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Guidelines for Authors

The Editor is always pleased to consider articles for publication in the *Journal.*

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

Length. Approximately 4500 words plus illustrations.

Copy. Ideally one copy of the text should be submitted, together with a head and shoulders photograph of the author plus a short pen picture.

Clearance. Articles must be cleared by an author's CO where applicable.

Computers. Articles submitted on 3½in discs, or through the e-mail as an attached text file, are very welcome. Please ensure that text is typed with no formatting, ie LH justified only, and please **NO** caps-only headings – all upper and lower case.

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Photographs should, if possible, be of good quality with sharp definition, and don't forget to add appropriate captions. Please do not submit laser/photo copies of photographs or files from digital cameras.

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

Contributions should reach the Editor by:

11 October for the December 1999 issue
Early February for the April 2000 issue
Early June for the August 2000 issue

Submissions before the deadline are particularly welcome.

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Editorial

THE Balkans has become familiar territory for members of the Corps during the past seven years. It began with a troop from 3 Field Squadron deploying in early 1992 with 24 Field Ambulance to provide humanitarian relief in Croatia and Bosnia. The BBC reporter, Kate Adie, in a letter to the Engineer in Chief at the time, commented: "The troop commander's efforts to restore and repair power and water supplies were tenacious, and his determination to ensure and encourage the cooperation of Bosnia repair teams, of all ethnic backgrounds, was an object lesson in UN ideals and practical assistance." Within the year, the Sapper presence had grown to over 600 all ranks. It is now well over double that number and has at times been rather more.

Three articles in this issue concern Sapper operations in support of Nato in the Balkans, covering the period from the deployment of 20 Field Squadron in support of the Kosovo extraction force in November 1998 to shortly after the start of the Nato bombing campaign of Kosovo and Serbia in April 1999. Although Sappers have been kept busy in the role of enabling British forces to deploy into Macedonia, and subsequently borne the brunt of the work in setting up the refugee camps, it is in Kosovo that their training and skill are being put to the test. There will doubtless be many challenges ahead in rebuilding a nation whose very fabric has been shattered, both structurally and socially. That Sappers will be at the forefront of building the peace does not go unrecognized, as Kate Adie's comments and more recently those of Libby Purves writing in *The Times* make clear. The sustainability of the present British contribution for any length of time must however be in doubt.

"Designing Air Power" describes the work of 529 STRE (Air Support), a newly formed unit whose role is fundamental to the policy of force projection. Reliant as this policy is on air power, which was so clearly demonstrated in Kosovo and Serbia, its importance to the order of battle is unquestioned.

"An Approach to Close Support for the Next Century" carries on from previous articles the debate on close support engineers. It sets out principles and uses historical evidence to argue the case for a more effective armoured engineer capability in the close support battle. Many readers will recall the series of articles about engineer mobility support published in the1980s. The concept of close and general support engineers evolved soon after, based on organizational changes and the introduction of armoured engineer vehicles capable of supporting effectively other arms in the contact battle. Sadly, the latter have never been forthcoming and Sappers have had to make do with obsolescent, if not obsolete, armoured hulls.

Long Marston, the name familiar to many Sappers during the past 50 years, even though few ever visited it or knew exactly where it was, is now no more the home of engineer resources. This function has been absorbed into Headquarters Land Command and Headquarters QMG. "The Closure of Long Marston... And The New Order" is a tribute to a unit which was never at the sharp end but without which the capability of the units it served would have been severely dented. The New Order will have ample opportunity in the coming months to prove itself a worthy successor.

World War Two experiences continue to be a fruitful source of articles. The extracts from Major Brettell's diary give a vivid description of what it is like to be taken prisoner by the enemy and the trauma it generates for years, if not a lifetime, to come. Thankfully, the threat of being taken prisoner is not of great concern in present-day operations, though that is probably what the three Americans thought before they were captured by the Serbs in Macedonia.

Engineer in Chief's "Annual Report to the Corps," normally published in August, is delayed until the December issue of the *RE Journal.* Operations in Kosovo will be covered more comprehensively then than they can be now, both in the Annual Report and in articles from those currently serving in the Balkans.

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An Approach to Close Support For The Next Century

MAJOR M W WHITCHURCH MBE

This article continues the discussion about close support published in previous RE *Journals*.[1]

The Story So Far

WHAT is the best organization for armoured engineers in the close support (CS) regiment? What equipment and training should it have? How should it be handled? What is the best plan for peace and war? What experience can help us? What is the best organization of Royal Engineers in a brigade? Key questions which require considered answers.

Like previous work by Major Jonathan Welch, Major Richard Hourahane, Major Roland Ward and Lieut Colonel Chris Sloan, this article is written to provoke further discussion which will improve our contribution on the battlefield.

Taking Stock – The Half Full Glass

THE latest defence review has allowed us to improve the close support regiment's organization. Thanks to a lot of hard work across the Corps, the HQ, field and armoured engineer squadron establishments look more convincing than before. What follows is food for thought based upon the realities of war, study and reflection. Such discussion, if it is to be worthy, should move from the known and agreed, to the unknown and that which is subject for debate. Here goes.

Our Role – What We Are About

"Let us take stock and examine the problems. We must be clear about it otherwise we shall go wrong in our training. If our 'thinking' is wrong our 'doing' will be wrong. As we train our formations and units so they will do in battle."

Lt Gen B L Montgomery
Minley Manor 1940.

SIMPLY put, we change the face of the battlefield to suit the commander's aim. Readers will be well aware of the many and varied tasks which are carried out to allow the Army to live, move and fight. What may not be so obvious are the vital ingredients of military engineering[2]. These ingredients are: skill of our troops, power of our machines (tools, plant, explosives, tanks and natural forces), a flow of materiel to site, leadership from officers and NCOs and the work done in a timely manner with optimum safety. Look at any military engineer task and these ingredients or factors hold good.

The Setting for Armoured Engineering

THE task of the military engineer out of contact is hard enough but can be summed up as "organize the work and get on with it." It is **in contact** in offensive operations (when the lethality, accuracy and volume of modern weapons do their worst) that we examine the problem. So what in essence is this problem? Simply to be able to do RE work using all measures to protect ourselves against the enemy. Pretty glib so far but look further: the armoured engineer vehicle will do its work where the enemy knows the obstacle, has the range with pre-laid guns ready to engage. No other arm has such a serious tactical problem. Indeed the tremendous advantage of the defence makes the problem even more daunting[3]. History shows how we might overcome this problem.

Relevant Characteristics of War

The implications of firepower. Readers should all agree about the lethality of modern weapons. For the unconvinced ask any veteran, especially of the Assault Royal Engineers (ARE) of 79 Armoured

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[1] See Discussion since December 1997 including correspondence in Dec 98 and Apr 99.

[2] See "Sappers Fit for War" Colonel W M R Addison, *RE Journal* March 1979. One of the most valuable articles written on what we are about.

[3] See the British Defence Film Library Video Tapes: C1404 and 1405. These tapes are titled: *Command of Armour*. Made in 1978/79, they are a valuable record of the experience of Field Marshal The Lord Carver, from his time as commander 4 Armd Bde in WW2. His instruction is a must to study. Look for the bit on area and mobile defence.

Figure 1: The best engineer tank in its day – Centurion AVRE.

Figure 2: Churchill "Jumbo" bridgelayer – robust, practical and effective in battle.

Division. Roland Ward's letter in the last edition reveals the conviction of real experience[4]. Furthermore, conversation with any ARE confirms Roland's emphasis on protection for Royal Engineers whilst doing their work. A cogency borne of being shot at and taking casualties. If still not persuaded then watch any instrumented exercise like tactical engagement simulation (TESEX) and the problem is easier to understand.[5]

Deduction: "Metal before Flesh". As a rule any RE work in contact has to be done with the protection of armour. An armoured engineer vehicle must have exceptional levels of protection as the enemy (a good one at least) will hit it as best it can. Obvious you say? Look then at the current fleet. Chieftain AVRE and AVLB were developed by people who have neither been shot at nor understand what happens to a vehicle which is in the assault. The hydraulics are unarmoured, the optics large with no covers or replacements, there is no sustained smoke obscuration, machine-guns and much reduced levels of protection compared to the main battle tank. To be fair this is probably because our Army does not understand firepower: how to use it and how to minimize its effects against you. A look at previous vehicles like Centurion or Churchill proves the point, as they have most of these "protective" attributes. *(See figures 1, 2, and 3.)*

The implications of waste and muddle of war. Field Marshal Wavell once characterized war as one of waste and muddle. Clausewitz described it as the friction of war. Any study (battlefield tours especially) shows that waste and muddle are often greater than TESEX and that is bad enough. To this end waste and muddle is usually catered for by having enough force that some survive and succeed. Readers so far might treat this as the 3 for 1 rule writ large!

Deduction: Allow for waste and muddle. Our approach (planning, organization and conduct) to war must be such that we take account of waste and muddle. We must have such a number of vehicles and equipment that despite casualties we will still succeed.

At best this gets lip-service paid to it in peace. This is because the pressures of budgets, care of the environment, lack of resources, wanting to look good and false impressions borne of

Figure 3: Chieftain AVLB. exposed hydraulics not an act of war.

[4] See *RE Journal* April 1999 p64. Roland Ward's letter has priceless nuggets of experience which repay study.
[5] Any serving reader should go out and watch a TESEX as an umpire (or observer controller as they are called). TESEX is a small revolution because the other side can fire back.

An Approach to close support for the next century 1,2,3

demonstrations[6] which can be very misleading (unless trainers set the context), all serve to create a mentality of text-book tidiness. Study by TESEX and battlefield touring[7], and time to think helps correct this impression.

So, What Is The Best Armoured Engineer Approach For The Future?

"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 time find a substitute".

Maj Gen F Tuker
Cornwall 1963

Historical Context. Before describing "how it should be done" let us touch on "how they did it". First, good soldiers plan for the worst case. (As the old saying goes "the plans are man's and the odds are God's"!) In this context the opposed crossing against a well-organized defence is the worst case – our litmus test. By this I mean all the necessary mobility support (breaching = bridging, fascines, plough, python dozer (demolition gun?) and so on) plus the siege support = flame, remote demolition and lashings of machine-gun fire. Let the pamphlet "Armoured Engineer in Battle" written at Perham Down(!) in 1953 reinforce the point.

> "This aspect of the employment of Armoured Engineers must remain of considerable importance, if only for peace-time training. From the point of view of technique it embraces most of the major difficulties with which Armoured Engineers are likely to be faced: in employment of their equipment, in integration with supporting arms and the assaulting forces, and in command and control. A high standard of training in the technique of the set-piece assault will therefore go a long way to prepare Armoured Engineer units for their part in all other phases of war."[8]

It is here that I caution serving members whose experience extends as far as crossing the River Avon on Salisbury Plain, the Swindebeck on Soltau or the equivalent at Suffield. These are tiny problems compared to what has and will emerge in general war. First, any enemy (and we would too) given a free hand and time will organize the best obstacle plan with matching covering fire and fortification to boot. Hindenburg Line 1917-18, Alamein 1942, Gustav Line 1944, Gothic Line 1944, Le Havre 1944, Siegfried Line 1945, and the Iraqi defence line 1991[9] are all examples. It must be emphasized that all less the last one could not be bypassed and were well organized. "But this won't happen to us" you say. To bring the problem up to date imagine you are the CRE of the Serbian Army in Kosovo. What would you be doing? Exactly – wiring, mining and digging as fast as you could go, adding covering fire according to taste. After all, this was exactly what we were going to do in Germany. So, if we have to fight how are we going to do the breach?

Deduction: The enemy will rarely conform to our "pink" and sooner or later we will have to face such a task (Iraqis yesterday, Kosovo tomorrow?) and we therefore need a method to crack this worst-case problem. By method I mean Royal Engineers who are so organized, trained, led and equipped that the problem can be tackled with certainty. If we can crack this then all other opposed crossings are less difficult. Our method, using the principles of war, will enable us to **achieve the aim** by a **concentration of force** (read RE effort) with best **security** through **offensive action** using **co-operation** of **all arms** and **services**. Such a method **must** achieve **good economy of effort** as we cannot afford huge losses.

Before we look at a short case study which illustrates the form, you may well be thinking: "Well alright Sticky, but we won't be doing this as we shall avoid it." Agreed. But beware of wishful thinking. Successful commanders were well aware of the need to avoid the opposed crossing against a well organized defence. Marlborough did so at *Ne Plus Ultra* in 1711 (unopposed crossing by manoeuvre), Wellington at the Bidassoa crossing in 1812 (same form as

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[6] As Footnote 2 see Col Addison's point on demonstrations.

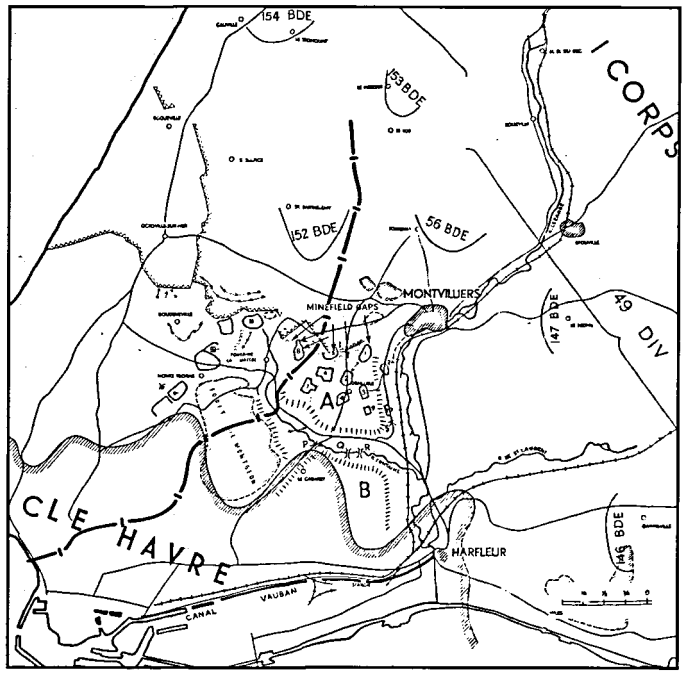
[7] The author has led 37 Battlefield Tours to date and this method of instruction is highly recommended.

[8] Available from the Corps Library. It is relevant because it was written with recent war experience looking to the future.

[9] Official histories are helpful although always a long read. Readers are welcome to contact the author for advice on the history concerning each obstacle as the sources are many and varied. ATN (9) 4342 (BT 01980 60) 3693.

1711), the Germans on the Maginot Line in 1940 (bypass), and the coalition in the Gulf in 1991 (bypass)[10]. Now all credit to us if we can do this but it may not be so and we could be faced with a real problem like those cited earlier. Perhaps a way to think of this is in what Kitchener once said: "We must make war as we must, not as we would like."

Before moving on let me stress that the problem of crossing a wide water obstacle (say over 100m) which is opposed is a separate issue to this discussion, requiring a different approach.



Map 1: The assault on Le Havre.

How They Did It

79 Armoured Division successfully tackled the problems at Le Havre (Operation *Astonia*) 1944 and the Siegfried Line 1945 (Operation *Veritable*).[11] RE work was achieved at minimal cost in casualties (although much equipment lost) against a quality enemy and in very quick time compared to some of the costly failures of identical operations in both World War One and Two.

Let me offer a simple summary of the Le Havre operation which is worthy of serious study because it is well archived, it still exists in enough detail to be toured (is close enough to be visited too) and veterans who took part in it are still able to help us[12].

