRE Theatre Troops), and Brigadier Tom Foulkes' article *Towards Perfection*, which explains why the army needs Masters of Business Administration. I must confess I did find the Mind Map in the latter article rather daunting. The very topical article *Prime Contracting* emphasizes the need for funds to be used more cost effectively across the defence estate, an area in which many serving members will be involved.

Many readers will be able to recall their first few days and first deployments in the army. *National Service Remembered* and *Last Military Expedition of The Raj* both provide a lighter reminder of those early days with which many of us will be able to identify.

Four articles in this issue have a direct relationship with the Corps Museum and Library. For that I offer no apology. The importance of military museums is summed up in the address by Professor Richard Holmes at the National Army Museum. The sterling work carried out by FoREM, and the extract from Gerald Napier's article on the Corps Library remind us what it takes to keep a magnificent collection such as ours going. The last article with a museum connection is in the form of a letter explaining how battlefield tours should be run. The Institution makes grants to serving soldiers and officers undertaking tours and in "*Sticky's*" article, which is aimed predominately at the serving membership, he gives a very direct guide as to what can, should and must be achieved on a battlefield tour, emphasizing the fact it must be fun.

Within the Institution, there have been changes amongst those with publications responsibilities. Captain John Borer has replaced Juliet Scanlan as Assistant Secretary with specific responsibilities as copy editor. I am sure many of you will get know John, giving guidance and advice on future articles. I am indebted to my predecessor, Colonel Mike Cooper, for the advice and guidance he has given me over the last 18 months or so. Mike has now moved on and taken over responsibility for Memoirs and Book Reviews from Colonel Gerald Napier. Gerald has, and always will be a fantastic contributor to Institution life. He has been contracted to write the Corps Heritage book, which is due for publication in 2004. It would be remiss of me if I did not mention Mrs Jacqui Thorndick, who spends many hours re-drawing maps and charts, scanning photographs and compiling the *Journal* to present your articles in the best way possible. There you have it – the new team.

One of the main aims of the Institution is to encourage debate through the correspondence pages of the *Journal*. I am conscious in this electronic age that the time lag between editions is a perhaps a factor in the lack of correspondence on debating subjects or articles. To speed up this process, letters will in future be published in the *Supplement* (Pickaxe), which is published every two months, and then repeated, if relevant, in the following *Journal*.

In the spaces of the *Journal*, since it is the Golden Jubilee of HM The Queen, I have included photographs of some of the occasions when Her Majesty has visited the Corps. The photographs do not relate to the adjacent articles.

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The Evolution of IRT – Op Agricola

LIEUTENANT C B B FOAD BA

Lieutenant Corinne Foad was educated at Burnham Grammar School in Buckinghamshire and Sussex University, where she gained a BA (Hons) degree in Geography and Environmental Studies. In 1999 she was commissioned into the Corps of Royal Engineers, going on to complete Royal Engineers Troop Commanders Course 125. On joining 21 Field Squadron (Explosive Ordnance Disposal) she qualified as a Bomb Disposal Officer at the Defence EOD School and deployed on Operation Agricola *in October 2000 as the EOD Detachment Commander.*

Introduction

Ask a handful of people around you what IRT stands for, and you will get a variety of answers: Immediate Response Team, Incident Response Team, Immediate Reaction Team – or just a blank look! The IRT is the Immediate Response Team; a dedicated team of key personnel who can deploy at a moment's notice to an incident site to extract casualties in the safest and quickest manner possible. This article aims to heighten awareness of the IRT in Kosovo and to discuss some of the issues surrounding its proper formation. It will also examine the EOD role within the IRT, and explain some of the circumstances in Kosovo that have instigated changes within the IRT.

IRT in Kosovo

On deploying from 33 Engr Regt (EOD) to Kosovo as the EOD Detachment Commander in October 2000, I was told I was to provide a team on ten minutes notice to move to deploy by Puma helicopter or vehicle as part of the Immediate Response Team for part of each month. The remainder of each month would be covered by Scandinavian EOD teams. Gundolph Lines (the Pristina base of the in-theatre engineer regiment), where my detachment was based, was less than a minute's drive from Harden Lines (the Pristina Field Hospital), where helicopters put down to pick up EOD teams and the medics. In turn, the Joint Helicopter Force was based less than ten minutes flying time away, near the airport of disembarkation (APOD).

Initially, the procedures laid down for the IRT, and for the EOD role within the IRT, appeared

Helicopter preparing to winch IRT team onto clear area near the incident site.

quite sparse. EOD SOPs called for provision of a two-man EOD team; a Bomb Disposal Officer (BDO) and a No. 2. It suggested methods of clearing a safe route to a victim or a vehicle with and without snow cover, by helicopter and by road. There was however no co-ordinated plan laid down for the EOD teams, the air crew and the medics to work from and no mention of other agencies, such as the Defence Fire Service (DFS) and the Multinational Military Police (MNMP), who could be involved during an IRT incident.

The EOD detachment arranged exercises and no-notice callouts to practise the different agencies in working together. It became obvious that further SOPs would be required to cover the wide spectrum of situations to which the IRT might be called. It was realised through practice that the EOD teams need to operate as the usual four-man rather than a two-man team, in order to be able to safely and rapidly breach a lane through a potential bomblet or mined area. Also, the anaesthetist and operating department practitioner (ODP) who are part of the team have to be properly winch-familiarized. It was also noted that the RAF aeromedic on board was somewhat surplus to requirement, and that the DFS, a vital part of most deployments, were not considered part of the IRT at all. Consider a scenario where a vehicle has left the road and overturned. There are people trapped inside and one has a potential spinal injury and cannot be dragged and pulled out. The EOD team can achieve access to the vehicle so that the medics can apply preliminary first aid, but how can the casualties be freed from the debris to go to hospital without cutting equipment? A lot of work needed to be done to reorganize the IRT into a flexible and coherent unit that made best use of the specialist skills of all its elements and yet was honed down to a well-rehearsed team of essential individuals.

The Defence Fire Service remove roof, steering wheel and seat-backs in order to release a casualty with a spinal injury.

THE BOSNIA MODEL?

IT appeared that the template for IRT in Kosovo had been lifted directly from experience in Bosnia where the IRT is well established as a heli-borne team incorporating EOD on every callout. 33 Engr Regt (EOD) has a detachment of three BD teams in Multi-national Divison (South West) (MND(SW)) in Bosnia, which man the IRT in turn. However, there are considerable differences between the IRTs in MND(SW) and Multi-national Brigade (Centre) (MNB(C)). The latter covers a much smaller area than its Bosnian equivalent, and the terrain is much easier to cover in a wheeled vehicle. In addition, the mine threat in Bosnia is considerably higher than in Kosovo, where the main threat is from bomblets or submunitions. This has a bearing on two things. Firstly, that although a heli-borne deployment in Bosnia is standard for the IRT, it may sometimes make more sense in Kosovo to deploy by road. Secondly, with a lower unexploded ordnance (UXO) threat in Kosovo, the primary role of the EOD teams is often task scene management and agency co-ordination, in which they are highly trained.

WHAT IS THE REQUIREMENT FOR IRT?

THE role of the IRT is to safely and rapidly extract casualties from serious accident scenes and give basic life-sustaining medical treatment, in order to get them to hospital for treatment as soon as possible. There is a clear distinction to be drawn between an IRT incident and a MEDEVAC situation. In any situation involving casualties where a helicopter would be faster than road in getting the casualties to hospital, MEDEVAC can be requested. The IRT should be called if it is a more complex scenario, where there is either the possibility of a threat from UXO, or if the casualties are trapped in some way. Any unused area of land in Kosovo should be considered to have a potential UXO threat unless there is specific evidence to

The EOD team assist the medic in preparing a casualty for evacuation by winch

the contrary. It is sometimes difficult for callsigns on the ground to judge exactly what type of incidents require the IRT as opposed to MEDEVAC, but with increasing awareness of and education on the capabilities of the IRT, calling it out should soon become an automatic response to a serious or complex incident.

So, what is required to ensure the IRT can fulfil its role? Clearly, it needs to be a team that is used to and practised in working together. To this end continual training is required to keep up readiness and to explore different types of scenario. The elements that have deployed in the past have always been the helicopter crew, the medics and EOD. However, it was obvious from practising different scenarios that the DFS need to be an integral part of the team. Moreover, although the MNMP are a separate element, they are likely to be on the scene of any serious incident and should therefore be practised in working with the IRT so that on site, command and control is handled smoothly. All exercises were arranged so as to involve all elements of the team, often initiated by an MNMP or infantry patrol on the ground.

The IRT needs to be able to deploy to any incident in the most suitable means to allow the fastest evacuation of casualties. This means by air or road, depending on weather conditions, location of the incident, and accessibility. Because of their equipment, and the limited space on a Puma, the DFS would always aim to deploy by road from one of their stations in MNB(C). The medics have battlefield ambulances on permanent standby in which the anaesthetist and ODP could deploy. Several of these would normally deploy as road backup to any heli-borne incident as a precaution anyway. The EOD teams remain on standby with their vehicles at all times, with a second team ready to deploy by road as backup should the heli-borne team require further manpower or recovery assets. The practicalities of deploying by means other than helicopter are not a problem. It is just a question of maintaining the co-ordination between the separate elements of the IRT and further emergency services. Again, this was trained for realistically. If a practice callout was instigated and the helicopter was unavailable or unable to fly due to the conditions, deployment was by road.

Finally, it has to be considered whether all assets are needed on every IRT callout. Should it be an integral team who all deploy no matter what, or does it require a more flexible approach? The problem here is the limited information that comes from the man on the ground when an incident takes place. Often the details become lost or confused, and it is not until arrival on site that the real situation is known. True, in Kosovo there are very few minefields, and the known mined or bomblet areas are being steadily cleared by non-government organisations (NGOs). It would be rare for an EOD team to actually have to breach through an area of

A Stretcher casualty is winched up with a medic.

mines or bomblets (although not impossible), but the BDO can give that expert assessment of an area and declare it safe or otherwise in his or her opinion. It can also be argued that the BDO should take control of the incident and co-ordinate the whole operation, not only because he or she would control the safety aspect of the scene but because of the scene management training he or she has received. Thus EOD would deploy as a matter of course whether the UXO threat was considered likely or not.

THE FUTURE OF IRT

PROCEDURES for the IRT in Kosovo are gradually becoming more formalised and co-ordinated. The individual elements of the IRT continually train and strive to achieve the most effective way of working, although they are sometimes hampered by the rapid turnaround of personnel. Much of the training, and the changes that have been instigated, were brought about by the EOD detachment and the SO3 EOD. This is primarily because the EOD personnel are on 4-6 month tours, whilst the JHF personnel change every six weeks, and the anaesthetist and other medical personnel every four weeks. With this turnaround of personnel, it is almost impossible to get any continuity of thought or to get a practised team working together more than once or twice. Anybody coming new into theatre must be provided with clear guidelines from the start as to their role in the IRT.

At a higher level, there are also definitions to sort out. What is the exact mission of the IRT? Is it the team of people that respond to an incident, or is it actually the helicopter itself, meaning there is no such thing as an IRT deploying by road? How can one define the type of incident the IRT should be called to in order to help those on the ground instigating the call? At present there is still some confusion surrounding IRT, although significant progress has been made over the past year.

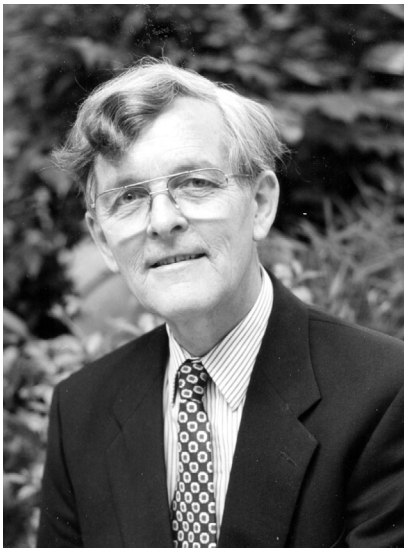
These issues need to be clarified before the IRT can be used in the most efficient and effective way. The bombing of the Nis Express bus on 16 February 2001 was a prime example of misuse of the IRT. A culvert bomb was detonated by command wire under the lead bus of an escorted convoy transporting Serbs from Serbia to the village of Gracanica in Kosovo, leaving 11 people dead. The IRT were not tasked until nearly three quarters of an hour after the explosion had occurred and consequently were the last to arrive on the scene. The survivors had already been evacuated from the bus and had returned to Serbia, and the scene was crowded with all manner of people before any sort of check for secondary devices had been carried out. Had a such a device been planted, the disaster could have been ten times the scale of the horrific tragedy it already was.

CONCLUSION

THE IRT in Kosovo is evolving. There is work to be done, but there is potential for a unique and vital team trained to give highly skilled assistance at any incident at a moment's notice. The model needs to be moved further away from the Bosnian template to one suitable for its new environment. At a higher level, decisions have to be made regarding the exact definition and role of the IRT. There is still a long way to go in terms of written-down policy, but the various elements are drawing together. It is imperative that our soldiers in Kosovo are reassured that there is a dedicated and effective team ready to respond to serious incidents, and that they know its capabilities. The IRT is the best means of achieving this.

National Service Remembered

LIEUTENANT M PADMORE BA CEng MICE



Mike Padmore was commissioned into the Corps in 1958 as a national service officer following training as a civil engineer. He subsequently served as a troop commander with 3 Field Squadron. During 30 years with the contractor Costain, he visited many exotic and non-exotic parts of the world, in capacities from agent to managing director. In retirement, study for an Open University degree enhanced an interest in historical research: an interest applied here in re-visiting the National Service experience. Mike is an active member of the Friends of the Royal Engineers Museum and a social member of the Blythe Sappers!

I am probably in a minority of the 2.5 million conscripts in looking back on my two years of national service with some satisfaction and often pleasure. I was particularly fortunate to serve with the Corps of Royal Engineers and to have the opportunity to put time to good use and acquire skills in practical engineering. All in all, the experience was one from which I drew benefit and one which I certainly would not have wanted to have missed.

In what has proved an interesting exercise in social history, memories of national service over 40 years ago have been checked where possible against the facts; the research revealing just how much historic material has been lost in such a short time. For example, in the combined collections of the RE Library and the RE Museum, I could find only three photographs relating to Guillemont Barracks at Cove. A similar dearth of information seems to apply in respect of Mons Officer Cadet School. Fortunately I kept a diary, which has provided a fair amount of primary evidence on which to draw. This, together with the results of my searches, yielded the material for this article and a recent talk to FoREM at Minley.

I was deferred from call-up while attempting to qualify at night school as a civil engineer. Eventually, when only part way through this task, I decided that the army might hopefully be an easier option and asked to be called up. Call-up papers arrived in February 1957, with the bonus of a day's pay of four shillings in advance, and a train ticket to Malvern Railway Station, which, when visited recently, has changed very little. Outside the station, what seemed to me to be a long period of being shouted at incessantly began. With three fellow recruits I was bundled unceremoniously into the back of a Bedford 3-tonner, which whined us noisily down to No 1 Training Regiment Royal Engineers at nearby Merewood Camp.

From arrival at the railway station at 2.30 pm on 21 February 1957, until lights out at 10.30 that evening, we were subjected to a succession of culture shocks, inflicted at a pace clearly designed to prevent the feet from touching the ground! After registration, and re-identification as No 23372323 Sapper Padmore, M, kitting out took place in a large store, where one moved along a counter stuffing an avalanche of items into a kitbag. Size seemed unimportant; my diary records the receipt of "denims for 8-footers and berets and vests, PT, which are infinitely too small!" Trevor Royle, in his book on national service, quotes an army saying; "If it fits, you must be deformed", which on reflection seems apt. When we came to "Boots, black, pairs, one",

they were more discerning. "What size?", barked an aggressive individual with three stripes. "Eight, I replied". "Eight what?", he bellowed. I was on the verge of saying "just eight", when the required answer of "Size eight, sergeant" was pointed out with due emphasis! I was beginning to learn my place in the scheme of things.

27 May 1957 Pass-off Parade B Squadron, 3 Training Regiment RE, Guillemont Barracks, Cove.

The next shock to the system was being marched to the canteen for tea, in single file, with knife, fork, spoon and mug held tightly in the left hand in the small of the back, where, according to my diary, there were 1000 others. The size of the canteen and regimental strength at the time, suggest an over-estimate, but the impression of vast numbers remains. After the meal, we filed past three drums of tepid, greasy water, labelled "rinse, wash and sterilize", into which one optimistically dipped the eating irons. Resistance to disease and infection must have been stronger in those days! I recently came across an article in the *Soldier* magazine for January 1959. With the prospect of the end of national service in sight, the army was looking to make itself more user-friendly to prospective volunteer recruits, and equipping the canteens with cutlery was one of the master-strokes proposed. The final shock of many on that first memorable day, was the issue of a piece of brown paper and some string, in which to parcel up the "civvies" to send home. One realized then that there was to be no escape; we were in the army and recognizable now, even in our drawers, green, (lady-killers), size three! Other reminders from the diary of the first two weeks of very basic training are:

- 28 February – Food exceptional today; Army Catering Corps officer here on inspection.
- 1 March – First day on the miniature range. I had a sixpence group with one stray; my companion shut both eyes while firing, causing extensive damage to the range.
- 5 March – Pass-off parade at 2.30 pm with regimental band: five men. This was rather a shambles with many of the troops out of step, but Squadron Sergeant-Major Grey seemed quite happy; I am sure he was glad to be rid of us! From 3.30 pm to 10.00 pm we were free to sample civilization and so, with four others, walked into Malvern and took tea in the Winter Gardens restaurant. This was tea, free of the bromide, with which we believed we were being doctored"

Next day we were up at 4 am ready to leave camp at 7.30 en route to our next posting at No 3 Training Regiment at Cove. On a warm morning, we marched in greatcoats the three miles to Malvern Great Western station to join a troop train, which is now surely an extinct species. At Farnborough North Camp station, a welcoming committee of fairly aggressive NCOs lashed into us from the start. This must have upset me because, as the diary records:

•"I had to lie down during corporal's inspection. Only vigorous protest on my part avoided a subsequent transfer to hospital".

Another diary entry on 7 March noted that, "the barber came and did 85 haircuts in three hours". It doesn't record that stylistically the haircuts were basic, and the second ones inflicted within the space of just ten days. You did however get a lot of hair removed for your money. A recent letter to the editor of the Farnborough News produced a telephone call identifying the barber as Les Willis, who had a shop within the barracks. His widow was able to confirm not only the phenomenal output, but also that the price of the haircut was just sixpence!

The haircut was just another of those culture shocks that army life served up. Another was the substantial loss of privacy. The only way that I could keep my mother's precious fruit-cake to myself was to wait until lights-out, eat a piece under the bedclothes, and then live with the discomfort of crumbs in the bed. Otherwise we

lived communally, including innoculations in that we all shared the same needle. Was it, I wonder, wiped between jabs? I do remember that it was reckoned to be best to be near the front of the line for jabs, while the needle was still sharp!

Army kit seemed to have been specifically designed to absorb the maximum time in laborious cleaning, and kit cleaning was certainly a priority item on the agenda at No 3. Take the boots. The two pairs when drawn from the stores had a pimpled orange skin texture. This had to be smoothed with the back of a spoon which had been heated over a candle. A mixture of spit and shoe polish, applied with a circular motion with the index finger and polished with a duster, eventually produced caps and heels in which you could see your own reflection. All was well until a fellow conscript stepped on a toe. Cleaning webbing by scrubbing and then applying brasso and blanco absorbed more precious time. After that, the battle dress had to be ironed using a shaving brush, water and brown paper.

An incident is recorded on 12 March concerning which I had to wait a long time to level the score. "On Camp Fire Picquet tonight. Reported at 5.45 pm to the cookhouse and five of us were peeling potatoes until 10 to 12, enough for 1000 men". Probably another over-estimate on numbers, but no doubts on the duration of the "fatigue". With kit to clean and sleep very necessary, our feelings about the cook sergeant responsible may be imagined! Well, some twenty years later, I was the managing director of a construction company with a large contract to build in the Arabian Gulf. During a visit from London, I stayed in the site camp. I had previously arranged for a temporary replacement to cover for the camp boss, or catering manager, who was on leave. Cornered in the bar and over more than a few beers, this chap was lobbying for a permanent position with the company. Through a Heineken haze, discussion turned to army life. Guess who he turned out to be? The very sergeant responsible for our lack of sleep back at Cove! For some reason, his continuity of employment did not prove possible.

The first 48-hour pass came four weeks after joining the army. On the 18 March, "the bus left the camp at 12.30 pm and I was back in Nottingham six hours later". This is roughly twice as long as it takes, (or should take), today. Our tortuous route then, before the days of motorways, would have been via the A30, the North Circular Road and the A5. I remember that the bus company sold itself to the soldiery on speed, and I have a vivid memory of its advertisement showing one of its coaches being pursued by a black Wolseley 6/80 police car (the one with a bell on the bumper). I also remember that two of us on the back seat took it in turns to keep an eye out for the law, while the driver put his foot down.

Research to try to identify the coach company and the barber, took me to Farnborough Library and the local newspapers for 1957. The one national service story of interest was in the Aldershot News of 25 January of that year. A soldier from another Corps in Aldershot, had been caught stealing 400 cigarettes from the NAAFI. When police checked on his home address, they were told he was already in gaol for theft! It turned out that the soldier, who had himself failed the army medical, was doing national service on behalf of his friend who was fit, but unwilling to serve! He was given 14 days for the crimes of falsifying his identity, and smashing up the guardroom cell. He was sent for trial at Andover Sessions on the more serious charge concerning the cigarettes!

An interesting product of adversity, which is what we seemed to be suffering from for much of the time during our training, is that it binds people together into a tight group, as a joint defence as it were against an outside world of shouting NCO's, endless bull and loss of sleep. This cohesion was well tested on the 2nd May when my friend Derek lined up on parade on the main square minus the bolt from his rifle! When the omission was picked up by the inspecting officer, our Squadron Sergeant-Major was understandably apoplectic and the offender was duly frogmarched – not quite the proverbial lollypop on the end of the pacestick, but near enough – at the double from the square. Not only did he get seven days "jankers", but, horror of horrors, was also put on a charge of "actions prejudicial to good conduct". Short of being shot, getting on a charge was to us the ultimate sanction!

Derek was a somewhat vague architect who on his own admission, was wholly unsuited to military life. He seemed particularly resentful of the two-year interruption of his civilian career. Well, he got off the charge with a warning, but only through the unstinting efforts of the rest of us, including the contribution of kit, did he survive the "jankers" without further increment.

When I managed to get in touch after 40 years, I was astonished, and initially somewhat peeved, when he declared that he had no remembrance of this incident. Fortunately I was able to trace the third of our trio, John, whose memory was as vivid as mine. When we three met up for lunch recently, our conclusion was that Derek was suffering from selective memory syndrome, an affliction well known to historians; ie one remembers what one chooses to remember!

Sport was, as it still is now, extremely important in the army, but it was a surprise to be suddenly picked out from the rest of the squad and sent down to the cricket nets. There, a sergeant with a clipboard told me to put my pads on. A few minutes later I faced a very fast bowler indeed, whom I later learned had played for Lancashire's second XI! He had demolished my wicket, four balls out of six, before the sergeant intervened. "Here, Padmore", he said, "we thought you played for Nottinghamshire!" Before call-up I had worked in the County Engineer's Department: and played cricket for the Nottinghamshire County Officers Cricket Club; the powers-that-be had optimistically misread my form! Needless to say, I was returned to sapper training without further ado!

Money was extremely short during national service. After deductions to keep the contributions going to my civilian employer's pension fund, I had disposable income of one pound a week. As one always seemed to be hungry and undernourished, several shillings had to go on NAAFI and "Sally Bash" wagon snacks. The diary does however record an outing to the Ely Hotel on the A30, for a slap up meal for 7/6d. I remember that we walked back happy, due as much as anything to the 2/6d spent on three pints of good strength beer each, to wash the dinner down. We gathered bunches of rhododendrons to present to the guardroom commander, but history doesn't relate whether they were actually handed over! On a recent visit to the Ely, beer had gone up from 10 old pence, or 4.5p a pint, to £2.25, a fifty-fold increase in 44 years.

I went to WOSB (War Office Selection Board), at Barton Stacey for selection for officer training and failed. More correctly, I was put on "deferred watch". My own analysis of this situation was that having received my education at a quiet grammar school, I was not sufficiently confident and robust in imposing my will on others, particularly the candidates from the public schools. In retrospect, it was a significant turning point in my life. I was sent for a period to 29 Field Squadron in Germany, where I joined a lance-corporal's cadre, and learned to shout with effect. When I returned to WOSB three months later, candidates from the public schools in my group didn't know what had hit them! After all, in basic training they had been trained to respond with alacrity to direction from lance corporals and now I was one, so my exercise of crossing the river with a wounded man, a barrel, a rope and a few poles, was finished way ahead of time. My ability to project my voice was to develop so well that a few months later, when in charge as the SUO of the passing-out parade of the officer cadet squadron at Chatham, my mother refused to believe that the shouted commands were emanating from her son!

During my four months deferment, I was in Germany in a barrack room with a mix of regular and national servicemen. There was some understandable resentment among the regular soldiers about the national serviceman, many of whom insisted on marking the days to demob on elaborate charts on their locker doors. Those with longer to serve were treated with a measure of disdain. On the 5 September, the diary gives an interesting insight into the literary tastes of some of my room companions back in those days: "Apart from the Daily Mirror and Sketch, it is quite surprising what literature is consumed here. The Dandy and Beano are old friends, but in addition, we have most of the women's weeklies and even a document of true romance, entitled Young Brides!"

There are three distinct memories of life at Mons Officer Cadet School. We arrived there in a bitterly cold November. Iincluded in our group were two cadets from Ghana. These two, who must have been star players in the Ghanaian Army, had never even been to Accra, never mind Aldershot – an extremely bleak Aldershot in the middle of an English winter! Not surprisingly, they never did acclimatise. It was at Mons that I had another sporting encounter. The whole intake was lined up by height and then paired off and instructed to knock hell out of each other for three minutes in a boxing ring. It was without doubt, the longest and most exhausting three minutes of my life! My opponent refused to yield to my onslaught, and he was unable to flatten me either. Stuart Sinclair and I have remained firm friends ever since. The other

memory is of infantry training with Stuart. He was playing the role of the officer in charge of a platoon, with orders to capture an "enemy" position on a bracken covered hill near Camberley. Once the "defenders" had been dispatched using rifles and blank ammunition to repulse the attack, Stuart drew the rest of us into a kneeling "O" Group, where we peered at each other through a screen of bracken draped over our helmets. Once this latter-day Jack Hawkins had issued his orders – some to give covering fire from the flank and for the main party to advance on the given signal of a flare – Stuart fired the Verey pistol. The flare set fire to the bracken on the hill and the defenders fled and surrendered without a shot being fired. The rest of the day was spent in putting out the fire!

From Mons we moved to the officer cadet squadron at Chatham, where Major G S Harris, was our OC. In his obituary in the RE Journal of August 2000, he is described as being "an excellent mentor to hundreds of budding young Sapper officers, and many national service officers remember him with affection". These are sentiments which I wholly endorse; I personally owe much to Major George for the sound guidance and significant responsibility he gave me. Being a national serviceman, I only learned of his impressive war record through his obituary, but it all fitted perfectly with the man I knew.

The cadet squadron at Chatham must have been designated a dust-free zone. We were to lose a great deal of sleep over dust - literally! For instance, my diary records "awaiting a second inspection for dust at 2.30 am in the morning". Of course we were the junior party and needed to be taught absolute subordination by means of meticulous attention to dust elimination, and the preparation and presentation of kit. Blankets and sheets were not necessarily for sleeping in, but for forming 22 inch wide bed blocks. These were made up to look like a Black Forest gateau, with the sheets forming the filling. I do recall that before a big inspection, some of our party slept without blankets and sheets to save time the following morning.

To me, a sobering experience at Chatham was clearing a minefield of dummy mines at night. In the bitter cold of winter, in the middle of a chalk quarry near Upnor, this was a demoralizing exercise. But how much more so in battle conditions; lying prone and prodding with a bayonet at 4-inch centres in dead silence, so as not to alert enemy machine gunners; separated by 20 paces from one's companions in case a mine was triggered. This was truly a task in war calling for a very special brand of courage and commitment.

An invaluable aid to the engineer officer, and one which I kept with me for many years after leaving the army, is The Royal Engineers Supplementary Pocket Book No 3 on Bridging. One must be careful what one reveals from my 1957 edition, because of the injunction on the first page not to communicate the contents to "any person not authorized to receive it". But in it, there are some gems. Where else could one find such essentials for temporary bridge design as the weight of a camel at 1600 lbs and, more importantly, the maximum weight of a camel on one leg at 1000 lbs? One also learns from the book that a cavalryman on his horse and in marching order is 1400 lbs, and with a maximum weight (this must have been crucial), on one leg averaged 860 lbs. One wonders how, when and by whom, such invaluable data was assembled!

After commissioning at Chatham, my posting was to 3 Field Squadron who were then stationed at Chiseldon, near Marlborough in Wiltshire. There, I had command of a field troop and could indulge my enthusiasm for practical engineering. Assembling and dismantling Bailey bridges had great appeal to me; it was like having a full sized Meccano set at your disposal. No matter if we spent all night building the bridge only to start dismantling it 20 minutes later! Bailey was a brilliant invention, and it has even greater appeal when someone else is doing the heavy lifting.

Chiseldon was a remote camp on a railway line originally called the Midland and South Western Junction Railway. It linked, by a somewhat tortuous route, Southampton with Cheltenham. In those pre-Dr Beeching days, I could at least get home some weekends. The journey, particularly on a Sunday evening, was leisurely; three hours to cover the 55 miles from Southampton. The train crew and station staff were all very relaxed. I remember pausing at a station while a through passenger got off to avail himself of facilities not available on a non-corridor train, and the train waited, there was no hurry! Horsebridge Station is currently up for sale at £850,000, a price which would have bought the whole railway in 1966.

Chiseldon Camp had its own station, but I never saw anyone else board or alight here. The camp was built entirely of asbestos during the first world war. Insulation of both heat and sound was

poor and what heat there was, came from oil stoves. I have recently met up again with Jim Wood after 40 years. When we last met, he was SSM of 3 Field Squadron. Jim recalled how on OC's orders, every one in the HQ block was privy to what was being said, and excuses for late return from leave were marked by the office staff for originality. Grandmother dying yet again scored a low five, but one day they had a nine, when the accused claimed that his father had been murdered during the weekend. The sad thing was, this story may even have been true.

Outside of working hours, Chiseldon was distinctly short on entertainment. I did join the Marlborough Amateur Dramatic Society and although I starred in an occasional play-reading, my main role was as a civil engineer, helping to repair the theatre roof. 22 Field Engineer Regiment mess nights could be lively, particularly when entertaining the Sergeant's Mess. How an orthopaedic surgeon would have viewed High Cockalorum, or the assembling of a 15-foot high human pyramid, to stick a postage stamp on the ceiling I cannot think In retrospect, these activities do seem to have incurred an unacceptably high level of risk!

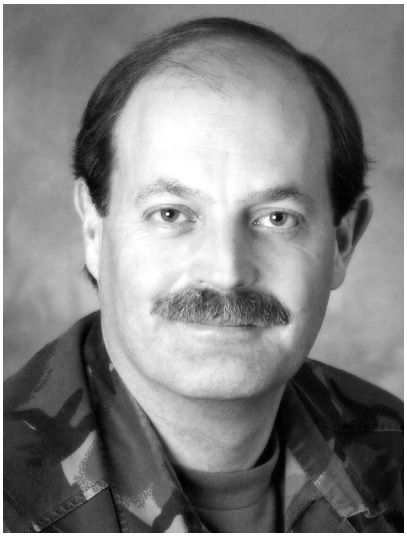
A task given to 3 Field Squadron by Her Majesty the Queen, was the erection of the Totem Pole in Windsor Great Park, a task made the more rewarding because we did not afterwards have to take it down. *(See RE Journal, December 1958).* My troop was entrusted with the foundation works and while we were wrestling one day with the placing of reinforcement at the bottom of the excavation (using levers and some appropriate Sapper terminology to achieve the objective), I was horrified on looking up to see the Colonel-in-Chief of the Corps, on horseback, surveying the scene. I cannot remember what was said, but hope that the muddy-fingered salute I offered to Her Majesty was adequately smart in the circumstances!

One of my last duties as an officer before demob in February 1959, took me to South Shields. This was because of an army regulation which said that a soldier charged with an offence under the civil code had to be represented and have any fine paid on his behalf. This would subsequently be deducted from his army pay. One of the sappers of my troop had seen the New Year in all too well in South Shields, and he was duly charged with urinating in the Market Place, the public conveniences being closed at that hour. At vast expense, he and I travelled up to Tyneside, which is a long way from the Marlborough Downs. The following morning, we attended the Magistrates Court where the deed was described in some detail. I then rose to make a statement, Perry Mason style, in my client's defence. The three magistrates appeared to ignore the brilliance of this submission for, without looking at me, the chairman pronounced the verdict; fined ten shillings! I paid the fine and we set off on the long trek across England back to camp.

I owe much to national service and the Royal Engineers in particular. Had I known, as I have learned through my researches, that there was a column on my army record waiting to be filled in on reaching the rank of Field Marshal, I might well have stayed on. The army experience made me realize that I could now work harder, stay awake longer and shout more loudly, than I had ever done before. I left the army and enrolled for two years of night school, tackling examinations as a military exercise; it seemed to work. I knew by then that I wanted to build things, preferably things that didn't have to be subsequently dismantled. In this respect I have been only partially successful. A power station and an oil refinery in UK to which I contributed have now been demolished, and my bridge in Nigeria was blown up in the Biafran War. You cannot, as they say, win them all!

Joint Force Engineering

BRIGADIER M F N MANS



Brigadier Mark Mans has served in UK, Germany, Africa, the Middle East and the Balkans. He attended the Army Command and Staff Course in 1987, the Higher Command and Staff Course in 1997 and the Royal College of Defence Studies in 1999. His appointments have included DCOS 20th Armoured Brigade, SO1 DS at Staff College, CO 21 Engineer Regiment, Colonel Manning (Army) and more recently CRE Land Command. His current appointment is ACOS Plans HQ Land Command

Introduction

In the two years I spent as CRE Land Command, I witnessed a change in the way operations were planned and conducted. The emphasis now placed on joint operations, and in particular Joint Rapid Reaction Forces, does I suggest require a modified approach to the employment of Royal Engineer forces. This article will therefore seek to explain the principles under which I consider they should operate, their capabilities, the command and control of engineer forces within a joint force and the manner in which joint force engineer operations are planned and conducted. I should add at the start that I am indebted to others who have contributed much to the debate, in particular Brigadier Melvin who as Chief Engineer in the ARRC is developing a similar NATO concept, and to Lieutenant Colonel Naylor from my own staff.

Fundamentals

Successful joint operations depend on how effectively commanders employ the full range of resources across the entire spectrum of military operations. By shaping the conditions under which military forces operate, engineer operations, delivered by the Royal Engineers, are a significant force multiplier and will play a key part in influencing the final outcome of a campaign. Engineers have utility across the complete spectrum of operations and will be used to develop the battlespace for joint manoeuvre, to enhance strategic, operational and tactical mobility, and to provide and maintain infrastructure to protect and sustain the force. They will also provide geographic and geospatial information and logistical assistance to support the joint force. The functions they perform in support of a joint force may be grouped into two broad categories:

- **Combat Engineering.** Combat Engineering encompasses those engineer tasks associated with the direct support to current or imminent combat operations and focuses in the main on mobility, countermobility and survivability tasks. It is conducted predominantly, but not exclusively, in support of land based close operations, with the emphasis on speed of execution. It frequently relies on prefabricated equipment solutions, may involve improvisation, accepts a degree of risk and is likely to fulfil a short term tactical requirement.
- **Force Engineering**. Force Engineering encompasses the deliberate, longer-term preparation for, and indirect support to, ongoing or future operations, as well as those engineer tasks associated with sustaining the joint force throughout all stages of an operation. It will focus on pre- and post- conflict activities and on deep and rear operations during conflict. It is an area which may involve a greater degree of cross component support and the engineer tasks will usually be more enduring, relying on purpose designed and purpose built solutions. It is likely to fulfil a longer term, operational requirement.

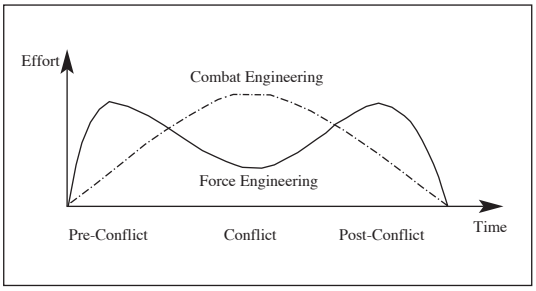


Figure 1 – Distribution of Engineer Effort

THE range of engineer capabilities and the multi-role nature of most engineer forces gives them a utility in either functional area. The distribution of engineer effort between the two functions will however vary during the course of a campaign, though the total level of effort is likely to remain roughly constant. This is illustrated at Figure 1.

The combat and force engineering functions can also be used to explain the roles performed by engineers in support of different force elements and can be grouped as follows:

- **Close Support.** The intimate support to a unit or brigade sized formation and is mainly combat engineering in nature.
- **General Support.** Support to a divisional sized formation or component and is a mixture of both combat engineering and force engineering.
- **Joint Support.** Support to a joint force and is mainly force engineering in nature.

CAPABILITIES

The Royal Engineers can bring to bear a variety of capabilities in support of any given operation. Not only will a Joint Task Force (JTF) as a whole rely on specific capabilities (works, geographic, logistic etc), but the Maritime, Land, Air and Logistic components will each also have engineer units and formations assigned with capabilities to meet specific operational needs.

- **Joint Force Maritime Component (JFMC).** Maritime Component engineers have rapidly deployable units to support amphibious operations. Engineer units perform both combat engineering tasks (mobility and survivability), and force engineering tasks (ship to shore bulk fuel engineering, route development etc), to support amphibious forces across the range of entry operations.
- **Joint Force Land Component (JFLC).** Land Component engineers provide a full range of engineering capabilities. Generally, engineer units at brigade level and below provide close support combat engineering and focus on mobility, countermobility and survivability operations. Engineers at divisional level and above reinforce the combat engineering capability within the brigades as well as providing various specialist units to perform force engineering operations such as Explosive Ordnance Disposal (EOD), water development, bulk fuel engineering, support to infrastructure development and repair and maintenance of utilities. Geographic engineering capabilities, including access to special topographic products, exist at brigade level and higher.
- **Joint Force Air Component (JFAC).** Engineer forces are trained and organized to provide specialist support to the RAF. Units provide support across the range of military operations by focusing on airfield construction, maintenance, repair and sustainment operations such as fuel engineering and ammunition protection. Air Component engineer units can deploy either as part of an air expeditionary force or as detached units operating in support of specific air missions.
- **Joint Force Logistic Component (JFLogC).** Engineers supporting the Logistic Component specialize in support of the receipt, staging, onward movement and integration (RSOI) of the force into theatre and then enhance the facilities and infrastructure necessary to sustain the force. In addition engineers augment the Logistic Component by embedding specialist engineer logistic units and staff within the supply chain to manage the supply of the large quantities of engineer materiel necessary to support engineer activity.
- **Joint Force Special Forces Component (JFSFC).** Although there are no engineer units embedded in the Special Forces Component, specialist capabilities (EOD, search and geographic support etc), can be provided for specific missions and tasks.

An example of how the various capabilities could be used in support of a JTF and its components is illustrated at Figure 2.

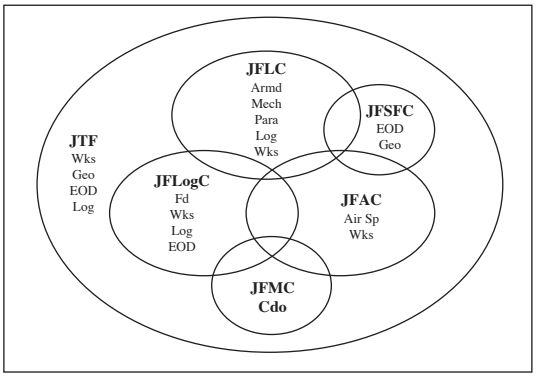


Figure 2 – Joint Task Force Engineer Capabilities

Command and Control

If the experiences of the last decade are repeated in future campaigns, engineer operations will include many Ministry of Defence civilians, as well as the services of Non-Governmental Organizations (NGOs), private voluntary organizations, international organizations, other UK Government agencies, and civilian contractors. In addition, operations will often be conducted in a combined or multi-national environment, possibly within a UN, NATO or European led Alliance. The total engineer force of regular and reserve military, civilian, contractor, host nation, allies and coalition partners represents a significant coordination challenge. Such a challenge can only be met by exercising appropriate command and control at the highest level throughout all stages of a campaign.

Simplicity and clarity of command relationships for engineer forces are paramount to their effective use owing to the diversity of capabilities and the varied and complex nature of engineer tasks. Engineers will always be in short supply and their activities should be commanded and coordinated at the highest level possible in order to ensure their most efficient use. Joint force engineer command and control procedures should be based directly on existing doctrine that adheres to two well established principles. Firstly, most engineer tasks require materiel and equipment which is too diverse, scarce and bulky for it to be held by forward units. Therefore each task, beyond the simplest and most immediate, needs the support of a higher engineer commander and staff to co-ordinate activity and assemble the required materiel. Secondly, concentrated engineer forces generally produce the best results. The tendency to "penny packet" resources is wasteful and should be resisted.

At the JTF level and within all Joint Force Component commands there needs to be a single, clear focus for engineer advice and support. The right of direct access to the Joint Task Force Commander (JTFC) and component commanders on engineering matters should be guaranteed and engineer staff need to be fully involved in the intelligence, planning, operations and logistic processes. Each JFC should have a designated engineer commander known as the Commander Royal Engineers (CRE). There is also a clearly identified requirement to exercise command and control at the JTF level. The term "Joint Force Engineer" (JF Engr) describes the role of the senior Royal Engineer commander. The JF Engr is the principal engineer advisor to the JTFC and will act under his direction. The JF Engr exercises functional control over all engineer forces and will prioritize engineer assets and resources across all JFCs in order to meet the JTFC's intent. Maritime, Land, Air and Logistic components will all have engineers within their assigned forces, but the numbers will vary. A flexible approach is required to provide cross-component support at critical stages in the campaign. Only through the establishment of a single engineer command and control focus at the JTF level can the necessary balance of engineer effort across the components be achieved. Such effective command and control arrangements are an essential pre-requisite for the efficient employment and co-ordination of engineer effort.

The JF Engr will be assisted by a small engineer staff who will coordinate the combat and force engineering requirements needed to ensure joint force mission success. Although the size of the engineer staff should be kept to a minimum, it will vary according to the campaign and will be tailored accordingly. A generic engineer staff organization is shown at Figure 3.

The different engineer staffs must co-ordinate their activities with all Joint (J) staff branches in order to plan and provide effective engineering support.

- **Intelligence & Geographic.** Throughout the intelligence cycle, the engineer staff assist the J2 Intelligence staff in coordinating intelligence requirements. Imagery, topographical and geospatial information will play a crucial part in the formulation of

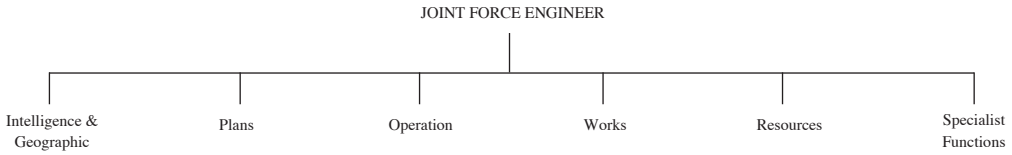


Figure 3 – Generic Joint Force Engineer Staff

operational plans as will mines and unexploded ordnance (UXO) databases. Existing infrastructure, such as bulk fuel installations, ports and airfields, and theatre specific information covering the availability and acquisition of materials and services will also be crucial to developing planning options.

- **Plans.** The engineer staff support the J5 Plans staff by addressing all potential engineer requirements early in the planning process. In the initial stages of a campaign, engineer planners will play a key role in mounting and deploying the force.
- **Operations.** The engineer staff control the deployment, employment and redeployment of major subordinate component engineer forces and the materiel they require to conduct their missions. They work closely with the J3 Operations staff to achieve the JTFC's intent through combat and force engineering operations.
- **Works.** Infrastructure is a critical aspect of enabling and sustaining force deployments. Engineer staff are responsible for the execution of infrastructure tasks and for specialist sustainment operations in support of the joint force (bulk fuel engineering, water development etc). They will work closely with J4 Infrastructure staffs who are responsible for setting the requirement which is then funded through the J8 Financial staff.
- **Resources.** Virtually all engineer tasks require resources of one sort or another. Funding and resource implications will need to be considered at an early stage to guarantee the required supply. A close working relationship with both J4 Logistic and J8 Financial staffs is essential to monitor the procurement and movement of engineer materiel into and within the theatre.
- **Specialist Functions**. The nature of the campaign may demand specialist engineer capabilities, such as EOD and search. The JF Engr will need to be supported by the appropriate staff expertise.

Planning and Conduct of Joint Engineer Operations

ENGINEER staffs must be involved in the joint planning process from the outset to articulate fully the engineering constraints and capabilities across all components. Engineer tasks are invariably demanding in time, equipment, resources and manpower. The early identification of engineer support requirements is therefore critical. Thereafter, joint engineer operations enhance the JTFC's ability to move, manoeuvre and achieve objectives by efficiently using resources through a combination of combat and force engineering. Making efficient use of scarce engineer resources is essential to provide effective support to joint operations and depends on centralized control and decentralized execution. Engineer support will focus on the provision of means and capabilities to generate, mount, conduct, sustain and recover from operations and will be required throughout the campaign covering the full spectrum of pre-conflict, conflict and post-conflict activities.

In the pre-conflict phase, engineers must be fully involved in any early reconnaissance to determine the resources and effort required to support theatre entry and the deployment of the force. Enabling works in preparation for the JTF to manoeuvre on land, sea and in the air begin with research into national infrastructure as well as ascertaining the availability of equipment and construction material. Preparation of agreements and contracts for support from host nation agencies and companies, and the acquisition and transport to theatre of the requisite engineer materiel will then follow. A significant force engineering effort is likely to be needed to provide, repair and maintain the infrastructure required to transport, receive and assemble the force. This is likely to include the development of routes (road and rail), Deployed Operating Bases (DOB) for the air force, and Forward Operating Bases (FOB) for aviation as well as the clearance of mines and UXOs. Engineers also need to be involved in the air targeting process, particularly to help shape and prepare the battlespace. Their full involvement enhances the effectiveness of aerial targeting by advising on the most effective manner to attack the enemy's national and military infrastructure. This allows attacks to be focused on enemy capabilities while preventing destruction of key infrastructure essential to future operations and without causing disproportionate collateral damage to civilians and the environment.

Once the campaign enters the conflict phase, the full range of combat engineering capabilities will be required across all components of the JTF. Demand for engineer effort will almost certainly exceed supply and the JF Engr will need to ensure that available military engineer effort is redirected to the area of greatest need. Whilst the decision remains that of the JTFC, the JF Engr will advise on the best configuration and method of engineer support to accomplish the mission and the allocation of assets will be altered as priorities change and tasks progress. Thus, for example, engineers from the Air Component might work on infrastructure repair for the Land Component or EOD teams from the latter might be deployed to support amphibious operations for the Maritime Component. Engineers will support Joint Force Components in mobility,

counter-mobility and survivability tasks. They will also sustain the joint force by the construction, maintenance and restoration of infrastructure and services essential to operations. Military Engineer Services force elements will be heavily involved in the planning and design of infrastructure to enable the construction of fuel supply networks, production and supply of water, electricity, medical facilities and accommodation. In addition, engineers will not only contribute logistic support to the JTF as a whole but they will also support the logistic elements within the force.

In the post-conflict phase, the emphasis will shift more towards force engineering. Engineer tasks will typically include infrastructure maintenance and repair, battlefield clearance, and liaison with NGOs, international organizations and national authorities over humanitarian assistance. The JF Engr will need to ensure that close co-ordination is maintained with Civil-Military Cooperation (CIMIC) staff in order to support the host nation and so facilitate a rapid transition back to civilian control. Thereafter, engineer planning for redeployment will need to commence early if engineer forces are to be reconstituted ready for future operations.

Conclusion

THE basic tenets of Joint Force Engineering have been employed effectively on operations in Macedonia in late 2001 and more recently in Afghanistan. The fact that the concept has been readily accepted both inside and outside the Corps owes much to our heritage. As a Corps, we have a history of involvement with the other Services and it is not surprising therefore that we have had little difficulty adjusting to current Joint concepts. I hope I have shown that the Royal Engineers are an integral and essential part of a Joint Task Force. As military engineers, the Corps has a key role to play in support of defence at every level (strategic, operational and tactical). The capabilities that can be brought to bear throughout all phases of a campaign, if properly harnessed and coordinated, offer considerable utility across the entire range of operations.

Her Majesty meets the families, Gordon Barracks, Hameln 1993

The Royal Engineers Corps Library

(THIS ARTICLE IS EXTRACTED FROM A SITREP WRITTEN BY COLONEL G W A NAPIER IN 2001)

History

THE present Corps Library is descended from the libraries set up in stations around the world; (a memoir dated 1848 mentions sixteen outside the UK in the Bahamas, Barbados, Bermuda, Canada, etc). Their primary purpose was professional; the exchange of technical information through the Professional Papers and other means. There was also an extra-mural and recreational side through which it was hoped to offer an alternative means of filling officers' off duty hours with more elevating activities than were offered by the bars and brothels of most overseas stations!

About the time that the Institution received its charter in 1923, the central Corps Library was in London at Horse Guards. There were branches at Chatham and Aldershot, and in nine overseas stations. The London collection was moved to Chatham in 1939 and amalgamated with the School of Military Engineering (SME) Professional Library. During the war the Aldershot Library closed, and its collection was moved to Chatham after the SME returned from Ripon. At that stage, the library became responsible for the technical reference books, some of which were placed on the shelves and others reissued to schools. This was the first time that the library became available to WOs and NCOs of the Corps. However, after the setting up of the Technical Training Group in 1962, the use of the Corps Library for current professional support of training gradually diminished, although there does not seem to have been any formal acknowledgement of this.

The evolution of the library over more than a century to its current situation, is a tale of upheaval, change, staff problems and crises solved by the colossal efforts of individuals of varied ranks and backgrounds, whose only common characteristic seems to be an appreciation of the value, (in all senses of the word), of the collection. From time to time, usually during major moves, books have been disposed of by sale to members of the Institution and on the wider market, with a view to limiting the size of the collection to whatever was seen at the time to be the main purpose of the library.

The Collection

THE collection comprises books, archives, photographs, videos, maps and plans, journals and periodicals and war diaries. Its widespread variety is often not appreciated by those unfamiliar with the library.

There are at least 30,000 books in the collection. They range from old, (some of which are very valuable), books – mostly on military matters but many with no military or engineering connection at all – to recent publications which are added to the collection at the rate of some twenty a year. They have largely been acquired by donation, often as bequests, which explains why many of them are irrelevant to the main business of the library. Such books have qualified for acquisition simply by virtue of their origin. Many of them are rare and valuable. All the books are fully accessed and their details held on the database. The general condition is good, thanks to a programme of conservation and manufacture of storage sleeves that was undertaken in the 1980s, funded from the sale of one of the valuable first editions. The main subject groups are :

- **Military Engineering.** This includes numerous out-of-date ME volumes useful only for historic purposes. The group also includes old publications on fortifications, field engineering, bridging, demolitions etc.
- **General Engineering.** A fair number of old books on non-military engineering subjects are held. These are sometimes referred to by scholars researching historic techniques.
- **Biographical.** An excellent set of biographies is held on national and international historic and more recent personalities, mainly from political, military and professional engineering walks of life. A separate section contains a substantial collection of specifically Royal Engineer biographies.
- **Military Historical.** These include many standard, some quite rare, works from early wars through the Napoleonic era, the two world wars, Britain and Ireland, the Crimea, Africa, India, the Americas and formation (divisional and brigade) and Corps histories.
- **Defence Policy.** A general section covers military theory, strategy, policy and background material in connection with the other Services.
- **Travel.** A large, very interesting and rare collection of travel books. Some are relevant to sapper affairs

but many are general in nature.

- **Survey.** Although relevant to Corps history, much of the survey collection is highly technical and of interest only to specialists.
- **Architecture.** The same applies as for survey, although there is wider public interest in the work of Royal Engineer architects.
- **Reference.** The usual range of reference books is available. The Army Lists in particular are valuable sources for helping with enquiries, though they are a far from complete set.
- **Very Valuable Books.** A number of high value rare books are held. These are not widely used but much appreciated by those who do use them (largely for historical research).
- **Wallets.** Much of the material in the library arrives in or has fallen into poor condition. Items such as these are stored in wallets, but otherwise cover all the topics of the books and are treated for accession and recording as such. They are maintained in a separate section to ensure careful handling. The wallets also contain typescript and other unpublished material.

ARCHIVES

THE archives are primary source material for research and the answering of enquiries. They include official documents such as the now discontinued EinC's Liaison Letters, the Sapper Telegraph, personal papers, records of Corps organizations such as sports clubs, the Headquarter Mess Minutes and unit newsletters from operational tours. Other important sub-categories in the archives are:

- **Letter Books.** These are largely 19th century handwritten copies of letters to and from garrisons on mainly administrative matters such as payment for fortifications. Specialist researchers from organizations such as the Fortress Study Group and English Heritage refer to them. The letter books are held in environmentally controlled conditions.
- **Specifications.** Copies of the specifications of equipment used by the Corps over the years are held in numerous boxes. They are of limited and highly specialist interest only.
- **Works Schedules.** Similarly, there are books of works schedules, estimates and costing for works dating back to the 19th century which are of little general interest.
- **Files.** Miscellaneous information on biographical and engineering subjects is kept on files held in the archives.
- **Unit Histories.** This important group comprises unit-by-unit files into which are placed documents received from units relating to their history. The more complete ones are much referred to.

PHOTOGRAPHS, VIDEOS AND SLIDES

THIS collection dates back to when the Corps was a leading authority in the early days of photography and the Army focus for experimentation and training. Its value is widely acknowledged. The photographs comprise some 700 albums, 600 envelopes of loose photographs, 750 mounted photographs, 40 illustrated reports and 20 unit uncatalogued unit scrapbooks. The photographs are not all catalogued individually. They are located through the computer by searching for subject type, date, and geographic area. Thus, for example, "FBE over the R Rhine at Xanten in 1939-45" will lead to a number of albums of storage envelopes from which a choice can be made.

In general, the condition of the photographs is very good since they were moved to environmentally controlled storage in the 1980s.

There is also an ad hoc collection of videos containing some interesting historical material. It can be drawn on at present for the purpose of illustrating lectures, but videos have a limited shelf life and their future is uncertain.

The slide collection is also ad hoc and very limited.

MAPS AND PLANS

MAPS and plans are held in plan presses and are recorded in a manuscript list. The collection is somewhat patchy and other sources such as the Public Record Office and Military Survey's own historic map branch may satisfy researchers' queries more readily.

The plans are quite often referred to by researchers, rather as in the case of the letter books. They are not recorded on the database but are listed separately in a word-processed catalogue.

JOURNALS AND PERIODICALS

FULLY bound sets of all periodicals produced by the Institution and the Corps as a whole are kept, ie the Professional Papers, RE *Journal* and *Supplement*, RE *List* and The *Sapper* magazine. The Library also holds some bound copies of Army and Service-wide journals such as *The British Army Review*, *RUSI Journal* and *Army Quarterly*; also of professional journals of learned societies like the Institution of Civil Engineers. Complimentary copies of many other periodicals are received in the library from, for example, foreign and Commonwealth engineer corps'. They are held and displayed for general reference for the duration of each issue and selected ones are

then retained on the shelves. Certain selected ones of these are checked for relevant references, which are then noted on the computer.

War Diaries

A VERY fine collection of First World War war diaries is held. These are the second (carbon) copies of the originals that are now in the Public Record Office. A very few similar copies are held from the Second World War. The war diaries are stored and listed separately from the rest of the archives. They are much consulted by researchers from within and without the Corps.

Use and purpose of the Library

The most recent broad definition of the purpose of the library is to "...provide a central reference facility on the subject of military engineering in general and the Royal Engineers in particular".

The library is available for general reading as a background to their professional development, or simply for recreation, for officers, WOs and SNCOs. To help in this, troop commanders' and Senior NCOs' courses are introduced to the library. Retired officers and other members of the Institution may also use it, although there are few books held in the collection that cannot as easily be obtained through the public library system.

However, probably the most frequent calls on the library are for information from the archives. Biographical information is widely sought after from members of the Corps and Institution as well as from the general public, the media and government departments. The preparation of unit histories is another subject for which the archives are frequently mined. There is a dearth of such histories, but a growing interest in them. Maintenance of the archives, including of course, the photographs and war diaries, is probably the library's most important function. There is no doubt that the library collection and Corps archive enjoys a high reputation as a source of information.

Conclusion

THE Royal Engineers Library houses a magnificent collection of books and archives that reflects, through the donation of material by individuals and the work of the Institution, the history and achievements of the Corps.

While the books in the collection are much admired and the envy of many visiting researchers, most of the work of the library and the interests of enquirers lie within the archives. These contain original unpublished material of great relevance to the story of military engineering.

It is therefore highly desirable that members of the Corps are aware of what the library has to offer. Perhaps of equal importance is the need for serving and recently retired members of the Corps to send copies of unit histories and other historical material, including photographs, to the library in order that their own contribution to the story of the Corps is not forgotten by future generations.

Her Majesty inspects a "wheelbarrow" May 1987

Brandy the Sappers Didn't Get!

MAJOR K J GRANT TD CEng FICE FCIOB

Ken Grant joined the Corps as a Pioneer Student in 1943 and literally went through the Mill at No1 TBRE, Clitheroe in No. 100 War Party. He served in 553 Field Company, 181 Railway Operating Company, No1 Engineers Training Establishment, in France and Germany and with the British Forces Network in Hamburg.

He was commissioned into 109 Army Engineer Regiment in 1949 as a Troop Commander. He was appointed Officer Commanding 247 (Glam) Field Park Squadron in 1959, an independent unit under the overall command of The Royal Monmouthshire Royal Engineers (Militia). At the time of this story in addition to his roles as a TA Commander, he was a Director of a Building and Civil Engineering Company based in Cardiff. His squadron was disbanded in 1967 following a re-organization of the TA when he transferred to RARO. He is now retired and lives in the Cotswolds.

"Brandy Bridge is down can the Army help?" Those words were spoken to me over the telephone one Sunday morning just a week before Christmas day in 1965. I was told that the village of Abercanaid, near Merthyr Tydfil in Glamorgan and home to some 1,000 persons, was cut off from the outside world. Three factories, one of which supplied milk to some 150,000 people in the Merthyr area were also marooned. At the time, I was OC 247 (Glamorgan) Corps Field Park Squadron, an independent unit under the command of The Royal Monmouthshire Royal Engineers (Militia).

The friend who telephoned me was aware that the TA sometimes went to the aid of the Civil Power in times of emergency. A precedent had occurred in 1959 whilst the regiment was in camp at Monmouth. A 290 foot span Bailey was constructed for Gloucestershire County Council over the River Severn at Haw Bridge at Tirley where four spans had been damaged by a barge in December 1958. However, I knew that aid was governed by certain rules and procedures which had to be followed. I therefore immediately contacted my CO who readily agreed that I could conduct a recce and report back.