Le Havre (Operation *Astonia*). By late August 1944 the Allied invasion of Europe needed more ports to support the advance. The port of Le Havre was one option. The enemy knew this too. "Deny the ports", went the German thinking, "and the Allied administration will fail resulting in defeat." Now the port of Le Havre is nicely protected on three of the four sides by significant natural obstacles. The only way to take the port is by assault from the north. The quality enemy had organized a defence of wire, minefields, demolitions plus ditches with comprehensive fire support from infantry and artillery and concreted (not just dug) in. Declining the Allied offer to surrender he was determined to hold on and fight. The Allied approach can be summed up as **win the fire fight**, then **fire and manoeuvre** (read breaching as an implied task) **at optimal cost.**

Using a technique of teams of specialist armour or armoured engineers working with other arms, the Allies assaulted two divisions up. *(See Map 2 over the page).* This modern siege had 11 breaches attempted of which 7 succeeded. Equally

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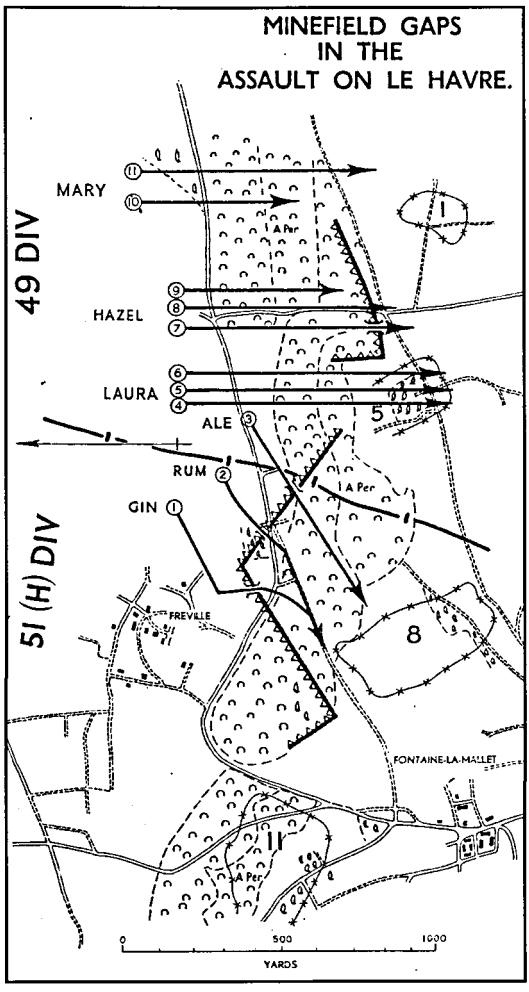
[10]More detail? For Marlborough see: "Army Field Manual" dated 1985. *The Application of Force – The Fundamentals*; for Wellington see: Army Video: *Intelligence Preparation of the Battlefield*; for Maginot Line see Army Video: *A Better Idea;* for the Gulf see: *Gulf Campaign* Video. The British Defence File Library is the best source to get the tapes. Contact them on Chalfont 95298-8252.

[11]The Corps Library contains tour guides for both operations. Ask for *Normandy to the Seine (Op ASTONIA)* and *Seine to the Baltic (Op VERITABLE).* Both come under the heading RE Battlefield Tours.

[12]22 Regiment toured Le Havre and the author will be pleased to help anyone visit this battlefield.



Map 2: The breach at Le Havre – enemy strong points in numbers 1 to 11.

the fortified enemy was reduced by Royal Engineers using specialist demolition devices such as the Petard demolition gun, and flame-throwers from tanks. About 400 casualties resulted from the operation (about 5 per cent of the troops involved) and about half the specialist armour was destroyed. By World War One or Two standards this was a success at very small cost. The Siege of Le Havre remains a valuable example of how to do it – not for textbook tidiness (which no operation is) – but for effective method.

Assessment of the operation? The approach to the battle was good and the resulting battle was comparatively easy. Lessons to learn? How **metal was used before flesh** (all RE mounted behind armour in the contact or close battle); how waste and muddle were taken into account by **a very clear method** of assault and **lots of kit**. Note how armoured and field engineers **co-operated** not **integrated**. "Armour" in the thick of the fire and protected, "field" following up with improvements only when dismounted RE work could be done in the open safely. Finally note how firepower (or siege power) was used. Everyone had weapons to fight (we don't) and remote demolition and flame was used to achieve the aim with minimum casualties (which is exactly what we want). A walkover it was not, but the approach gave our forefathers great confidence for the rest of the campaign[13].

How It Should Be Done

WE say armoured engineers. The original title "Assault Engineers" helps understanding for what we are about – engineering in the assault – the worst case.

Tools of the Trade For the Armoured (Assault?) Engineer

"Give us the tools and we will do the job."
Churchill

BUILDING on success we need two assault vehicles – Assault Vehicle RE (AVRE) and Assault Vehicle-Launched Bridge (AVLB). These vehicles will have many of the proven ancillaries that exist in service. The plough (full width too), fascine, dozer, trailer, python and the new bridge are all good equipments (not perfect but again what is?) It is essential that we also have a demolition device that can demolish strong points, buildings, bridges and obstacles from behind armour. The 165mm demolition gun was an excellent device which was got rid of by those who, in my view, misunderstood the realities of war. Add smoke plus an incendiary round and RE support for fighting (real siege warfare) in built-up areas, as well as assaulting organized defence

[13] See "Straightening the Record at Le Havre", by Major General J C Woollett, RE *Journal*, April 1990, p52.

lines, would improve beyond recognition[14]. Not our job? It is our role to breach strong fixed defences. Armoured engineers are the siege engines of modern war. Moreover it is everyone's job to fight. Both vehicles must have exceptional protection (active and passive) with all the devices (machine guns, light mortar, smoke generators and seriously good additional armour – a true assault vehicle)[15]. Furthermore it must be shot at in trials to prove it can take serious punishment (as it will in war) and survive.

The Case for Challenger Two – Now

To date we have had an AVRE and AVLB that have always been one or two generations behind the main battle tank. This had obvious drawbacks for mobility support. Equally, training and equipment support (repair in modern parlance) is a veritable nightmare. We lived it with Churchill, then Centurion and, I regret to report, currently with Chieftain. Let me deploy a short case for a fleet of Challenger Two (CR2) derivatives. (By this I mean the main battle tank as the base vehicle on which we add the tools plus additional protection as required).

First – money. We could achieve huge economy of scale by having a CR2 fleet. Production is happening now. Add on 140 derivatives and the cost per unit would be smaller. Make the basic tank and add on the tools according to taste.

Second – add on the true savings of maintenance, training and repair. Serving readers will soon become aware of CAPITAL which is the new way to account for everything in the Army. A CR2 fleet will achieve huge savings in this area and CAPITAL will prove this. Visit the RE Wing at Bovington and look at how the Driving and Maintenance School would benefit. Ditto the rest of the Army.

Third – sales. Foreign armies are more likely to buy a family of vehicles. No one wants a mixed fleet. Look at sales of Leopard and compare to Challenger and the point is made. Not our business? We all exist to do our bit for UK plc.

Fourth – Think long term. Options like CR1 or T72 will only reinvent all the nightmares we have today. The whole-life and whole-fleet costs in the 20th to 30th year would become prohibitive. Indeed, a visit to any current armoured engineer fleet would confirm the problem. These vehicles will serve for about 30 years, so whole-life cost is the key.

Fifth – We gain all the operational and administrative advantages which we did not have in the Gulf (or in Kosovo?) This will allow us to do a better job on the battlefield. To put it another way better administration leading to improved economy of effort increasing offensive action, morale and achieving the aim.

Technique

Naturally we should avoid the opposed crossing/assault if we can. History has plenty of advice on how to do this. But if we cannot, then the nub is maximum multiple crossings with effective guaranteed fire support from all vehicles and arms using the proven assault technique of 79 Armoured Division[16] as shown at Le Havre. To be fair much of this technique we practise now but the problem is one of realistic scale[17] and space prevents expansion.

Current Practice

Now for the controversial bit. Previous discussion and practice shows that the regiment is the best organization to support a brigade. But how is this regiment to be organized to support its brigade? In future there will be two ways: the three-squadron way (HQ, field, armoured) supporting the mechanized brigade in the UK. Alternatively the four-squadron way (HQ and three identical close-support squadrons each

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[14] See BAR 121, Apr 99. Article called "In the Jungle of the Cities". It is our business as professional soldiers to be as involved in this as anything else. Equally RE *Journal* Sep 84, two instructive articles on AVRE in FIBUA by Maj Steen Clarke and on RE Work Behind Armour by Maj Tom Roy.

[15] A Reviewer in the latest BAR claimed that our current fleet does not rate as a true assault vehicle. For more detail look at "Winston Churchill's Secret Weapons: The Story of Hobarts Funnies" by Patrick De la Force. This book will show you how wide of the mark we are ...

[16] See the "RE Tour Guide" and "The Story of the 79 Armoured Division", both from the Corps Library. Also ask for the "Final Report of the 79 Armoured Division" , look for App 6 *Team Assault Technique*.

[17] By small army syndrome I mean an army that does not truly exercise above battle group level and thus draws false lessons.

consisting of a mechanized, armoured and support troop) which supports the armoured brigade in Germany. Now, the debate thus far focused on the contention that a squadron cannot support more than one battle group. Jon Welch, and his fellow armoured engineer Richard Hourahane, provided a thought-provoking response worthy of further discussion. It has to be said that only the test of the next five years will show which is the better method. No way is perfect and knowing the limits and how to work within them is what this debate is about. The latest establishments are some of the best we have ever had in peace.

The Big Picture

"It is better to see the difficulties and dangers of enterprise than to be blind to everything but success"
Duke of Wellington 1809.

Hands up who foresaw war in the Falklands (1982), the Gulf (1991), Bosnia (1993-1995) and Kosovo (1999)? Rather like tomorrow's weather what sort of war will the next one be? Predicting the future is very difficult and our preparation for war can only be general until the specific problem emerges. Deduction: prepare for war not a war and once you have "a war" then look at the specifics. It will be an unexpected war (in time, place and type). When it appears that the opposition will not give in, intense diplomacy will continue and the politicians will do almost anything to avoid a land war. In the meanwhile the opposition will be organizing a seriously good defence which probably has to be assaulted.

Teeth to Tail, Max Capability, Min Cost ...

Jon Welch's argument focused on support to a battle group. I would argue that the key is to look first at the parent organization against the principles of war. The doctrine I previously described in December's *Journal* is current and time proven. Thanks to small army syndrome[17] we have a generation that overstates the battle group to the exclusion of everything else. To get it right at battle group (and other major units in the brigade of which there are many) we must concentrate on the brigade first. Now Jon claimed that this RE support needs to be:

"robust, flexible and above all it needs to be so configured as to provide the maximum amount of capability for the minimum number of vehicles and personnel"

The new UK CS Regiment is 546 all ranks, supports four battle groups, brigade HQ, a brigade support group (brigade admin area in former parlance) and no doubt additional troops according to the task. It has two troops of tanks, four field troops and two support troops. By contrast the new Germany CS regiment has 659 all ranks (over 100 more men or crews for 25 more tanks or three-plus field troops of people). It has three tank, three field and three support troops. It supports **three** battle groups and anything else in the brigade. It is clear that the three-squadron version seems a better method to meet Jon Welch's "max capability min people and vehicles requirement". It is more cost-effective. So what do we make of this? It could be that a third method (way?) could do better. Consider the three-squadron method. Now add, say, 50 all ranks. This could make those establishments better. Perhaps a full recce troop, and a resources troop in the HQ Squadron. Moreover manning a more realistic-sized fleet of tanks. Arguably the UK version has a better "teeth to tail" ratio. I offer these thoughts as a devil's advocate. So what is the third way? First HQ and field squadrons are unchanged. An added advantage here is that the field squadron can fight as Infantry company in an emergency and the armoured squadron could play a role in fire support. In effect use the ARE experience and reorganize as a true armoured engineer squadron with 20 tanks. In detail this is three troops of six (three AVRE, three AVLB) and two "command" AVRE in SHQ. One for the OC and one for the 2IC. Tour the battle field of Le Havre (highly recommended) and you realize that current armoured squadrons are not big enough for waste and muddle and will not survive because they have inadequate protection (both active and passive). It is sobering to learn that the 1951 "Armoured Engineers in Battle" pamphlet stated: "plan on half the fleet becoming casualties in a deliberate set piece assault". The Armoured Corps have their OC and 2IC in a tank, so why not the Armoured Engineers? Look at "Implications of firepower" and you start to see how this deduction came about. Small wonder that the authorities wish to mount OCs in Warrior instead of CVR(T). When asked what the OC and 2IC should be in the veterans of World War Two say the same. In a tank. So how many tanks would the six brigades need? 120 in service

with about 20 in the training establishments and reserves.

I will now raise food for thought and say that a standard three-squadron establishment for both types of brigade with 50 or so additional men for enhancements (additional tanks, BGE parties, resources, recce and so on) is what should be considered in three years time.

Jon Welch criticized the engineer support of the early 80s as "not being able to get the right RE support to the right place in a timely fashion." There is a lot in this. But looking at 20 Armoured Brigade exercises in 1982-84 it was not so. We had (almost constantly) a field squadron and an armoured engineer squadron made of two troops similar to a UK brigade today. Throughout the exercise season, getting the right support to the right place at the right time was not difficult. My troop changed battle group by being warned (by radio) and sending a liaison party to pick up the necessary information (signal books, orders, situation and so on). We then moved. To be fair, the amount of regrouping that used to go on was and is unrealistic. Good planning (see Le Havre and Siegfried line) required little regrouping. It relies on understanding what a brigade can actually do: one operation or phase and then to be relieved. It is sobering to note that only one in 12 battle groups are still operational at the end of their missions in BATUS[18].

"Yes but what sort of war are you fighting?"

Given favourable factors (enemy, weather and ground) in war, what Jon Welch and Richard Hourahane describe may work. Indeed the four-squadron method would work (with the right kit) in a desert against a broken enemy which is disorganized. It would not however be effective in deliberate offensive operations. Whichever way is used regrouping will be inevitable.

Waste and muddle happens – somewhere in Germany 1945.

So which is right? I tend to favour the three-squadron way but remain open-minded.

Training for Close Support

We overstate BATUS and understate the brigade level of exercising[19]. BATUS is a useful vehicle which no one would be without, but does it not enhance the small-army syndrome by penny packeting? Perhaps a better way is to "train to order". Jon Welch's splendid article on Recce[20] in BATUS last year showed how this might be done. For the unfamiliar, a recce regiment plus its support was shipped out for the exercise. Given that we train for war and not BATUS we need to train to order by looking at the principles of the "one off" exercise. Deliberate area defence involving four field troops might be one to consider. Space prevents further discussion on this area and indeed the realities of peace which need re-examination.

Doctrine

We are missing something. It is a manual called the "CS Regiment in Battle". By contrast the RAC, Infantry and RA have one. The RAC one is splendid[21]. I commend it to readers.

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[18] See Lt Col P N Hinde, Maj P Fox, J M Montgomery, BP Ruson *Operational Effectiveness Study*, DERA March 1998.

[19] See "Approach to Battle" by Maj Gen Sir Francis Tuker. It contains some priceless gems on how to organize for battle and is worth study. Contact Lynda Surman on ATN (9) 4222 4381.

[20] See RE *Journal* Apr 99 p5 – 13.

[21] The RAC Manual "The Armoured Squadron" 1997 is the best around at the moment. Look for Annex B to Chapter 4. The new "Battle Group Tactics Manual" is not bad either.

Conclusion

Let me sum up:

- We prepare for war not a war. Manoeuvrists beware as we may have to fight as we must and not as we would like. The dash around the desert has to be balanced with deliberate operations, such as an assault on a defensive line which is well prepared (Kosovo nearly). Proper study of several cases would help. Try Le Havre.
- What we have is 70 per cent right and in peace has never been better in terms of organization (structure in current parlance).
- We must have a brigade exercise which really puts the players through their paces to see how well these new structures work.
- I commend the three-squadron organization with a true armoured squadron of twenty CR2 tanks. I **think** it may serve us better in peace and war. Let us trial it in two years or so.
- We must have the right tools. CR2 (with demolition gun) is key and cost effective.
- We must have the right technique: the deliberate assault on a well-organized defence must be written (somewhere), taught and practised.
- We need a manual on CS. The method used by the RAC equivalent is worthy of imitation.
- The next five years, the test of time, will tell us a lot.

Two final thoughts must come from Major General Francis Tuker, a relatively unknown officer to serving readers but a master of method whose slogan, when he commanded 4 Indian Division (with distinction) was:

"If the approach to battle is good
then the battle is easy"

and

"... if the approach is not right failure is certain[21].