Brandy Bridge was a reinforced concrete arched span of 150 feet over the river Taff, situated between Merthyr Tydfil and Abercanid. A railway ran parallel with the river at this point and crossed the river on a separate bridge. They were not the first bridges to be built at this location nor the first to meet with a terminal fate. The site was originally the location of a ford or stepping stones called the Plymouth Crossing. The manuscript Ordnance Survey map of 1851 depicts a ford and even in those days a bridge was needed. The following story taken from a book entitled *The Bridges of Merthyr Tydfil* by W.L.Davies, describes the problems in getting a much needed bridge built.

"In August 1857, a committee was set up by the Local Board of Health to consider the question of providing a bridge to serve Abercanaid. Nothing came of this and on 22 January 1870 in exasperation the inhabitants of the village called a meeting making the following proposition "That this meeting is of the opinion that the first and surest way to obtain a bridge and a road to Abercanaid is by memorizing the Local Board of Health, and that this meeting has great confidence in the present Board that they will take prompt and active measures to obtain for us – a bridge"

In August 1870 the committee instructed a surveyor to make proposals and plans. It was estimated that the proposed bridge would cost between £400 and £500.

The Merthyr Telegraph *of 16 June 1871 carried the following main editorial "The Abercanaid Bridge.*

When the difficulty of erecting a bridge to span the river between Merthyr and Abercanaid is considered, one will no longer wonder at impossible gulfs existing between one world and another. The Abercanaid Bridge threatens to become a joke. At present it hardly promises to assume a more tangible form. That the proposal to give the people who live on the western side of the valley some means of communicating with the town of Merthyr should have been discussed again and again for many years is a reflection on all concerned. A stranger would hardly believe it possible that selfish and wrangling landowners would carry their principle of non-responsibility to such an extent. When the houses of Abercanaid were built, nobody could possibly have anticipated that the families who were to inhabit them were to be isolated from the world. We question if another instance of isolation like theirs could be pointed out in the whole kingdom. Right in property is always understood to involve certain responsibilities. It would be against all reason to allow any man to live by owning the soil, and yet to discharge no duty to those in whose interest he must be regarding as holding it. Many of the landowners of Wales however, seem to think that their position is one of privilege without responsibility; that they were sent into this world to gather without scattering; to receive, but not to give. This selfish theory lies at the bottom of all the discreditable squabbling about the Abercanaid Bridge"

Another ten years passed before 7 August 1880, when the Surveyor of the Local Board of Health reported on an interview with the Taff Vale Railway, to discuss proportioning costs between the Board and the Railway Company whose line ran alongside the river. Eventually agreement was reached and a start was made early in 1883. The Engineer and Surveyor for the local Board of Health, Mr Samuel Harpur, was in overall charge. Excavation and stonework was by a contractor, J.Jones. The Cleveland Bridge and Engineering Company of Darlington designed and constructed the steel lattice-work girders and steel cross-members and were responsible for their installation and assembly.

In 1925, a road roller driver reported peculiar movement of the bridge roadway. Nothing was observed on test until the roller speeded up. Under these conditions, it was seen that each cross-girder gave a twist when the roller passed that spot, but resumed a normal position when it had passed. Frazers and Company who had strengthened the bridge a year earlier, were asked to examine the structure. Nothing in the way of flaws or potential collapse was found but they suggested that the cross girders might be of too light a construction. Measurements of all the main girders, cross-girders and floor plates were made by Frazers. Their dimensions were given to the Horsehay Company (presumably technical and engineering consultants), who were asked to analyse the data and if possible, suggest what corrective action could be taken. They proposed that a two ton maximum weight limit should be placed on the bridge and this was done.

Brandy Bridge.

As a result of these restrictions, the local authority became sensitive to the dangers that the Abercanaid residents faced in the event of fire – the fire engine exceeded this weight restriction. Again the people of Abercanaid had cause for concern and agitation.

The Borough Engineer was thus obliged to examine the possibility of using two other old bridges in the vicinity. This indicated the desperate mood of the local authority in seeking a quick solution to what was, particularly to those who lived in Abercanaid, an urgent and dangerous problem. Opposition to this proposal forced Merthyr Tydfil County Borough Council into building a new bridge. The British Steel Association and Mouchel and Partners were invited to submit proposals.

Finally a scheme was accepted and on 26 July 1929, a start was made on a ferro-concrete arch over the river span, using the existing abutments and installing springing platforms at the base of each abutment wall. Reinforced concrete cast in-situ girders would span the adjacent GWR and Plymouth railway.

The tender of Lewis Harpur (grandson of Samuel Harpur, the surveyor of 1883), for £4,430 was accepted and he completed the work in time for the bridge to be opened to traffic on 28 February 1934. This modified bridge lasted until 1965 when South Wales was swamped in flood chaos and the Borough of Merthyr Tydfil suffered disastrous floods. The

Cardiff to Merthyr railway lines were blocked and a major flood warning was flashed to thousands of householders living along the banks of the river Taff between Cardiff and Merthyr.

About 300 metres downstream of Brandy Bridge, the old Plymouth weir had been slowly disintegrating – large stone blocks had been dropping from the bottom of the race. On a night of floods of extraordinary proportions, the river removed the weir resulting in loss of restraint and scouring the silt and debris which had been accumulating behind the weir wall for many years. The water became a rapid which washed away the old level of the river bed and undermined the springing bed at the base of the west abutment. The weight of water ripped it from its base, taking with it the bottom end of the arch and in so doing twisted the whole arch structure. The resulting effect was the breaking away of the roadway from the abutment at this side."

In eager anticipation of finding a worthwhile training job for my squadron, I set off post haste to Merthyr on that cold dank December morning. I was to meet on site with the Borough Engineer, his deputy and the other interested parties who had requested Army assistance. It was immediately apparent that although there had not been a total collapse of the bridge, it was unserviceable. My first thought was to "bridge" the short gap between the abutment on the Abercanaid side and the apparently undamaged roadway on the Merthyr side in order to restore some communication. Closer inspection however revealed that the roadway was twisted as well as very much out of level. Placing a short ramp across the gap which might have been acceptable in a battlefield situation would have been hazardous. There was no knowing if a further rush of water might bring about a total collapse of the structure. This idea was not of course acceptable in a civilian situation. In the event, the distressed bridge remained stable until demolished.

The obvious solution was to throw a Bailey across the 150ft gap as soon as possible. Fortunately the Deputy Borough Engineer, had been commissioned in the Sappers and was "Bailey literate". We discussed how quickly we might obtain and erect a Bailey of a load class capable of serving not only the domestic life of Abercanaid, but also the factories in the village. Fortunately we were talking milk and pies as end products, which could be moved in vehicles weighing not over 20 tons. Reference to my Bailey handbook confirmed that a double truss double storey arrangement over the 150ft span would satisfy requirements.

I was able to offer neither man power nor material resources, so other means of procurement and erection had to be determined. Fortunately, I had gained some experience of putting together a civilian project of a similar nature when employed some years earlier by the Ministry of Fuel and Power. I had been tasked to design and build a temporary bridge to span a gap of similar dimensions to the one required to replace Brandy Bridge. In my earlier task, because of the nature of the site and higher load requirement, I needed to provide two spans, one of 100 feet and the other of 50 feet. The spans were were provided with vertical articulation in midstream where they were supported on an RC pier sitting on piled foundations. Due to the unusual joint configuration at the pier, I discussed the project with Sir Donald Bailey at what, in those days, was MEXE. I subsequently arranged to purchase the bridge on behalf of my department, in the civilian market. With this experience behind me, I set about the task of getting the temporary replacement for Brandy Bridge.

The meeting moved from the site to the offices of Thomas and Davies, a car main dealer on the Merthyr road. They kindly provided us with an "advance HQ" to progress the matter. I was given authority to make arrangements on behalf of the County Borough of Merthyr Tydfil for the Bailey bridge to be obtained. As one of those attending the meeting said "it was probably the first time in history that an Army major had been given clearance by a local authority to place an order" I set about making contact with the top man in Acrow.

At that time, my "day job" was contracts director for a firm of building and civil engineering contractors. Fortuitously, I was doing business with Acrow, the parent company of the manufacturers of Bailey components. I was aware that the quickest way to get a rapid response from any company on a Sunday morning when offices were closed, was to telephone the chairman.

By diverse and varied means we eventually found the home telephone number of the chairman of Acrow. The 'phone was answered by a young lady who politely but firmly told me that the chairman was at lunch and it "was more than her job was worth" to disturb him. I gave her enough of a potted version of the disaster to con-

vince her that the chairman would wish to be disturbed. He was called to the telephone and his response was positive and immediate.

It resulted in the managing director of Thomas Storey informing us that a bridge would be on its way within 24 hours if we would confirm exact requirements the following morning. The County Borough of Merthyr Tydfil would supply labour and craneage for off-loading and erection. The suppliers would provide supervision for erection of the temporary bridge.

Now that we knew the direction in which we were heading and had a guarantee of a bridge, all that remained for me to do was to confirm the span, number of panels, end ramps if any and report on the bank seating which would be available by the time the bridge components arrived. At first light next day, the gap was measured by my PSI W02 Moore. The Merthyr town council held an emergency meeting to ratify the decisions taken on the previous day. After the meeting the Town Clerk, Mr Selwyn Jones, informed the press "that a 150 ft Bailey bridge would be swung across the river Taff as a temporary measure to replace the damaged bridge. Engineers hoped to have the job completed by Christmas Eve and the work will cost about £12,000. It now seems doubtful that Brandy Bridge can be repaired, and the estimated cost of a new structure is £150,000."

The Borough Engineer's department confirmed the order for the bridge from Thomas Storey and the Bailey components were transported by road from Stockport to site on 21 December.

A retired Sapper working for Thomas Storey, one Captain Lemmon, came to the site, and advised and oversaw erection of the Bailey bridge which was successfully completed for opening at 12 noon on Christmas Eve. Although this was one Bailey the Sappers did not build, we (the Sappers), did have one or two hands in it! An example of combined operations with a different slant.

The Bailey was in-situ for two years, during which time the third Brandy Bridge was designed and built.

The piers and buttresses of the distressed bridge were demolished and all traces removed from site.

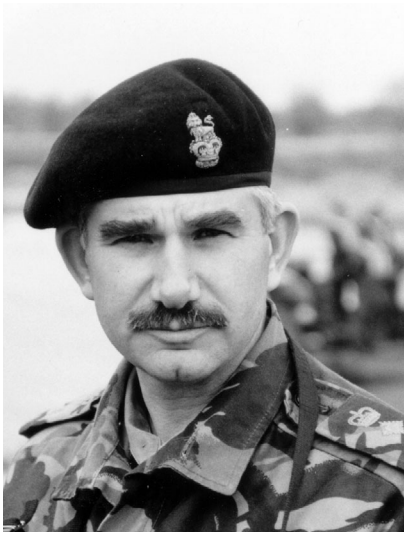
ACKNOWLEDGMENTS:

- Mr. V.F.H.Conway (Formerly Managing Director of Conways Dairies Limited).
- Mr. Peter Morgan, Solicitor
  Mr. Idris Williams C.Eng. FICE FIMun.E (Deputy Borough Surveyor at the time, thereafter Director of Technical Services).
- The National Library of Wales.
- Merthyr Tydfil County Borough Library Service.
- *The Western Mail* and *South Wales Echo*.
- *The Merthyr Express*.
- The Bridges of Merthyr by Mr. W.L.Davies.

Her Majesty signs the order to blow the bridge! May 1987.

"Towards Perfection" or Why more Sappers should have MBAs

BRIGADIER T H E FOULKES MBA BSc CEng FICE FIMechE MIoD



Brigadier Tom Foulkes is a third-generation Sapper whose career has combined both civil and mechanical engineering disciplines. He is currently the Director of the newly-formed Army Estates Organization at Wilton. Following command tours with 1st Field Squadron at Nienburg and 28 Amphibious Engineer Regiment at Hameln, he enjoyed six years in the equipment world, initially as Project Manager General Engineer Equipment, and then as Colonel Equipment Support 42. During this period he was closely involved with many Sapper equipment developments including BR90, M3, Deuce and Terrier. Following a happy year at the Royal College of Defence Studies, he served a short stint as Project Manager CAPITAL (resource accounting & budgeting) at HQ Land Command before assuming his present responsibilities for restoring the Army Estate. He is an enthusiastic football supporter, photographer, gardener and Open University student (philosophy).

Introduction

In a perfect world, the army would be run by sappers – or so many well-informed people are beginning to believe.

To readers of the *RE Journal*, this discovery may come as no surprise. Nevertheless, it is well justified and represents an important career opportunity for sappers. Defence management and the associated problems of running the army in peacetime are becoming increasingly complex, requiring greater quantitative, analytical and financial aptitude than ever before. Although in short supply across the army as a whole, sappers tend to have many of these competences. In the commercial world, however, such skills are closely associated with people who have graduated as Masters of Business Administration – MBAs

Why the Army needs MBAs

The objective observer might question why defence management should be changing in this direction. The answer is simple. Since 1990, diminishing threats to national survival have been matched by increasing demands for tauter management of defence resources, and the trend seems set to continue. Consequently, senior officers are having to learn new ways of doing business in order to deliver army capability through a combination of their own financial resources and other, contracted-out, services. To do so, they must work in a more numerate and analytical manner as they wrestle with the new concepts of "Resource Accounting & Budgeting" (RAB), opportunity costs and discounted cash-flow. They are discovering a need for better financial and statistical analysis as they attempt to optimize budgetary decisions in terms of the "3Es" – Efficiency, Effectiveness and Economy. At the same time, they are striving to master output costings and output specifications. They are having to develop unfamiliar skills as "intelligent customers" and to seek new creativity as entrepreneurs in their quest for innovative ways of maintaining the army's strategic health by enhancing its intellectual capital. They are embracing balanced scorecards for decision-making and performance assessment. They are encouraging continuous learning and continuous improvement.

And because the fundamentals of good management are the same everywhere, MBAs address all these things. Imperatives in defence may differ somewhat from the High Street, but success requires the same quality of thinking and analysis in both. MBA training, like military training, is essen-

tially practical; and like sapper training, it's about doing things better. It's about getting a bigger bang for the buck, and it emphasizes that the world is not settled but constantly changing. It warns of discontinuities, and it advises that the best strategies are those that actually work. MBAs prepare people for senior management responsibilities by developing their ability to handle a number of themes.

Qualities Required

FIVE key qualities underpin the MBA way of thinking:

- **Scepticism**: – an ability to question wisely before coming to independent conclusions, to challenge, to weigh and test the evidence, to know when to doubt *(Dubito ergo sum).*
- **Pragmatism**: – a strong emphasis on problem-solving for practical outcomes and making things work, on the quality of results rather than theory or dogma, on achieving and sustaining superior performance *(Make things as simple as possible, but no simpler).*
- **Compromise**: – an ability to make advantageous trade-offs, a willingness to accept that ideal answers seldom exist in the real world, that the best is often the enemy of the good and that all practical problems have multifarious dimensions that can rarely be reconciled within a single solution *(To every complex problem there is a clear, simple and obvious answer which is almost certainly wrong).*
- **Tolerance**: – a recognition that a variety of factors, constraints and perspectives must be accommodated in order to find effective ways of managing messy and complex problems, an acceptance of merely adequate solutions in the face of inadequate resources and shifting priorities, a recognition of the importance of timing and a willingness to concede to external forces *(The right idea needs the right time).*
- **Analytical Curiosity**: – an inquisitive search for and scrutiny of data, a tendency to measure, a logical and progressive mode of thinking in quantitative as well as qualitative terms, structured use of reason and calculation to pose and address penetrating questions, an inquisitive examination of facts, factors, causes and context, a preference for proof *(Think independently and notice what others fail to see).*

Why Sappers Fit the Bill

AND if these qualities look remarkably like those required of a good sapper, it's because they are. Sappers tend to make good senior managers because they are used to creating something out of nothing, to leading the search for solutions, to making things happen and to designing for the long-term. They understand why no two problems are ever the same and must therefore be addressed from first principles. This is a natural consequence of their numerical inclination and professional advantages of:

- **Engineering Training:** – practical and results-oriented through the application of systematic investigation and probabilistic hypothecation, based on fundamental principles derived from the mathematization of nature.

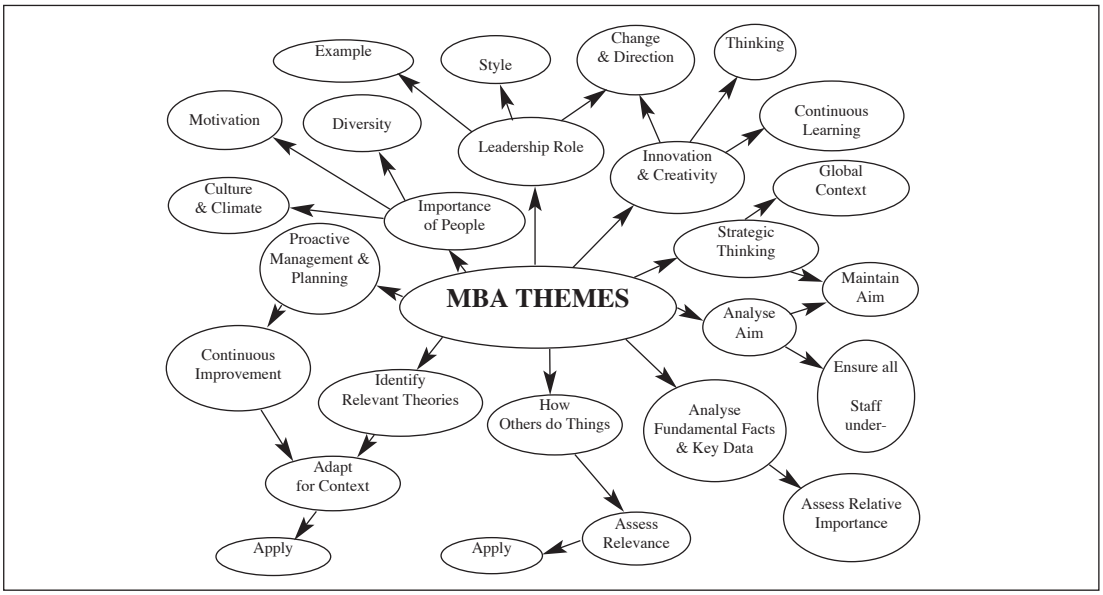


Figure 1 – Mind-Map of MBA Themes.

- **Analytical Mentality:** – successful engineering relies on the multi-dimensional analysis of case-specific problems combined with structured assessment of data, deliberate what-if thinking and accurate calculation of quantitative options.
- **Practical Approach:** – nothing could be more practical than engineering, the sole purpose of which is the amelioration of nature and the production of tangible results that actually work in adverse conditions following incremental development derived from models, trials, tests and feed-back loops.
- **Realism**: – engineers learn realism through bitter experience of underestimating the elements, they appreciate that the Law of Unintended Consequences and Murphy's Law, like Newton's Universal Law of Gravity, apply everywhere; they understand risk-based scenario planning, bounded rationality, working within constraints and finite boundary conditions.

Conclusions

THUS by inclination, selection and training, sappers would seem to possess substantially more senior management potential than many other groups in the army. Furthermore, engineers are imbued with an invaluable spirit of improvement; they expect to lead change and to make things better in the real world. They are used to making sense of ambiguous, conflicting, incomplete and complex information. They know the difference between theory and practice. They are adept at working in small groups and at getting the best out of specialists. They know when to speak and when to listen. They understand the value of feed-back loops. They are more likely than most to acquire the insight required to penetrate the dogma of fashion, the myth of full funding, the illusion of certainty and the deception of knowledge.

Engineers are therefore useful to business and valuable to society. sappers bring these qualities to the army. To plug the army's growing management gap and to realize their individual potential for transforming engineering techniques into MBA thinking, all they require is a combination of personal resolve, well directed training (from such sources as the Open University Business School and RMCS Cranfield) and hands-on commercial experience (through business attachments, construction contracting, project management etc).

Beyond the immediate needs of the army, readers may also wish to be aware of the potential benefits of an MBA to later career opportunities. A recent survey found that 40 per cent of MBAs improved their remuneration immediately on graduation and that MBA salaries have risen by 20 per cent in the past four years to an average of £64,000 pa, with a significant proportion earning over £100,000 pa.

What to do next

THOSE wishing to explore MBA opportunities further should visit the Open University website (www.oubs.open.ac.uk) and investigate a variety of approaches including the Master of Defence Administration (MDA) degree offered by RMCS Cranfield (http://barrington.rmcs.cranfield.ac.uk) and professional development schemes run by the Institution of Civil Engineers (www.ice.org.uk), the Engineering Management Partnership (www.emp.ac.uk) and others. Further information can be found in DCIs and on other websites (eg: www.mbacareerhorizons.com). An OU distance learning MBA will take between two and five years to complete. Full-time residential courses (eg, London Business School and RMCS Shrivenham) usually last one year. For independent advice on courses to suit personal and professional circumstances, readers can contact John R Thomson (Director of MBA at Napier University Business School in Edinburgh and a TA officer) on tel: 0131-455-5018 or e-mail: jo.thomson@napier.ac.uk. Although MBAs are expensive in time and money, the army can help with both (see DCIs).

But however they go about it, sappers should strive to make the world a less imperfect place – because that's what engineers do.

Your Regimental Museums Heritage

SPEECH BY PROFESSOR RICHARD HOLMES AT THE NATIONAL ARMY MUSEUM ON 24 JANUARY 2002

YEARS ago Harold Wilson, supporting a Labour General Election candidate at one of the Plymouth constituencies, paid a glowing tribute to the Royal Navy. He added "You may ask why I speak so well of the Navy" and unwisely left a rhetorical pause, allowing a heckler to interject: "Because you're in a dockyard!". You would expect me to speak well of military museums today: after all, I am a military historian, and this is a military, museum. But actually it's not that simple. Military museums, if they are any good, are not just for people like me. Of course you cannot be in my line of business without relying on museums, and the archives and artefacts they contain. I can scarcely write a book, or make a TV series, without coming here or going to the Imperial War Museum. But the days are long gone when places like this were museums for historians, or museums for the army – important though they are to both.

It is an irony of our age that the armed forces stand higher in public esteem than almost anything else. Higher than the church, civil service, parliament or (much as it pains me to say it), the press. Yet the armed forces are smaller than they have been since the post-Waterloo rundown, and if they are high in popular esteem they are low in public understanding. I'll bet that the average man on the Clapham omnibus could not tell you the difference between a brigadier and a bombardier, a commodore and a commander. Although the rules governing soldiers' appearance in uniform have wisely been relaxed, the terrorist threat under which we have lived for so long means that uniforms are not a familiar sight on our streets. Barracks are forbidding places, quite properly hard to get into.

So military museums have a function here in explaining something about the army, its history and structure, to people who might value it, but actually know little about it. The role of regimental museums is all the more important because ours is – and will, I am sure, remain – a regimental army. Listen to two old soldiers chatting and one of the first things they ask one another is: "What were you in?" Regiments matter, and matter deeply, to people in the army and the families that support them. Sometimes there is a functional logic behind the regiment, for example for the Paras or Guards. But more often the logic is geographical. The regiment brings together people from the same part of Britain, who speak the same language, and within this broad family they forge those "bonds of mateship" that are the real requirement for cohesion in combat. And if you suspect that all this is old hat, a bizarre survival best jettisoned at the dawn of the 21st century, talk to the people in the system and they will tell you different.

Amongst other things I'm Colonel of the Princess of Wales's Royal Regiment, and we are 300 regular soldiers stronger today than we were 18 months ago. Why? By taking regimental recruiting seriously, by accepting ownership of the problem, and deciding that an outfit that beat the French at Albuhera in 1811 was not going to be beaten by demography. The regiment is a family which links the serving to the retired, the regular to the territorial and the army cadet; which looks after its old and bold and which reaches out to the young and rootless. Its museum is a place that tells outsiders what the regiment is about, and goes on to help the whole regimental family to take pride in the past and form hope for the future.

Regimental museums do not simply jam dusty tunics into fly-blown cases; they may have done so once, but just visit one today. When I was in Durham a year ago I was fascinated by a regimental cricket score book, kept by the Durham Light Infantry in the Crimea, with Corporal Jester – what a name! – demolishing the officers' batting order, only to fall in battle at Inkerman. The South Wales Borderers' Museum at Brecon has got the Victoria Crosses won at Rorke's Drift, defended against the Zulus in 1879 – though not perhaps as Michael Caine and Stanley Baker would have had us believe. There is a Tiger tank, in full working order, in the Tank Museum at Bovington. And the new Royal Artillery Museum, "Firepower", in the wonderful setting of Woolwich Arsenal, gives a gripping feel for the pre-Alamein bombardment of 1942 which rivalled some of the bombardments of the First World War. Of course I would commend my own regimental

museum in Dover Castle, where you can see Lieutenant Matthew Latham of the Buffs saving the colour at Albuhera although a French horseman had severed one of his arms. Regimental pride mattered then – and it matters now. And what we see in these museums isn't just epaulette history, about officers; it reflects a whole broad range of soldiering, from professionals to conscripts, from bemedalled commanders to hard-pressed corporals. What better way to get some sense of what the First Day on the Somme was like than to see – to hold – what a soldier carried as he climbed out of his front-line trench into No Man's land.

At a gathering like this I may well be preaching to the converted. But no matter. Thank you all for coming. To those of you in the museums business, thank you for what you do. And to those of you in the media, a little supporting fire is always welcome. For just as armies are ultimately about people, so too are military museums. They tell us a good deal about what we have asked our army to do in a past that ended with coffee this morning. They help bridge that widening gap between the soldier and society. But they will do that job only if people visit them – which is why, no doubt like Harold Wilson and his dockyard – I am so pleased to speak about them today.

Her Majesty at the handover of her new patio, Balmoral Castle

A Spark on a Wire – Live Line Tapping in Northern Ireland

WARRANT OFFICER CLASS 2 R C SEYMOUR IEng MIIE

WO2 Seymour was posted to DCRE (Wks), 25 Engineer Regiment, in Jun 99 and has had a very busy and challenging tour in Northern Ireland. In addition to his design and technical advice duties he is also responsible for the execution of Live Line Tapping and the training of the Live Line Tapping Team. He now looks forward to his next post with CRE Airfields and will be going there on promotion.

Introduction

'Live Line Tapping' is the process where an 11,000V live connection is made to an overhead line (OHL) It is used extensively in the province for the supply of electricity to remote locations. It is the operational responsibility of DCRE (Wks), 25 Engineer Regiment to carry out this task and to maintain the electrical supply from the point of the tap to the point of usage.

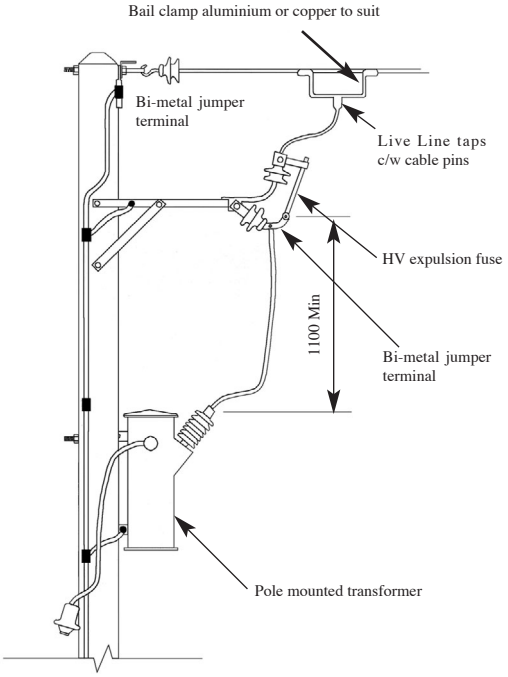
The majority of locations requiring an 11,000V supply are the Golf and Romeo sites in South Armagh, generically known as the Hill Top Sites (HTS). The electrical supply is derived from an OHL up to 2km away and has two aspects. The first tap is transformed to a 230V supply and used at the "pump chamber" for the domestic cold water supply. The second tap supplies the site directly at 11,000V, via an underground cable, and is subsequently stepped down to 400/230V on site for normal usage. The procedure of connecting to Northern Ireland Electricity's (NIE's) OHL is always carried out by RE electricians and conducted LIVE for several reasons:

- To switch off and isolate the OHL would, in most cases, involve the loss of supply to a small town/rural community. The commercial impact of this would be too great. It is therefore normal industrial practice to do such work live.
- The political and tactical impact of notifying all the necessary agencies that there will be an interruption in supply, including details such as when and where the actual connection is to be made, is too great.
- NIE engineers would not be able to carry out the work because to do so, would put them at unnecessary risk of attack from terrorist groups who see them as assisting the security forces.

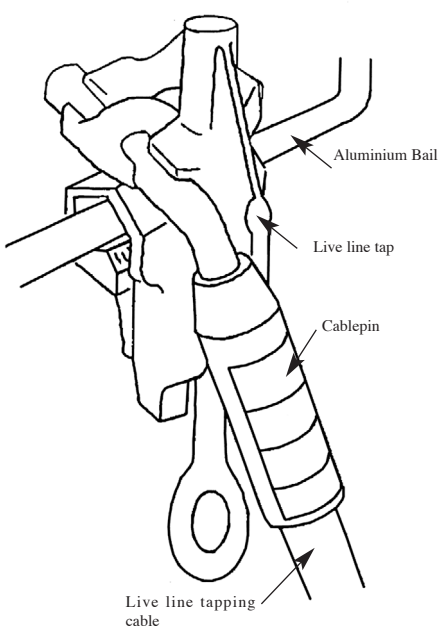
The Task

The detailed tasks involved in live line tapping are complex and require a high degree of skill from those undertaking them. The team carrying out the task must be well rehearsed, having practised the procedure as much as possible prior to D-Day. All team members must be relatively fit, as well as confident pole climbers. A normal live line team is made up of an Authorized Person, High Voltage, (AP(HV)), normally the Clerk of Works (E) from DCRE (Wks), and four ME (Elec), which may increase to six depending on the complexity of the task. Apart from issuing permits to work and the production of safety programmes, the AP(HV) is responsible for the overall planning and execution of the task. The working team is divided into two sub teams, the 'pole top team' and the 'ground team'. The pole top team is the more arduous of the roles involving two of the ME (Elec) working for extended periods at height, on climbing spikes and with relatively heavy equipment. The ground team has one person acting solely as 'accompanying safety person', whose task it is to oversee all aspects of safety whilst the job is ongoing. The other member of the ground team fulfils a support role to the men on the pole, ensuring tools and equipment are prepared correctly and passed up the pole when required. Both members of the ground team must be trained in, and be familiar with, pole top rescue procedures. These have an increased emphasis in South Armagh due to the risk of a terrorist sniper shoot. All tasks must also be carefully co-ordinated with the security cordon to ensure that there is sufficient protection on the ground. In many cases, a helicopter will also be put up to provide an "over watch", should the current alert state dictate it necessary.