Diary of a POW – North Africa to Italy 1942/3

MAJOR D C BRETTELL

Edited extracts from a diary written by the author, who died on 3 August 1998.
A full copy of the text is lodged in the Corps Library.

It's 18 months since I reached the Allied Lines, having absented myself without leave from an Italian POW camp, and I feel that I can now look back on the 15 months that I spent as a POW with an unbiased mind and write down a certain amount of what I felt and did during that time.

It was the evening of 20th June 1942. At about 1600 hours on that ghastly Saturday evening, I found myself squatting with my fellow officers and ORs in a little waddy northeast of the town of Tobruk. We were, by that time, unarmed and very dejected and bewildered. We were guarded on all sides by the men of the German Machine-Gun Company that had captured us.

We were allowed to go to our tents and pick up as many belongings as could conveniently be carried. It was curious that one hadn't the vaguest notion what were the sort of things to take. I can see myself now. I stood at the entrance to my tent foolishly gazing at what had once been my home – I might almost say, my world – I am not ashamed when I say that tears welled up and I had to bite my lips hard to stop myself weeping my heart out.

Everything happened so quickly. One experiences a curious feeling when witnessing the world and routine, to which one has become so used, smashed before one's very eyes. It is alarming not to know exactly what is going to happen to one in the immediate future. There is a sense of despair and uncertainty, which we all feel at sometime in our lives, but which I never wish to experience as vividly as I did at that particular moment in my life.

I stood gazing, possibly for minutes, before I pulled myself together and went inside. I knew that there were certain things I should destroy under such circumstances. I got out a box of matches and set light to my identity card. These cards are extremely difficult to destroy! To the smouldering remnants of my 2606 I added the rough plans of the minefields that we had been laying for the past three weeks. I smiled as I did this, and thought to myself of all the work that I was saving myself and my *havildar*. The work of sorting out and trying to make sense of our notes and plans would have lasted many an hour. Then I burnt my diary. My thoughts then turned to my personal comfort. What does a POW need in the way of personal comfort? I grabbed my macintosh, a sweater, a pair of pants, two pairs of socks, a pair of KD slacks, a spare shirt, and that was all. I rammed them all into my small pack. Then I saw my washing and shaving materials. I thought to myself, "Dammit, I'll grow a beard!" It was not long after this that I learnt that one of man's greatest morale-boosters is a good wash and shave.

We were loaded onto trucks and taken to a patch of open ground near the cross-roads called Kings Cross, where there were many other POW, and told to go to sleep. I slept like a top.

By nine in the morning, we were beginning to feel somewhat hungry. Nothing had been laid on by our captors and the outlook was black and foodless. During the morning, we were marched two miles to the aerodrome, and during the day watched thousands upon thousands of South Africans, Negroes and Indians, and troops of all races and colours being marched to join us. A depressing sight.

It was sometime the next day that we received our first rations. Bully and biscuits and an issue of water. Morale was very low indeed.

On the Tuesday we witnessed one of the most stirring scenes I have ever seen. The Cameron Highlanders arrived with pipes blaring and arms swinging. It was tremendously morale-raising to hear and watch them march into the cage.

We were handed over to the Italians, and several moves later reached Derna. Settling down as far away from an open and rather unpleasant latrine as possible, we went to sleep but in the middle of the night were awakened by the sound of two shots and the moans of a wounded man. A batch of ORs had arrived tired and hungry, and had been ordered about by the Italians who were guarding them. One of the ORs refused to obey an order and told the guard to "F... off". He received a bullet in the small of the back for his

pains. I saw him next morning but whether or not he lived, I can't say. The sickening horror of those shots and moans will live in my memory for the rest of my life.

Here I would like to comment on our mental feelings at this time. Lectures on escapology are to my mind too few and far between in the army. It should be drummed into every man's head (preferably by someone who has had some experience in escaping) the immense importance of getting away or attempting to get away at the earliest possible moment. The fact is that the nearer one gets to the base of the enemy, the harder it becomes to get away. Had J and I really thought about it, we might have made good our escape and saved ourselves 15 months in goal. As it was, the one thought that filled our minds was a longing to get somewhere definite. We wanted to be able to settle down and sleep for a bit in comparative comfort and then possibly begin to think of escape. Our morale was, naturally, extremely low, but I feel ashamed now that I let myself sink into such a low condition with regard to initiative as I did. It's essential at such times that one takes a firm grip of one's senses and thinks of nothing but methods of getting away.

We eventually reached Barce and found ourselves behind barbed wire. J and I bagged a double tier bunk, and then, having dumped our kit wandered round the camp to see what sort of a place it was. This was foolish. When men (officers or ORs) are in a low state of morale and health, they lose all their normal sense of morals. We returned to find that some low type had stolen our 2-gallon water tin and one of our jack-knives.

Just how we occupied our time in Barce camp has always puzzled me. We had one or two books, and a small amount of tea which we had picked up on our travels also did noble service. We would spend a long time wandering round the camp in search of firewood to build a fire, boil some water and make a very weak brew. We thought it was nectar. We found out that seven times round the camp perimeter was about a mile and decided to run a mile each day but our strength was not sufficient to keep it up.

We were transported from North Africa by plane and were moved to Lecce in the "toe" of Italy and then to Bari, a few miles further north on the Adriatic coast. One of the South Africans had brought with him a devoted little dog. When we left the camp at Barce, the camp commandant brought out a parcel and presented it to this officer, who opened it and found a day's ration for his dog. On arrival at Bari the dog was removed from its master, and I shall never forget the screams of the wretched little fellow when he got into the hands of some of the little Italian runts who pulled his tail and generally bullied him. Those screams will also live on in my memory. Eventually one of the Italian officers took charge of the dog. It was allowed to come and visit its master once a week and the reunions were a picture to behold. What happened in the end I don't know.

J and I used to lie on our beds and play a game which we called "word squares". We would play this for hours on end. There was one pack of cards in the building but the owner guarded them very well and was extremely loath to loan them out. At a later date when the ever-to-be-blessed Red Cross parcels and fags appeared, J and I collected the empty packets of Players cigarettes and spent many an hour carefully copying the pictures of kings and queens and jacks onto them until eventually we had a fairly presentable couple of packs of cards which passed many an hour. I will always remember "The king with a diamond on the end of his nose".

One of the main joys of Bari camp was the constant supply of deliciously cool water which flowed from the taps; it must have come from a very deep well somewhere because I have never known such cold or such pleasant drinking water. This was to us (so recently having been drinking "Tobruk" and "Buk-Buk" waters) a boon of no small measure. How we longed for it when we were at Chieti later on.

It was here that we started the entertainments which were to become one of the main features of our sojourn in Italy. They began in a very small way. First there was Tommy's trumpet, followed by Cookie on the squeeze box. Then we all joined in a sing song, and so on and so on, and then bed and glorious oblivion. In the words of the old song you can do a lot of things to me "but you can't stop me from dreaming".

The organized entertainment didn't really get going until the first batch of parcels arrived which gave us the energy to start organizing things. Never will I forget that day. We saw trucks arrive at the camp gates and saw the crates of parcels being unloaded into a building outside the camp proper, and all our hopes were

raised beyond measure, but it was some days before the parcels were near enough for their contents to be eaten.

The Italians were difficult. They said that we might only have a parcel between ten per week. This was ridiculous, and we said so, and said that we wouldn't have the parcels at all unless we got them at the rate they were supposed to be issued, ie one per man per week. Deadlock.

They climbed down a bit and offered us one between seven, but still we refused. It was a colossal strain, knowing that all the food was just the other side of the fence. We gave in to one between four per week, the longing for food and especially for sugar was too much for us. I never before realized what a lot sugar has to do with the provision of energy in our bodies. We craved it. The only sugar we got was contained in the early morning coffee. We could buy, at truly exorbitant prices, "cakes" from the canteen, hardly worth calling by that name. They were about an inch and a quarter in diameter and half an inch high, but they contained sugar. There were never enough to go round, and it was pitiful to see the care with which we divided the tiny things into four so that we might each get a taste.

Through the canteen we were able to buy such things as paper and pencils, toilet paper in small quantities etc. Cigarettes (Italian weeds) were also obtainable in small numbers. The name of "Milit" will live for ever. How we longed for the previously despised "V" cigarettes!

But I have diverged somewhat from the subject of Red Cross parcels. From memory there were different contents in differing parcels, but they all contained the following:

1 lb biscuits
½ lb margarine
¼ lb jam or marmalade or syrup
¼ lb sugar
¼ lb chocolate
2 oz cheese
2 oz meat paste
A tinned pudding or pudding mixture
A bar of soap
A packet of sweets

There wasn't enough room in the camp cookhouse to deal with the heating up of individual tins of meat, so we all set about making little fires and great cookery went on, until the supply of wood began to run out. Luckily we moved from Bari before the supply became too diminished. Accompanying each parcel were 50 cigarettes or an ounce of tobacco. This was one of the things we enjoyed to the full. The taste of a real good English cigarette was a real joy. I remember feeling quite dizzy when I took the first two or three draws. Morale and our strength rose perceptibly after the first couple of parcels. People started giving lectures on this and that, and life became really different altogether.

There was talk about escaping, but as far as I know, while I was there, no real attempts. Nevertheless the sentries were very jittery and extremely light on the triggers of their guns, as witness the story of a wretched private who was shot dead one night while looking for the lavatory.

Our next camp was at Chieti, a town on the River Pescara, about 12 miles inland from the east coast of Italy on about the same latitude as Rome. The camp was about 200 yards square overall, surrounded by a wall about 20 feet high. At 100-yard intervals were sentry boxes, each containing one miserable looking runt about two-thirds the height of the rifle with which he was armed. All most formidable.

Eventually we were searched, and I lost my raincoat and all my Egyptian money. Their reason for taking my raincoat was that it was of civilian pattern and could be used for escape purposes. They were good enough to give me a receipt for both and, when the weather broke and we were all short of warm clothing, they were humane enough to give all the clothes back "for the duration of the winter". When the warm weather arrived, they issued an order recalling the clothes to store, but nobody obeyed it, which led to a number of searches. I had sewn mine up in my mattress, and it survived all the searches, even when they ripped a 2ft long rent and felt about inside. I still have the mac. I managed to bring a 10/- note through all the searches too, it was sewn up in my watch strap. One of the things at which we became more and more expert was the way in which to hide things of value, whether personal or escape equipment. It is quite an art.

As time went on there arose a series of committees for the improvement of conditions generally. The first and most important was the messing committee, to which all complaints about food went. This committee had a hard deal in the beginning because all our thoughts were centred on our stomachs as we had nothing to while away the time, such as a theatre or education or

even a library. We spent a lot of time thinking about food and thinking up reasonable and unreasonable complaints to make. Never will I forget listening to the fatuous arguments that went on. People wanted to know exactly where the 13.5 lire per day which we were paying for messing, was going. The wretched representative of the Committee would read out a list of something like: macaroni 2.52 lire, sugar 1.76 lire, salt 0.00234 lire and so on, all to three or four places of decimals. The total would never come exactly to 13.5 lire, and a tremendous argument would start. As if it mattered anyway. But it really and truly did matter to us then. Having nothing to occupy our minds, the only thing we could work them on was petty arguments like this. It is a laughing matter now, but then it was all done in deadly earnest.

A small band of hard-working chaps started thinking about arranging entertainment of the theatrical type. After a few weeks, the first show was put on in what was called "The Little Theatre" housed in one of the few spare rooms in the camp. About a third of the room was taken up by the stage and the rest was seating accommodation with no seats. About 150 people could see the show at one time and the show had to be done several times a week so that everyone could see it. The portrayal of the fair sex was a problem. Never will I forget the first smashing bit of "homework" that appeared on the stage in Chieti. She took the audience completely by surprise. Dressed only in a very inadequate two piece bathing costume "she" looked, to our sex-starved eyes, quite definitely what the Earl of somewhere-or-other would call "Romp-worthy". Later on, when we had become more expert at props and dresses, some really magnificent female parts were played (and displayed!!). Among the more beautiful and convincing females, may I mention Jimmie James and James Macfarlane. The former grew his hair for some of his parts, and the latter had all the idiosyncrasies of women to a tee.

Later on, the first musical instruments came into the camp and all sorts of combinations started up, from swing bands to full classical orchestras. This was all under the direction of Tommy Sampson, who was playing his trumpet as hard as he could go. Later on we were honoured by the arrival in camp of Tony Baines, who had been a bassoon player in the London Philharmonic Orchestra, and who became responsible for writing out scores for the full orchestral concerts that were produced. He was a great man, and one of those who always appear to be absent-minded, but are far from it in reality.

At the end, when the Germans were moving the camp, he was seen manfully carrying a double-bass out, just how far he got with it I never learnt, but he was one of the ones who jumped off the train on the way north to Germany. I don't know the end of his story.

Next to the entertainment, the educationalists were perhaps the hardest worked members of Chieti society. A committee was set up to discover what subjects would be popular and who could give lectures. It was possible to learn about anything from arithmetic to shorthand, advanced Greek to pig-farming, English military history to the rudiments of the Russian language.

A large number of games of all sorts was played, even though the football pitch had a tarmac road running through the centre line.

But I think that the game that amazed the Italians most of all was the village cricket match between opposing sides of camp. The difficulty of overcoming the lack of a flat bit of grass to use as a pitch was overcome by the use of green paint applied to a strip of the road that split the camp. Stumps were made so that they hinged backwards when hit. Bats and balls were the products of the Red Cross. There was a local rule which said that a man was "Out" if he hit the ball onto one of the flat roofs as balls were in short supply, and the Italians only produced a ladder to collect them off the roofs on Mondays and Thursdays. The first match was a memorable occasion. One of the porticoes was converted into a pavilion complete with "Telegraph". Before the match was due to start, an old groundsman wandered onto the field dragging a roller after him. He was wearing the inevitable bowler hat and sucking a clay pipe. He and his assistant solemnly rolled and brushed the wicket until the umpires came out dressed in white overalls borrowed from the hospital doctors for the occasion. An Italian was heard to remark "Cricket must be a very dangerous game if they have to have doctors on the field all the time!" To add the finishing touch to the picture, Pittso and his band played in one corner.

The arrival of Yanks was memorable. They brought fresh ideas and fresh games. We started playing softball, which is a mild form of baseball played with a soft ball; an excellent game

especially in the cramped conditions. Eventually there were about 250 Yanks in the camp.

A local was working on one of the buildings when he noticed that he was missing one of his hammers. Reporting the matter resulted in a search. During that time they kept us shut up in our rooms and wouldn't allow the cooks to prepare a meal. That was one of the hungriest days of my life. We had no proper food for 26 hours, which in our weakened state was too long. I succeeded in passing out and was never allowed to live that fact down. I understand that when my friends who went to Germany were having a lean time of it, they used to recall the memory and say cheerfully "Oh well, if Brett were here, he would probably be dead by now!" The hammer was not found, and it later proved to be a tremendous asset in our tunnelling escapades.

THURSDAY, 23RD SEPTEMBER 1943

AT 0400hrs the Germans ordered all the Yanks and part of Bungalow E4 to pack and prepare to move. Thank God it wasn't us as we then had time to perfect our escape plan.

FRIDAY, 24TH SEPTEMBER 1943

THE lights were turned on at 0400hrs and the Germans ordered everyone to be ready to move by 0630hrs. After a brief conference we decided to enter the tunnel we had dug out, prepared for a 72-hour stay. We took a blanket each and stripped to our pants. How we survived I shall never understand. Lying in complete darkness in a hole 2ft square with surprisingly little air to breathe is an experience which has to be tested to be believed!

The air wasn't bad at first and we kept it circulating by flapping bits of cardboard and ping-pong bats. The hours dragged by. We had some water that tasted foul after an hour or so. We also had American emergency chocolate rations and raisins. The necessities of nature were a bit of a problem. We had a "Pee-tin" which was passed backwards and forwards as the necessity arose and emptied (at great personal risk) into the sewer by the bloke at that end. Thanks to providence, nobody desired to perform the larger natural function. There was a lot of movement up above which turned out to be the Italians clearing up. The blackness was intense and we were becoming caked with mud. The night dragged on...!