The term "live line tapping" is, by definition, the tapping of electricity from a live overhead



Typical Pole Top Arrangement required for Pump Chamber Supply.



Live Line Tape connection to Bail Clamp

line. However, it is often used as a general term that relates to all aspects of working live on overhead lines. This work can be broken down into three categories:

- Live Line Tapping.
- Hotstick Working.
- Ground Level Work.

Live Line Tapping. As briefly described above, this is the making of connections and/or disconnections on a live OHL. It is achieved by means of line clamps secured to a bail connector, using extendible insulated rods. These are normally operated from ground level.

Hotstick Working. Is the work undertaken from a position on an overhead line pole. It is the connection or disconnection of the bail connectors to live overhead lines to facilitate the connection of the live line clamp.

Ground Level Work. This is work conducted from the ground using mechanical or other devices allowing materials, tools or equipment to come close to, but not in contact with, (other than for short periods), live HV overhead lines. This work would normally be the removal and replacement of HV expulsion fuses.

EQUIPMENT

THE over riding factors to consider when selecting the equipment for the teams to deploy with are that it must be durable, robust and capable of fitting into a helicopter (usually Wessex or Lynx). The type of equipment used can be broken down into three categories:

- Hotstick Working Equipment.
- Live Line Tapping Equipment.
- Climbing Equipment.

Hotstick Working Equipment. This centres on the hotsticks themselves, or the equipment attached to the sticks in order to perform the desired task. The sticks are used by the linesman, when up a pole, to reach out to the live conductor to fix the bail clamp to the line. The tool that fixes the bail clamp to the OHL is the MP100. This is a percussion tool that fires a wedge into the bail clamp to hold it firmly against the OHL conductor. The correct operation and alignment of this equipment is essential, but is often difficult to achieve considering its weight, and the fact that the operator has to lean out from the

Pole Top Team securing a "Wedge Tap Bail"

pole and position the MP 100 at arm's length.

Live Line Tapping Equipment. This generally refers to a set of extensible rods, each measuring about 1.2m long, which couple together to create a longer flexible rod. At the end of such a rod can be fitted, amongst others, the "positive grip head" or the "fuse pulling head". The equipment is probably most commonly used in the fuse extraction mode. It forms an integral part in the isolation process, which is required to carry-out any work on the high voltage system.

Climbing Equipment. The climbing equipment used by the team is based around the civilian type "Troll" full body harness, and is used in conjunction with a climbing belt and fall arrester. All team members climb on single spike climbing irons, which are both light weight and versatile.

TRAINING

TO maintain the high degree of individual skill which is required, and indeed, the necessary skill base within the regiment, LLT training courses are conducted on a six monthly basis. In the past, this was achieved by returning soldiers to the mainland to undergo a LLT training course with one of the regional boards, usually East Midlands Electricity. This however proved to be both costly and time consuming. Approximately four years ago, the LLT training facility at RAF Aldergrove was constructed. It comprises a 3.5m high single span low level training line, and a 10m high two span high level training line. Not only does this provide a location to conduct the six monthly training courses, but it also offers a facility where a team can rehearse procedures prior to conducting an operational tap. The training courses are run by the Clk Wks (E) who, along with the GE(E), attends the more detailed and in depth course at, what is now, EM Power.

Training courses and operating procedures are constantly being revised to reflect changes in HSE legislation. These changes effect matters such as "free climbing". This is where an individual is able to climb a pole without any kind of prevention to stop him sliding down should he fall. The regiment is currently procuring differing systems for a trial to ascertain which is more suited to its specific needs. The matter of formalizing pole risk assessments has also been addressed in some depth and now puts the

The use of Fuse Pulling Rods

onus on individuals to carry out their own detailed assessments, not only of the pole to be climbed but of adjacent poles for a distance of 3-4 spans. This is recorded on a pre-printed risk assessment form and retained in the relevant health and safety file.

To reflect the changes in HSE legislation, the previous GE(E), Capt Alan Cliffe RE, has recently rewritten the regimental 'Live Line Regulations and Procedures'. These have now been adopted by both Defence Estates (DE) and industry alike, and form the basis of a document that can be used by the Corps throughout the world.

The Future

THE future for live line tapping in the province is unclear and depends upon the peace process and the continued requirement for the HTS and other similar sites. Certainly the foreseeable tasks are those associated with maintenance and the isolation of the high voltage electrical supply. The number of de-tapping tasks will increase as progress towards normalisation is made. Whatever the future tasks, the regiment is continually striving to improve the way it does its business. In order to become more effective and to produce a quicker operation, there is a clear requirement to think very carefully about methods of work. A system currently being reviewed is "hot gloving", which is used by many of the area electricity boards. This is where an electrician works directly on the live line with specially insulated gloves and clothing. The system would have many advantages:

- The process of working with 'hot gloves' is considerably less complex, therefore the task would be completed a lot quicker and to a potentially higher standard.
- The subsequent time spent on the ground by both the cordon and the RE troops would be greatly reduced, thus significantly reducing the overall risk of the task.
- There is less equipment required to carry out a live line tap, thus reducing equipment and maintenance costs.
- With a less complex process, time spent in training could be more effectively used.

Conclusion

THE process of live line tapping is vital to the unit's operational role of providing engineer support to security force operations province-wide. It is a complex process that requires a high degree of skill and courage from those undertaking it. It is therefore necessary to practise these skills extensively and, in order to do so, the LLT training facility at RAF Aldergrove has been established. The regiment is continually looking at ways in which improvements can be made to its systems of work, and continues to work closely with industry. One such improvement is the possible adoption of "hot gloving" procedures, which will enhance the finished product both in terms of quality and speed. An investigation of these pro-

Her Majesty opening the Autumn Fayre Hameln 1993.

Prime Contracting – The Story So Far

LIEUTENANT COLONEL S P PERKINS BSc CEng MICE MAPM

Lt Col Perkins began his engineering career as Pupil Engineer with Kier Ltd working on the Frigate Complex, Devonport Dockyard. After graduating with a "working" degree, Sandhurst and Chatham was followed by tours in Germany, Berlin and Manchester before attending the PET (C) in 1985. He commanded 61 Fd Sp Sqn where among other projects he redesigned and completed the Bovington Tank Test Track. He was SO2 Engr in BFFI where he was active in setting-up the funding and planning for the swimming pool project and after a tour in Germany he commanded 519 STRE in Bosnia. He was the project manager and designer of the Beril Valley Obstacle Belt and was team leader for the Temporary Accommodation study. A tour as CRE (A) and DCOS Cbt Engr Sch was followed with a six month attachment to Brunei Garrison and two years as DCRE NI. He has been with South East Regional Prime for eleven months as a member of the Strategic Board and is responsible for customer liaison, data capture and output specification.

Introduction

This article is based on the information available at the time of writing (January 2002). The introduction of Prime Contracting, the New Purple Body (NPB) and the development of the new systems are ongoing and some of the facts and figures used here may not be included in the final deliverables.

When I joined the South East & Germany Business Unit (BU) of Defence Estates (DE), my terms of reference were broadly written to include all aspects of the BU's work. However it became very clear that there was both a need and a distinct advantage in having a military member in the Regional Prime Contract (RPC) Integrated Project Team (IPT) acting as a workstream manager as opposed to people in other teams who were primarily client representatives.

Lieutenant Colonel Alistair Strong's article of April 2000 outlined the use of prime contracting in construction and this article gives an update of how the system is being integrated into the MoD. What is apparent from the time I have been with the IPT is the enormity of RPCs and the changes planned for the management of the defence estate. These are quite considerable and complex in detail, albeit relatively simple in concept.

Background

The principles of prime contracting developed from the two reports "Building Down Barriers" (Latham 1994), and "Rethinking Construction" (Egan 1998), which were the primary analysis of the UK Construction Industry. This dissection of the industry has been well publicized in the construction press, but the main thrust is of a general perception that there were:

- Too many interfaces in a single project.
- A lack a of clarity in the responsibilities of those involved leading to;
  - Duplication of effort &
  - Carelessness in the allocation of risks
- An adversarial attitude leading to a blame and claim culture.

This has led to the development of a different method of establishing contracts that include the Private Finance Initiative (PFI) and Prime Contract. The government's preferred solution, providing the conditions are correct, is PFI (or a derivative such as Private Public Partnership (PPP)), but where the grounds do not exist for PFI or partnering, then prime contracting is to be the adopted contractual method[1].

The MoD spends well in excess of a billion pounds a year on the estate, of which more than half is on general maintenance and refurbishment. The number of sites owned by the MoD is almost 3,000 and these range from single isolated structures, to complex airfields, garrisons and naval bases.

The nature and diversity of the construction work and services undertaken by the MoD on all these sites is such that it would be difficult if not impossible, to produce a standard form of contract covering all aspects and projects. Changes, in light of the government's preferred solutions, have been devised in order to both modernise and

[1] The Strategy for the Defence Estate June 2000

improve the management of the MoD estate.

Prime contracting is being developed using a number of core principles and not around a single "off the shelf" contract that might impede innovation and the use of best practice. This is in order to move away from the "old days" of poorly put together contracts, resulting in uncertainty, mistrust, poor investment and delay.

Also, rather than continue to be an intransigent organization which persisted in using an off the shelf all-embracing form of contract, the MoD is now committed to developing as a client that understands what it wants from a particular project, and in meeting those aims using a more coherent and corporate approach to estate management.

Prime Contractor. A prime contractor can be defined as one having overall responsibility for the management and delivery of a project, including co-ordinating and integrating the activities of a number of sub-contractors to meet the overall specification efficiently, economically and on time. In other words it is a single point responsibility.

This will be applied to all prime contracts used on the MoD estate and this process can be divided into two categories:

- The first will be the **Regional Prime Contracts** where the contract period is for seven years extendable to 10. These contracts are further sub divided into two dimensions:
  - There is a "services" dimension known as **Core Services** and represents what is currently referred to as "Property Management" and
  - The "works" dimension called **Core Works**, which represent discrete projects for a specific purpose and task. These are subject to their own strategic briefs, regimes for supplementary contracts, maximum price target cost and payment.
- The second type of prime contract will be major stand alone **Capital Works Projects**, where there will be a requirement to design and construct an asset to be fit for its intended purpose with a "through life cost compliance period" of probably three years.

These stand-alone contracts will be let by competitive tender using the recognized procedures already in place.

Estates Organization

In February 2000[2] the Defence Management Board (DMB), (FPMG as it was then known), instructed the Chief Executive (CE) of DE to examine options for changes based on the "rethinking construction" principle. This led to the publication of the MoD estate strategy "In Trust and on Trust" in June 2000:

"To have an estate which is of the right size and quality to support the delivery of defence capability, that is managed and developed efficiently and effectively in line with acknowledged best practice, and is sensitive to social and environmental considerations."

Soon afterwards the *Project Alexander* study was established to address the management arrangements needed to deliver the objectives set by the strategy. A key enabler for this vision is the procurement strategy of prime contracting, which was endorsed by the defence council in December 2000[3].

The *Project Alexander* study team phase one report was approved by the DMB on 28 June 2001[4] and the accepted plan will mean a significant change in the way the MoD both manages its estate and procures estate services. It will greatly enhance the arrangements for rolling-out prime contracting and enable the MoD to achieve better value for money from its estate expenditure.

For the first time a true customer-supplier relationship, between those who use the estate and those who deliver it, will be created by:

- The establishment of six Customer Estate Organisations (C Est O's) that will collate, prioritize and budget for estate requirements on behalf of end-users.
  - The Royal Navy,
  - The Army (based around the Army Estates Organization),
  - The RAF (based around the RAF Infrastructure Organization),
  - The DLO,
  - The Central TLB and DPA jointly and,
  - Subject to further work, PJHQ.
- The creation of a new tri-service organisation, (temporarily titled the New Purple Body (NPB) and headed at three star rank) will manage the delivery of estate requirements and will absorb the present DE establishment. This organization should be largely in place by April 2003, and fully formed by 2005.
- Finally, overarching all this will be a senior level DE Committee (DEC), (replacing the Defence Estate Board), that will represent the estate users and

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[2] FPM (00) 3rd meeting 21 Feb 2000.
[3] Defence Council Meeting 20 Dec 2000.
[4] Project Alexander detailed Organisation design report May 2001.

oversee the performance of the NPB as well as give direction on strategic estate issues.

PRIME CONTRACTING ORGANIZATION

THE prime contract principles follow those of the "smart acquisition" model currently used for equipment purchases, but with some obvious variation for the management of estates and buildings.

The map of Great Britain shows the five RPC areas, with their boundaries following the existing brigade and divisional lines. This arrangement has brought about other complications with the present Establishment Works Consultant (EWC), and Works Services Manager (WSM), contracts, and makes the transition plan between property management and prime contracting complicated, but not unworkable.

The programme for the delivery of the RPCs is now in place and Scotland is currently in the invitation to tender (ITT) stage. They are due to award their contract in October this year, and the other four regions will follow on in steps of about six to nine months. Exact dates are very much flexible due to factors that may accelerate the contract award date. There is little allowance for slippage in delivery of the programme, as the DEC has directed that all the RPCs are to be in place by 2005 .

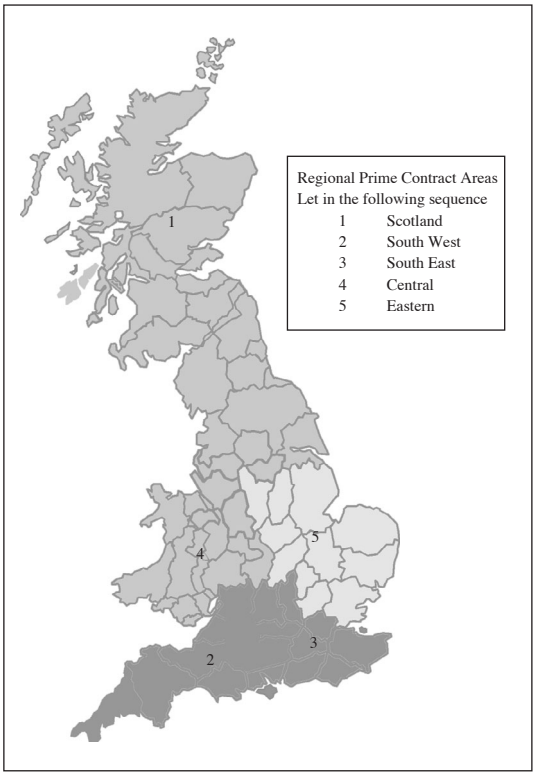
One of the critical factors for the success of prime contracting will be the ability of the MoD to be a better-informed client. To achieve this, each prime contract will be managed by an Integrated Project Team (IPT) consisting of four main constituents

- Full time members
- Client (Top Level Budget (TLB)) representatives
- Support from industry specialist as required
- The prime contractor (after contract award).

The work being undertaken at the moment relates to the estate maintenance and new works in Great Britain. The other areas of estate management to be considered at a later date primarily include:

- The estate overseas
- Housing (only the Scotland RPC currently includes housing)
- RCFAs
- Northern Ireland
- Rural Training Estates.

What will change is the delivery of the estate management currently focused at PROPMAN and the EWC and WSM staffs. Where prime contracts are put in place, the EWC and WSM contracts will



Map

be terminated and the property managers will relinquish many of their tasks. However the new system cannot operate without some form of site representative and one of the immediate actions of *Project Alexander* is to report on the specific structure of the new system.

Project Alexander and Prime Contracting are dealing jointly with the arrangements to implement the new estate management organization. *Project Alexander* is addressing mostly internal decision-making processes and organizational structures whilst Prime Contracting is focussing on the contracting arrangements with industry and the support this requires. Some of the respective responsibilities are shown in table one. To summarize; the main objectives of Prime Contracting are:

- Improved supply chain management
- Target cost incentives, partnering, continuous improvement vs measurable targets
- Reduced cross – MoD management overheads.
- Improved transparency – single point responsibility
- Improved standards – clear processes and measurable performance targets
- Improved management focus and clarity of roles

Project Alexander	Prime Contracting
• Define details of estate roles from the time of contract award onwards i.e. numbers, grades, responsibilities, skills • Develop and implement change management and communications plans at national level and take lead on national co-ordination • Define the details of all NPB posts in the NPB HQ • Manage transition from existing to new organisations	• Defining details of the estate roles that manage prime contracts e.g. MoD project managers and regional maintenance managers • Defining how the contractors interact with the end users • Details of the regional prime contract relating to receipting, invoicing and the payment mechanism • Define performance management regime between NPB regional team and prime contractors

Table 1

Conditions of Contract

The conditions of contract are in a generic form only. It is the intention that the core principles will not change, however each contract is capable of being tailored to meet the specific requirements of the project. The conditions form only one part of a prime contract. There will be a number of other documents that the conditions will refer to; these will include:

- Strategic Brief(s)
- Output Specification
- Project Brief
- Project Execution Plan
- Project Programme

The selection and evaluation of the prime contractor is conducted as a three-stage process, against pre-determined criteria which will include "gates" in areas like quality, financial and technical. Failure to pass these "gates" will mean no further involvement in the project. Soft issues will figure significantly in evaluation with a suggested balance between hard and soft issues of, initially, 60:40. To progress further, organizations will need to score satisfactorily in both areas.

The three stages involved are:

- Expression of interest (EOI)
- Pre-qualification questionnaire (PQQ)
- Invitation to Tender (ITT)

The work involved in these stages is not covered here but the principle will be to eliminate bids at each stage to reach a preferred bidder who best meets the requirements of the contract.

Core Principles

Both types of prime contract will be predicated on a number of core principles, which will include:

Supply Chain Management. This is one of the key features underpinning prime contracting. Responses to the ITT must clearly identify the membership of the supply chain, and provide assurance that the supply chain and best practice will remain in place throughout the life of any contract. Commitment to supply chain management principles will figure predominantly throughout the selection and evaluation process.

Collaborative Working. Another key feature is the ability to work collaboratively by adopting a position of trust between both parties, having a common interest and finally a willingness to co-operate to meet mutual goals.

Open Book Accounting. Throughout the contr act period the prime contractor will be required to operate an "open book" accounting regime providing the MoD with access to such relevant financial information as may reasonably be required to carry out amongst other things:

- Monitor of actual costs incurred against target cost;
- Substantiate claims for payment against milestones;
- Agree changes to the target cost to reflect additions/deletions from scope of contract;
- Assess final outturn costs and final price payable;
- Consider impact of innovative proposals.

Fraud Prevention and Detection. The prime contractor will be required to demonstrate a robust fraud prevention and detection policy and procedures. Evidence of this will need to be submitted as part of the selection and evaluation process. The prime contractor will be required to report periodically on the implementation of his policy and procedures throughout the life of the contract.

Other principles included in the contract will be:

- Value Engineering – Through Life Costs
- Fitness For Purpose
- Pricing – Maximum Price Target Cost

Implementation

Staff Numbers. Table two shows the actual breakdown of staff involved in the part of the

estate so far considered. The estimated staff required after the introduction is estimated to be 1550 and is made up as follows.

- Customer Organizations 460
- New Purple Body 700
- Administrative support 390

It is expected that if these figures are correct then the reduction of staff from 2134 to 1550 is likely to take place by natural wastage and re-assignment over the two years from when Defence Estates, as currently organized, is absorbed into the NPB in April 2003.

Delivery. The system for delivery of the new process will work on a supply and demand procedure with the TLBs and the CofC being the demand element, and the IPT/Prime Contractor being the supply side. Diagram one shows the flow path in simple format.

Interfaces. One of the main tasks faced by the RPCs and the NPB is to ensure that there is collaborative working with other interfaces within the MoD. Other initiatives such as SLAM, Core site and *Projects Aquatrine, Connaught and Allenby* to name but a few, have a direct influence on the work in hand. Each of the IPTs has a specific workstream to co-ordinate these interfaces and there is scope for a great deal of nugatory work and strain trying to introduce new systems and procedures. This article will not deal with these issues, however there is a considerable concern within the MoD that there is initiative overload.

Royal Engineer Integration

THERE are many members of the Corps working at

Ser	Grouping	Total staff	Staff excluded from current scope	Total staff in scope	Remarks
(a)	(b)	(c)	(d)	(e)	(f)
1	Navy	109	14 – NRTA	**95**	NRTA – 15 year contract with Flagship Training Ltd
2	Army	1122	313 – HQNI 188 – UKSC (G) 2 – SCE 60 – RFCA (estimate)	**559**	
3	RAF	500	94– CRE (A)	**406**	
4	DLO	290		**290**	Note that the 159 staff employed within NBSA are included in the figures – NBSA bases may not be commercialised by the time the New Purple Body reaches “steady state”
5	Centre (excluding DE)	1664	1306 – DHE 299 – PJHQ	**59**	
6	Centre (DE Only)	1246	265 – USF 202 – ATE 64 – Germany	**715**	ATE – excluded because it is the subject of a separate Strategic Partnering Project
	Totals	**4931**		**2124**	

Table 2

all levels within the estates establishment both in Great Britain and abroad. The effect of prime contracting will vary across this spectrum, but as much of the planning is still ongoing this article will only deal with the core aspects of Great Britain.

So far the assumption by the *Project Alexander* team is that in the future there will be more military personnel actively involved in the managing of the estate. Whilst they will not necessarily need to be Royal Engineers, let alone MES personnel, there is a clear opportunity for people to have a wide-ranging involvement at all levels of the development, management and monitoring of contracts. These are core competences that are advantageous to most members of the Corps, and particularly necessary for those MES personnel involved in areas such as ECI, CONDO and deployed operations.

The arrangement of most RE personnel at brigade and divisional level will probably not change as the demand side of the new C Est O's structure will still be required to provide input into the NPB. The development of the Army Estates Requirements (AER) staff will need to include people at all levels of command and specialist advisors will continue to play an important part.

The exception to this is CRE (A) where the present WSM and EWC responsibilities are delivered at specific airfields. Whereas the CRE (A) responsibilities are not changed by the introduction of RPCs, the interface between CRE (A) and the capital works procedures is. Currently capital works are delivered by the organizations responsible for project sponsorship. Part of the RPCs responsibility is to deliver capital works up to an agreed financial level. That limit is still being negotiated with the estate organizations however it will mean that CRE (A) will have to deal with the Regional Prime IPT with regards to some capital works matters. Further details are being developed by CRE (A) and the NPB.

Conclusions

THIS has only been a brief introduction to the principles of prime contracting in the MoD, the NPB and how the Corps might integrate with the new system. Many of the aspects of this new structure are still being developed, and an immense amount of work is taking place to meet the time scales. Questions have been asked at the highest levels as to whether the system is able to meet the time frame and if there is initiative overload. These are both reasonable and understandable questions that are the subject of continual debate.

The question that there is a need to improve on the management of the defence estate is fairly obvious when seeing the condition of many of the establishments across Great Britain. The reasons behind these conditions are not part of this article. However, the introduction of prime contracting will ensure that the money that is made available will be used more cost-effectively because of the economies of scale involved and the simple reduction of the number of contracts involved in the delivery mechanism.

Further details on prime contracting can be found on the DE web site www.defence-estates.mod.uk

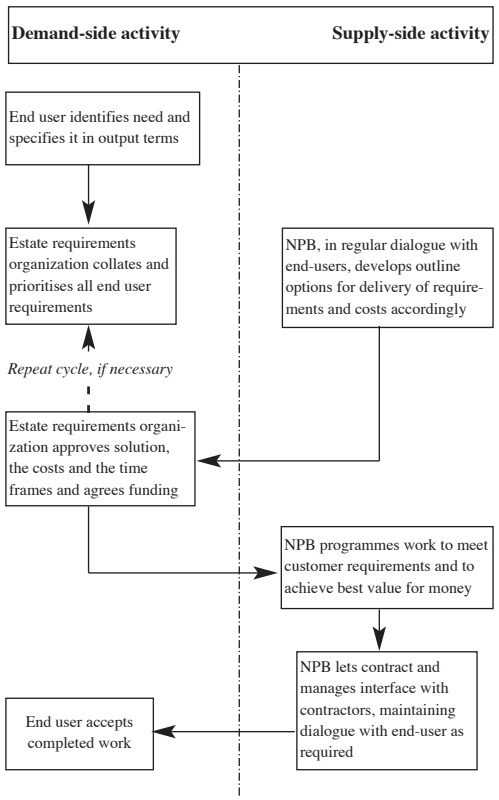


Figure 1

Professor Manabu Ito, New President of the International Association for Bridge and Structural Engineering

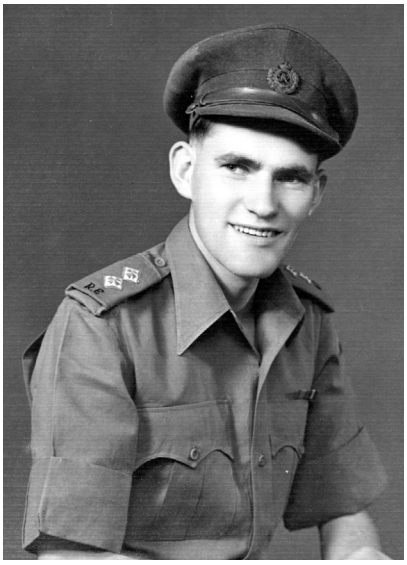
Professor Manabu Ito, born in Japan in 1930, assumed office as the new President of IABSE on 1 Nov 01 for a three-year term. He succeeds Mr Klaus Ostenfeld of Denmark as the leader of the International Association for Bridge and Structural Engineering, an association of more than 4,400 structural engineers in over 100 countries.

Prof Ito spent the majority of his career at the University of Tokyo, where he was Professor of Bridge Engineering for over 30 years. Upon his retirement from the university, he moved first to Saitama University, and then to Takushoku University. He retired from academic activities in April 2001 and is now advisor to Chodai Consulting Engineers, Tokyo.

Professor Ito has been a member of IABSE for more than 40 years. He has held many important positions such as Vice-President of IABSE, Chairman of the Japanese Group of IABSE and Chairman of the IABSE Symposium in Kobe in 1998. In the same year he was made an Honorary Member of IABSE.

Last Military Expedition of The Raj?

LIEUTENANT J SANDY



Jack Sandy was born in Gillingham, near what is now the RE Museum. He played in and around Fort Amherst which was where his interest in "holes in the ground" began. This interest was heightened when his school was evacuated to the mining valley of Rhymney in South Wales. On leaving school, he served in the 12th Battalion, The Kent Home Guard and also Z Battery of the 101st Home Guard which was equipped with twin rocket projectors. He did an Engineering Cadetship at Dartford, which, providing the usual criteria were met, would lead to a commission in one of the technical Corps. He did his basic training at Maryhill Barracks, Glasgow, and No 1 TBRE at Clitheroe, Lancashire. He then attended 148 Pre-OCTU at Wrotham. The Engineering Cadets had to finish their training in India with the Madras Sappers and Miners at Bangalore. Jack was commissioned in June 1946 and his first command was a platoon of sappers recently returned from the Burma campaign who were all suffering from leprosy!

Introduction

My war started in 1941 with the Home Guard. At call up time, I was in great danger of being drafted into the Infantry, but my Matriculation Certificate saved me. At that time, REME was being born out of the great need for electrical and mechanical engineers. Those with science-orientated certificates went for a "when did you last see your father?" type interview board. If successful, an engineering cadetship followed with armed forces service after that. Only about half the cadets were considered to be officer material and of those (including myself), most were "pink listed", that is they would complete their engineering training in India. When I arrived, little did I know that I would take part in what was probably the last military expedition of the Raj. Also of course, we never dreamed that we would not be the last British sappers to operate in the area. As I write, soldiers of the Corps are on the move to Afghanistan.

India

To the newly-arrived cadets, India was a revelation. The tailors (Durzis) were very competent and very fast. Our be-draggled khaki drill clothing disappeared and was replaced with an immaculately starched and ironed uniform which it was a pleasure to wear. The starching and ironing was all done by our bearers who also darned socks in a particular and effective way. Bangalore had been dealing with soldiers for generations and was well versed in providing their needs, most of them, by today's standards, rather innocent. The attractive daughters of the large population of Anglo-Indians were, for the most part, untroubled.

In the extensive training grounds, we were taught the theory and practice of Bailey bridging, that most satisfying of engineering tasks. We practised the use of the various booby trap switches and with luck, were able to make our fellow students jump out of their skins. Demolition was also taught, although it was soon apparent that the rocks of Southern India cared nothing for beehive charges; they barely left a white mark, as they say.

Of course there was much else to learn and, as at Clitheroe, this was conveyed effectively and with pride, although there were one or two mildly eccentric officers amongst the directing staff. On one occasion, we were paraded and inspected by General Sir Claude Auchinleck. This was carried out with a minimum of fuss and remains memorable to this day.

The usual range practices were augmented with a firing camp out in the wilds which was much more

exciting. Several weeks were spent in the jungle camp of Shimoga on the banks of a crystal clear river, sleeping in two huts that were already on site.

Whilst at Shimoga, several engineering tasks were practised. "Bithess" roads had been developed during the Burma campaign by Bill Slim's engineers, taking advantage of the almost inexhaustible supplies of jute products in the Calcutta region. A prepared sub-base, or formation, of the local soil was enveloped in a sealed covering of hessian sacking heavily impregnated with bitumen. Deep lateral drainage ditches were also provided. The resulting road was first class for rubber-tyred transport. On another occasion, an improvised ferry was used to rather perilously transport a 15 hundredweight truck across the river. We also bridged a dry watercourse or nullah with local timber. Here a most valuable lesson was learned. Timber trestles were fabricated and were tightened up prior to dog-spiking by using a long steel pinch bar to windlass a cross-network of steel wire rope. Something slipped and suddenly the many fingers engaged in this were painfully trapped. One fellow, more an observer than a participant, sprang to the rescue. Unsure of which way to move things, his first choice was wrong as evidenced by a chorus of yells. He then knew which way to turn the pinch bar. Lesson: "A bad decision is better than no decision"

Back at Bangalore, a working knowledge of Urdu, the lingua franca of the Indian Army, had to be learnt. The tuition was in the care of a teacher or munshi who announced one morning that in the bazaars, there was much talk of a new bomb having been dropped on Japan. Thus it was that the cadets realized that the war with Japan was about to end.

Sapper Officer

I WAS commissioned in June 1946 into Queen Victoria's Own Madras Sappers and Miners. Soon after, I enjoyed a formal dinner in the Mess. The tables were well provided with many items of mess silver, but one piece was unusual. Taking into account the long evening at table and weaknesses of the flesh, a silver pot of suitable shape and capacity was available for the hard pressed and was passed discreetly under the table to those in need.

On a more serious note, an exercise was mounted in Bangalore City to provide training in the use of RT and its procedures. The background was "Aid to the Civil Power". No doubt after the debacle of Amritsar, continuing efforts were made to ensure that the army would never over-reach itself in such a way again.

Early in July, I was posted to 10 Indian Field Company in the Punjab. The rail journey took me via Madras and Lahore to Rawalpindi. The last stage was very hot and a tin bath containing a block of ice was placed in each compartment to give at least an illusion of coolness. At Rawalpindi, I was met by a jeep and driver and for most of the remaining journey, we travelled along the Great Trunk Road. Half a day's march west of Rawalpindi (a day's march was some 15 to 20 miles), the road passed through the Margalla, or Cut Throat, Hills – a mountain spur jutting out into the plains to form a natural defensive barrier. The spur is breached at one point by a narrow defile, the Margalla Pass, guarded to the south by a small hill upon which stands a memorial tower – still referred to as the Nicholson Burj. It was a great thrill to have arrived in such surroundings compared with the blandness of Bangalore.

10 Field Company was stationed in Campbellpur and formed part of 10th Indian Division which had taken part in the Italian campaign. The CRE was Lt Col Hutchinson. He was obviously a formidable character because a song had been written to commemorate his exploits in Italy. It is sung to the tune of "Steamboat Bill – up and down the Mississippi" which may not be well known these days.

Hard boiled Hutch,
Up and down the Tiber Valley
Hard boiled Hutch
Always in the fray
Hard boiled Hutch
Sorry this line forgotten!
A little bit of bullshit
Goes a very long way!

To reach the North West Frontier Province from our base, it was necessary to cross the Indus at the point where the great river narrows to force its way through the 200 yard wide gorge at Attock. The crossing point is dominated by the battlements of Akbar's Fort. In 1883 a bridge of boats had been replaced by a twin storey bridge; railway line above and roadway below. During the summer and autumn of 1946, several major field exercises were mounted and the hard-learned experiences of the frontier years were reiterated and practised. Advancing

Oghi.

through the challenging country meant that the commanding heights ahead of the advance had to be held, and the dominating picquets withdrawn safely and in good order. This was arduous infantry work at which the Gurkhas and Garwahlis excelled. 10 Field Company carried the necessary equipment to set up water points to supply potable water to these expeditions. Engineer supplies were carried in leather panniers on the backs of small but sturdy mules. My only technical contribution was to develop attachments for the mules' saddles that enabled two coils of Dannert wire to be carried safely without having to wrap the wire with hessian as had been the usual time consuming practice. The behaviour of the mules was not always predictable. On one sad occasion, one of them began to rear and plunge and a rapidly spreading dark stain on the leather pannier showed that there would be no Murree beer in the Mess that evening! The mountain guns were moved on the backs of splendid Argentinian mules of a somewhat calmer temperament.

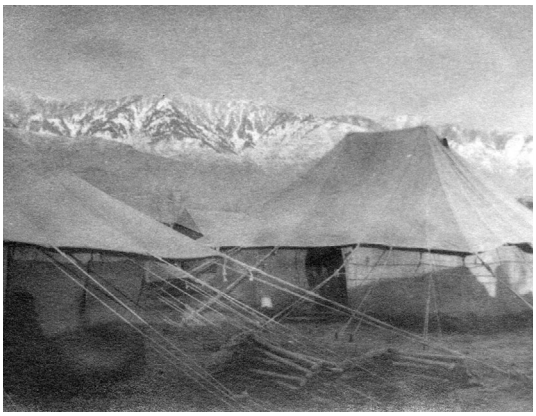
After the normal very hot weather of the summer months, it was a great relief when autumn arrived. At or about this time, the division was renamed 7th Indian Division and 10 Field Company re-designated 13 (Old 61) Indian Field Company.

25 Brigade Group

In November and with great urgency, 25 Brigade Group was formed and moved to Oghi which is about 50km north and slightly west of Abbottobad, now in Pakistan. Oghi was a small settlement of a few hundred people and one person had been wounded and seven shops looted by a large number of tribal raiders who had attacked the village of Sarai Jal Bori. 13 Fd Coy was allocated the hockey field and it was there that European Personnel Indian Pattern (EPIP) tents were erected and the mess set up. The gunners were also quartered nearby. The 5.5 inch guns were manned by British Other Ranks (BORs) as had been usual in the Indian Army ever since the Mutiny. The first job was to establish a major water point for the relatively large body of troops. Because the brigade group was on active service, it was possible to indent for additional supplies and equipment. The enthusiasm with which this was undertaken produced the staff injunction that whilst this was in order, "units should be careful not to tear the arse out of it"

One of the major engineering tasks was to create from scratch, a Dakota-capable air strip. The work for this was overseen and carried out by the group's Field Park Company. 13 Coy provided labour and some supervision After initial site preparation, the airfield was covered with heavy duty coconut matting and surfaced with Sommerfeld track. Some of the coconut matting, laid on the floor of the mess tent, added to its cosiness.

When major earth-moving had been completed, two bulldozers were made available in order that a jeep-capable track could be built to the top of a local commanding hill feature. This was known as 6159 – its height above datum. I was put in charge of this work. There was some initial difficulty at the foot of the hill because the ground there was very boggy, but the cutting of the track higher up went well. There was one never to be forgotten day. The brigade commander, accompanied by the GOC-in-C, General Sir Frank Messervy, wished to ride to the top of 6159 on horseback. Whilst paying



EPIP Tents at Oghi.

Outline map of the North-West Frontier of India showing principal tribes.

close attention to the section of track over which the party would first travel, the activities of the second, higher-up, bulldozer were not being watched. As the jingling of approaching horses was heard, I went to check on the second machine only to find that it was perched on top of a mound of rocky soil. The riders were forced to dismount and lead their somewhat nervous horse around the idling machine. The brigadier demanded "Do you know what you are?" "No sir" "A bloody fool" "Yes sir" .Of course, by the time that the party returned from the summit, all was in order. General Sir Frank reined in his horse and exchanged a few kindly words with the chastened engineer officer before riding on. Two things were deduced from this incident. One – least said soonest mended. Two – Sir Frank certainly knew how to manage men.

In the event, not a single shot was fired in anger and the group did not become eligible for the much-prized India General Service Medal with the North-West Frontier clasp. Some two to three weeks after we moved to Oghi all seemed to be at peace, so all units returned to barracks It seems likely that the advance of 25 Brigade Group to Oghi was the last expedition of its kind ever to be mounted in British India.

BLOODY DAYS IN RAWALPINDI

SOON after we returned from Oghi, 13 Fd Coy moved to new quarters in Rawalpindi. Early in January 1947, some of the officers went west along the Great Trunk Road in order to visit a quarry. A large limousine occupied by Sikhs passed them travelling towards Rawalpindi at high speed with shot guns very much in evidence at its wound down windows. When returning to Rawalpindi, they found the limousine lying burnt out at the side of the road. What had occurred in Sarai Jal Bori was probably an early expression of Muslim-Hindu enmity and here, dramatically, was another example. The bloody January riots in Rawalpindi followed. At their height, I took a small armed detachment and occupied a footbridge across the railway yard which separated some of the warring factions. In this situation, the relatively secular (pre-dominantly Christian), make-up of our Madrassis was of particular significance as they were, from a religious viewpoint in the Muslim-Hindu context, entirely neutral. The steel and concrete open bridge was not the greatest of places during the day, but when darkness fell and the flames grew higher, and the shouts of mayhem grew louder, it became distinctly memorable. When the position became more stable, the detachment was able to carry out motorized patrols and the distraught crowds in the streets were ordered to surrender their sticks and axes in an effort to reduce tension. Scenes of terrible death and destruction were to be seen all over this great city. There is one particular memory. A rather old and probably retired soldier, a Gurkha, standing alone, armed only with a stick and guarding a Sikh temple. The word had obviously gone round that "no-one messes with a Gurk"

These serious Hindu-Muslim conflicts in the Punjab led Lord Louis Mountbatten to his decision to partition India much sooner than had previously been contemplated. The area of which I

have been writing in this account now forms part of Pakistan.

End of military service

EARLY in March 1947, I departed on leave to the UK. On reporting to Liverpool to return to my unit, I was told, literally on the gangplank, that I was not to return to India. I subsequently reported to 3 TRRE in Fleet, Hampshire, where I was demobilized early in 1948.

Royal School of Mines

PRIOR to my demobilization, I decided that I would apply to the Royal School of Mines to study for a degree in metal mining. The then professor, J A S Ritson, had been a very brave and well decorated soldier in WW1 and he was well-disposed to returning ex-servicemen.

We were a mixed batch, some returned from the services, some from the Allied nations and some fresh from school. Those who resided at the university became very close, irrespective of their recent history, and many of the friendships continue to this day.

The degree course was spread over three years and embraced a wide variety of subjects – some more demanding than others. As with the Corps, there was a general desire amongst the lecturers that their students should succeed – this they nearly all did. This is not the same as saying that all of them went on to become successful mining men. As always there was a certain amount of luck involved once the real world was entered. The senior lecturer in Mineral Dressing was Edmund Pryor. By contrast with his fellow lecturers he was a rather irascible man. I could not think of any obvious explanation for this as Pryor was passionately devoted to his subject and his students greatly respected him for this. The explanation was eventually found in *"The War Underground, The Tunnellers of The Great War"* by Alexander Barrie.

"Later that day, they took him out in bitter weather dressed only in one gumboot and a pair of trousers, and threw him over the rear of the trench with a number of {other} corpses for burial. A shrapnel shell burst and a heavy lump of metal smashed into his half naked body. It was December 21st, 1915. Eventually, Pryor's batman came along hoping to find some memento he could send home to relatives. He was astonished to see the eyes of his supposedly dead officer open feebly for a moment – and then close".

I do so much wish that I had known this all those years ago when I was one of Edmund Pryor's students.

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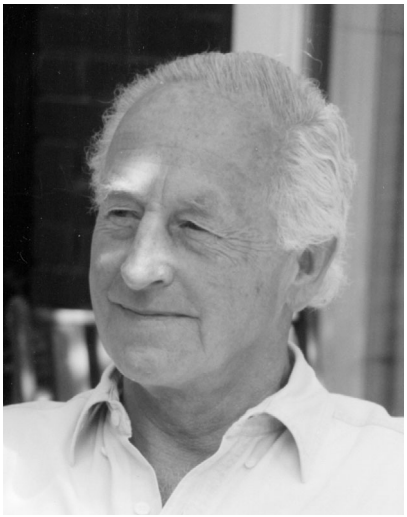
- *Defeat into Victory* by Field-Marshal Sir William Slim
- *The Great Game* by Peter Hopkirk
- *War Underground, The Tunnellers of The Great War* by Alexander Barrie
- *Amritsar* by Alfred Draper

Assignable Aptitudes

PETER DELL



Peter Dell retired from the Corps in 1973. From then until 1996, he held a series of senior management and consultancy appointments in various international business organisations, including Courtaulds and Ernst and Young. Throughout this period, he was a Visiting Fellow at Manchester Business School. Presently, he holds appointments as a Director or Consultant and is a Visiting Professor at the University of Durham Business School.

BACKGROUND

SOME recent research into the likely career patterns for managers suggests that the aptitudes required are once again becoming more congruent with those required of a military engineer. The research was prompted by the acceleration of change in a typical career pattern, in which the career of each individual may contain six or more distinct phases.

Consider a number of different elements of a wide variety of careers. Is there any common theme for an officer assigned to a UN Force, a banker handling the restructuring of an international loan, a doctor or nurse in the A&E department of a major hospital, a senior politician, a specialist engineer and even an accountant. In each case the demands of each incident will be both more diverse and different from those expected. The specific training that underpins each role will need to have been as versatile as possible, yet still provide the precise essential skills. The determinant of success may well be the ability to assign the appropriate mixture of aptitudes. There will be times when the individual does not have that eclectic mixture, so then needs the judgement, imagination and courage to recruit the missing components. A second theme may be the international nature of the task, requiring at very least an awareness of the different priorities and standards that motivate each nation involved. Even if there is no international element, the issue to be addressed will certainly include multi-cultural aspects representing regional and ethnic differences. These career challenges have always been present in both the military and business communities, but two recent and ever present trends have accelerated the rate of change and widened the scope.

In both the armed services and business communities the demise of the Cold War has raised significantly the international instability. In each community the effects have been manifold. Consider the impact of comparative examples. The armed services no longer have two models for which to train, but at least six, for which some anticipated competence has to be developed, with the further uncertainty that every UN or multi-national operation is highly likely to contain unique and previously unseen aspects. Specifically for military engineers, the emphasis has returned to the many engineering skills that are necessary to rebuild a nation's, or a region's, infrastructure. The business community for similar reasons has ceased to operate solely in countries which have a recognizable and defined governmental and legal structure. A business now often needs to contribute to the development of both in parallel with their commercial goals. The higher risk is common in each community. The need for versatility, underpinned by

knowledge, becomes a key aptitude. The versatility of the Corps has been long recognized and again stressed in a recent article in this *Journal*[1].

A second trend has been the increase in both the transparency and speed of transmission of information. Thus leaders in all elements of society have to anticipate the impact of their actions not only on the event and its immediate community, but also the wider issues. There is very little certain secrecy. A necessary judgement in this regard has to be certain of remaining secure and the need for that provable, otherwise the final beneficial outcomes cam be destroyed. This again sharpens the need for sensitivity to multi-cultural issues. The open information society also demands a clarity and constancy in decision.

The concept that a successful career can be completed within one organization is long dead. Experience in the corps and more widely in the services confirms this pattern. The hypothesis that consecutive careers in very different sectors for an individual had replaced the linear career was tested in discussion with representatives of business, the armed services, government and non-government organizations. The views were entirely affirmative. This allowed the assembly of suitable support to allow research to be pursued as to whether there are transferable management talents that encourage the development of successful multi-sector careers. This appears to be a topic of interest across all careers, uniformed or civilian.

Discussion

THE research discussion has been informed by an initial literature search, then expanded and tested by an extensive interview programme. The former disclosed an international library of work on the talents required of a successful leader or manager, including some material on whether these roles complemented or conflicted with each other. Nothing was found dealing specifically with those required for a multi-sector career. The examples of relevant background material in the literature are legion, but three are cited for the breadth and longevity of the ideas contained[2, 3 & 4]. The interview programme was completed during 2000/2001 with fifty independently selected candidates from over twenty different organizations, covering inter alia such sectors as manufacturing, aerospace, oil, telecommunications, media, banking, insurance, the armed services, professional associations and the professions. The interviews were conducted within a structure, but in an informal style which encouraged the introduction of original ideas.

The themes that stem from this interview programme fall under two headings. First, those that reinforce characteristics well noted as necessary for a successful leader or manager and second, those that are specific to successful multi-sector careers. This last group generate the idea that there are assignable aptitudes which provide the basis for the versatility needed to handle the variant viscisitudes that challenge an individual in most careers, certainly those in the services or business.

Under the first heading there were seven subjects, which although widely cited in business[5] and military[6] literature, received such strong endorsement as relevant to the research subject that they should be noted. These talents were:

- Strong quantitative and qualitative analysis.
- Robust standards.
- A competitive instinct;
- A secure integrity.
- The ability to create and articulate a vision, or aim.
- The establishment of a learning environment.
- A desire to achieve financial independence.

All but the last of these are equally important, applicable and achieveable in either a military or civilian career. The transferability of these between military and civilian careers has been noted in a previous *Journal* article[7]. The last however tends to be

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1 Brancher, David (2001) Engineering Versatility and the Corporate Culture. *The Royal Engineers Journal* Vol 115 No 1, Chatham
2 Kanter, Rosabeth Moss (1984) *The Change Masters*. George Allen & Unwin, London
3 Porter, Michael E (1980) *Competitive Strategy*. The Free Press, New York
4 Peters, Thomas J and Waterman, Robert H (1982) *In Search of Excellenc*e. Harper & Row, New York
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6 Roskill, SW (1964) *The Art of Leadership*. Collins, London
7 Dell, Peter (1997) Transferable Talents. *The Royal Engineers Journal* Vol 111 No 2, Chatham

particular to a business career. As one participant drily remarked referring to a well known board game, "I have been fortunate in my career 'to have passed Go' twice". Interestingly its achievement, admitted to by a few in the interview group, did not in every case engender the sense of physical and intellectual security that one might expect.

The four talents that emerged as important within the project were:

- Objective setting.
- A low boredom threshold.
- Team building.
- An interest in the motivators of other cultures.

The importance of objective setting originates in part from the competitive instinct. This rating was at its highest when the participant was a player in the process. Although over 90 per cent of the interview group gave emphasis to this, less than half claimed the same enthusiasm for achieving completion of the objective. The reason in part for this inconsistency is the fast tempo in business which moves people rapidly, often leaving completion to others. The risk to a business has, in these cases, to be covered by other factors, such as the combination of skills within the team, and succession planning. A similar failure in the military equivalent of the selection, maintenance and achievement of the aim would be unacceptable.

A prime stimulant to multi-sector careers was the admission and recognition of a low boredom threshold amongst more than 75 per cent of the interview group. Their reactions varied from escape, by changing job, through causing something to happen, or by creating chaos as a means of probing for weaknesses. The last two are valuable attributes in creating the necessary versatility to deal with the unforeseen. In business teaching case studies also contribute to this process, as do training exercises in a myriad of forms in the military. Certainly the outcome of boredom is an aptitude that can be usefully assigned to the solution of some of the complex challenges which confront leaders in either a military or business environment. Even so, in the services, this is unlikely to be such a significant factor. The normal pattern of two plus years in each appointment, further truncated by the increasing frequency of short emergency tours, will limit the likelihood of boredom. The military equivalent to management boredom may well be frustration, both in the rapidity of moving to new assignments and the consequent inability to complete. This could be most acute for the military engineer, the completion of whose tasks will be long, rather than short, term.

Team building, in various forms, earned support from 64 per cent of the interview group. The issues were the ability to recognize and realise potential in others, alongside a confidence in not only leading a team, but temporarily ceding that leadership to another who at that moment had the more apposite skills. In other words in this last case, an ability to both lead and play in a team. This approach led to an emphasis on sound succession planning. Such planning in a military environment is universal due to the ever present risk of losing the leader in conflict, but in business succession planning can be omitted by a jealous defence of the existing leader's position. In the present world of fast changing and fluid situations, the leader/player approach, linked to succession planning, is a necessary assignable aptitude.

Slightly less than half the interview group noted a need to have experience and education in another culture. This suggestion came from a number of different starting points. In some cases the origin was from tertiary education in a foreign language, including study of the related culture and history. In most cases, the stimulus came from working outside their country of origin, achieved by a combination of both selection and volunteering for a cross-border role. Regardless of the initial driver, this group claimed that experience in another language and culture significantly sharpens an ability to listen more keenly and then identify the different motivators of groups from diverse cultures. In business the traditional model of an international company being one that imposes its national style worldwide, although far from dead, is being replaced by one that shows a much higher understanding and rating of true multi-cultural talent. In the military this is being recognized with greater frequency through the unlikely combinations of national contingents assembled for some UN forces. The importance of multi-cultural awareness is an outcome which is specifically chronicled about the East Timor operation by their first commander, Peter Cosgrove[8]. In business, there is evi-

[8] Cosgrove, PJ (2001) Complex Operations – A Commander's Perspective. RUSI Journal Vol 146 No 1, London

dence that this enhanced multi-cultural awareness translates back on an individual's return to their national environment in an ability to recognize, then release, regional potential both in geographic and business communities. There is therefore strong evidence in both business and the military that a well developed multi-cultural awareness is an aptitude which needs to be assigned to the solution of all international problems.

Conclusions

Returning to the changes to the career pattern for a manager in business of several phases spread across different sectors, this relatively recent trend has in a sense been present in military careers, including those of engineers for centuries. The distinction is that the employer in the services has remained constant throughout. Nevertheless, for a military engineer there has been a greater variety of professional demands, as a range of engineering roles have been added to the general military ones of command, staff and training. The resultant employer has on occasions also been changed, since merged military/civilian control will apply to many infrastructure projects for the UN and others, whilst the military engineer has often been seconded to the control, in every regard except simple administration, of another country.

The seven talents that are necessary for a successful leader or manager in business, irrespective of whether that career is linear or multi-sector, are those listed above. All these, with the exception of achieving financial independence, are applicable in either a military or civilian career. There are two in particular, competence in quantitative analysis and the establishment of a learning environment, that successful military engineers have acquired during their education and then need to maintain and grow throughout their careers.

Three of the four talents specifically important to the achievement of successful multi-sector business careers are also applicable in both the military and civilian environments. The relevant omission in the military career is the likelihood of boredom. Again, similar to the pattern within the general leadership talents, two, the ability to establish effective teams and an interest in the motivators of other cultures, can play an even more meaningful role in the success of a military engineer. Almost all engineering projects depend on the creation of teams which meld together the appropriate engineering techniques. There is also a need to understand the different cultural motivators in the divisions that exist, real or imagined, between sub-groups; for instance electronic and civil, within the engineering profession. The much stronger emphasis on this understanding of the cultural motivators for a military engineer comes from working in a multi-national force, or on secondment to another nation.

The set of nine talents identified as equally important in either a successful military or civilian career that spans several sectors are applicable across the military profession. The nine include a subset of four that are very likely to be stronger, through both development and practical testing, amongst military engineers. It is this subset of original components which suggests that the aptitudes presently needed by a successful business manager or military engineer are becoming more congruent. The ultimate success perhaps comes in an individual recognizing then assigning from these the best combination for each stage of a career.

A French Experience
"A Unit at the Heart of French Military Engineering in Kosovo"

CAPTAIN ARNAUD LE GAL

After three years in the military academy of Saint Cyr, Captain Arnaud Le Gal started his career in the French Engineer Corps in 1994. After 11 months training at the Engineer School at Angers, he was posted to 34 Engineer Regiment and subsequently to Guadeloupe with an infrastructure training unit. He is currently commanding the Water Production Company as part of 2 Engineer Regiment based in Metz, north-eastern France. He deployed to Angola in 1997 and in 2000 he took his company to Kosovo.
(Translated and adapted by Lt Col Philip Crook RE, BLO French Engineer Corps)

THIS was the fourth roulement to Kosovo of the composite or "modular" company, (Compagnie Modulaire d'Aide au Déploiement CMAD – modularised infrastructure support company), which was to serve within the French Engineer Battalion (BATGEN) in Kosovo as part of Multi National Brigade North (MNB N). The BATGEN had deployed earlier in July 2000 and was due to return in November that year. I normally command the 974th Company, which is a specialist unit responsible for water supply as part of 2 Engineer Regiment based in Metz, north-eastern France. The regiment's role is that of infrastructure support and has specialist companies in water supply, provision of electrical power and construction. After pre-deployment training, the company deployed on 4 September 2000. The personnel forming this composite company were drawn from all corners of the regiment in order to provide the necessary organization, skills and trade balance for the mission in Kosovo.

The company's primary mission was to provide infrastructure support to MNB N and this article is based on my own personal experience of my first operational command.

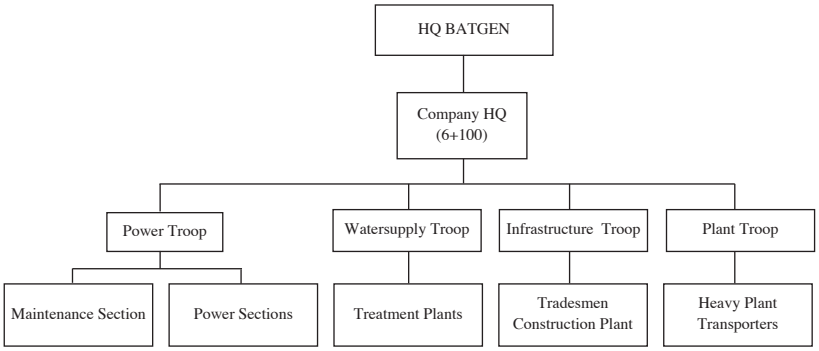
My company, or to be correct, CMAD, is an integral part of BATGEN, which is in support of BMD - N, and my company was to experience at first hand life in Kosovo from not only a geographical point of view but also its politics and the humanitarian aspects. After the usual tedious move at the mercy of the movers, the company soon settled into its quarters at Novo – Selo and we could begin to focus on our new environment and the mission and tasks that confronted us within our area of responsibility.

If the geographic configuration of the region with its high mountains and flat plains is not a challenge in itself then there is the diversity of the population. The brigade area of responsibility covered the northern border area of Kosovo with its strong Serbian element which, as we have seen through the media, has been under pressure from the more popular Kosovar Albanian population. The town of Mitrovica is a pressure point and has occupied the brigade in crowd control operations for many months. The tension between the two nationalities, the Kosovo Serbs (KOS) and the Kosovo Albanians (KOA), runs through political, commercial and cultural lines and the historical lineage of the problem is well embedded in Balkan history. Those of you who have served in the there know the problems well. As a mere engineer company commander, these higher level aspects of my job in support of the brigade sitting astride this area of conflict, was never far from my mind and those of my soldiers.

The brigade itself was made up of several units spread across the area of responsibility (AOR). The brigade HQ was supported by a French signals battalion based at Mitrovica, a French armoured unit equipped with a squadron of the superb French built Leclerc tank, a motorised infantry battalion (BIMOTO), a helicopter unit (BATALAT), a logistic battalion (BATLOG) and finally BATGEN, which is collocated with BATLOG at Novo-Sello camp.

A Belgium-Luxembourg battalion, a Danish battalion, a Russian infantry battalion, a battalion from the United Arab Emirates and a

COMPAGNIE MODULAIRE D'AIDE AU DEPLOIEMENT
CMAD
KOSOV



Moroccan battalion made up the multinationality of the brigade.

BATGEN is organized to support the specific operations of BMD N and besides my company, there is the Headquarters and Logistic company (Compagnie de Commandement et de Logistique – CCL), Mechanised Company (Compagnie de Combat Mécanisée – CCM mounted in the four wheeled VAB APC), Support Company (Compagnie d'Appui – CA) and a Heavy Works or Plant Company (Compagnie de Travaux Lourds). The role of this was subsumed in October 2000 into my company. BATGEN is responsible for all the engineer missions and tasks within the brigade AOR from bomb disposal (NEDEX = EOD), verification of minefield information, repair of roads to aid to the civilian population and also to ensure force mobility throughout the AOR.

As part of BATGEN, my company, which shared the camp at Novo-Sello, was largely responsible for its reconstruction and maintenance as well as contributing towards the more mundane jobs such as guard duty and improving the protection of the base. This camp construction tasks and subsequent maintenance was an ongoing activity throughout my company's tour.

My company consisted of a Headquarters, which provided me with the means of command of the unit from operational to personnel matters, and which supported the everyday activities of the troops during their missions. My command consisted of a Power Troop (Section Energie) whose primary tasks were to ensure a constant supply of electricity to the brigade and setting out and maintaining the growing power grid. Power Troop consisted of a maintenance section whose task was to look after the 80 kW and 500 kW generators which were held by the power sections spread across the brigade's AOR. The second troop was Watersupply Troop (Groupe production d'eau), which was equipped with Mobile Water Treatment units (Unité Mobile de Traitement de l'Eau - UMTE). Each unit is capable of producing 1,500 litres of potable water per hour and their primary mission was to ensure that potable water was available throughout the AOR for each of the units. The final troop was Operational Infrastructure Troop (Groupe Infrastructure Opérationnelle – IO) and held the company's tradesmen which included plumbers, bricklayers, carpenters and metal-smiths. This troop was equipped on the ground with the necessary tools, specialist equipment, vehicles and machines for field construction works such as accommodation, sanitary units etc. The equipment ranged from the EMAD, a light wheeled tractor with backacter, tipper trucks, cranes and forklifts. This troop's prime mission was in camp construction and its subsequent maintenance and they become the experts in constructing the accommodation units (the French use the term "bungalows"), and the sanitary facilities. They also improvised the overhead shelters for the bungalows to give them better protection during the Balkan winters. They also carried out numerous modifications and repairs to please the customer whose demands were increasing as the quality of life improved. As I mentioned earlier, the Heavy

Works Company departed Kosovo in October 2000 but one plant troop remained and was placed under my command. This troop was mainly committed to route improvements, repairs and the construction of new lines of communication. They were equipped with the usual array of plant machines from bulldozers to graders and like all plant operators throughout the world, they enjoyed the challenge of changing the shape of the landscape!