SATURDAY, 25TH SEPTEMBER 1943

THE air was becoming very thick. Then we had a message from Capt Mackenzie, who had come back with some Germans to collect Red Cross rations for the chaps at Sulmona. He said that all the Germans had left but that Carabinieri (Italian Military Police) were still clearing up. This was most cheering and we decided to exit at 2300hrs.

At 1800hrs we heard noises at the far end of the tunnel. A ghastly moment. Alan Cameron, brave man, went up to investigate, and reported that someone was filling in the far end and ramming it down.

Now we were in a fix. We were in no fit condition to start digging again. The only alternative was to get out and climb over the wall. At 2000hrs after 33 hours in the B... place, Bob Evans and I pushed up the lid. I crept out (I have never been in such a blue funk as at that moment!) and scouted round for sentries and whatnot. As far as I could see there was only one sentry and he was on the gate. Seven of us got out of the tunnel and sealed the others back in (they would leave later that night). All the camp lights were on. We dressed and removed most of the mud from our hands and faces. We decided to climb over the wall in three parties and rendezvous at the old mill near the river Pescara.

It was midnight. The river was in spate and impossible to cross. We set off along the bank to get as far away from the camp as possible.

SUNDAY, 26TH SEPTEMBER 1943

WE woke up early and tried to camouflage ourselves under hedges in an attempt to hide up for the day. Being Sunday I didn't think that any Italians would come woodcutting, but they did, men, women and children. Of course they found us and we had to tell them who we were. It was a terrible moment. However they turned out to be friendly and offered to get us food. That night we discovered a small footbridge over the river and crossed it.

We came to the conclusion that seven was too big a party for safety and decided to split up. Buck, Jenk, Crab and I camped in a wood and the other three went a mile or so downstream. It was difficult parting but it was all for the best in the end.

WEDNESDAY, 6TH OCTOBER 1943

GREAT excitement this morning. The son of a local farming family, came running to say that a

parachutist would like to see us. We duly followed him and were introduced to Capt Lee of the SAS, who had been sent to round up all escapees in the area. He gave us directions to get to the mouth of the river Foro where there was a beach party and a boat to take us to Termoli. He gave us fags and 4000 lire. We set about planning our move.

THURSDAY, 7TH OCTOBER 1943

EVENTUALLY we reached the house where the "beach party" was supposed to be. There were about 50 chaps there, including five from Chieti. We had a terrific meal of nuts and vino and tea. The theme of that meal was "Let's get rid of all this food, we won't want it when the boat takes us to Termoli!" Little did we know!!

We dumped all except our essential kit. We later sat in absolute silence on that B ... y beach, frozen to death and gazing out to sea. An SAS Captain Simon Butler stood waving a torch out to sea. We waited till 0300hrs and then gave it up as a bad job. It was desperately disappointing, but we decided to come again next night.

FRIDAY, 8TH OCTOBER 1943

IN spite of endless torch waving by Simon, no boat arrived, and we had another cold and wasted night. How we cursed the Navy.

SATURDAY, 9TH OCTOBER 1943

AT 2100hrs we lined up in parties of 30 along the road to the beach. (There were about 200 of us by that time). We were told that there was a boat cruising up and down off the beach, and our hopes rose no end. We heard machine-gun fire, and bullets whistled over our heads. This was followed by a shot from a gun of some sort. Later the shore party came back with the story that the boat they had been signalling had turned out to be German and had fired on them.

MONDAY, 18TH OCTOBER 1943

EXAMINING a map in the local school, we discovered that Termoli was 50km from the Sangro and at so we set out to the shore of the river and waded across. It was much easier than expected and crossing the provincial road was also easy. We climbed a hill and asked to sleep in a house. They welcomed us, and within five minutes the entire population of the village (some 30 souls) were sitting round us in an admiring circle.

After about an hour of this, I suggested bed, and they all cleared off, leaving us to sleep on corn-cob leaves covered by canvas.

FRIDAY, 22ND OCTOBER 1943

WE were up early and heard German trucks moving north, apparently across the river.

SUNDAY, 23RD OCTOBER 1943

(One of the Greatest Days of my Life)

WE set out at dawn towards Montenero. There was not a German in sight and the locals told us that they had all fled north in the night. We learnt the whereabouts of our line and set out in that direction. It was here I nearly met with a sticky end. We had been examining a crater blown in the road and then continued up the road. Fifteen months in the "Bag" had dulled my Sapper training, and I had forgotten the regular practice of sowing antipersonnel mines round craters. Luckily I looked down and stopped about three paces from a cluster of mines in the road. After that we were more careful. At about 1000hrs we saw the first Bren-Gun carriers advancing towards us down the lane. My feelings are impossible to put on paper. It was terrific to see our chaps again, and we walked up that hill faster than we had ever walked before.

We explained who we were and their welcome was profuse. The first English fag was a joy, and later we were fed on bully and cheese sandwiches.

SUNDAY, 24TH OCTOBER 1943

WE hitched a lift on a RE postal truck to Castel somewhere or other and eventually arrived in Bari in darkness and damn me if we weren't taken to the POW camp. Here we filled in various forms and sent a printed post card home.

10TH NOVEMBER 1943

[VIA North Africa and Gibraltar, Don Brettell reached London and at 1600hrs on 10 Nov 43 was released for home leave.]

The Closure of Long Marston ... And The New Order

LIEUTENANT COLONEL P M NAYLOR MILOG

Phil Naylor has had a varied career with the Corps since commissioning in 1977. As a troop commander he saw service in Norway, Cyprus, Belize, Germany and the Falkland Islands with 11 Field Squadron. Then followed tours as an instructor at both 1 Training Regiment and at the Northern Ireland Training and Advisory Team (BAOR). He served with 32 Armoured Engineer Regiment and 21 Engineer Regiment before returning to the UK to complete the Dagger Course and start two years' work with the Procurement Executive. His "resources" career followed with command of 65 Field Park Squadron, and a stint as 2IC of 21 Engineer Regiment, which included a tour in Bosnia and the move of the regiment from Nienburg to Osnabrück. Then followed a most enjoyable six months completing the Joint Service Defence College Course at Greenwich before assuming command of Central Engineer Park. He has seen the Depot through from its height of activity to complete closure and is now moving to become the SO1 Engineer Logistics in Engineer Branch, Land Command.

Introduction

Since early 1941 the Corps has been provided with engineer resources support in the Base Area from Long Marston, near Stratford-upon-Avon, Warwickshire. The name "Long Marston" has tripped off the tongue of many on operations, projects or exercises over the years, sometimes in praise, sometimes in criticism, and often as a cry for assistance. Despite such a long history, and given the enormous support role it has provided, it is perhaps surprising that so few members of the Corps, past or present, have ever visited the Central Engineer Park.

This article will review the support once provided from Long Marston, look at the background leading to the decision to close it, outline the activity necessary to drawdown a major Army depot and finally, and most importantly, detail how engineer logistic support will be available to the Corps in the future.

A Short History of Long Marston

Between the First and Second World Wars the main Sapper activity was the maintenance of Army installations including training areas, railways and docks. Each garrison engineer had his own "yard" in which he held a limited amount of stock, often buying locally whatever extra was required. The lessons of the First World War regarding the importance of engineer stores had been forgotten and, as 1939 approached, the Army found itself with practically no engineer stores, without an engineer stores depot and with no plans to remedy this deficiency.

No 1 Engineer Store (Base) Depot RE was hurriedly formed at Chatham in 1939 and by the autumn was operating near Rennes. With the requirement to maintain the BEF, the need for a home depot to hold large quantities of RE stores was pressing. As a makeshift measure the then new RAOC Depot at Donnington was brought into use, but was soon overflowing. A key decision came in 1940 when, during the period of the evacuation of the BEF from Dunkirk and other French ports along the English Channel, it was realised that the congestion of military stores at the docks and railway sidings would have to be eased. The order "Clear the Ports" given by the Prime Minister, the late Sir Winston Churchill, started the movement of engineer stores that resulted in the setting up of the first large engineer stores depot to be located in the UK.

Lieutenant Colonel PM Naylor
The Closure Of Long Marston and the new order

Reconnaissance was carried out and a site at Long Marston, six miles south of Stratford-upon-Avon was chosen, since it was relatively safe from air attack. In addition, it was well served by the Great Western Railway, having access to the main lines at Honeybourne on the south side and through Stratford-upon-Avon to Birmingham and Leamington on the north side.

Rapid action was taken to requisition the first 350 acres of farm and marshland. By September 1940, after hasty construction works, 715 railway trucks containing equipment for storage arrived. From this developed the home of engineer resources for the next 50 years.

The Service Provided from Long Marston

Over the years, Central Engineer Park has undertaken several engineer resources functions in the Base Area. In particular it has had two primary functions:

- Base storage and distribution of engineer materiel.
- Base repair, manufacture and adaptation of engineer materiel.

In addition to these primary functions, several secondary or supporting functions were also undertaken, including:

- Provisioning the Depot.
- Procurement of construction materiel.
- Production of technical publications.
- Training of resources specialists.

It is almost impossible to quantify the support provided to the Corps from Long Marston in the last 50 years, but stores have been issued for every operation since the Second World War and to every theatre in which the Corps has been deployed. In recent years this support has included Northern Ireland, the Falkland Islands, the Gulf and Bosnia.

At its peak, in the 1950s and 60s, the Depot employed over 800 soldiers, 1000 civilian staff and nearly 1100 displaced Polish refugees. By the early 1990s this figure had dropped to some 150 military and 450 civilian staff. By 1998, approximately 150,000m^2 of stock with a value of nearly £200m was held in the depot, including bridging, boats, tactical handling fuel equipment (THFE), trackway and expedients, together with a range of plant and engineer construction plant (ECP). Over the years this range of stock has varied considerably and some may remember HAFB (heavy assault floating bridge) and LAFB (light assault floating bridge) or Romney, Marston, Nissen and Twynham hutting. If an item was not available as stock, it could be procured or manufactured rapidly and deployed wherever it was needed.

THE ENGINEER LOGISTIC REVIEW

The Background

The absorption of engineer resources activities, behind the Corps rear boundary, into the RAOC and REME, has been recommended and fought off on many occasions since 1945. The Odling, Somerville and Staveley studies all successfully argued that engineer resources were not the same as the "fire and forget" commodities of the RAOC or the "routine repair" of the REME. The QMG's *Logistic Support Review*, conducted in 1991 as part of the *Options for Change* work, once again recommended that the business should transfer to the REME and RAOC. It also recommended the transfer of the equipment support staff function from Director Engineer Services (Army) to Director General Equipment Support (Army), one of QMG's two functional directorates. The *Logistic Support Review* acknowledged the need for Royal Engineers to continue to provide the engineer resources staff function, by not recommending its transfer from Commander Engineer Resources to Director Logistic Support (Army), the other functional Directorate within HQ QMG.

In 1992 the equipment support staff function transferred to Director General Equipment Support when Engineer 3a joined ES42 in Andover but the other *Logistic Support Review* recommendations were conveniently put to one side. Later, in 1994, a barrage of new initiatives hit the Base Engineer Resources organization, now firmly under Director Engineer Support (Army) (D Engr Sp(A)). Transformation into an agency and competing for quality were both considered in great depth but were overtaken by events when, in 1995, the order was received to transfer the entire operation from Long Marston to Chilwell. This was the result of *Defence Cost Study 10* which sought to rationalize Army storage in the Base Area and saw economies in removing the single use site at Long Marston.

D Engr Sp (A) staff then worked long and hard to define what changes would have to be made to the very old single story ammunition storage sheds at Chilwell, how they were to physically move the engineer materiel and how they were to modernize the business. It was the latter that proved most difficult, given the restrictions of the former, and led to the *Engineer Logistic Review* (ELR) being undertaken. In December 1995 the review was published, recommending that the Royal Engineers should not move to Chilwell but should instead transfer those elements of the Base engineer resources business that were not core to the Royal Engineers to those whose core business they were. Essentially this meant disaggregating procurement and provision, storage, repair and training, while retaining policy, managing engineer resources in the supply chain, inspection and logistic IT.

New Service Providers

SINCE the *Logistic Support Review* QMG set up various agencies and authorities to carry out specific logistic functions in the Base Area. These agencies were ideal recipients for the engineer resources non-core business where it would receive the attention, modernization and funding that it needed for a successful future. In total there were 16 non-core business areas to transfer to ten new service providers and the particular agencies providing the service were:

ESPPA	Equipment Support Provisioning and Procurement Authority.	Procurement and provision of spare parts.
DCTA	Defence Clothing and Textile Agency.	Procurement and provision of construction materiel and the hire of plant.
ABSDA	Army Base Storage and Distribution Agency.	Storage, configuration and distribution of war reserves and training stocks.
ATSA	Army Technical Support Agency.	Provision of technical publications
ATRA (An AG Agency)	Army training and recruiting agency.	Training RE resources specialists and resources officers.

While the greatest part of the business was to transfer to the agencies, a significant amount of repair was to return to Land Command. This was work that should already have been carried out in the field support and field park squadron engineer workshops.

An essential feature of the ELR proposal was that RE staff should be embedded throughout the new service providers, and elsewhere in the Army supply chain, to give advice and be a point of contact with staff officers and commanders. The correct level of support was judged to be an SO2 Engineer in most of the new service providers, including the Supply Chain Operation Centre (SCOC) at Bicester, DCTA at Caversfield, HQ ABSDA at Bicester and the School of Logistics at Blackdown. In Land Command, Engineer Branch, HQ Land required a SO1 logistic operations, each division a SO3 logistics, and each Combat Service Support Group (CSSG) a SO2 engineer. The majority of the practical assistance was to be given by RE soldiers in DCTA and ABSDA, the former having two clerks of work and the latter 21 tradesmen ranging from WO1 mechanical engineer resources specialist to a corporal mechanical engineer fitter (utility and petroleum).

The core engineer resources business would remain under Commander Engineer Resources who would join D Engr Sp (A) at Andover as the Colonel Engineer Resources. He would provide the policy to those embedded in the new service providers as well as running the Engineer Resource Management Cell (ERMC) in SCOC and the Inspectorate of Engineer Resources (IER).

The Plan

THE recommendations of the ELR were discussed within the Royal Engineers before being put before QMG early in 1996. QMG agreed the recommendations and directed that they were to be implemented.

A small planning team led by Lt Col Mildenhall and supported by Lt Col (retd) Kinnear and Maj (retd) Fresson was established and months of hard negotiations then began with the new service providers. This was a time of great change and almost all involved were already trying to reorganize, downsize or implement savings measures and taking on additional engineer resources business was not the top of their priority list. Nevertheless the team produced a plan which was sound, despite being dependant on many external influences. The greatest limiting factor was the time needed to carry out the £4m worth of property management work.

The success of the disaggregation was very much the result of the tremendous effort and attention to detail by the planning team. The business was fully, honestly and accurately assessed and a financially sound and a logically supported action plan was produced. As with any plan, it had to be amended almost continuously, but the expertise and tenacity of the team members won through and they deserve full recognition. The final and very successful completion of this exercise is testimony to their effective staff work.

CLOSURE OF LONG MARSTON

Stock Transfer

THE transfer of the stock out of Long Marston began in earnest in May 1998, starting with Hesco bastion, gabion walling and targetry which moved out on three trains to Bicester. This was followed by the movement of plant, ECP, bridging and boats to Base Vehicle Depot Ashchurch, which continued until November that year and involved some 720 vehicle loads. In July 1998 the larger "spares", such as bridging spares, began to be transferred to Base Ordnance Depot Bicester, closely followed by large quantities of trackway, fascines and Harrier support equipment. The move was conducted using hire vehicles, contractors and even two RLC regimental exercises. In all, some 110 vehicle-loads moved from Long Marston to Bicester between July 1998 and February 1999. All the small "spares", totalling some 8500 different types of item, were moved to Donnington within a matter of days, spread over eight weeks, and with surprisingly few deficiencies being noted. Finally, all the TFHE, which had become, or may have become, contaminated by fuel, was moved to the Petroleum Centre at West Moors, near Bournemouth in Dorset. In total, approximately 2300 vehicle-loads, about 60,000 tons of stock, were relocated.