All the troops, power, water, infrastructure, plant etc had their own distinguished personality, which was characterised by the high level of knowledge and experience of the officers, NCOs and sappers. This know how was developed during the tour but its foundations were based on the experience and training gained from either the training within the regiment or from the various courses run by the Engineer School at Angers (Ecole Supérieure et d'Application du Génie – ESAG). The various tasks we undertook demanded a high level of technical knowledge and a true test of our competence when working with all arms and nationalities. This was especially the case with the power supply for the various camps of 1,000 – 1,500 personnel. Not only did we have to physically provide power, but had to ensure that the supply was safe at all times. The Infrastructure Troop proved very popular, especially when showers, toilets, headquarter buildings, service and amenity areas etc had to be installed, tested and maintained.

To give you a detailed and exhaustive assessment of our achievements may be a little too fatuous and repetitive as although each camp had different capacities, very similar problems presented themselves. In less than a year, a tented camp was transformed and equipped with all the facilities of sanitation, water, power, command post, and facilities for personnel as well as a multitude of other works to improve the quality of life. For the company it meant constructing nearly 500 metres of concrete foundations, erecting around 400 accommodation blocks with 50 sanitary units with all the associated water supply, drainage and electrical power.

The task may sound simple but we did encounter many challenges, which we will not forget in a hurry. We experienced difficulties with the supply of construction material and it always seemed to be an item on the critical path. In addition local contractors had to be carefully monitored as not only were they unreliable with their delivery times, but also the quality of the material was somewhat dubious. However none of the problems were insurmountable and the experience of the company and the soldiers made sure, in typical "sapeur" fashion, we delivered.

The experience of Kosovo was not only an invaluable one for the unit but also for the individual, both officers, NCOs and soldiers alike. I believe our contribution to the overall mission played a vital part in not only improving the quality of life of the deployed units but also towards the stability of the region through our humanitarian contributions. As for all sappers we are more often constructing, sometimes destroying but we are always serving. For a young commander the experience of commanding men under such conditions of real operations, within an international environment can only prove to be an immeasurable one.

Mine-Warfare in Korea 1953

MAJOR J D LEWINS MA PhD DSc SM PhD(MIT) PPINucE

Jeffery Lewins was commissioned into the Corps from RMA Sandhurst on 8 Feb 1952; the first of HM The Queen's Commissioned Officers, but with the last of King George VI Gold Medals. After 8 YO course at Chatham, and service in Korea with the Commonwealth Division, he was sent to Cambridge to read Mechanical Sciences. He also took up an English Speaking Union scholarship in nuclear engineering at MIT. Returning to the army, he joined 50 Fd Sqn in Osnabruck. Staff College followed. A spell as G2 in the Lowland Div HQ at Glasgow was succeeded by time at the University of Washington in Seattle, to get back into some nuclear engineering. His final tour was in 2 Armd Engr Sqn at Hohne. He became a lecturer in Nuclear Engineering at Cambridge and later still, Engineering Director of Studies in Magdalene College. He has now retired, but is still Praelector of the College, which has offered pleasant surroundings for 8 YO batch reunions.

I WAS fortunate to experience the Korean War, and doubly fortunate not to be there in the first winters, without proper clothing and moving smartly backwards. I was there only in the first seven months of 1953 when the battle was static and reminiscent of the first world war in its use of defended localities with cut-and-cover bunkers. I offer this account of my experience of mine-warfare in Korea as I experienced it, as an historical record. I am all too conscious of the changes in mine-warfare in the intervening years, and of the civilian consequences of land mines which were only just apparent to me at the time. I have added some remarks by Colonel Edward Sharp (my final troop commander in Korea), whose experience was considerably greater than my own.

Korean Mine-Warfare Incidents

BATTLE school in Japan in November/December 1952 (which was cut short by a need to break a strike in Kure, and being called forward as battle reinforcements after the first battle of The Hook), included some instruction in live mine ammunitions of US provision. Notably, the anti-tank mine we employed had chemical fuses. During my six months in Korea before the truce of June 1953, I was initially in the HQ of 55 Squadron. When the OC was rotated, I escaped to 3 Tp as Troop Officer. The Korean campaign was a "twofer"; two colonels in the Divisional Engineers (a full colonel CRE and a Lt Col commanding the regiment); two officers in a troop (captain commanding and a dogsbody – me), and subsequently, two campaign medals (UK and UN). My extra good-fortune was to have my troop captain's post unfilled for six weeks to give me, a twenty-something year old, the experience of commanding sixty sappers in war.

During this period, my troop laid no mines and we lifted no enemy (North Korean or Chinese) mines. The Chinese certainly used mines in the campaign at places like the Gloucester Crossing, but I had no experience of them. My concern in mine-warfare was our own mines. Like many latter-day soldiers, I quickly came to believe that we killed more of our own with our own mines than we killed of the enemy. This belief was probably not well founded; the Chinese took very substantial casualties in their set-piece attacks on The Hook position. Although I viewed the immediate aftermath of their last attack, including removing several assault demolition satchels abandoned on our position and digging out trapped elements of the Duke's, I would find it difficult to determine how many of the casualties were directly attributable to our defensive minefields amongst the many due to

VT fused shells brought down literally on top of the infantry positions that night.

Earlier, while I was still in squadron HQ as the so-called IO, George Cooper, later Chief Royal Engineer but then commanding 1 Troop, was tasked to support a company raid by the King's Liverpool Regiment. This raid was to be launched against what might be occupied caves on the Chinese side of no-man's land in front of The Hook. The raiding party set off from the flanks crossing ground that had been fought over for at least a year. That night, before crossing no-man's land, the company group found itself in a minefield and suffered some casualties from anti-personnel mines. Too many of the infantry kindly volunteered to escort their wounded comrades back to safety and so George was left to command the remaining force and make a successful raid, later acknowledged as part of his MC citation. Subsequently my first squadron commander said to me, "Jeffery, they should have asked me. I knew there were minefield records showing all those fields they wandered into." Like all three of his troop commanders, he also got the MC, but expressed some disappointment at not being awarded the DSO. Still, as he put it to me "This way round, Jeffery, there's always room for the DSO later."

Later, supporting the King's Liverpool Regiment myself in what I remember as the Youngdon valley, we were tasked to lift a section of the anti-tank minefield to provide a counter-attack route for our armour (that cheerful regiment, 4 RTR). There were already electrically controlled AP (anti-personnel) mines immediately in front of the position which were able to let patrols pass. These controlled mines were the concept of Jimmie Grice commanding 12 Sqn. They were based on two-way switches in housing by Edward Sharp, who at that time was Regimental Signals Officer (RSO). Edward subsequently checked the installation on several occasions and was amazed to find the characteristic footprints of the Chinese recce parties who apparently never figured out how the safe passage was accomplished.

The field records showed a standard pattern of three double rows – no AP laid. Covered by a bren machine gun pair from the King's, (for which I was grateful), we deployed soon after daylight hoping that the morning sun behind us might prevent the Chinese opposite from interfering. We found the rear rows in accordance with the records and I and the recce sgt went on to locate the two further forward rows. Somewhat uncomfortably, I agreed to let him take the middle and I took the front.

While searching on my stomach, I heard the explosion behind me. It was the very nice South African recce cpl, "Sonny" Lipschild, who had set off an anti-tank mine, presumably while trying to disarm it. We brought the body back in, supposing that there might be a consultation period before continuing this evidently risky enterprise.

Indeed there was. My seniors quickly agreed that chemical fuses for anti-tank mines could become sensitive to the point of turning into anti-personnel mines after two winters in the Korean ground. The CRE opined that this was a tricky problem, and that we would not know how to deal with it until the mines were brought in for examination. Therefore, "young Lewins, I want you to collect all the mines so we can have a good look to see how we can cope." I was about to remark on the proposal when my percipient squadron commander hacked me on the shins and shut me up[1]". Later he provided an "interpretation": go out and pull all the mines and blow them in situ. I was glad to obey this sort of command without cavil.

I had again learnt lesson number one: you are likely to kill more of your own than of the enemy by laying mines.

However, the matter turned out to be more difficult than we realized. I don't remember who laid that field although the records were a model of Staff Duties and RE Pocket-Book advice. But although the mines of the rear row were undoubtedly there (and armed), the middle row were there but not armed and the front row nearest the enemy could not be found at all. I had a difficult couple of days in the fresh air watched by the

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[1] Not the only "hacking" I received as a subaltern. On one occasion in the I-Box with similar senior ranks present, we turned to the air-photos showing fortifications on the Chinese side. The CRE wondered whether they could not have been the works of Ghengis Kahn who had also fought over this battlefield. "If only we had older air-photos". I was "hacked" for remarking "C'est magnifique, but ce n'est pas Daguerre" which I actually thought not a bad mot for the occasion. I still have the bruise.

puzzled Chinese before I could convince a suspicious CRE that we really had lifted all the mines that were there.

So a further lesson learnt. One's own men don't much enjoy laying live mines, even "just" anti-tank mines. They have to be monitored by requiring arming rings etc. to be accounted for – and if you are really suspicious, check their clothing and webbing beforehand for "spare" arming pins. If you are going to design mines, keep this need for verification in mind.

A final incident with mines shows how stupid the young officer can be. A message was received on the troop radio ordering us to investigate a reported minefield in the rear of the positions, which did not correspond to mine records. My new troop commander and I with him driving but otherwise alone, obligingly went off to check, with the likeliest minefield record in his hands. It was pretty clear that in the heat of laying this field, the wrong Korean ridge had been identified and (a) there were no mines where the record claimed but (b) there were likely to be mines, a mixed field, on the next hill over, behind the red triangles. "Right Lewins, twelve paces into the field from this edge and start looking for the mines." I had gone some six paces when his voice behind me said "Halt. Stand very still." Yes, the field started somewhat closer to the wire than the records claimed and I had unknowingly stepped over a No 6 AP mine. We extricated ourselves.

The third lesson: Do not go mine hunting on your own, without back up and without people knowing where you are. We could both have been injured or killed and we had no way of obtaining help. A lovely man, and his wife tells me he still has the recurring nightmare of being responsible for me.

The Truce

We were supporting the King's Liverpool when the Truce was declared. I suppose now that the static nature of the final phase of the war was as much a reflection of the political will to reach a truce as the stalemate between the combatants. On the day, the Chinese built temples from leafy boughs and their loudspeakers invited "Tommy" to fraternise at the stream in no-man's land. Some time later, the CO sent NCOs to require the soldiery to return to our own lines. Sometime after that, the officers were sent to get the NCOs back. I can hardly blame them after a war that was a good deal more taxing on the infantry than on anyone else.

The truce required withdrawal of both sides. In our case, this was to new defensive positions to be rapidly developed to the South, the Jamestown Line. Unfortunately, the area had been fought over three times and was littered with minefields. The following remarks come from my (last) troop commander who stayed on while I and those from 8 YO batch who had come out with me, returned to the UK on a troopship carrying the first released prisoners of war. I have asked Edward to allow me to quote from his private letter since his experience may be of value to others.

"The American M6 AP Mines were like small shoe boxes, containing about 1 lb of plastic explosive. The striker-fuse was triggered from a horizontal pocket screwed into the top of the mine. This striker had an over-centre action comprising a ball bearing contained between two notched springs. If you pushed it in too far, or pulled it out too far, the striker went in and the mine went off. From the end of the striker, two lengths of about eight feet of fine wire about a foot high led at an angle to legs in the ground. Often these trip wires crossed other wires. If tripped or cut, these mines detonated. We believe that we lost Philip Crofton, Bertie Bayton-Evans, Bruce Robinson and Sgt Ball on these things."

"You will recall one dealt with them by lying face-down in the mud with your face about a foot from them. One had then to insert a safety-pin through the holes in the sleeve and a corresponding hole in the striker. It would then be safe to cut the trip wires and unscrew the fuse. If the pin would not go through, then one had a choice; you could imperceptibly push it in or pull it out. This did not call for judgement but for luck, to be guided you hoped, by Providence. Sometimes one did this at temperatures of minus 30°F (sixty degrees of frost). At the time, not unsurprisingly, sweat covered one from top to bottom."

"During the often bitter confrontation during the truce, all troop commanders had a "Bluebell" kit in their jeeps. This consisted of wire rods for stroking the ground to locate trip-wires, safety-pins and, ominously, shell dressings and morphine kits. These were metal boxes containing ten morphine syrettes. One applied them through the tunic and into the deltoid muscle. On two separate occasions, I recovered an RTR soldier and two Korean

Service Corps soldiers. All three were alive when I got them out, but all of them died when we got them onto stretchers at the Casualty Collection Post. All had lost most of their legs and they seemed fairly lightweight on one's back. There was very little blood and I recall their eyes blinking as they passed over to what we hope was a better place."

I learnt to take some comfort from a layer of sandbags in the well of the jeep. Edward goes on to confirm my own experience that all minefield rescuing was an officer's task. This does not mean that others could not do it, but that officers felt that it was beyond self-respect to ask others to undertake this duty. His experience only reinforces my own subjective view that we lost more to our own mines than we inflicted on the foe.

Conclusion

My experiences of mine-warfare did not lead me to high military rank, but they were experiences that certainly shaped me, that is, rubbed a few of the rough edges off my character. In later life I have dabbled in many physical and engineering theories but perhaps the greatest value of Korea was that it taught me to look with a degree of caution at the predictions and practicalities of a simplified model theory, however "elegant" the mathematics. I retain the subjective view that we kill our own with mines as much as we harm the enemy, a view from fifty years ago that is only reinforced by today's news of the death of over forty Indian soldiers and civilians laying mines on the Indian-Pakistani border. Some knowledge of the way humans react "on the ground" has been instilled, to my lasting benefit

The Friends of the Royal Engineers Museum

Introduction

MANY readers of the *Supplement* will have seen notices announcing the activities of groups of The Friends and may have wondered what this association is and what it does to help the Museum. This article sets out to answer these questions and to encourage members of the Institution to join the Friends.

In 1987, a professional consultant advised the Museum Executive & Library Committee (MELC) that the museum needed a group of Friends to assist with publicity and to provide other assistance. The Association of Friends of the Royal Engineers Museum (FoREM) succeeded the RE Historical Society. Guidelines for the operation of the Friends were agreed by MELC. These defined the objectives of the association as "To support the museum by promoting and encouraging knowledge of, and interest in, its activities and work". To fulfil this objective the Friends actively promote membership and publish an annual newsletter. Voluntary work undertaken by the Friends includes:

- Organizing groups of Friends
- Arranging lectures, displays and exhibitions concerning the museum and its collection
- Carrying out historical research
- Assisting in the collection, sorting, cataloguing, restoration or conservation of items for the museum
- Contributing to the funds of the museum
- Promoting other activities that will support the museum or the Friends.

Organization & Activities

THE association is run by an executive committee with the usual officers, chairman, treasurer, membership secretary and secretary. The museum director and the curator are ex-officio members. Other members include the Corps' medal adviser and the chairmen of the groups of Friends presently run in Medway, Camberley and Colchester, and the chairmen of the "specialist functional" sub-committees. These last work on projects to celebrate and record those aspects of the Corps' activities which have been under-represented in the museum.

Current work of the specialist sub-committees includes displays on Transportation, Postal and Courier Services, Bomb Disposal, Airborne Engineers and the role of the Corps in the development of the Federation of Malaysia Engineers. The first task of those organizing a project is to identify those who might be interested in funding it and who can contribute ideas, artefacts and other material. In the past, bodies such as dining clubs, REA specialist branches and connected civilian associations, not necessarily themselves members of the Friends, have provided invaluable assistance and considerable funds for projects. The sub-committee chairmen and members of their teams have much to do in writing to those who might support them, addressing meetings, planning the project, liaising with museum staff and getting the exhibits built. Obtaining material for the display is frequently the least of their problems. Mounting displays to the standards required by the museum is surprisingly expensive. Modern displays of photographs on video require expensive software and hardware. Donors are naturally anxious to see results from their generosity and it is essential to keep them informed on progress. Space in the museum is at a premium and careful discussion is necessary to fit Friends' projects into the overall scheme. Now that the museum has achieved the status of a "designated museum", some public money is available for the improvement of the existing galleries and facilities, but this does reduce the effort the small staff have available for Friends' projects.

Projects

THE Transportation Display in the Gabriel Room is a working model of a typical military port in the second world war. It is being maintained and improved by a local model railway club, the Seachat Group. This Group has also offered to construct a small display in the first world war gallery to illustrate the use of railways in that war. Once funds are available, it is hoped to complete the display with a video show of transportation operations.

The Federation Engineers display includes a wonderful diorama of the construction of an airstrip at a jungle fort, a case of exhibits from the period and a video display of a large collection of photographs. Brigadier G G Carter MBE opened the display in May 2001 with a lunch in the RE HQ Mess attended by nearly 100 guests. Among those present was the Chief Engineer of the Royal Malaysian Army, Brigadier Dato Md Tairobi bin

Abdul Razak, and thirteen other guests from Malaysia. It was remarkable that the small number of surviving officers from the Federation Engineers raised over £12,500 – an average of over £225 per donor – to produce this display.

In May 2000, the first world war display of PCS items was completed and opened, again with a lunch in the HQ Mess. Work on the second world war display continues and it is planned that Sir Iain Vallance will open it in May 2002. Members of the Forces Postal History Society will celebrate the 50th Anniversary of their society by visiting the museum just after the opening of the display. A Victorian display is also being prepared, which will cover the formation of the Army Post Office Corps, the postal operations of the Crimean War, the Abyssinian Expedition, the Egyptian Expedition and the Relief of Khartoum. The funding of these postal displays is well supported by the postal associations.

The work on the Bomb Disposal displays is ongoing. Much has been done to improve the presentation of second world war material and efforts continue to display post-war plant and devices. In particular, two cabinets in memory of Captain W W Feather GM containing No 17 Fuzes, a selection of bombs to which these were fitted, butterfly bombs and a photograph of Captain Feather with a copy of his citation have been set up. A display representing the butterfly bomb raid on Grimsby has also been established. A Hands-England drilling rig is now set up outside the museum and we live in hope that we shall soon obtain a metal ring shaft from Holland.

The Airborne Engineers display in the museum will cover the period from the formation of Airborne Forces in 1942 by Lt Col John Rock RE, to 1950. There will also be a display at Elvington covering the period commencing in 1950 with particular emphasis on the Suez operation. The Airborne Engineers Association is raising funds.

Medals

The museum will always accept the medals of a Royal Engineer, preferably as a gift, and guarantees to display them. As a general rule, the museum does not purchase medals, since they are becoming evermore expensive. From time to time however, medals which could significantly enhance the collection appear on the market. In these circumstances the Chairman of MELC, with advice from the Regimental Colonel and the director and curator of the museum, may authorize purchase. In 1994, the Friends were authorized by the Chief Royal Engineer to start a General Officers Medal Fund (GOMF), to improve the collection. Some 32 out of 53 General Officers agreed to contribute and, so far, £5,150 plus tax rebates has been contributed. There is still about £1,500 to be spent. Some very important and interesting medals and groups of medals have been acquired. Pride of place must go to the splendid group of Subadar-Major Bir Singh, 3rd Bombay Sappers and Miners, including all his medals, but especially the Order of British India (1st Class), the Indian Order of Merit (2nd Class) and a Durand Medal. The DCM awarded to Sapper Quinton for the action in which Major Archibald and Sapper Walters won their VCs has also been acquired, as has the MM awarded to Sapper Shilton in Norway in 1940. At the other end of the scale, rare campaign medals won by Sappers in small wars from Canada to New Zealand have enhanced the breadth and depth of the collection. Now that the GOMF is coming to an end, it will fall to the museum or to the RE Central Charitable Trust (RECCT) to fund purchases, although the Friends will help if funds are available.

Groups

The local Groups of Friends in Medway, Camberley and Colchester all run programmes of meetings with either talks on subjects of engineer, local or general interest or visits to interesting places. In the case of Colchester, there is a close link with the local REA Branch. Groups assist in recruiting new members to the Friends and also arrange to visit the museum regularly – usually once every two years. They keep the museum in the public eye in their areas. We had, until recently, a group based on the Solent but, unfortunately, we have not been able to recruit a new committee to run it. We need more groups. What about starting one in your area? Any member of the Friends can set up a group and, once established, FoREM can help with locating excellent speakers on Corps history. and our central funds will provide a small sum annually to help cover postage and expenses. Groups provide a splendid chance for old (?) Sappers to meet regularly in any locality. Three willing people can easily run a Group. If you are prepared to start one, please contact me, Lt Col Mike Watson, either by telephone or fax: (01206-735326) or Email: mike-andjane.watson@btinterinet.com.

FoREM Travel

SINCE the association was founded, regular overseas tours have been organised. We have been to Gibraltar, Malta, Jersey, Picardy, Spain, Portugal, Northern Italy and twice to Berlin. These have been "battlefield tours" with a difference – some serious history, but much good fun and good company. Between 25 to 35 people have attended each tour and each has raised a useful sum for the museum.

Membership

Life Members of the Friends make a donation of £150. Ordinary Members subscribe £9 and Family Members £12 per year. It is very helpful if annual subscriptions are paid where possible by direct debit. All subscriptions and donations may be covered by a Gift Aid Declaration, which increases their value to the association by 28 per cent. The corps treasurer holds all the funds of the Friends as a sub-account of the museum. The Friends' treasurer controls the association's expenditure and allocates money to projects as it comes in.

Membership of the Friends, which is open to everyone, offers the opportunity to help the museum maintain its high standards and its coverage of Corps activities. Members have free entry for themselves and a guest – in the case of family members for two children as well.

They also receive a newsletter each year which reports activities and developments in the museum, lists the staff and contains articles of historical and topical interest. We need new members to bring-in new ideas and, later, to take part in running the association. If you would like to join, please contact the membership secretary:

D R Trotman Esq
Hon Membership Secretary FoREM
RE Museum
Brompton Barracks
Chatham
Kent, ME4 4UG.

THE RE Museum is your museum; it tells the story of your Corps to the world at large. Even though you may already support it directly through contributions to the endowment fund, it needs more Friends. Membership will keep you up-to-date with how the museum is developing and allows you to contribute your ideas – whether you are serving in Chatham or far away, or after your retirement from the active list. Join now!

Her Majesty with General Sir Hugh Beach opening the new Royal Engineers Museum May 1987

Battlefield Touring for Royal Engineers
An Understated Method of Instruction

LIEUTENANT COLONEL M W WHITCHURCH MBE

This article offers tips and advice on how to plan, organize and conduct an effective battlefield tour for Royal Engineers. It is taken from the experience of 44 tours and refers to the manual **Training for Operations.** *The article takes the form of a letter to a friend explaining how he might run such a tour.*

"Fools learn by experience. I prefer to learn from the experience of others
Bismarck

"If you want to understand war, volunteer to run a battlefield tour"

ARMY

From Lieutenant Colonel M W Whitchurch MBE RE
Cadets and OTC Branch
Headquarters Regional Forces
Headquarters Land Command
Erskine Barracks, Wilton, SALISBURY, Wiltshire SP2 0AG

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Major BM Barker RE
91 Field Squadron
88 Engineer Regiment
BFPO 145

Reference: LAND/SO1 DO

Date: 28 February 2002

Dear Bubbles,

You asked for some advice and tips on running a battlefield tour for your regiment and on the staff required. As I explained on the 'phone, I have run some 44 tours to date and swear by their training value **and fun – and that training value (and fun) applies even more to the organizers than it does the troops**. In order to ease understanding, I will use Kipling's "six honest men" and refer my experience to the current practice taken from the manual *Training for Operations* 1997, Army Code 71630[1]. Look up Annex H to Chapter 2, and refer to it throughout as you read this letter. Royal Engineers can get useful special to arm instruction too. The fact is that our sapper forefathers have made and left us a first class reservoir of experience in the Corps Library[2] and Museum[3]. If there was ever a reason why **we must have our Museum and Library, it is the undoubted value they bring to battlefield touring**.

"I have six honest serving men who taught me all I knew: What, Why, When, Where, How and Who"
Kipling

WHAT IS A BATTLEFIELD TOUR?

I DEFINE battlefield touring as a professional study of previous operations using actual ground and

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[1] This is available in CD ROM by calling Mrs Glenn Williams on ATN: 94344 5057 or BT: 01980 61 5057
[2] For advice on the Corps Library call Mrs Maggie Magnusson on ATN: 94661-2416 or BT: 01634 82 2416.
[3] For advice on use of the Corps Museum call the Director on ATN: 94661-2229 or BT: 01634 82 2229.

The Corps Library is in the RE Institute Building (now HQ RSME), completed in December 1873.

The Corps Museum is in the replacement RE Electrical School Building completed in 1904

other aids in order to improve understanding of war. The intention is that we will benefit from the experience of others, and therefore be more successful in future operations. Following Bismarck, let me offer two more useful quotes.

"Only the study of military history is capable of giving those who have no experience of their own, a clear picture of what I just called the friction of war"

Clausewitz

"In war, one ounce of imagination and foresight is worth a ton of experience where for us experience is always bitter. It is from continuous study that the gifted soldier can in peace find a substitute"

Maj Gen F Tuker

WHY DO BATTLEFIELD TOURS?

THEY give good training value – much more thank you think. They allow students time to think about their profession. With the right approach, they build team spirit and mutual understanding, and can also make a welcome break from the routine of the regiment. A tour gives an insight into the scale and intensity of an operation and perhaps best of all, has the conviction of real experience. Refighting the operation as a TEWT with controlled discussions, is both fascinating and excellent training value. For the Royal Engineers, much can be gained by looking at the special to arm aspects of the problem. For example: how to cross the Rivers Oder or Seine with today's kit compared to yesterday's, or looking at how they did it and deciding how we would do it with their material.

WHEN SHOULD I RUN A BATTLEFIELD TOUR?

A LITTLE thought shows that running a tour can be done a lot more often than you think. Whenever you travel, explore the chance of visiting former battlefields; it may be that you can run a tour if they are suitable. Doing them on the back of another exercise is very economical and increases interest. For example, 38 Fd Sqn toured Monte Cassino, Arnhem and Vernon (all 1944), when on exchange with the Italian, Dutch and French Armies from 1992-94. Touring can be done on an overseas exercise (OTX) too. For example Exercises *GRAND PRIX* or *OAK APPLE* in Kenya would allow study of the Mau Mau insurgency (1953-55) or the First World War (1914-18). A course at ENTEC in Munich may allow you to visit the Blenheim battlefield (1704). Closer to home I have seen units tour English Civil War battlefields. Indeed one officer in Warminster used old defences in Southern England from 1940 as a basis for a TEWT. Touring former battlefields whilst on operations is also possible. For example the 1915-18 Salonika Campaign that took place in the Balkans makes a cracking tour if you are in Macedonia or Kosovo. There is also a nice little tour that can be done on BRAC (1944) in Croatia. Now we have troops in Afghanistan, I suspect we can eventually try tours of Jellalabad, Kabul and Kandahar – yes we were there several times in the19th century!

WHERE CAN I DO A TOUR?

YOU need to be selective here. For various reasons, many battlefields cannot be toured: poor archive material, battlefield no longer recognisable because of development, too far or too expensive to be visited, or visiting is simply not allowed because political clearance will not be given – these are the usual ones. No matter, there are plenty of suitable battlefields that can be used.

WHO CAN DO A TOUR?

ANYONE. I have instructed private soldiers, civilians and other armies, including all sorts of engineers. I have found that they can gain as much from tours as a British officer audience. It is not an officer only sport.

HOW DO I RUN A BATTLEFIELD TOUR?

FIRST, I endorse what is written in the manual. Second, the usual methods of instruction hold good. Third, like any other army task, use battle procedure to plan, organise and conduct the tour. Fourth, use the three key ingredients: thorough preparation, optimum activity by the students and confirmation of what has been taught. With all this it should be valuable and enjoyable. Happiness is leading a Battlefield Tour.

TOP TIPS AND ADVICE ON BATTLEFIELD TOURING

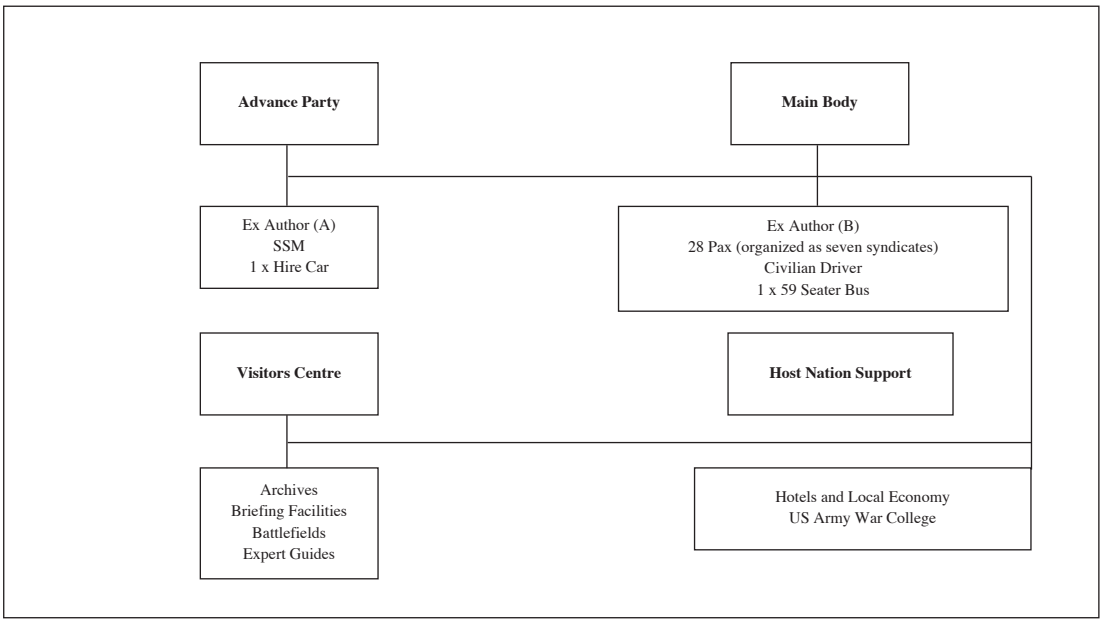
(Points in relation to the manual. Refer to it as you go through)

Preliminary Activity – Paras 1 to 7.