As separate tasks, considerable quantities of plant and other stores were moved to Longmoor to establish the RE Training Pool and a major disposal initiative took place to reduce stock levels on a wide range of equipment.

Closure of the Engineer Workshop

DURING the spring and summer of 1998 the drawdown of the engineer workshop took place. Initially only accepting essential new work reduced the outstanding workload. The transfer of all the training stock to the ABSDA engineer parks, and with it any responsibility to repair this materiel, also significantly reduced the burden. In October 1998, Land Command field support units within the UK assumed responsibility for field repair levels 1, 2 and 3. Once again, this reduced the burden on the workshop. At the same time the Army Base Repair Organization began to assume responsibility for level 4 planned repairs and modifications as well as unplanned level 4 or base repair. Thus much of the new repair work ceased with the exception of a small amount of work generated from within the depot.

As a consequence of the reducing workload, the workshop was able to drawdown and, by mid-November 1998, was completely closed. The machinery and fittings from the workshop were either redistributed or auctioned off under the direction of the equipment manager. By Christmas 1998 the buildings were empty and all workshop equipment was off site.

Transfer of other Functions

IN parallel with the closure of the depot and the engineer workshop, the supporting functions were transferred out. ESPPA assumed responsibility for provisioning most items of RE materiel on 1 October 1998. DCTA took on the remainder by mid-November and at the same time assumed responsibility for the procurement of general construction stores and equipment for operations and projects, immediately becoming involved in supporting operations in both FRY and the Middle East. DCTA also assumed responsibility for plant hire.

As early as 1993, ATSA had assumed responsibility for the production of technical publications for RE materiel although stocks of these publications were stored and distributed by Long Marston until March 1997. At that time this storage and distribution responsibility transferred to Llangennech along with the rest of the Army publication repository.

Finally, in October 1998, the last course was run by the resources training team at Long Marston and, within a week of course dispersal, the team had relocated to the RLC training centre at Deepcut. There they began to redesign all trade courses on the basis of a RE Training and Development Team study, in time for the next scheduled course in April 1999.

Manpower Reductions

Clearly, the whole process of closure required tight budgetary control. As one function ceased in Long Marston it started up with a new service provider. In some cases there was an overlap of responsibilities to allow the new service provider time to build up capability while Long Marston drew down. With limited funding it was important that any overlap was kept to an absolute minimum and a key area where costs could be controlled tightly was the management of manpower. This meant the timely recruitment of staff into the new service providers, combined with the reduction of staff at Long Marston.

At the beginning of the drawdown process, in Spring 1998, there were some 120 military staff posted to Long Marston. By the end of 1998, numbers had reduced to less than 30 and by April 1999 this reduced further to some eight military personnel who would see the depot through to its final closure in September 1999.

The reduction of the civilian staff at Long Marston was by far the most difficult process of the entire drawdown. In all nearly 450 staff received notice. Of these, about 40 were redeployed, a few found employment at other government establishments and some took early retirement. However, the majority faced redundancy. It is to their lasting credit that they worked extremely conscientiously to the end to ensure the success of the transfer process.

Domestic Closure

One of the saddest elements arising from the closure of any establishment is the run down of the fabric of the organization and, in this respect, Long Marston was no different. Established institutions such as the messes, NAAFI and sports clubs all fall to the process of change and with them decays the very soul of the unit. By April 1998 the junior ranks dining room had closed, giving way to a temporary solution in the Warrant Officers' and Sergeants' Mess and by October of that year this mess had closed to be replaced by an all ranks' facility in what was once the officers' mess. Property was disposed of, including items belonging to both messes and the PRI, much of which has been redistributed throughout the Corps.

In September 1998, to mark the closure, a weekend of events was organized to which many ex-employees, both military and civilian, attended. The event including the final official functions in Stratford-upon-Avon to mark the Freedom of the Town held by the Corps.

In the meantime other areas of the Depot were closed down, including the gymnasium, fire station, medical centre and servicing bay. By Christmas 1998 the depot was looking very desolate. Those personnel remaining had the task of closing down the accounts and disposing of the camp infrastructure.

The New Order

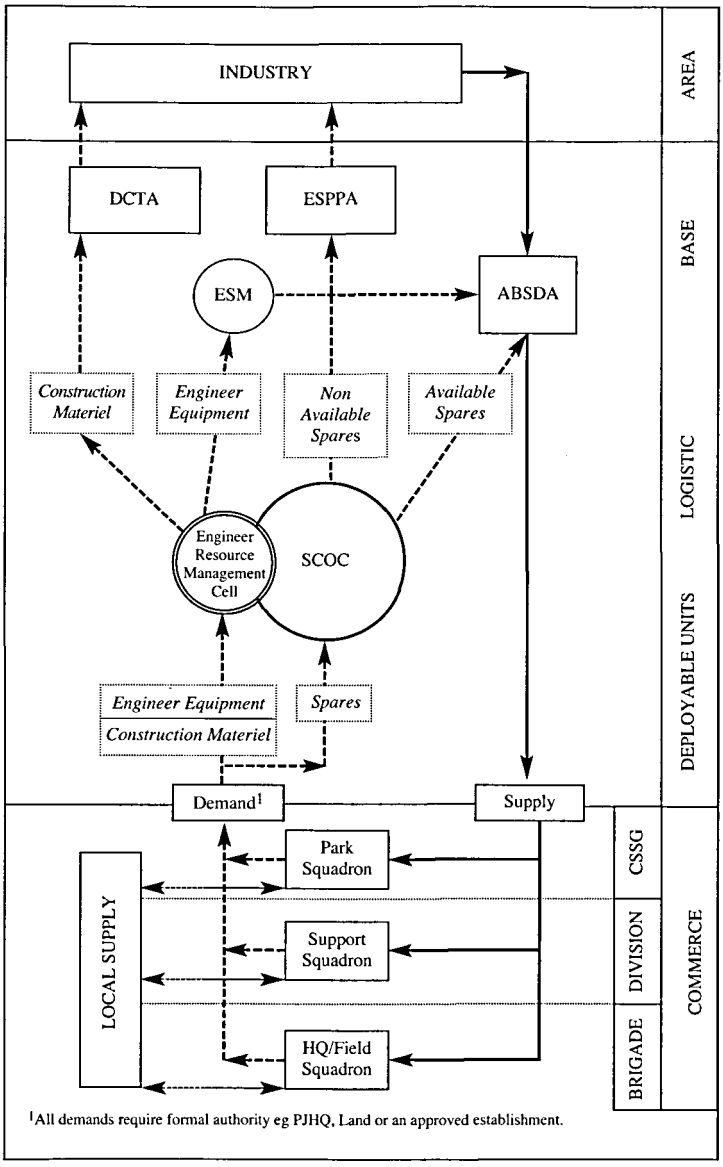
By the end of January 1999 the whole Engineer Resources business had been transferred from Long Marston to the new service providers, three months ahead of time. Each separate aspect had an "absorption plan" stating what service was to be provided, to what standard, and what resources were to be transferred. The D Engr Sp(A) and the one star directors or chief executives from the new service provider had signed these plans. In all cases there had been an enthusiastic willingness to take on the business, maintain the necessary standards and improve the service where possible.

The future success of the provision of engineer materiel from the Base Area depends on:

- The ability of the new service providers to provide the service described in the absorption plans, and
- the ability of the Corps to understand and adopt the procedures used by the new service providers.

The RE staff officers and tradesmen embedded in the ABSDA, DCTA and ATRA have already demonstrated their worth in enhancing the service. The Engineer Resources Management Cell in the SCOC and the IER continuously monitor performance and report back to Colonel Engineer Resources who provides advice and policy to HQ QMG as well as attending the necessary agency customer advisory groups. With one exception, there has been little but success to report. The initial drawdown operation was mounted with the issue of engineer resources worth over £5m up to 1 April 1999. Speed and accuracy have reached or even exceeded the standards laid down in the absorption plans.

The new engineer staff officers in HQ Land, 1 and 3 Divisions and the CSSGs have not been deployed as quickly as those embedded in the new service providers so there has been a delay in spreading and monitoring the new systems in



should finally ensure the new order is fully in place.

What is the new order? While waiting for the new *Engineer Support Regulations* one should look at the wiring diagram *(left)*, which is simplistic but provides a flavour.

Effect on the Corps

THE outcome of the closure of Long Marston has been the subject of considerable debate within the Corps. However, for those who have an understanding of the capability of QMG's agencies, it is clear that there are many benefits. The service is now provided by specialists whose core business is that service and that service alone. The new service providers are able to focus their funding, manpower, facilities, systems and training toward a single mission and therefore demand and receive a high priority for further investment. An engineer resources organization standing alone would never have been able to develop to the same extent. As a result of the ELR, the Corps is now in a much stronger position to influence and exploit future developments in both logistic supply and support.

As an integral part of the Army supply chain, engineer materiel will be more visible to commanders at all levels than has been the case in the past. It will not be seen as a competitor to other resources and will have more chance of receiving the priority it deserves. The same benefits will apply to access to repair procedures in the Base Area.

Finally the officers and soldiers involved with engineer resources will see a difference as they move closer to the "professional logistician". It is often forgotten that there are over 60 officers and 200 soldiers (including five class 1 warrant

Land Command units. However there has been a concentrated advertising campaign aimed at ensuring units know what changes have been made. The engineer resources symposium has been run twice each year, information has been printed in the *Sapper Telegraph* and DCIs have been produced (DCI JS 10/97, 21/97, 52/97, 101/98 and 125/98 refer). Nevertheless units are busy and information does not always get down to every level, so some out of date practices continue to bug the system. The complete rewrite of *Engineer Support Regulations* later this year

officers) intimately involved with engineer resources. Recognition of their expertise in this field is developing, with national vocational qualifications and masters degrees in the pipeline. Logistics is no longer a matter only for the RLC.

As for the remainder of the Corps it should be business as usual but with the prospects of greater things to come.

AFTERNOTE

THIS article was written before the formation of the Defence Logistic Organisation (DLO) on 1 April 1999. The DLO brought together logistics of all three services in the Base Area under the Chief of Defence Logistics. As a consequence:

- QMG will no longer exist after 1 April 2000.
- Army Base Storage and Distribution Agency (ABSDA) became the Defence Storage and Distribution Agency (DSDA) on 1 April 1999.
- D Engr Sp (A) stood down on 1 April 1999.
- Col Engr Res and his staff moved from Andover to Wilton to become DCOS Engr Div (formally Engineer Branch) HQ LAND Command.

There is no longer any engineer staff branch anywhere in the base area. While this shows considerable change it does not alter the information in this article to any significant extent.

Photographs to illustrate articles

Please ...

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- **Laser copies** of photographs, no matter how good they may look to the naked eye, are no good for publishing purposes for either the *RE Journal* or *The Sapper* magazine.
- The same applies to **digital photographs** taken at 72dpi. Do not send them they cannot be used.
- Do not stick "**stickies**" onto the front of photographs, they can take the surface off of the photo and they leave a sticky residue which sticks to the glass of the scanning equipment.
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Roman Military Engineering

MR S RAYMOND

IN the ancient world no empire took military engineering more seriously than that of the Romans. It was the bedrock of their success in war.

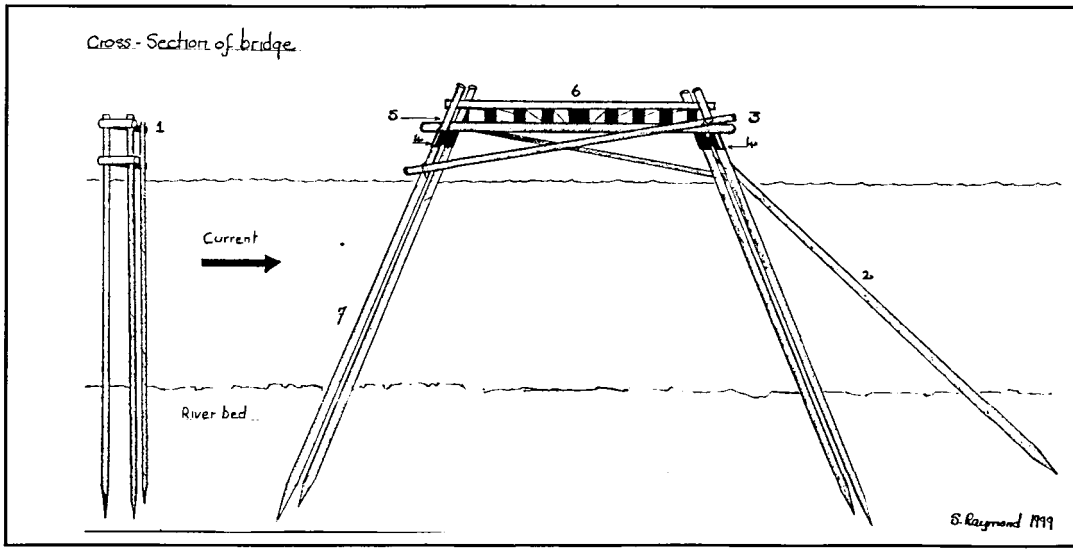
Under Caius Julius Ceasar, who invaded Gaul in 58BC, the army was a powerful tool. During his campaign in northern Europe, the Germans crossed the Rhine with the intention of dispossessing the Gallic inhabitants of that region of Gaul. On learning of this, Caesar turned south meeting the Germans at Besançon. In a great battle the Germans were heavily defeated, losing around 15,000 men, and survivors fled back across the river. Caesar decided to overawe these fierce barbarians by building a bridge over which his troops could attack in style.

Accordingly the Romans began work near Coblenz where the Rhine is about half a kilometre wide and up to eight metres deep. Disdaining the use of boats lashed together over which a roadway of planks could be erected, Caesar intended to build a stronger causeway.

His engineers rammed pairs of sharpened piles a foot and a half thick into the river bed. They were fastened together with iron collars and set two feet apart. Once lowered into the river, the soldiers placed them at right angles to the bank. Using pile-drivers with an eight-man crew, the baulks of timber were fixed obliquely in line with the direction of the current. Twelve metres downstream, another set of piles similarly constructed was planted but inclined in the opposite direction to the flow of water. Joining these by a crossbeam two feet in width, the engineers bolted them into position.

Trestles made like this further supported by timbers slanting against the force of the water carried the planked roadway. Finally, a short distance upstream, more piles acting as buffers were placed in line with the bridge supports. These prevented the enemy from smashing the bridge by floating tree trunks downstream. The building work was carried out in such a way that the swifter the current the more rigidly the piles were locked together.

Within ten days of collecting timber the army marched across and the Germans fled in terror.



Parts of bridge:
1 Piles
2 Support strut
3 Crossbeams
4 Iron Collars
5 Footbridge support beams
6 Footbridge
7 Main support piles

Caesar contented himself with ravaging the countryside and burning villages. The huge operation was intended as a propaganda exercise and after eighteen days the Romans withdrew to Gaul, burning their bridge behind them.

The army excelled in siege warfare. Their abilities were so respected that towns facing a blockade often capitulated rather than undergo the suffering involved. The army employed two types of siege tactic. The first was to build towers and ramps up to the battlements while the infantry tried to burst in under cover from archers, slingers and giant ballista (catapults) which engines were capable of hurling large stones weighing up to fifty kilos. The second was to use a technique called circumvallation in which the town was completely surrounded by an unbroken line of trenches or fortifications, cutting off water and other supplies.

During these operations whole areas might be stripped of trees used in the construction of timber ramps and protective sheds for the troops. A typical example is that of the siege of Jerusalem between the years AD 66-70, when the Romans cleared an area of not less than 18 kilometres around the city.

The most enduring monuments to Roman power are the military roads, many of which are still in use today. The army constructed roads wherever they went, and no obstacle was too great. If necessary, marshes were drained before causeways were built across them. Even today one can see where the road has been carved from the cliff face along the Danube river by Trajan's military engineers. On average, these highways were five metres wide with drainage ditches on either side. The built-up road section consisted of a bottom layer of sand and another one of stone in cement. Above this was a level of crushed stone, topped with stone blocks.