Tip 1. Seeing the Wood for the trees. Prepare a simple at-a-glance guide on what your tour is about. (A sample is available on request from me on 'phone number at top of letter)

EX MASON DIXON-TOUR OF US CIVIL WAR 1996. AT-A-GLANCE GUIDE

Aim. To study battles in the US Civil War in order to improve practical understanding of war.
Why. CO's Training Directive, para 22.
Where. Eastern Theatre USA. (Add Sketch map)
When. 10-20 May 2003.
Who. 30 Officers and SNCOs of 88 Engr Regt.
How. See below. 2 Recces. Tour using *Training for Operations*, 1997 Army Code 71630.



Tip 2. Dosh and how to get it. Funding is the biggest single problem facing you. It can be solved but takes a lot of effort to organize. The best way to crack funding is to get the commander or appropriate staff officer to earmark a sum for money for your tour. This staff officer is normally in charge of the "man plans". For example, HQ 1 Mech Bde gave 22 Engr Regt a grant of £5000 for their tour of Vernon and Le Havre (1944). The Institution also has money[4] but generally it is as tight as ever and you will need to find other ways to raise the loot. Other possible sources are regimental PRI Funds, your Formation Commander's Enterprise Fund, The Berlin Brigade Trust Fund[5], Regimental Associations and individual contributions. An encouraging trend is the recognition of touring by commanders and giving it formal backing with public money. The commanding officer of London UOTC ran a tour in France last year for 130 people for £19,000 – all raised from public sources. So get the regimental second in command to build future tours into the budget. Finally, you can get money and flights from HQ LAND COMMAND, but please book well ahead and be prepared to be disappointed, as competition for these resources is keen. POC is below.

Tip 3. Smartness pays. Ensure you have a convincing case showing why your tour must be supported. A slick multi-media presentation with an at-a-glance guide not only shows that you mean business, but gets you money. Offer to write articles on the subject, and even offer to take holders of money with you on the tour. Moreover, is there something you can do to help them in return? Use common sense and fire the imagination; you will succeed… eventually.

Tip 4. Gripping misperceptions. Some may think this is a "*bottlefield*" tour where study is minimal and a good swan is envisaged. Firmly correct such notions. Touring is a professional study with the right balance of work and play.

INITIAL PLANNING – PARA 8

SEEK out HQ LAND COMMAND *Battlefield Tours – An Aide Memoire*. Contact HQ Training Support Command on BT: 01985 22 2070 and ask for their letter TSC (L) 8033 dated 30 Apr 01. YOU MUST DO THIS as it contains all the procedures to be followed for a tour.

Tip 5. Exercise authors. You need two authors who should be officers. I will call them Authors A and B. The amount of work needed to make a good tour and the lack of time available to prepare, means that two heads are definitely better than one. It also allows for concurrent activity and good participation in the battle procedure before, during and after the tour.

OUTSIDE ASSISTANCE – PARA 9

Tip 6. Beware of experts. All must be checked as some will charge a lot and give little. Some cannot instruct because they entertain but don't train, or because they swamp the students in unnecessary detail. Remember commercial tour guides are just that – commercial. They will charge a lot and in my experience, deliver not much - after all they are there to make a profit. Author A controls the instruction. He must ensure that he knows enough to be able to instruct in terms that the students will understand. It is however worth taking the trouble to find suitable experts, as they do make a significant difference. One Cold War vintage retired officer for example, made an excellent contribution at Vernon and Le Havre. The above is my preferred method and it works very well.

Tip 7. Research. The best sources of information are the Tactical Doctrine Retrieval Cell (TDRC) (Call David Porter, ATN: 94344-5058 or BT: 01980-61-5058) who have several reports from previous tours – it is all there for the asking. For books, contact the Prince Consort's Library (POC is Lynda Surman on ATN: 94222-4381 or BT: 01252 34 9381). Scan, speed read or study five good books on the same subject – it is like looking at a piece of ground from different points of view. In Macedonia I was able to get original French, Bulgarian, German and British archives on the same battle – the result is a good understanding of the subject. What books to read? Call the Editor of British Army Review (BAR) on ATN: 94344-5056 or BT: 01980 61 5056. Get his advice about a

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[1] Ask the Corps Secretary Lt Col David Hamilton MBE on ATN: 94661-2298 or BT: 01634 822298

[2] Call Mike Adler on BT: 01276 855825.

good book and then look for the bibliography that will lead you on to other material. The review section, (books, video and CD ROM), of BAR is worth monitoring as is your local Waterstones bookshop. Videotapes are helpful too. Contact the RMAS media resources dept (POC is Anne Ferguson on ATN: 94261-2403) and see what they have on the subject. The British Defence Film Library is another source. Call Robert Dungate on ATN: 95298-2278 or BT: 01494 878278. The Imperial War Museum is quite splendid and a visit to their film and sound archive is well worth the effort. Call Laurie Milner on BT: 0207 416 5354. Finally, contact with the Public Records Office (PRO) is essential. It contains war diaries, maps and post operational reports. The two page report that I found on a failed offensive in the Balkans in 1918 was splendid, as it brought to life the reasons why it failed in the words of the commander…… and what honesty too. Your man is William Spencer who is on BT: 0208 392 5248. He is a Falklands veteran and the Military Specialist for the PRO.

Tip 8. How to get time to do all this? Simply make time – set aside one hour a day and use ideas from the article in the Nov 98 edn of ADTN called, "*To Whom It May Concern"*.

Outside Help.
Col Mike Crawshaw talks to 22 Engr Regt at Vernon Heights

Museums are invaluable.
Luton UOTC at the Tank Museum.

ADMINISTRATIVE PLANNING – PARA 10

Author B should lead on this with the Tour Sergeant Major (TSM) in support. The fact is that faultless admin, (like anything else), will make a good tour into an excellent one. A word on the TSM. He ensures that the main body is in the right place at the right time, as well as dealing with all the minor problems that will occur. He should also keep the nominal roll because in the days leading up to the tour, it will change daily and takes a lot of time and effort. If you are going to take 40 people, then advertise so you start with 60 names; you will be astonished at how many will fall out on the way.

Tip 9. Example. Is there an example of how to run a tour? Yes. Ask TDRC for a copy of their report on Ex MASON DIXON which took 30 men to the USA in 1996. It is a good example of method and must be read. Call David Porter.

SUBSEQUENT ACTIVITIES – PARAS 12-17

REMEMBER to get the right balance between work and play. My tours start at 0830 and finish at 1630 with about one hour of preparation. This does not include preliminary moves. Remember that tired students don't learn or share your drive.

Tip 10. Gripping the show. Experience has shown that you must lead the tour – use experts and others, but the buck stops with you. Confirmation of the instruction is achieved by syndicate and group discussions, (controlled by the the authors), which answer a series of pre-arranged questions from the study guide which should be prepared on the first and second recces. Always have the senior officer present give the last word; this is a proven way to wind up the discussion before moving onto the next serial.

Contemporary Kit promotes imagination & interest.

Remembrance: Lt Col John Wooton at Le Havre in 1998

Para 13. All the approaches work well. The one to use depends on the student body, veterans available, personalities and your aim. No two tours are the same.
Para 16. Prepare and issue a study guide – an easy to use precis of each battle – most people don't read books, as you will. Research will reveal some good author who may have a precis, or simply do it yourself. After all, if you want to learn a subject, write about it or teach it!
Para 17. It is vital that you do a confirmatory recce to ensure you miss nothing. We sappers have always taught the need for the initial and confirmatory recce and this is no different.
Tip 11. Outside help. If you are able to get veterans, take them with you on the second recce as they have the chance to help get the instruction right. Ditto experts. Clearly this also allows them to prepare too. As with the experts, check the form of your veterans – many will be unable to help because of old age (try not to go in midwinter!). Others by their personality will not be suitable. Persevere however as good veterans are worth their weight in gold.

Pre Exercise Activities – Para 18

For travel arrangements, contact the movers through the chain of command.

Tip 12. Travel help. Find a good travel agent. I have used Bristol Travel Savers for touring in Europe – they can save you a lot of work in transport and accommodation planning, and they are well used to the Army (POC is on BT: 0117 984 8020). The best bus company that I have found in Blighty is Victory Tours. Flights have never been better. With the no frills commercial airlines, air travel is not the problem it once was. A quick surf on the Internet will show what is about.

Tip 13. Forming Up. A comprehensive admin briefing to the whole group is essential as papers, money and documents etc. need to be issued. You should also have a good multi-media presentation to arouse interest for the tour.

THE EXERCISE – PARAS 22-28

TRY to stimulate the imagination by use of different aids. For example, as a preview for Le Havre we used the Tank Museum, and we laid on assault boats at Vernon to give a feel for the problems of the Seine crossing. Consider a trip to the firepower demo at Land Warfare Training or the BOMBARD OP at Larkhill. Visiting a war cemetery is normally appropriate. Students find it sobering to see how young the occupants are, and veterans certainly appreciate it. At Cassino and Arnhem we held full remembrance services which were valued by all. Always use a big coach with VCR and PA system – it is your moving classroom. Ensure you vet the coaches that are provided – the attitude of some companies verges on the disgraceful. By contrast, the Victory Tours Company is first class and run by a retired army officer. Call BT: 01725 552247 and ask for Nick or Hilary Adams.

POST EXERCISE ACTIVITY AND TIMINGS – PARAS 29-34

WRITE the PXR as you go along, and make sure that TDRC receives three copies. Writing it as you go is essential as you will never do it properly afterwards. Use a laptop.

AND FINALLY:

IF my experience is to be believed, there is no doubt that a well run tour is a valuable training aid. Please use the manual and these notes and you will be set for some fun soldiering. Your troops will thank you as they will get first class enjoyable training. The ones who will learn most however, will be you and your fellow organizers. Call me if you need more.

Your Obedient Sapper

Sticky

Sapper Webb of 2 Sqn at Pip Ridge Macedonia

Planning a tour in Kosovo with US Special Forces

Memoirs

MAJOR I H G WILSON MC

Born 22 June 1924, died 22 May 2001, aged 76

IAN Hugh Gordon Wilson was born in Ceylon and educated at Marlborough College before joining the Corps at Ripon in October 1942. After a short course at university learning engineering science, Ian attended OCTU and was commissioned into the Corps in 1943, joining 222 Assault Squadron RE. The Squadron was later reorganized in July 1944 with Lt Wilson's troop being transferred to the Assault Training Regiment RE, based in Sussex, which provided reinforcements for assault squadrons that had landed at Normandy.

In September 1944, Lt Wilson joined 79 Assault Squadron, in time for the beach assault at Walcheren which he later recounted as follows: "We sailed from Ostende in an LCT commanded by a beary navy lieutenant. He had an all night party. I left early to go to bed. A fast tide was running past the landing beach on Walcheren where the RAF had blown the dyke and flooded the island. The beary ship's captain tried to steer in to the beach five times but was too inebriated to allow for the tide. Every time we went round again the shore batteries peppered us. The senior sapper aboard was a captain... We made him lead the mutiny, put the ship's captain below in irons, hugging his bottle, and forced the midshipman to steer in the LCT, which he did well. (One of the many hidden stories of the War)."

79 Squadron, part of 1 Assault Brigade RE in support of the 1st Canadian Division, took part in the Scheldt and Reichswald battles as well as river crossing operations as Allied forces advanced through Holland into Germany. The Squadron constructed 50/60 ton ferries near Rees for the Rhine crossings in support of 51st (Highland) Brigade in March 1945 and for the assault across the River Ijssel in April, where Lt Wilson was awarded an immediate MC for his actions in support of A Squadron, 4 Royal Tanks. His citation relates that three days and nights prior to and on the day of the assault, his detailed recces of routes and river bank entrances and exits, and his determination and supervision of his men, personally directing the most important work of the bulldozer, frequently under severe artillery fire from the enemy, enabled the tanks to have a smooth passage through the obstacle and successfully complete the operation. Several of his sappers were wounded, he himself receiving a wound in the arm, but he insisted on carrying on with his work during the night.

In June 1945, after VE Day, Lt Wilson was posted to 617 Armoured Engineer Squadron, later retitled 201 Armoured Engineer Squadron. He continued serving with armoured engineers returning from Germany to Perham Down in 1947 with 26 Armoured Engineer Squadron. He then served with 3 Airborne Squadron RE before joining 15 Supplementary Course at the SME in 1948. Promoted to captain in 1951, he served with the Training Brigade before being posted to FARELF in 1953. Returning to the UK, he attended a staff college course in 1958 before retiring from the Army in 1959, joining Urwick Orr & Partners as a management consultant and subsequently holding a number of chief executive appointments in well-known engineering companies until his retirement in 1977. He subsequently founded and was director of a chemical-dependency (alcohol, etc) treatment centre until 1995. To celebrate his 70th birthday in 1994 he joined up with the other Ian (ITC) Wilson

in the Corps, with whom he had served in 3 Airborne Squadron RE, to make a parachute jump. They both survived it well but his wife, who decided to jump too, for the first time, unfortunately broke her ankle quite badly.

In 1949, Captain Wilson married his first wife, Meg. She died in 1973 leaving five children. In 1985, he married his third wife, Ann, who survives him.

CHW REW

BRIGADIER D E HOLBROOK CBE

Born 31 August 1910, died 20 January 2002, aged 91.

DEREK Ernest Holbrook was born into a family of soldiers and sailors. His grandfather was Colonel Sir Arthur Holbrook of the 3rd Hampshires, who later became an MP. His father was Colonel A E Holbrook RASC and of his uncles, one was Major General A W Holbrook late RE and the other Commander N D Holbrook VC Royal Navy.

Derek Holbrook was educated at Wellington College, the Royal Military Academy, Woolwich and Trinity Hall Cambridge, where he gained a first class honours degree in engineering.

Commissioned into the Royal Engineers from the Shop in August 1930, Holbrook spent the next three years on YO training at Chatham and at Cambridge University before joining 23 Field Company at Aldershot as a company officer in 1933.

A tour with the Training Battalion RE followed during which he spent a six-week attachment in 1936 with a pioneer battalion of the German Army stationed in Hanover. He wrote an interesting and informative account of this attachment which was published in the *RE Journal* in 1938.

A tour as Adjutant with 51 (Highland) Division RE (TA) in Aberdeen preceded his appointment as GSO3 (Int) in GHQ of the British Expeditionary Force in France in 1940, withdrawing successfully to England via Dunkirk in June of the same year. He was to continue in intelligence appointments throughout the war years, initially for a short period with GHQ Home Forces and then as GSO 2 (Int), and later GSO 1 (Int), in HQ 4 Corps. He was engaged in a variety of operations in Iraq, India (Assam) and Burma, culminating in the great battles of Imphal, Meiktila and the Pegu Yomas. Mentioned in despatches four times, he remained in Burma at the end of the war as commander of 552 Sub-Area.

Returning to England in 1946, he served as AAG in AG 10 in the War Office before being appointed CO of 1 Training Regiment RE at Malvern in 1949. A tour as GSO 1 Military Operations followed before he joined the operations staff in Malaya from 1953 to 1955 during the Emergency. From 1957 to 1960, he was Deputy Director Staff Duties in London and was appointed CBE in 1959. Following a tour as Chief of Staff and Assistant Military Attaché with the British Army Staff in Washington, he retired from the Army in 1962.

An excellent shot during his service, he won the Army Hundred at Bisley once, the Revolver Thirty three times, and was a member of the Corps' Methuen team. He played hockey and squash for the Corps over a number of years and was also an accomplished German linguist.

AMF describes him as a man of total integrity, who had respect for traditional values and was possessed with irrepressible good humour and high spirits. He was a source of inspiration to all those who were served with him.

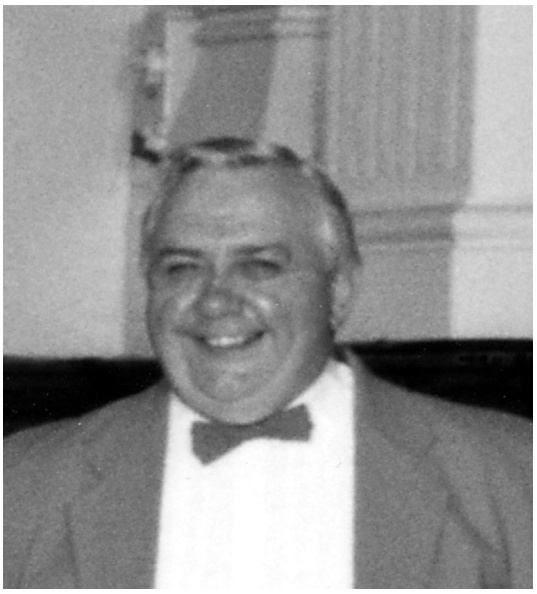
On his retirement from the Army he became Commandant of Gordon Boys' School from 1962 to 1969 and for the following 10 years until the age of 70 taught at a prep school in Farnham.

He is survived by his wife, Anne (Catton), whom he married in 1955.

MRC AMF

CAPTAIN B J WHITE

Born 29 September 1938, died 4 December 2001, aged 63



BRIAN John White devoted much of the last 20 or so years of his life to the Royal Engineers Association, first as Secretary of the Maidstone Branch in the 1970s, later as Group Secretary of the South Eastern region and Chairman of the Medway Branch, and finally as Deputy Controller at the Headquarters of the REA at Chatham. His dedicated work as Chairman of the Medway Branch earned him the prestigious REA Badge of Merit.

Brian joined the Royal Engineers shortly after leaving Portsmouth Grammar School in 1957. Two of his brothers also joined the Corps, with all three at one stage serving at the same time.

He quickly made his way up through the clerical roster ranks and was commissioned as a Quartermaster in 1980, serving with the Postal & Courier Service at Mill Hill. He retired from the Corps in 1985, first becoming an instructor with the Youth Training Scheme before being appointed as a Retired Officer Grade 3 at the RSME in 1989. It was at Chatham that he became deeply involved in the work of the REA. His excellent organisational skills combined with his warmth, kindness and ever-helpful manner, made him particularly effective in his entirely voluntary job with the Medway Branch. His early retirement as an RO to take on the job of Deputy Controller REA was the culmination of a long and devoted service to the Corps.

A talented singer from an early age, Brian became head choirister of his church choir and for the past 16 years was a staunch member of the Chatham Garrison Church choir. He had a fine bass voice and a passionate love of singing. He became a founder member of the Gillingham Male Voice Choir and toured with them around the country whenever he could.

He was also a keen sportsman, excelling at athletics, football and cricket in his youth. Later, when at Chatham, he became a hockey referee and was intimately involved in organising and running the Medway Hockey Festival.

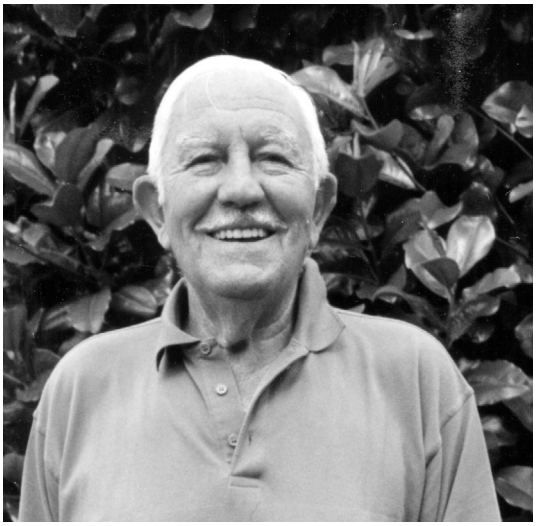
His friends and colleagues will remember him as a gentle giant of a man with a big heart and a caring, kind manner towards others that exceeded the normal bounds. A devoted family man, he lived life to the full and few others epitomised more than he the REA motto "Service not Self".

He is survived by his wife, Dora, whom he married in 1967, their two children Joanna and Gillian and grand-children Kristian and Dominic.

J R McL

MAJOR R T WILTSHIRE

Born 18 August 1912, died 6 September 2001, aged 89



REGINALD T Wiltshire, or Wilts as he was always known, commanded 80 Assault Squadron RE during the D-Day landings in Normandy, landing at Bernieres-sur-Mer in the initial assault on 6th June 1944.

After the disastrous Dieppe raid in 1942, 1st Assault Brigade RE was formed, in 79 Armoured Division, to meet the need for Sappers to make beach exits through the many obstacles the Germans were developing along the French coastline.

In April 1944, planning for the actual invasion at squadron level commenced. One assault squadron was to land in front of each of the six assault brigades, with 26 and 80 Assault Engineer Squadrons leading the two Canadian brigades.

Wilts was commissioned as a temporary officer in the Royal Engineers in September 1936. He boxed for the Corps and played rugby for the Corps and the Army before the war. He joined a Chemical Warfare Company in 1941 as second in command, and later was posted to command 80 Assault Engineer Squadron to prepare it for D Day. He transformed it into one of the best squadrons in 1st Assault Brigade.

He and his men made very good exits off the beach at Bernieres, so much so that their Canadian brigade penetrated further south on D Day than any other brigade. Amongst the casualties on that day was his regimental commander. A sad result of his death was that no one recommended Wilts for a decoration, although he was Mentioned in Despatches, which many felt he richly deserved.

Later, in October 1944, Wilts led his squadron, which by then had been re-equipped with Buffalos (tracked amphibious landing vehicles), into the heavily defended Flushing harbour. As usual, he led from the front on this most dangerous but successful operation.

Casualties in 1st Assault Brigade had been so severe that three of the assault squadrons were disbanded. 80 Squadron being one of them, he lost his command in early 1945. He was posted back to England as, in his words, "there were no more rivers to cross". The anti climax of peace was too much to bear so he resigned his commission.

He joined the family business and ran a fleet of steam tugs off the Cornish coast, based near Torpoint, but wound the business up in the 1970s. He also served as a JP on the Torpoint Magistrates Bench for over 20 years.

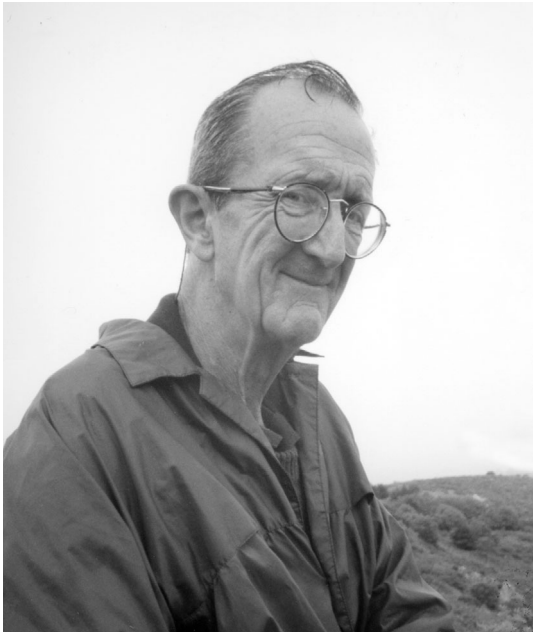
Wilts will be remembered by friends and colleagues as a tremendous extrovert and an outstanding wartime squadron commander.

In 1941 he married Betty Reynolds who died in 1965. They had two children.

AEY

LIEUTENANT COLONEL D P CADOUX-HUDSON OBE

Born 22 February 1928, died 4 December 2001, aged 73



DAN Cadoux-Hudson's great legacy to the Corps resulted from his inspired work as SO1 of the RE Manning and Record Office that led to the award of his OBE. This mainly concerned the introduction of the new ADP system that replaced the old punched cards by which the staff kept track of soldiers' careers. In the mid-1970s, this called for an innovative and adaptable attitude to new technology, not always a characteristic of senior officers approaching retirement, nor indeed of civil service staff familiar with other practice. REMRO was the first record office to go over to ADP, and Dan's work paved the way for the application of the technique to the Army as a whole. His success at Brighton was a fitting climax to a career with some notable achievements, but one that was dogged by the unusually intractable speech impediment against which he had to battle all his life.

Dan was educated at Radley College where he became a school prefect and a doughty oarsman, stroking the 1st VIII to victory in the Hedsor Cup in 1945. Asked later in life whether he would insist on his sons taking up rowing at school rather than allow them to play cricket, he replied "I have told them they are welcome to play cricket if they want but that if they do I shall never speak to them again". Such was his wholehearted attitude to whatever he undertook and his splendid sense of humour. He went to Sandhurst from national service and was commissioned into the Corps in 1948.

After two years in 32 Assault Engineer Regiment at Perham Down, Dan went to Korea with 55 Independent Field Squadron, in support of 29 Infantry Brigade. On 10 April 1951, the Royal Ulster Rifles were to attack an enemy position overlooking the River Imjin, reaching their objective by means of an American equipment footbridge. Unfortunately insufficient bridging was supplied, and a portion improvised to make up the difference started to collapse. Dan immediately led his men into the freezing river to hold the bridge up. For his excellent work on that day he was Mentioned in Despatches.

Eight years of regimental service then followed; 9 Training Regiment (1953-56), 36 Engineer Regiment (1956-58) including Christmas Island and 1st Divisional Engineers (1958-61) as Adjutant. His CRE at that time found him "…a superb adjutant, his stammer no disadvantage, he was always well worth listening to. Moreover, on a CPX he always knew precisely when to produce a glass of whisky."

Jobs on the staff and regimental duty then alternated. He commanded 38 Berlin Independent Field Squadron from 1963-65 and was Second-in-Command 25 Engineer Regiment at Maidstone from 1967-69. He served in Engineer Branch Northern Ireland and in the Adjutant-General's branch at Stanmore until, on promotion, he was appointed GSO1 PT, Headquarters 1 (British) Corps. The then Adjutant-General, Sir Cecil Blacker, wrote later "You have become a most trusted, respected and admired figure in the Physical Training world, and you will be greatly missed when you leave."

It was then that Dan moved to Brighton where three colonels-in-charge were lucky enough to enjoy his support, served up with clarity and his unique sense of humour, through some tricky times of reorganization. Units too, welcomed his attitude: "Dan was well briefed on the facts and often knew more about the real problems than

you did. If you managed to make a good case, Dan would stand by and produce what he had agreed. Dan never let you down. He always kept his word."

Immensely proud of the Corps, he entered heartily into its social life and contributed to its debates, notably on dowsing at which he was both practitioner and advocate. Dan enjoyed a particularly happy family life and his home in Brighton was conspicuous both for its prolific garden and the exceptionally fine workmanship devoted to it by his skill as a joiner.

His wife Anthea, whom he married in 1953, a daughter, three sons and thirteen grandchildren survive him.

LS-B, AEY, DJNG, POMC, GWAN

MAJOR GENERAL W F COOPER CBE MC

Born 30 May 1921, died 5 January 2002, aged 80

BILL Cooper served the Corps and the Army in many capacities during 36 years of commissioned service, and then in retirement involved himself in many other things until shortly before he died 26 years later. In his case variety was certainly the spice of life and everything he did earned him the admiration and respect of those involved. And yet nobody could have been more modest about their own achievements.

He could never be called a workaholic although he never seemed to be happy unless he was doing two or three things at once. What was so remarkable was that each particular thing was carried out so thoroughly and so successfully. "Second best" did not come into his vocabulary or his actions, his relationships with people or his way of life.

Bill was educated at Sherborne where his military claim to fame was playing the tenor drum in the OTC band but where his education qualified him for the RMA Woolwich. This closed down shortly after he got there, (an unconnected event), and he therefore joined the first course at the Shorncliffe OCTU and was commissioned into the Corps in March 1940, too young to be posted to the BEF in France and, anyway, not versed in the arts of military engineering.

He subsequently joined the City of Dundee Highland Field Company which became part of the UK Mobile Reserve holding the Hythe Canal when invasion appeared imminent, but later training and mobilising for many and various abortive expeditions to strange places like Dakar and Jan Mayern Island as part of the Royal Marine Division.

In 1942 he was posted to 78th Division RE and took part in the Algiers landings and the campaigns in Tunisia, Sicily and Italy. By the end of the war he was commanding 214 Field Company. He was twice mentioned in despatches and awarded the MC. Typically, he used to say that he was helped out of all sorts of trouble by his friends, but he surely returned the compliment.

In 1945 he married Liz (Finch) whom he had known for many years.

He went to Staff College in 1951 in the last year that the "Blenheim" Division of that august establishment was in operation. As a practical Sapper, and a good party man, he played an important part in dismantling the mess bar brick-by-brick at the close of play in December. He must have been given a good report however as he was posted to a hot seat in the Military Operations branch of the War Office.

There then followed a busy tour as Brigade Major at Chatham, where he was particularly concerned with the education and well-being of young officers and was always very sensible and understanding of their problems. He was a great hand at chatting up the Tutors for Admission at the 18 Colleges and one Foundation at Cambridge, where many Sapper officers continued their education, and was particularly confident of success at a college where the Tutor was an old Sherbornian. Bill's offer of a potentially brilliant YO to enhance the academic and sporting achievements of the college was turned down flat in less than five minutes. Even Bill couldn't win them all.

Appointed next as OC 11 Field Squadron in Malaya, part of the Commonwealth Brigade commanded by Brigadier Peter Moore DSO** MC, he had an even busier time. Amongst his squadron's tasks was the planning and construction of the first eight miles of the Kedah Road

project, a strategic road built of laterite with concrete bridges and culverts, eventually stretching some 60 miles, parallel to and close by the Thailand border. The road was required to ease the problems of the security forces in containing the infiltration of communist terrorists into Northern Malaya.

Bill was given the task of commanding the composite force required to get everything going and succeeded admirably in overcoming the logistic and administrative nightmares associated with the work in such a remote area. In so doing, not only did the engineering work proceed apace and unhindered, but also excellent relationships were established with the Malayan Army and police and with the local population in particular. This was an important task carried out in true Sapper tradition, and there could not have been a better man to get it going. His concern for the morale of all ranks in his command at that time was evidenced by his excellent R&R scheme to Penang.