The work was not without its lighter side however. A surviving letter (on papyrus) from a soldier sent to assist civilians who were having difficulties in building a tunnel says: "On arriving at the site, I found that these civilians had begun their tunnel on opposite sides of a hill. Upon taking measurements of both tunnels, I discovered that the sum of the two measurements was greater than the width of the hill." He concludes: "If you want a proper job doing, get the army [engineers] in."

50th Anniversary Articles

The Editor would be pleased to receive articles from anyone who took part in projects during the aftermath of WW2, or have something interesting to relate of happenings during the years 1949/50, with a view to their publication on or near to the 50th anniversary of the event.

Accounts of later events are also welcome as they can be kept for publication in the appropriate issue.

"Ubique" Comrade ...

MAJOR C M HAINGE BSc(ENG)

Major Hainge has served in 2 Armoured Division Engineer Regiment and defuzed bombs in 33 Engineer Regiment (Explosive Ordnance Disposal). A tour in 35 Engineer Regiment introduced him to cross-country skiing enabling him to spend a year on loan to the British Ski Federation as team manager of the Great Britain Biathlon Team, a job which included a trip to Calgary for the 1988 Winter Olympic Games. After Staff College he spent two years in ASD1, which was followed by command of 49 Field Squadron (Explosive Ordnance Disposal) and the chance to take the squadron to Cyprus and Belize and elements of it to Mexico. Faced with the threat of a return to the Ministry of Defence, he opted to work in the British Embassy in Moscow as Assistant Military Attaché; the photo, left, shows him on Red Square during a May Day parade. Then it was pay-back time and Major Hainge is now serving as SO2 G2/G3 Engineers in Headquarters 1 (United Kingdom) Armoured Division in Herford – although true to form he has temporarily escaped this job and is currently deployed on Operation Agricola *in Macedonia.*

INTRODUCTION

EVERY now and again the chance to do something really out of the ordinary comes your way. These paragraphs give a short outline of what can happen when you take that opportunity, and offer an explanation as to how one Sapper officer spent a four-year sabbatical outside of the Corps.

THE OFFER

As the end of my time in command of a squadron approached I was reluctantly forced to consider my next job. What could possibly offer as much fun? Not a desk job in London, that was for sure, and even Germany seemed lacking in sparkle. Deduction – an overseas tour might fit the bill, so I asked to go to Washington or Canberra, bleakly aware that once the giggles had died down in Glasgow I was more than likely to be sent back to London.

The weeks passed, enlivened by a 2-month training team deployment to Mexico. On returning home I found a message on the answering machine asking if I would like to go to Moscow. Of course I would – an opportunity like this only comes round once – but where, I asked, was the catch? It emerged that an essential precondition to any Moscow posting was the ability to speak, read and write Russian and since I lacked this ability the journey to Moscow had to be interrupted by a stay at the Defence School of Languages at Beaconsfield.

GETTING READY

THERE were two parts to pre-deployment preparation: language training and attaché training. Language training was a revelation. It was certainly the only time in my life when an O-level knowledge of Latin turned out to be useful, as it seemed that the Russian language worked in exactly the same way as Latin, the only difference being that the Latin speakers had died out. The Russians were working on it though, as the mortality rate across the country exceeds the birth rate by about 100,000 people per year. That means that if the trend continues there will be nobody left alive in Russia by the year 2170. Now it was obvious to me that even I couldn't fail to learn the language before that date, so with a heavy heart I wrapped a wet towel around my head and cracked on with it. Time passed and when the final exams came around, so did I.

Attaché training, on the other hand, was much more fun. And, as Forrest Gump said, "That's all I'm going to say about that..." Except that I should say that Mrs H enjoyed it just as much as I did, this being one of those rare occasions where the system also gives wives a bit of training to prepare them for the job ahead.

Ubique Comrade Major C M Hainge BSc

Move Out

WHAT can I say about the move to Moscow? The familiar nightmare of a family move encumbered by an active toddler, thickened up by all the uncertainties of going to a totally unknown country, to work for a completely different government department, in an utterly foreign environment. Piece of cake, really. Anyway, the move took place as moves tend to and the family arrived in Moscow greatly refreshed by the Club Class flight that the FCO provided for us. This was the first indication of the differences in working cultures between our two departments of state. More were to follow.

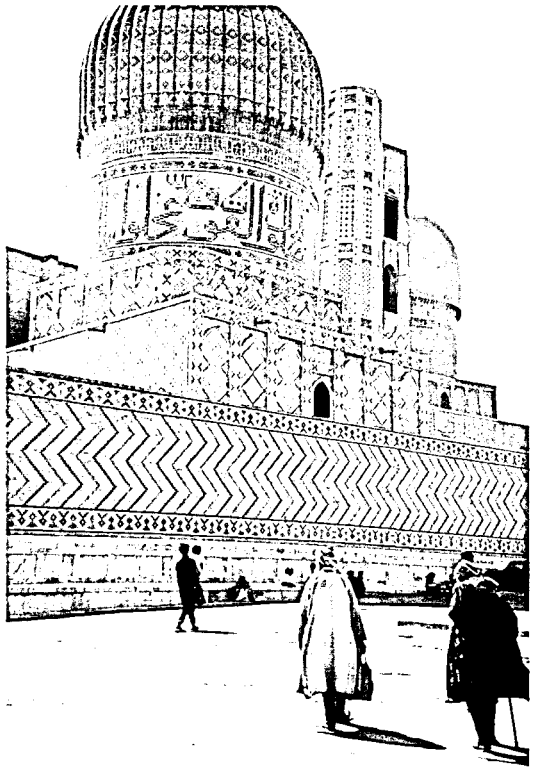
In any event, we soon found ourselves installed in a well-appointed four-bedroomed flat on one of the main arterial routes leading north about 4km from Moscow city centre. My predecessor told me that the nearest Metro station was two minutes' walk away, the journey time door-to-door to get to work was about 30 minutes and the embassy itself was located immediately opposite the Kremlin on the south side of the river. Everything was shaping up well.

The Working Day

IT is not possible to describe the course of an average working day in an attaché's life – there is simply no such thing. No such thing as an average day, that is. In essence though there are three aspects to the job: finding out what is going on, getting the locals on side, and waving the flag whilst trying to interest the host nation in the products of UK plc's military industrial complex.

Finding Out What's Going On

AN element of an attaché's job requires him to find out what's going on within the armed forces of his host country. In Russia hardly a day passes without some reference in the newspapers, or on TV or radio, to the plight of the armed forces and so – as long as you have a decent grasp of the language – it is relatively easy to build up a picture of how things stand. You can add to this by chatting to their serving officers, whom you meet on a regular basis, and listening to other countries' attachés who will often have their own view of events and developments. If you have an inquisitive approach, are interested in other people and aren't afraid to chat to them in a foreign language then you are well placed to find out what's going on.



Samarkand.

In theory there is little or nothing to stop you getting out and about on the roads to judge the state of the country for yourself. However, when said country stretches across 12 time zones from the Baltic Sea to Japan and extends from the Arctic Circle down to the deserts of Central Asia and the northern borders of Iran and China it can be a little more difficult than driving from Basingstoke to Bristol. There are very few roads for a start, which means that you have to go by air or rail, which is all very well, but it can be a little disconcerting when you fasten your seat belt only to find that Aeroflot's equivalent of REME has neglected to fasten the seat to the aircraft floor! That and the inclusion of livestock on the passenger manifest make air travel an interesting option. The interest, by the way, reaches a peak on landing approaches because many of the pilots approach along a series of flight levels and drop from one to the next in rather a sudden manner which leads you to believe that something of critical importance has just fallen off the aircraft. This carries on for up

Wooden house on the shores of Lake Baikal.

to 20 minutes and culminates in the final alarming drop to the tarmac. I don't know why they do it this way, perhaps they were trained by the Air Force. So anyway, travel outside Moscow tends to be challenging.

Getting the Locals on Side

The difficulty with getting the locals, ie the Russian Armed Forces, on side was that the term "NATO" was synonymous with enemy forces – after so many years in opposition across the former East German border, a great deal of attitude-adjusting needed to be made. One way around this was to get our junior officers and soldiers across to Russia on officially sponsored visits, and vice versa. Where this happened it was invariably a success, but dwindling funding levels in Russia militated against this type of activity. Nonetheless, two events stand out as particularly successful: a Russian-hosted visit by 40 British officers for a week, during which time the visitors were given an unprecedented opportunity to see a surprisingly wide range of units and equipment, and the regular attendance of British officers on Russian United Nations Monitoring Officer (UNMO) training courses, which lasted six weeks at the Vystrel All-Arms Tactics Academy, located about an hour north of Moscow.

The UNMO training courses merit an article by themselves. In brief, though, there were three courses per year each attended by up to 12 foreign students and up to 16 Russian officers. All instruction was in English and although the level of instruction tended to be fairly basic the end of course celebrations were splendid. However, the wise attaché never attended more than one per year as vodka consumption rates tended to make demands that the average Western liver was incapable of meeting; even the Russians occasionally showed signs of distress. One end of course celebration was notable for the incident where the colonel who taught driving – known as the MT Colonel – a stout, genial man with no hair, no neck and a mouth which was impressively full of gold teeth, wandered up to the major general in charge of the course and punched his lights out with one mighty blow! Why? Nobody knew, but this incident, although viewed by the Russians as slightly embarrassing since there were foreigners present, was completely and conveniently forgotten about the next morning.

Waving the Flag

Of course everyone knows about the endless round of diplomatic cocktail parties which take up so much of an attaché's life. However it isn't quite as good as it might sound. For a start they rarely last longer than two hours; if they are at lunchtime you invariably have to return to work; if in the evening you don't get home until 8.30 or later, at the end of a normal working day; you will probably need to keep a relatively clear head in order to remember any appointments, or other snippets of information that you might have picked up; and, together with the other social demands made, for instance you could expect to go to three other events a week – dinner parties, receptions, and so on – the temptation to treat these as anything other than an

extension of your normal work soon evaporates. Am I convincing anyone?

Want to Buy a Weapons System?

Not much scope for this in Russia you might think, and you'd be broadly right. With almost no orders coming in from their armed forces the Russian military industrial complex is in trouble. Virtually all its output is directed to producing systems for sale overseas in order to ensure its existence. So no chance of any sales of Challenger 2, but several firms recognised the potential benefits of upgrading their products by adding improved system elements produced by some UK companies. This recognition carried sufficient potential sales prospects to attract an increasing level of attention from representatives and generated unprecedented levels of involvement by attachés.

Life Outside the Office

In most foreign postings you can safely assume that there will be an opportunity to travel and see a bit of the country in which you are based, either on leave or on duty. The same is true of Russia and we made the most of the chance to get around and work our way under the seams of Russian culture and history. Anything else I say here will be little more than a repeat of the sort of thing you can read about in guide books – but the impressions we gained in this way of the country and its people will remain with us for a very long time to come.

Working Abroad

During my time in Moscow I was lucky enough to be accredited as the Assistant Military Attaché not only in Moscow but also in the capital cities of the five Central Asian republics: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, known collectively by non-diplomats as the "Stans". These are located in the gap between Russia, China, Afghanistan and Iran and it is generally safe to assume that relatively few in the West have heard of them, let alone visited them. As a result I was responsible for keeping an eye on military developments in roughly one seventh of the landmass of the world, and a pretty inaccessible and secretive one seventh at that. This brought its consolations; for instance, not many of us have had to take "the golden road to Samarkand" to do our jobs. Sadly the poet's elegant and memorable phrase fails to reflect the dusty reality and today's golden road is either a four-lane highway or a rutted goat track, both punctuated with potholes that you could lose a Lada in. For a glimpse of the historical background to the Central Asian area, Peter Hopkirk's book "The Great Game" cannot be bettered. Some of the echoes of those days live on and the phrase – the great game – used by Hopkirk to describe the state of Anglo-Russian international relations has an exact translation into Russian that is still used today. From my point of view, perhaps the most notable event in the region was a two-week visit by the Corps Band to Uzbekistan, which was reported on in *The Sapper* magazine but deserves mention here for the extraordinary response it drew from the locals. The Band featured daily in the national

Demonstration in central Moscow.

Russian officers.

press, on TV and radio and gathered huge audiences wherever it went. As a result the man in the street in Tashkent now firmly believes that the British Army wears scarlet tunics and busbies wherever it goes.

Weekends

What with all the dinner parties and receptions, weekends tended to be sacrosanct and dedicated to the family. The range of places to visit and things to see within Moscow alone was enormous and day trips outside the city were a constant source of amazement. Where else could you travel for no more than one hour from the centre of a world nuclear superpower's capital and be on dirt tracks running through villages and towns that had changed little since the time of Pushkin and Tolstoy? Wooden single storey dachas and *izbas* were commonplace wherever you went – although the legacy of the Krushchev years remained in the form of the ubiquitous five-storey concrete apartment block. Outside Russia the scenery became still more exotic and trips to the Central Asian republics sometimes took in the odd weekend, allowing us to visit carpet bazaars in the deserts of Turkmenistan where you could haggle for anything from a carpet (US $100 and up) to a camel (US $40 for an eating camel, $70 for a milking one) in temperatures of 40ºC and higher.

Leave and Travel

With such a massive country on our doorstep who needed to go overseas on leave? We did. Life in Moscow was not easy and besides, the Foreign Office leave package helped us to spend three weeks in the Caribbean, two weeks skiing in Meribel, one week in Istanbul, a fortnight in Greece and the odd long weekend elsewhere. I think that we even visited the UK once. Add to this the duty travelling to all corners of Russia and the five "Stans" and the diplomatic passport was soon reduced to a dog-eared threadbare relic of its former self.

What About The Wife and Kids?

"All well and good for the husband", I hear you cry, "but what about the family?"

Mrs H found it good in bits, but the constant battle to fight through the chaos that is Russian life to get hold of the basics – vegetables, loo rolls, shampoo and so on – was tiresome. The point here being that everything was available, but never from the same shop twice in a row. Luckily she had had the benefit of 110 hours of language tuition in Beaconsfield, but all the same it was not easy. Eventually we both grew accustomed to the system and even the business of arranging dinner parties for 12, cocktail parties for 50 and so on became easier.

The children enjoyed it, I think. Our eldest arrived in Moscow at the age of 18 months and had his fourth birthday the month after we left, so school was never a problem. The youngest was born about nine months before we left – thankfully not in a Russian hospital, but in the UK (there are some aspects of Russian health care that a wife should not be exposed to) and he emerged from the Moscow experience unscathed. Children were useful as a great way of getting to chat to people; they were a common factor and a constant source of interest of the babushkas who seem to run the country at grass roots level. Our eldest still hankers after the winters even though the snow was invariably too dry to make decent snowballs. Perhaps the most interesting experience for him was walking out on Boxing

Day over the frozen Moscow River to watch the locals fishing through holes in the one-metre deep ice in temperatures of around -35°C. His mother seems to have difficulty in forgetting this experience too.

So What's The Verdict?

I THINK that the whole family found the Russian experience to be outstanding, unforgettable, and a real once in a lifetime opportunity to get to grips with a totally alien culture and society at close quarters. The peculiar stink of the Metro, made up of sweaty bodies, cabbage, vodka and Russian cigarettes remains in the memory. So does the sight of the city, numbed into stillness by a sudden drop in winter temperature to -40°C below crystal clear blue skies in air so cold that it hurt to breathe it. Would we do it again? Oh yes – without question. I'd just have to sell the idea to Mrs H, that's all ...

Sappers in the Balkans 1999

FROM 28 ENGINEER REGIMENT

28 ENGINEER Regiment deployed at short notice to Macedonia during the period February to April 1999. Their mission was to be an enabling force to get 4 Armoured Brigade into Macedonia and then Kosovo. The Regiment, deploying as a wheeled formation, comprised 64 HQ Squadron, 42 Field Squadron from 35 Engineer Regiment, and 65 Field Park Squadron (switched from going to Bosnia with 21 Engineer Regiment, which was itself redirected from Bosnia to Macedonia later). The advance party deployed a week after the initial recce in February into a snow-covered Skopje, taking under command 20 Field Squadron, already in theatre, and married up with HQ Combat Service Support Group. They set about finding accommodation and planning the engineer logistic inload.

The advance party found the experience of driving around a foreign city with an interpreter and a civilian secretary with a cheque book looking for a place to live almost surreal. Having paid some men in a Mercedes and long rain coats a reasonable price, a semi-derelict US Air Force ammunition compound built in the 1940s was acquired. It was named Piper Camp.

The most important task undertaken at this stage was to upgrade a bridge, on the main supply route near the Greek border, to military load class 100 to enable the Kings Royal Hussars battlegroup's Challenger tanks to cross on tank transporters. The article on page 108 describes how this was achieved.

With the arrival of the main body, the Regiment started to prepare the Force Staging Areas about 5km from the border for the move of KFOR into Kosovo.

It was not long before news of the impending bombing campaign was announced. With engineer units either well within the range of Serbian artillery or in Skopje, where terrorism and civil unrest were feared, hasty preparations were made to strengthen the defences at Piper Camp where 65 Field Park Squadron was based. An Italian mechanized infantry company deployed to guard it. A move out of Skopje to Veles was achieved after a hasty deal with the owner of the Brako Metal factory secured new accommodation.

The bombing of Serbia started the next day, which precipitated civil unrest in Skopje and preparations were put in hand to deal with demonstrations in Veles. Fortunately, calm was restored but plans to train on Mabey Johnson bridges were overtaken by the impending refugee crisis. Within two days 42 Field Squadron was busy erecting tents at Bojane Camp

Map of area covered in article.

Sappers In the balkans 1999

UK (64 HQ Squadron) plant works at a refugee camp.

just west of Skopje. The Commander Royal Engineers reinforced the Regiment with 1 Field Squadron and the race to build a reception area, a registration area and a transit camp to cope with the influx of refugees was on. What was now a large regimental group, constructed the camp at Brazde with help from the Italians, the Germans, KRH, 2 Battalion REME, 27 Regiment RLC and various Royal Signals detachments. Within 40 hours 25,000 refugees were in the camp. Water was provided using Oxfam distribution equipment and two water purification NBC units and three standard units to provide 400,000 litres a day. Round the clock production of wooden latrines by 65 Field Park Squadron catered for sanitation requirements and rubbish, a significant problem, was disposed of by tippers. Food distribution was organized by the Sappers.

Soldiers worked themselves almost to a standstill amid harrowing scenes as thousands of refugees were bussed in on the night of Easter Monday. Many needed medical attention, provided by 2 Armoured Field Ambulance. Some elderly people had to be carried to their tents, one old lady pleaded with a soldier not to shoot her and another soldier was left holding a dead baby. The trauma of the refugees was very evident. The humanity and commitment of young soldiers was humbling and their resolve and effort was unstinting.

After two hectic weeks, the Regiment gradually withdrew, handing over the running of the camp to UNHCR. A brief period of training in Greece provided the opportunity to relax and recover before embarking on tasks at Piper Camp and Petrovec airfield. At this time the refugee numbers in Macedonia were such that a KFOR recce team deployed to search for other sites in Albania. Following this, the Regiment was off again, to southeast Albania, with 42 Field Squadron setting up a camp in Erseke for up to 8000 refugees, and 64 HQ Squadron developing a site at Dersnik capable of holding 20,000 refugees in an emergency.

As the end of May approached, members of 28 Engineer Regiment had spent four months in the Balkans. It has for most of them been an experience of a lifetime, a non-stop challenge and a period of excellent soldiering. There is no doubt plenty more to come.

Sappers In the balkans 1999 1

A Bridge and a Plan at Demir Kapija

LIEUTENANT DAVID HOLDSWORTH BA

Lieutenant David Holdsworth was commissioned into the Royal Engineers in August 1997. Prior to joining the Corps he was educated at Shrewsbury School and Cambridge University, where he studied physiology as a cadetship officer. Posted to 36 Engineer Regiment after Royal Engineers Troop Commanders Course 119, he deployed as a troop commander in 20 Field Squadron to Macedonia in December 1998.

INTRODUCTION

In December 1998, 20 Field Squadron deployed to Macedonia on Operation *Upminster* to provide general support to the UK element of the NATO Extraction Force. Initial tasks included the provision of duty accommodation, fabrication of a headquarters facility and the construction of both an A- and B-vehicle park. As the situation in Kosovo deteriorated, operational focus shifted to Operation *Agricola*. 20 Squadron was called upon to complete a number of route recce tasks in order to establish proved routes for the movement of armour throughout the country.

THE ROUTE

The aorta of the Macedonian road network is the E-75, a trunk road that bisects the country to link Pristina in Kosovo with Thessaloniki in Greece. This route is the sole and natural main supply route for NATO troops within Macedonia and furthermore an access for the putative peacekeeping force, onward into Kosovo.

With the close support troop of 11 Squadron occupied in exercising without the extraction force group, it fell to 20 Field Squadron to provide a preliminary recce of the entire route from the sea port of Thessaloniki to the Macedonian border with Kosovo. Initially the route was proved for height and width restrictions, while detailed bridge recces were conducted on the "sicker" bridges. Work is already in "Balkan progress" towards upgrading the entire route to dual carriageway incorporating modern concrete motorway bridges. The work is not complete and a number of older simply supported concrete slab (SSCS) bridges remain.

BRIDGE CLASSIFICATION

"Military Engineering Volume II" Pamphlet 7b, *Bridge Classification*, is currently being rewritten. There is a number of bridge assessments in the pamphlet which incorporate safety factors of such a margin that predictions of military load class (MLC) are unrealistically pessimistic. The pamphlet, used correctly, will not allow a bridge to be overclassified, however, such are the safety functions that a significant number of safe bridges are misclassified far below their actual MLC. This necessitates closure of the bridge until inspection is possible by a chartered engineer, with consequent delays and repetition of work.

Two personalities involved in the identification and rectification of this problem were coincidentally employed in other capacities on Operation *Upminster*. Lt John Verheyen of the 102nd Construction Squadron, Dutch Engineers,

A Bridge and a plan at Demir Kapija Lieutenant David Holdsworth BA

worked closely with 20 Field Squadron in Skopje, particularly assisting with the loan of tools and equipment from his excellent troop store. Previously employed at Chilwell on an exchange attachment, he was instrumental in characterizing some of the problems of Pamphlet 7b. Also employed on Operation *Upminster* was Captain Matthew Walton-Knight, 2IC of 527 STRE, who is currently undertaking the rewrite of the pamphlet.

An example of under-estimation in bridge assessment is provided by Chapter 7 on SSCS bridges. In common with all assessments a number of safety margins are factored into the assessment function. Furthermore a necessary assumption is made that the slab is solid, due to an inability to demonstrate a voided construction. Consequently a high self-weight must be allowed for and the MLC extracted from Table 7-2 (MLC against construction depth (c) and span(s)) is exceptionally low.

The Recce

The route recced by 20 Squadron from Thessaloniki to Kosovo includes five SSCS bridges which were assessed by detailed inspection to have a MLC of 4 to 8. Nevertheless all were supporting a regular two-way traffic of 40-tonne civilian vehicles. Four of the bridges lie north of Skopje and are modest single-span slabs of approximately 8 metres. Though typically Macedonian in appearance, with exposed reinforcing bar, these bridges are essentially of sound construction. The fifth bridge lies approximately 100km south of Skopje, close to the Greek border. This bridge, at a village called Demir Kapija, carries the E-75 over the principal national north-south rail route and a minor road. Even by Macedonian standards the condition of the concrete was unusually poor. The bridge was vibrating significantly when subject to even light civilian traffic. The initial recce therefore gave rise to concern, and the process of strengthening the bridge was set in train.

A Solution

Captain Matthew Walton-Knight inspected the bridge at Demir Kapija in the knowledge that the entire route would soon be subject to a high density of traffic with a MLC greater than 100 tonnes, as British armour was transported across it on heavy equipment trailers. In view of the singular nature of the road, potentially as the sole supply route, and the questionable condition of the bridge, the situation was confirmed as a serious structural problem.

The three-span bridge contains a centre span of 18 metres which limited safe loading of the bridge to MLC 70, against a requirement for MLC 100. The planned solution was a modular equipment pier, bearing up the centre span on steel jacks. The pier set was purchased from Mabey Support Systems, a subsidiary of the Mabey Group.

The process for obtaining this equipment is a simple one. Accurate measurements of the site are recorded and sent to Mabey Support Systems, complete with the load that will be imposed on the pier. Mabey, in response, design a pier and jack expedient to achieve the desired end result. Technical drawings, construction schedules and stores lists are faxed to the Military Design Authority and the complete pier stores are packaged and dispatched to the theatre of operations. In this instance the period that elapsed from the measurements being recorded by the STRE to the arrival of the pier components on site was less than 96 hours. It was at this point that 3 Troop, 20 Field Squadron, began the construction. At that time the first armour, by convoy, was expected at Demir Kapija within 72 hours.

Construction

The pier is a simple structure: the ground bearing beam is a double steel I-Beam, levelled in and anchored with AEH (anchorage earth holdfast) pins across the full construction width of the bridge. Bolted onto this foundation beam are eight verticals, constructed from a number of modular column units. Atop each column is a steel screw jack to equalize loading up through the pier and into the bridge seat beam. The bridge seat, an analogue of the bearing beam, is supported by the jacks. It is secured against lateral movement onto the underside of the bridge, by holding up bolts. The verticals are stablized in shear by an array of diagonal sway bracing. Each vertical node can support 75 tonnes, giving a total load capacity of 600 tonnes; a significant redundancy.

Owing to time pressure the ideal option of a concrete foundation was discounted and instead the bearing beam was levelled onto a mixed aggregate base within a trench excavated in the road surface. Groundworks therefore involved

The bridge seat beam, held in the jaws of a light wheeled tractor bucket, is bolted onto the jacks.

cutting the blacktop surface of the road and excavating to the necessary depth by plant and hand.

The siting of the foundation was further complicated by the close proximity of road and rail beneath the bridge. The road surface lay 2.5 metres above the adjacent rail route, separated by a concrete retaining wall. Siting the pier at the bridge's mid-span point would have transmitted the load directly onto the retaining wall with consequent risk of the wall collapsing. Therefore the pier centre was displaced 2.5 metres from the retaining wall onto the surface of the minor road. This still allowed both sufficient shortening of the critical span to raise the MLC and for a one-way trafficable width beneath the bridge upon completion.

Before our groundworks commenced, on the morning of the first day of construction, a significant problem was identified. Measuring the column heights and making our own measurements of the site, it became evident that errors had occurred in the initial measurement of the vertical gap from road to bridge. The pier was not high enough to reach the bridge even with the jacks at full extension. A redesign was developed without delay, by the STRE, involving the incorporation of six vertical column units from the outer two columns into the inner six columns, in order to produce a narrower pier of sufficient height.

Using a light wheeled tractor it was possible to excavate rapidly to the necessary additional depth now required, and to begin the laborious process of levelling in the beam. Using a medium wheeled tractor with forks to lift the beam repeatedly onto and off its aggregate foundation, the levelling process, which would have taken a full day by hand was reduced to four hours.

With a brief rest during the "Dog Watch", works recommenced at dawn of the second day. By constructing completed verticals, in their correct orientation, away from the bridge and then carrying them to their location in the grip of a light wheeled tractor bucket, the six columns were rapidly erected. Problems had been anticipated in lifting the bridge seat beam (formed from 2 x 624 kg I-Beam sections) into place, to rest on the jacks. Difficulties were compounded by overhead railway power cables and highly constricted room to manoeuvre between the construction line and existing concrete pier posts. These problems were overcome by our two outstanding plant operators, possessed of a skill which approached a black art.

In erecting the verticals it again became evident that we might encounter a design problem. Later it transpired that the technical drawing, copied from a Mabey facsimile, had lost the detail that diagonal bracing came in two lengths and that the vertical orientation of the column modules was critically not constant at all heights, a detail unfortunately not shown in the final technical drawing. Once again an alternative design, of bracing array, was approved by the STRE, and the relevant column units were stripped out and relocated. The change was again expedited by plant and only two hours of construction time were lost.

Completing the placement of the bridge seat beam signalled the end of critical works. The task was rapidly completed, with all hands on, as

A Bridge and a plan at Demir Kapija

all diagonal bracing was fitted, bolts tightened and finally the jacks extended.

The task was completed in 28 hours. The time for completion is attributable to the enthusiasm of the sappers and the impressive skill of the plant operators.

Within a further 24 hours the foundation was stabilized by the pouring of readymix concrete into the trench, flush with the upper level of the bearing beam. The concrete, which was of a very high standard, was fortuitously available from a motorway bridge construction site, just 19 km away, at the limit of the E-75's second carriageway.

Traffic

Upon completion of the framework, a four-man guard was left at the site to ensure the security of the pier parts and observe the bridge while subject to heavy NATO traffic.

It transpires that the maximum interest in the site was from the children of the village and their fascination lay exclusively in playing football with British soldiers and eating "Compo Boilies".

Within three days of completion the bridge pier was proved by the traffic of five NATO nations including British Challenger on heavy equipment trailers. The pier remains in place as this publication goes to print.

The pier is complete.

Conclusion

With the exception of the lesson: to work from original drawings, the process of using an "Off the shelf" expedient to upgrade this bridge has demonstrated the system's speed, flexibility and efficacy. The pier at Demir Kapija is now one of five on this route, as all marginal SSCS bridges have now been similarly upgraded.

A Bridge and a plan at Demir Kapija 2

The Closed Shop

TIMEKEEPER

"THE end came suddenly. On the declaration of war, the 'Shop' was closed and in accordance with the plans made for war conditions, the cadets were transferred to Sandhurst which became the first of the war-time Officer Cadet Units."

"The History of the Corps of Royal Engineers" Volume 8. Page 147.

BEING the first day of the partridge season, Friday 1st September 1939 was an important and keenly awaited day. It was also the day on which the Adjutant rode onto lunch parade to announce to four assembled companies of Gentleman Cadets first, that the British Army was mobilizing for war, second, that the Royal Military Academy was closing forthwith, and third, that all Gentlemen Cadets were to be clear of the premises by 1800 hours, at which time the gates would be locked. Momentous words to round off what, for us snookers*, had been a somewhat unusual and disturbing week.

Of the hot and hectic afternoon that followed I have only hazy recollection. Various things had to be handed in and accounted for, paperwork collected from the office and, at some stage, there must have been an attestation parade. Somehow we Gentleman Cadets had to relinquish our status as quasi volunteer schoolboys and become men subject to military law as soldiers. In this we posed a problem because, with General Mobilization, entry to both the Regular and Territorial Armies was closed, and yet we didn't consider ourselves conscripts. The solution was an ingenious compromise by which we were duly sworn-in under the emergency powers then in force, "for the duration", but using the Army Form specifically designed for volunteers to the Territorial Army. Thus we were recorded as private soldiers (TA), complete with 7-figure regimental numbers, a fiction which was not exposed until many years later when our entitlement to the Efficiency Medal was investigated and found wanting.

On the papers I collected from the office I saw that I was described as "Sapper". I don't remember having been asked about this, or of being particularly surprised, but clearly we had presented another difficulty in that we were leaving the Shop without any proper passing-out order. All we had was a passing-in order, with the result that our military futures were governed by the whimsy of the entrance exams. Our batch consisted of 10 with Higher School Certificate, and 20 from the Civil Service Entrance exam. I was 20th, having lost marks for handwriting and general disorderliness, so could ponder the fact that one more blot in any of the AB 4s containing my answers in the June exam would have relieved the Corps of my presence altogether, and I could have continued to enjoy the gunner buttons already on my blazer. (A "damn close-run thing" which my guardian considered should not have been attempted so early in my career.)