He returned to England in 1958 to be a member of the directing staff at Camberley which was followed by a tour as CRE of 3rd Division at Tidworth. He was perhaps disappointed in this latter appointment in that his two squadrons probably spent more time with their affiliated brigades than they did under his direct command, and his abilities were not tested by any major overseas exercises or training projects. But he need not really have worried as he was then posted to Aden for two busy and exciting years as GSO1 Ops, and was awarded an OBE for his services.

It was then back to Chatham again as Colonel GS, in the ideal position of being able to put into practice what he had preached, but not always successfully, as Brigade Major some years before. It was there that, (strictly off duty), he would test out his friends' potential and abilities as dowsers, mostly in the garden at the back of his quarters in mess kit after Corps Guest Nights from 1.30 am onwards. Poor Liz! Later in Singapore, when he was CE FARELF, she would again be disturbed in the middle of the night by some of the same officers playing golf outside her bedroom door, down a challenging fairway of a spiral staircase and marble floor to the hole which was a curly-toed Persian slipper, guarded by an indigenous kitten.

As Chief Engineer FARELF he was able to travel extensively in South East Asia and the Pacific, drawing on his experience and expertise in the setting up and supervision of "Hearts and Minds" projects, so much appreciated by those concerned, but also of great political value to the UK government. His swan song there was the construction of a model village on an oil palm development in East Malaysia.

Returning to the UK, Bill served a six-year stint in the MOD in London, where he was appointed a CBE for his work as Deputy Director of Army Staff Duties, and then ran the Military Assistance office for the sales of military equipment overseas. Finally, he was appointed Deputy QMG, mainly concerned with the maintenance and management of the Army's huge inventory at home and overseas. This latter appointment was largely conducted from a deep armchair with a rest for his increasingly gammy leg, a coffee table and table lamp alongside and the morning papers available. And why not?

While in London he made full use of the Army and Navy Club (the Rag) and made many friends there. From 1975, for three years, he became its well-respected Chairman and made full use of his understanding of peoples' likes and dislikes, his management skills (he was a Fellow of the Institute of Management) and his financial acumen, all for the Club's good. The adjective "clubable" as applied to him was particularly descriptive and appropriate.

He was somewhat of a *bon viveur* who appreciated good food and wine, and was not a bad cook either. So after he retired in 1976 it was no particular pain for him to take on the job of Director of the Gin Rectifiers and Distillers Association and the Vodka Trade Association. He did this with great skill which benefited both the UK spirits industry and Europe as a whole where he had to work closely with the MEPs and bureaucrats in Strasbourg and Brussels to achieve common European definitions, standards and practices. He was held in such high esteem that he was elected President of the Union Europeene des Alcols, Eaux-de-Vie et Spiriteux for a two-term stint of four years.

Bill's knowledge of military equipment sales led him to became a consultant to GKN Sankey and his knowledge and practice of military engineering worldwide was the basis of his consultancy and management position in Cloudious Peters Engineers. Not bad for an unqualified engineer!

Through his interest in dowsing he also became a healer. He learnt that his ability to dowse by "the pendulum method" rather than

the split-cane, clothes-hanger or fork-stick methods, enabled him to identify exactly how and where his "hand healing" should be applied to a patient. Many of his friends testify that the heat passing through the thin air between his hands and their bodies did much to alleviate and sometimes cure their particular aches and pains. He would never ask for payment for his services - merely suggest that a donation to a favourite charity would be reward enough.

He became President of the British Society of Dowsers in 1993 for a five-year period. His fellow members stressed how much his inborn skill and leadership had stood them in good stead over some difficult times.

He continued serving the Corps as a Colonel Commandant from 1977-1982 and as Chairman of the Finance Committee from 1978-1985. He also found time between 1975 and 1985 to be a Governor of the Royal Soldiers' Daughters School; and when he was not doing anything else, he pursued his hobbies of fly-fishing and bird-watching.

This remarkable man had a delightfully straight-forward and practical approach to everything he did; a huge sense of humour, an ability to get on with, and to get the best out of, all sorts and manners of people, an abiding loyalty to his friends, a great love of his family and a particular pride and devotion to the Royal Engineers.

His wife Liz died two years ago, and he is survived by his two children, Gillian and Allan.

FWJC, TO'GC, WHSH, JAR, FGB

COLONEL D O COOKSEY CE US ARMY ENGINEERS

Born 11 September 1933, died 24 December 2001, aged 68

COLONEL David Owen Cooksey was the United States Army Liaison Officer at the RSME from 1965 to 1968. Born in Swampscott in Massachusetts, and educated at Norwich University, Vermont, he served a full, varied and distinguished career in the US Corps of Engineers which included two tours in Vietnam and tours in Germany and the UK.

When Major Cooksey arrived at the RSME in 1965, it was soon clear that the Corps of Engineers had sent to Chatham the same high calibre of officer as his US Engineer predecessors. He was first employed in the Tactics School at the newly completed Chattenden Barracks, primarily as a Liaison Officer but also with special responsibility for introducing young officers and other students to the roles and organization of the US Army and, fortuitously, to pass on his considerable operational experience of the Vietnam war as well as his experience of the US Army in Germany. Later, at his own request, he was transferred to the Field Engineer School as Senior Instructor in Bridging. This involved him directly in instructing and reporting on young officers, senior NCOs and Reserve Army students. He was quick to familiarize himself with British Army equipment and managed an excellent, well-disciplined team of officers and warrant officers with a refreshingly American style which was a broadening educational experience for all concerned. His ready grasp of his subject and engaging sense of humour made him a very popular instructor.

He and his wife totally immersed themselves in the sporting and social life of the RSME, which was an opportunity for many of us to learn more about our American friends and our most valued of allies.

David had a genuine interest in everything British; our odd customs and traditions and different ways of doing things. He laughed at anything which at first seemed quaint or funny, but also joined with us in our laughter at "Americanisms" new to us, without the slightest offence being taken by either side. His laughter was particularly memorable on the occasion his fellow instructors insisted that, regardless of his very American crewcut, he would have to wear a bowler hat and an umbrella to attend the Queen's Birthday Parade at Horseguards.

He was very proud to be presented to our Colonel in Chief, Her Majesty The Queen, during her visit to the RSME in 1968.

David's last appointment before retiring from the Army was as Chief of Staff at the Engineer School at Fort Belvoir, Virginia. On retirement, he became Director of Facilities Maintenance in Washington with major civil engineering responsibilities, and later worked for Parsons Brinckerhoff Quade & Douglas in New York.

He received a number of awards for gallant and distinguished service including the US Legion of Merit, Bronze Star, Joint Service Commendation, RVN Service Medal (with four campaign stars) and the Vietnamese Gallantry Cross

He will be remembered by Royal Engineers who served with him as a proud and professional officer, a true Anglophile and the life and soul of any party.

DJNG

MAJOR GENERAL C R GREY CBE

Born 9 October 1930, died 23 January 2002 aged 71

Editor's Note: It has been recorded in the Institution files for some time that Maj Gen Grey did not wish to have an obituary published in The Journal. *It is however the wish of Mrs Grey that a note from a friend be published and I am pleased to include this contribution from Maj Gen EG Willmott CB OBE.*

***Order**: "No obituary. No Memorial Service."*
***Response**: "Yes, Sir."*
***Call**: "Would you write a note as a friend?"*
***Response**: "Of course, Liz."*

THEY both inspire loyalty and I had no difficulty in accepting the request from Liz to do a short personal note for The *Journal*.

What was this upright, smart and punctilious officer, proudly erect on his horse in front of his massed brigade on parade in Berlin? What was this martinet, who also had the ability to meet readily with all ranks and seek out the truth of any situation?

He certainly had high standards and these rubbed off on to those who worked for him. Even those outside the Corps found him a formidable commander. A good teacher, many copied his systems for knowing the details of the squadron or regiment or brigade. To me Charles was also caring, compassionate and inspired loyalty. Four examples will illustrate these marvellous attributes.

Situation: Senior NCO returned to Tidworth from Belfast with a nervous breakdown. *Action*: The RSM met him at the airport with Charles's car to ensure a comfortable journey. *Yield*: Grateful thanks for the support and true compassion to a suffering fellow sapper.

Situation: My squadron gave engineer support to 39 Brigade with two other squadrons under operational control for Operation Motorman (some 20,000 soldiers deployed in Belfast), whilst Charles as CO 22 Regiment took on Londonderry with AVREs. *Action*: No interference whatsoever, tempting though it must have been. *Yield*: Thanks to an ace delegator for the loyalty and trust given downwards, which I reciprocated.

Situation: My wife, Sally, tired by the inevitable tensions of helping families cope in Osnabruck, whilst my Regiment coped with the infantry role in Belfast and a substantial presence in Londonderry. *Action*: Out of the blue offer to go with the children to Berlin for a weekend break. *Yield*: Immense gratitude to Charles and Liz for thoughtfulness and for caring so sensitively.

Situation: A squadron commander and his wife struck down with 'flu. *Action*: Charles and Liz arrived at their quarter bearing an immaculately prepared Sunday lunch which they then served. *Yield*: Both will always remember their great kindness.

Such is the nature of Charles. He was in every sense of the word, a gentleman. It was no surprise to find him eager to support service families, especially those facing hard times when he took charge of SSAFA, rather than retire deep in the country to his lovely and loved house. It was no surprise either to learn that Liz was also with him throughout those years, giving total support and bringing gentleness and lightness.

His strong and determined character brought SSAFA into the threshold of the 21st Century. Often accompanied by Liz, he visited every SSAFA branch in the UK meeting many hundreds of voluntary workers to assess their needs and problems. He raised the standards of support offered to clients by introducing an increasingly comprehensive and well-organised training programme for all. It is greatly to his credit that in spite of many problems, he persevered in his aims and SSAFA is much the better for his industry.

Charles advocated his causes with grace and good manners. The RAF got huge support from his advocacy for dedicated airfield support from sappers when he was Chief Engineer, BAOR. So too did the EOD function of the Corps. As Controller, he masterminded the rebuild and then the relocation of the SSAFA office in Queen Anne's Gate; a complex task done successfully with appreciable financial gain. None of us at the receiving end will forget the charm that he deployed to support his powerful arguments, nor the chuckle and the genuine warmth in his eyes as he made points.

We are left with an abiding impression of a man who was very proud of being a sapper. A man who did his utmost to maintain the high standards of the Corps and its high reputation, not only in the Army but in all the Services.

Many have benefited from his support and loyalty. The perfect gentleman did not just look good, he was good.

I and many others are grateful for his presence amongst us.

Memoirs in Brief

Alan James McKerracher, who died on 1 May 2001, aged 76, was commissioned into the Royal Engineers in 1944, serving with 591 Parachute Squadron RE in 6 Airborne Division during the Rhine and Weser crossings in NW Europe. In 1946, Captain McKerracher was posted to 28 Field Company, Royal Bombay Sapper & Miners, serving first in Netherlands East Indies and then in India at the time of Partition in 1947. It was his experience in the Far East that kindled his later interest in working with the peoples of South East Asia. Twice mentioned in despatches during the war, he went on to serve with RE Airborne TA until 1963, and retained his membership of the Institution of Royal Engineers until his death. Alan, affectionately called "Black Mac" by some of his friends, joined Foster Wheeler Asia Limited, based in Singapore, in 1969 and was appointed Marketing Director in 1975 and Senior Vice President in 1985 until his retirement in 1989. His colleagues comment on the enormous and lasting contribution he made to shaping the Company and to the success it achieved over the last 30 years.

Lieutenant Colonel Richard Seifert, who died in October 2001, aged 90, will be best remembered for the 600 or so buildings he designed and built in London, which include Centre Point (1964) and the 600ft NatWest Tower (1981). He was said to have influenced London's skyline more than anyone since Christopher Wren. Many of his structures were critically acclaimed, though some were controversial, but he was universally acknowledged as a brilliant negotiator who was also skilled at exploiting loopholes in planning laws: the amendments constantly made to plug them became known as "Seifert clauses". Born in Switzerland on 25 November 1910, he was educated at the Central Foundation School in London and then at London University. After receiving a diploma in architecture in 1934, he opened his own practice but jobs were scarce and it was with some relief that he joined the Royal Engineers at the beginning of the Second World War. He spent the early part of the war building defences and anti-aircraft gun emplacements before being sent out to India. He attained the rank of lieutenant colonel before leaving the Corps to continue his career in architecture. He retained his army rank with pride and later said of his wartime experience "I think the Army was of tremendous value to me....the greatest school of experience – particularly in the officer class – of all times. I certainly came back a person who had a tremendous confidence". He renewed his involvement with the Corps when he became a member of the newly-formed Royal Engineers Museum Foundation Committee in 1986, later becoming one of its vice presidents.

Major Charles John Luckett MBE, died on 24 November 2001 aged 86. He joined the Corps at Chepstow in 1929 and moved to the Training Battalion RE at Brompton Barracks in 1933. Before the war, he served in Aldershot, Palestine and Singapore. In 1942, he was captured by the Japanese whilst trying to escape from Bank Island. In consequence, he spent the next three and a half years as a prisoner-of-war on Sumatra. He was repatriated in 1945 and went on to serve in Tidworth, Nigeria, BAOR, Aden, Ghana and Thailand before retiring in 1967. He became a staunch member of the REA. He is survived by his widow, Sybil and three children

Professor Sir Colin Buchanan, who died on 6 December 2001, aged 94, was an expert on transport. He was author of the Buchanan Report, Traffic in Towns. Commissioned in 1960 by the Minister of Transport, Ernest Sharples, and published in 1963, it foresaw that Britain's towns and cities would become paralysed by traffic congestion. It was widely praised at the time. Colin Buchanan was born in 1907 at Simla in India where his father was a water engineer. Having read for a degree in engineering at Imperial College, London, he joined the Public Works Department, Sudan, working on highway planning and bridges. Returning to England in 1933, he joined a firm of planning consultants before moving to the Exeter office of the Ministry of Transport. On the outbreak of war he was commissioned into the Royal Engineers, serving in Egypt, the Western Desert (where he was attached to the Long Range Desert Group) and the Sudan. He was responsible for construct-

ing a long timber trestle bridge across the White Nile at Juba. After the war, having achieved the rank of lieutenant colonel, he joined the Ministry of Town and Country Planning in London and qualified as an architect. In the late 1960s he was appointed Chair of Transport at Imperial College and in 1974 became the first Director of the School of Advanced Urban Studies at Bristol University. He was appointed CBE in 1964 and was knighted in 1972.

Correspondence

WHAT'S IN A NAME? AN EXAMINATION OF OUR HEAD-QUARTERS SQUADRONS

From: Lieutenant Colonel D W Taylor

Sir, – I recall that the offending title emerged from the Close Support Trial, which preceded Options for Change. The problem was that one CS squadron and one GS squadron in the then-approved single regiment per division, (i.e. one armoured CS troop per brigade), produced unwieldy squadrons of over 300 men. We therefore stripped out everything that the CS/GS squadrons' support troops' did not need all the time, and cast around for somewhere to park this impressive echelon. As this was first line support, the divisional (second line) support squadron had to be rejected on doctrinal grounds. We looked at the other arms, and found a good model in the Royal Armoured Corps. Their sabre squadrons were lean and mean, while the HQ squadron was treated like a golf bag – it held the tools needed to do the job, and did not aspire to be a player. Yes, OC HQ squadron was treated like a caddie, but by delivering a service to the sabre squadrons, the regimental 2IC, QM, MTO etc, he contributed to a more agile and effective regiment. I cannot think of a better title for the "regimental stores, transport and administration sub-unit" than "HQ Sqn". If you tack on other roles such as equipment repair, any title that attempts to encapsulate the span of tasks becomes maudlin.

It seems that much of the present concern is generated by attempts to aggrandise the original role, and convert the squadron into a manoeuvre unit, with tasks of its own. The other issue is whether the various specialists advise the CO as individuals, or as part of the supporting cast. You may have guessed that in my opinion, the tasks should all lie with the field squadrons (using the tools provided), and that the myriad of specialists need to be corralled to prevent the CO receiving single-agenda advice. Be that as it may, what will happen if we accept the proposal to re-title these 11 regular squadrons ? We will end up with 16 support squadrons in the Corps – that is more than any other category. Moreover, Geographic and EOD aside, every squadron will then contain the word "support" in either its title or its role. Are we really a Corps in trusses ?

It would make more sense to me if our available efforts were applied to the other issues raised in the article. But if we have to change the letter-head again, what is wrong with abandoning adjectives completely. For example, we all know what 60 Sqn does, and that is the normal spoken form, so why waste typing time adding epithets? Think how much more time we'd all have if over-used words like support, combat, armoured, assault, and mechanized were expunged from the vocabulary. Yours sincerely – David Taylor

WHAT'S IN A NAME? AN EXAMINATION OF OUR HEAD-QUARTERS SQUADRONS

From: Lieutenant Colonel M W Whitchurch

Sir, – Rob Tomlinson's article deserves comment. As a former regimental second-in-command, and having observed such a squadron for two years in barracks, in the field and on operations, I offer these thoughts.

- Effective titles are self-explanatory. *Regimental Support Squadron* is therefore better than the existing title. Equally, Field Support Squadrons are really *Divisional Support Squadrons*. This promotes clarity. A rose may well be as sweet by any other name, but when you say rose, it is clear.
- Any chance to improve the glamour of such squadrons should be taken. In 1997-8, 6 HQ Squadron went to Kenya for two months on exercise. This was straight after having built a training bridge. Soon after its return to Blighty, it went straight on exercise as part of 1 Mechanized Brigade where it did sterling work in support of the regiment and the brigade. It was positioned in the Brigade Support Group (BSG) (or Brigade Admin Area (BAA) in former times), and its SHQ was part of HQ BSG. The lesson is that such squadrons must have opportunities where it can thrive – and 6 Squadron did just that.
- This squadron has a range of capability that allows the colonel to bring influence to bear; it reinforces or otherwise according to circumstance. It is critical to any effective RE work.
- Maj Tomlinson's article gave the impression that many do not understand the employment of recce. The Recce Troop is part of the colonel's ability to *observe* and *orientate* on the battlefield. Along with his own eyes, his RSM and other parts of his directed telescope, he can get best information to make timely

decisions and take subsequent *action*. Such important troops must be kept at regimental level and not misemployed. Therefore the best, (and only?), place for administration and training is in the HQ Squadron as happens in the Infantry and RAC equivalents.

- Credibility and desire to command these underrated squadrons would be enhanced if some of these squadron commanders appeared on the pink list (promotion to Lt Col), and command something – it will be interesting to watch the list in the next couple of years.

So if you are a commanding officer, please consider; try the above and watch your HQ Squadron thrive. If coming up to squadron command, do not discount this sort of job – it is a wolf in sheep's clothing and has much to commend it. Your Obedient Sapper, Sticky

CORONATION DAY 2 JUNE 1953

From: Dr J D Lewins

Sir, – My Coronation Day started early. I was a subaltern in the Royal Engineers and my troop was supporting the infantry battle group holding the "Hook", a key position overlooking the Samichon River, which had earlier been raided by an enemy party and needed major repairs. It was vital to deny it to our enemy.

Normally, the battalion group was supported by a troop of 55 Fd Sqn (commanded by Captain, (later Chief Royal Engineer), George Cooper). My troop was added as further support. The troop commander, a captain, had been just relieved of his command and I, aged just 22, had spent a happy six weeks commanding sixty men in war. We were working on the left flank, George on the right. When George later claimed to have held the Hook entirely on his own after the infantry withdrew, I could only say – Hook right, look left!

On the night of 1st June, I had men cutting out the damaged trenches and restoring the roof supports. It was a quiet night with little shelling and mortaring so we made good progress. At dawn, gunners of the Commonwealth Division began their celebration of Coronation Day by firing red, white and blue signalling smoke at the Chinese forces opposite. Although we knew it had been pre-planned, we took it as a delightful celebration of the news of the conquering of Everest by Brigadier John Hunt's party – a fine tribute to Her Majesty. A Commonwealth Divison march-past took place in the morning. I commanded the engineer contingent as we worked our way past the saluting base in the muddy paddy field that served as a parade ground. In the regimental sports that afternoon, I represented my squadron in the mile – run through a paddy field in ammunition boots. I returned to my troop to spend the night working our way further round the left-flank of the Hook. I was tired. Not perhaps as tired as Her Majesty – although I believe I had been awake longer (some 40 hours) and not perhaps as puzzled as the Chinese by a very English celebration of Coronation Day, 1953. What a day to remember!. Yours sincerely – J D Lewins

THE BURMA CAMPAIGN

From: Lieutenant (retd) G P Webb

Sir, – Of all the books on the Burma campaign, Major Bernard Fergusson's "Beyond the Chindwin" is the classic. Not because it was Wingate's No 5 Column, but rather because it is the enthralling story of a band of warriors pitted against the jungle and the Japanese.

This incredible journey into the depths of Burma and the return to India (a map of the complete route is on pages 230/231), cannot be surpassed as a true adventure tale.

Did they have luck and help from friendly Kachins? Yes, but above all, an indomitable spirit and dogged determination. It should be required reading for all future sappers. Yours sincerely – Geoff Webb.

Reviews

VOICES FROM THE PENINSULA EYEWITNESS ACCOUNTS BY SOLDIERS OF WELLINGTON'S ARMY 1808-1814

EDITED BY IAN FLETCHER

Greenhill Books,
Lionel Leventhal Limited, Park House,
1 Russell Gardens, London , NW11 9NN.
303 pages, illustrated, maps.
Hardback price £19.99.
ISBN 1 85367 459 1.

THE soldiers of the Peninsular War were prolific writers of letters and journals, much drawn on by historians and purposeful tourists fascinated by the manner in which Wellington's armies procured the victories that contributed so materially to Napoleon's downfall. So it is a good idea to produce a selection from them, a sort of "menu de degustation", for the benefit of anyone with a general interest in the subject and who might want to go on to a more detailed study. Ian Fletcher, with his intimate knowledge of the ground and the units and personalities concerned, is well-equipped to present this set of personal accounts taken across the whole period of the war; connecting them together with appropriate narrative and minimum analytical comment.

The extracts are well-chosen and enjoyable to read. They provide a vivid picture of life at the sharp end from the pens of officers and non-commissioned ranks alike, sadly none of them engineers. Star contributions are from Captain John Cooke of the 43rd in his account of the siege of Ciudad Rodrigo with Lieutenant William Thornton Keep of the 1/28th Regiment running him a close second on top of the Maya Pass. These and many others are clear enough to be good background for anyone touring the area and interested in looking at the ground where the events took place.

The book has sixteen pages of illustrations, half of them in colour, but the six maps, reproduced from old publications, are insufficient. With no index and no attribution of the illustrations and maps, the book appears to have been produced on a low budget. More is the pity that the publishers could not offer it at a budget price.

GWAN

FRIEND & FOE

SUSTAINER

Published by Sustainer Publication Ltd in association with PUSH Marketing Ltd,
Sustainer Books,
FREEPOST LON 18568, London N19 4BR.
Price £10.95 (plus £1.45 p&p).

FRIEND & FOE follows Sustainer's two earlier books *Reveille & Retribution* and *Spit & Polish,* the profits from which benefit the Army Benevolent Fund. So far the first two books have raised £11,000, a measure of their success. Sustainer has written several amusing articles over a number of years about the Army, many of which have been published in the *British Army Review* and *The Officer*. *Friend & Foe* is made up of a collection of disparate articles that have appeared in these and other journals over a 25 year period. It is an ideal book therefore to dip into a chapter at a time. In the Foreword, Prince Phillip writes "There are exceptions, but there cannot be many, who could survive service life without a fairly well-developed sense of humour. People who can laugh at themselves are entitled to laugh at others and there is plenty to laugh at in the vast bureaucracy of the Armed Forces and its Ministry." Sustainer captures memories of life in the Army with admirable satire and humour. There will be few who will not recognize the events he recounts and chuckle quietly (or even loudly) to themselves.

Details of this and both previous books are also available at www.sustainer.co.uk or by telephoning 020 7263 5854.

MDC

NAPOLEON AND WELLINGTON

ANDREW ROBERTS

Published by Weidenfeld & Nicolson,
Orion House, 5 Upper Saint Martin's Lane,
London WC2H 9EA.
350 pages, illustrated.
Price £25.00 (hardback).
ISBN 0 29764607 9.

IT is impossible not to be fascinated by the parallel lives of these two great commanders, born in the

same year but never meeting in battle until the grand showdown at Waterloo. But while other writers have compared their military strengths and weaknesses, this study examines their own recorded attitudes to each other, and those of their contemporaries to them. Andrew Roberts is a well-known historian, commentator and critic with a refreshing unstodgy approach and given to dismantling myth.

The book is enormous fun to read, as it is full of pithy quotations and vignettes. Though well documented it is a broad-brush view of the affairs of the time elaborating its particular theme. The author puts his own head on the block with Napoleon's remark that "Man, and above all the historian, is full of vanity. He tries to give fine scope to his imagination, and tries to interest the reader at the expense of truth". This introduces the chapter on his subjects' own concern at their retrospective reputations which is, perhaps, the most revealing on their human weaknesses. And plenty there were, including their falling for each others' mistresses, a story that attracted publicity when the book was launched.

While the author makes no claim for professional comparisons in the book, let alone on such earthy topics as military engineering, there is plenty of interest on such matters as the different approaches to warfare, and to command of officers and soldiers. Inevitably there is a final chapter of comparative assessment of the two men. Neither emerges as a hero but for long-term influence on the affairs of mankind there is, in Andrew Roberts view, a clear winner.

GWAN

Her Majesty with Sergeant N C Johnson, Hameln November 1993.

Her Majesty with Major (now Colonel) P Lodge, November 1993.

Her Majesty with children from the Hameln Schools November 1993.

Her Majesty at the “Bygone Age” Stand Chatham May 1987.

Explanation of Abbreviations Used in This Journal

ACOS . . . . . .Assistant Chief of Staff
ADP . . . . . .Automatic Data Processing
AER . . . . . .Army Estates Requirement
AOR . . . . . .Area of Responsibility
AP . . . . . .Anti Personnel
APOD . . . . . .Airport of Disembarkation
ATN . . . . . .Army Telephone Network
BAR . . . . . .British Army Review
BDO . . . . . .Bomb Disposal Officer
BFFI . . . . . .British Forces Falkland Islands
BLO . . . . . .British Liaison Officer
BOR . . . . . .British Other Ranks
BT . . . . . .British Telecom
BU . . . . . .Business Unit
CE . . . . . .Chief Executive
CE . . . . . .Chief Engineer
CMAD . . . . . .Compagnie Modulaire d'Aide au Deploiement
CRE (A) Commander Royal Engineers (Airfields)
DCOS . . . . . .Deputy Chief of Staff
DCRE . . . . . .Deputy Commander Royal Engineers
DE . . . . . .Defence Estates
DMB . . . . . .Defence Management Board
EPIP . . . . . .European Personnel Indian Pattern
EOD . . . . . .Explosive Ordnance Disposal
EOI . . . . . .Expression of Interest
EWC . . . . . .Establishment Works Consultant
FARELF . . . . . .Far East Land Forces
FoREM . . .Friends of the Royal Engineers Museum
FRY . . . . . .Former Republic of Yugoslavia
GE . . . . . .Garrison Engineer
IO . . . . . .Intelligence Officer
IPT . . . . . .Integrated Project Team
IRT . . . . . .Immediate Response Team
ITT . . . . . .Invitation to Tender
JHF . . . . . .Joint Helicopter Force
KOA . . . . . .Kosovo Albanians
KOS . . . . . .Kosovo Serbs
LCT . . . . . .Landing Craft Tank
LLT . . . . . .Live Line Tapping
MBA . . . . . .Master of Business Administration
ME . . . . . .Military Engineering
MEDEVAC . . . . . .Medical Evacuation
MELC . . .Museum Executive & Library Committee
MES . . . . . .Military Engineer Services
MEXE . . . . . .Military Experimental Establishment
MNB(C) . . . . . .Multi National Brigade (Central)
MNB(N) . . . . . .Multi National Brigade (North)
MND(SW) . .Multi National Division (South West)
NI . . . . . .Northern Ireland
NGO . . . . . .Non Governmental Organisation
NPB . . . . . .New Purple Body
OCTU . . . . . .Officer Cadet Training Unit
OHL . . . . . .Overhead Line
PET(C) . . . . . .Professional Engineer Training (Construction)
PFI . . . . . .Private Finance Initiative
POC . . . . . .Point of Contact
PJHQ . . . . . .Permanent Joint Headquarters
PPP . . . . . .Public Private Partnership
QMG . . . . . .Quartermaster General
RAB . . . . . .Resource Accounting and Budgeting
RC . . . . . .Reinforced Concrete
REA . . . . . .Royal Engineers Association
REMRO . . . . . .RE Manning and Record Office
RMA . . . . . .Royal Military Academy
RMAS . . . . . .Royal Military Academy Sandhurst
RMCS . . . . . .Royal Military College of Science
RPC . . . . . .Regional Prime Contract
RSME . . . . . .Royal School of Military Engineering
RSO . . . . . .Regimental Signals Officer
RTR . . . . . .Royal Tank Regiment
RUSI . . . . . .Royal United Services Institute
SME . . . . . .School of Military Engineering
STRE . . . . . .Specialist Team Royal Engineers
TA . . . . . .Territorial Army
TBRE . . . . . .Training Battalion Royal Engineers
TLB . . . . . .Top Level Budget
TRRE . . . . . .Training Regiment Royal Engineers
UXO . . . . . .Unexploded Ordnance
WOSB . . . . . .War Office Selection Board
WSM . . . . . .Works Services Manager

Please note: the above abbreviations are those which appear within articles published in this edition of the Journal *only, and are printed for the benefit of our many foreign and non-military readers.*
Appointment abbreviations (which appear on the first page) can generally be found in the back of The Royal Engineers List.