Of my room-mate in J House I have shamefully little memory. I neither know his name nor what happened to him, but together we had struggled with the rigours of our first few days and I would like to think that the fates treated him kindly. On this afternoon we helped each other to pack our bookcases and belongings, and tidy-up for inspection. I think we each had two pieces of luggage which we carried between us up to the gates onto Woolwich Common. A bombardier, who had been following behind us, locked the gates with a huge key and bade us good-night. I looked at my watch which said six o'clock. And that was that. The place we were leaving had a history stretching back for 150 years and we were lucky enough to have enjoyed brief membership, but now had to fend for ourselves in the wider world. Not for us those niceties which were later to become so commonplace, such as "transport to the station" or "the unexpired portion". I viewed the evening before me with some misgiving.

I draw a veil over my struggle by bus and tram towards London, except to record gratitude to

* In the middle decades of the last century newly joined cadets were called "neuxes", a corruption of "new cadets", which was further shortened to "snooks", and then "snookers". This was some time before the game was invented in the messes of the Raj.

many kind people who helped me with my luggage. It was the first night of the London blackout which seemed to generate a spirit of camaraderie and cheerfulness in no way affected by the prospect that Woolwich might be bombed that night. Although staged but rarely, the General Mobilization must be rated the Army's most impressive and elegant performance. Should anyone be around in future, I recommend a London rail terminus as a useful viewing point; Hogarth would have been at home with the sight which greeted me at Waterloo. In every direction stretched a tide of khaki figures, some being marshalled by struggling corporals, some waiting in patient ranks bowed down by packs and kitbags, and others stretched out to spend their last moments of freedom in horizontal oblivion; and, over all, the din and stink of steam and smoke and soldiers. No seat, bench, or square inch of the concourse was unoccupied. No doubt there was a RTO and his staff, but I had only been a soldier for eight hours and did not know about such things. This was an Army occasion. The Royal Navy had very sensibly done what was necessary some two weeks previously and was now out at sea, whilst the RAF, with fewer reservists, was mostly already on the airfields as a result of earlier emergencies.

The railways had started badly, ASLEF having called a strike to begin on 2nd September but, with the government forestalling trouble by immediately taking over the four rail companies, they now settled down to one of their finest hours. Trains came and went with remarkably little delay to keep the military tide flowing. Also, although I was not to know at the time, the second stage of *Pied Piper*, the operation to move over a million mothers and children out of the cities by means of some 4000 special trains, started at dawn that Saturday. But these were all special trains, with no seats for casual travellers such as me, and none were going my way.

After a night sitting on my luggage to avoid losing contact with it, I finally found a train which got me to Exeter in the late afternoon. By no means to a hero's welcome. My long-suffering guardian, having so recently dispatched me towards Woolwich, inclined to the view that it was too soon to have me back on his hands; and old man Reed on the farm, who had never rated me fit for any army other than Fred Karno's, now assumed I was a deserter or had been court-martialled. It was only when his own son suddenly disappeared to join a TA Field Ambulance that he realized an extra pair of hands might be useful to get in the last of the barley.

And so began those first few days of that curiously unreal interval which separated peacetime from wartime, in which everyone agreed that "something would have to be done" without much idea of "what" so, meantime, there seemed no point in calling off the tennis. And there were still the partridges. Sartorial distinctions began to appear, not least in the matter of gas-masks where those who were "someone", such as ARP warden or special constable, sported a fine Respirator GS in smart canvas haversack, whilst everyone else had a lesser apparatus in a cardboard box supported by string.

Leave came to an end and, across the country, 214 ex-gentleman cadets emerged to reassemble at their new stations. Signals to Aldershot where, for some reason, they constituted three terms, Gunners initially to Larkhill, and ourselves, snookers and senior term, to Shorncliffe where we formed the first intake into the first RE OCTU. I don't think we had any Tanks.

Having myself been involved recently in some history-writing, I have no illusions about the reliability of old men's memories, or of the tenacity with which they are maintained. Others will doubtless have their own versions of these events, but there is one bastion I will defend to the last. Despite the statement at the head of this article, no Sapper from the Shop in my time ever had to suffer the indignity of being "finished off" at Sandhurst.

Designing Air Power

MAJOR C L WILKS MA CEng MIEE

Following attendance on the Army Staff Course, Carew commanded 5 Field Squadron and then was posted to Abbey Wood as a project officer. He arrived in 529 Specialist Team Royal Engineers (Air Support) in September 1998 and during his brief time with the team deployed on operations and exercises with the Royal Air Force to Italy, France, Turkey, Egypt, Saudi Arabia and Kuwait. His air support background was as a support troop commander in 52 Field Squadron (Construction) which, he is glad to see, has been resurrected. He is now directing staff counter mobility at the Royal Military College of Science.

This article is developed from a presentation given at the 12 (Air Support) Engineer Brigade study day on 22 June 1999.

Designing Air Power

John Keegan now admits that the successful outcome of the war over Kosovo was "a victory for air power and air power alone."[1] This view, now widely held by politicians, will strengthen arguments for the rapid use of air power in future conflicts; a modern version of gunboat diplomacy. The global reach of air forces, their speed of deployment, the precision bombing techniques employed and the low risk of casualties, together make the use of air power an attractive option to world leaders.

But is it as easy as that? Modern combat aircraft need sound bases from which to operate and these bases must be located within reasonable reach of the theatre of operations. This implies that to use air power effectively, air forces must deploy away from their main bases, often at very short notice, to temporary airfields which may not necessarily have all the facilities required to support combat aircraft. Considerable construction work may be required to prepare such facilities. 529 Specialist Team Royal Engineers (Air Support) (529 STRE (Air Sp)) has recently been formed to provide the technical design support necessary to prepare such deployed bases for air operations.

Many readers will have distant memories from the Cold War, of air support consisting of filling in craters and mending the odd severed pipe or power cable. Although airfield damage repair (ADR) remains an important aspect of air support, it is now just one part of a far larger military engineering challenge. This article will attempt to set out the role of the STRE (Air Sp) in the post-Cold War environment.

Since its conception in 1998, 529 STRE (Air Sp) has been fully committed to operations. It retains a chartered engineer (CEng) at 24 hours notice to move (NTM), with the rest of the team at a mixture of readiness R1 and R2. All members of the team have now qualified for the Hercules Executive Club Gold Air Miles Card! As an indication of the scale of RAF-deployed operations, a summary of current 529 STRE (Air Sp) operational commitments at the time of writing is shown in the table at Figure 1 and on the maps at Figures 2 and 3 over the page.

Working alongside the air support squadrons in 39 Engineer Regiment, 529 STRE (Air Sp) has helped develop a highly responsive "design and

[1] *Daily Telegraph* 4 Jun 99.

Designing Air Power Major C L Wilks MA CEng MIEE

build" capability which may have wider utility within the Corps.

Operation name	Country	Base	Aircraft/HQ
Deliberate Force *Engadine*	Italy	Gioia del Colle	16 x Harrier GR7 2 x Canberra PR9
Radome *Palatine*		Ancona	3 x VC10 Tanker 2 x Tristar Tanker
		Aviano	2 x E3 AWACS
		Vicenza	HQ BFPI
	France	Solenzara, Corsica	12 x Tornado GR1
Warden	Turkey	Incirlik	6 x Jaguar 1 x VC10
Agricola	Kosovo	Pristina	Air Transport
Bolton	Kuwait	Ali Al Salem	12 x Tornado GR1
	Bahrain	Muharraq	2 x VC10 Tanker
	Saudi Arabia	Al Kharj	6 x Tornado F3
		Eskan	HQ BFB

Figure 1: Table of operational commitments, June 1999.

STRUCTURE

THE Strategic Defence Review (SDR) recognized the need for deployable air forces and the contribution required from military engineers to prepare deployed bases. 529 STRE (Air Sp) is now established as a fully-committed STRE (Air Sp), with three further STsRE (Air Sp) formed as required from the existing establishment of CRE (Airfields). The proposed ORBAT is shown in Figure 4, below right. Fuels engineering support is to be provided by an enlarged STRE (Bulk Petroleum): this has been discussed in a previous article.[2]

Each STRE (Air Sp) will have the capability to split into two design sections, each commanded by a CEng, so that it can cover two deployed operating bases (DOB) concurrently. A maximum of eight separate air support design sections will then be available to meet the worst case SDR scenario of two concurrent medium-scale deployments. Each air support design section will have at its core a CEng, a garrison engineer of a complementary discipline, three clerks of work (one of each discipline), two draughtsmen, a surveyor and a construction materials technician. The total STRE (Air Sp) manning is 4 + 11 in peace and 5 + 19 in war.

ROLE

THE STRE (Air Sp) role is not, as cynics would suggest, solely that of finding and checking suitable five-star hotel accommodation for the aircrew. "Personnel beddown" as it is known in the RAF is only one part of the range of tasks that the STRE (Air Sp) needs to consider. It is usually the case that the declaration of an operational capability at a DOB is driven by the military engineering works required to provide facilities, rather than the deployment of the aircraft themselves. This puts great pressure on the STRE to prepare workable designs in short timeframes.

The 529 STRE (Air Sp) mission is "... to provide specialist engineering advice, reconnaissance and design for all RE air support

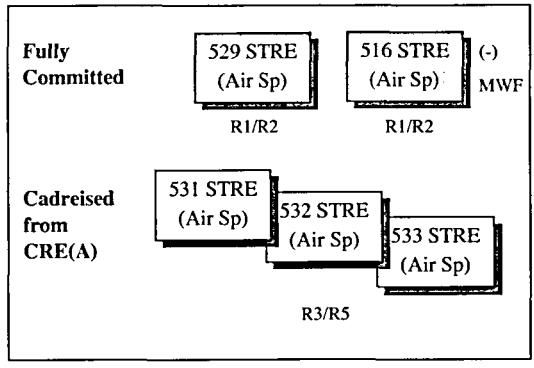


Figure 4: Post SDR ORBAT STRE (Air Sp).

[2] *The Royal Engineers Journal* Volume 113 No 1 dated April 1999.

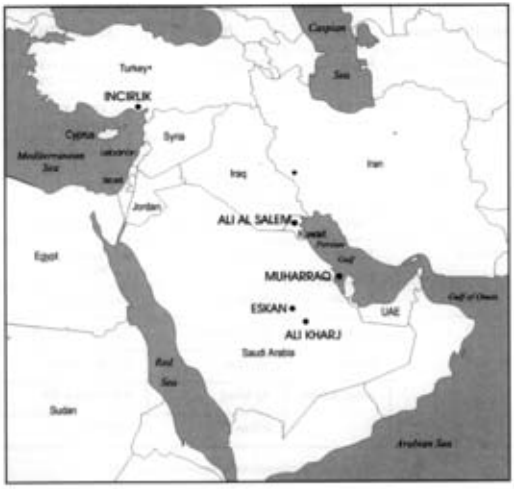


Figure 2: Map of DOB supporting operations over Iraq.

activities in order to support JRRF (Air)". Specified tasks include:

- Provision of a CEng reconnaissance officer at 24 hours NTM.
- Provision of a design section (½ STRE) at R1 for DOB design.
- Provision of a second design section (½ STRE) at R2 for DOB design.
- Maintenance and new works at all existing DOB.
- Technical support to restoration of essential services and facilities.
- Design support to the arrester gear modification programme.
- Technical support to contingency plans.
- Technical and design support to AIR exercises.

529 STRE (Air Sp)'s new badge, reflecting its airfield role, is shown right.

Military Design and Build

529 STRE (Air Sp) has established a close working relationship with 39 Engineer Regiment. A reconnaissance, design and construction doctrine has been developed that delivers the complete military engineering capability at the fastest possible pace. Elements of 529 STRE (Air Sp) will usually work under command of the air support squadron tasked with a new DOB. At the initial reconnaissance (IR) stage, the three-man RE element is commanded by the OC of the air support squadron, with technical advice from the OC STRE (an experienced CEng), and resources advice from a resources SNCO. This combination has proved highly effective in providing timely and reliable military engineering advice. There is often a lack of clear detail at the IR stage and the military engineering advice will influence key strategic decisions on deployment locations, aircraft types and deployment timings. The relative seniority of the RE element at the IR stage reflects the importance of the advice and ensures that RAF personnel have confidence in the military engineering advice they are given.

At DOB activation, a full design section deploys with the DOB activation party to start the design work. Close coordination between the design section and the military construction force ensures that designs reflect the priorities agreed with the DOB commander, and also take account of both the selected construction method (military construction force, host nation or local contract) and the optimum resourcing route (local purchase or UK supply). The design section will also establish links with the host nation base engineer and any NATO (or of course non-NATO!) coalition partners at the base.

The OC of the design section, being a CEng, has the technical credibility to ensure that this liaison is effective. As soon as each individual component of the DOB design is completed, it is immediately handed across to the air support

squadron construction supervision cell, headed by a garrison engineer, and construction then starts.

This close integration of design and construction taps into the experience of the STRE and provides a fast track "design and build" capability that may be unique within the Corps. The main benefits are design pragmatism, speed of construction and continuity of military engineer advice to the DOB commander.

Figure 3: Map of DOB supporting operations over the Balkans.

Financial and Contractual Issues

The Corps has finally realized the importance of ensuring that the correct financial and contractual procedures are in place prior to any deployment. For land deployments there is usually time to put such procedures in place for each deployment, but the speed of reaction of air deployments are such that procedures must be in place all the time. 529 STRE (Air Sp) has developed an extremely efficient procedure that ensures that engineer works are not held up awaiting approvals. Both garrison engineers in the team have standing contractual delegation from Defence Estates for works services on deployed bases; this reinforces the "design and build" capability within 12 (Air Support) Engineer Brigade by providing an alternative construction method, and one that often is more efficient and faster.

Financial authority is obtained by the DOB commander if outside his own delegation, as it is he that must justify any expenditure against his operational mission. 529 STRE (Air Sp) then works closely with the civil secretariat finance staff from PJHQ to advise them on the engineering and costing issues.

Why is Air Support Different?

Many readers may have assumed that the STRE (Air Sp) function can be completed by any STRE (Works). This article may dispel this view, but in any case it is worth examining this issue in more detail. The STRE (Air Sp) is clearly a specialist function with specific techniques and design issues to consider in order to provide effective support to JRRF (Air). The main differences are identified as follows:

Reaction time. The rapid deployment of air power has become a politician's favourite diplomatic tool in today's media-driven environment. Footage on the evening news of aircraft flying off on operations can provide a dramatic follow-up to a ministerial announcement. This speed of reaction has a number of implications for the STRE (Air Sp). The first is that the STRE (Air Sp) must be ready to deploy anywhere in the world at very short notice. The second is that the STRE (Air Sp) must be completely familiar with RAF deployed operations through training or operational experience.

Specialist Knowledge. RAF deployed operations present some unique challenges to the facilities designer. A sound knowledge of the key design issues will ensure that the good advice is given to the DOB commander and his team early in the deployment. At the reconnaissance stage, pavement assessment and repair, linked to an understanding of aircraft loading, require specialist knowledge; decisions must be made quickly on aircraft types in

order to achieve operational timeframes. Once the aircraft mix has been decided, the layout of any DOB is usually driven by three factors: safe headings for armed aircraft, weapon safety distances and radar coverage. Once these are resolved with the relevant experts, other facilities can be sited. The RAF require a number of specialist facilities, a knowledge of which is essential in order to guide the DOB activation team in preparing realistic statements of requirement. These statements of requirement are vital in order to fix design criteria and for the DOB commander to obtain financial approval.

Use of Contractors. DOBs are often located in areas where a reasonable local infrastructure exists. In these circumstances it is occasionally quicker and more efficient to use local contractors to complete construction tasks, rather than a military construction force. At Solenzara, major earthworks and precast concrete works were completed by works contract. This avoided the need to airlift military plant to theatre and made full use of local concrete batching equipment. Tasks requiring local knowledge or locally available materials are also more efficiently carried out by contract. The STRE (Air Sp) must therefore have the training and skills to prepare tender documentation quickly and then let and supervise construction contracts.

Design Tasks

THE full range of reconnaissance and design activities that may be required are summarized below. Each will then be covered in more detail, with examples from recent operations.

- Assessment and repair of aircraft operating surfaces (AOS).
- Aircraft beddown: revetments, flight line facilities, aircraft engineering facilities.
- Operations and communications facilities.
- Explosive storage areas and weapon preparation areas.
- Protective works and survive to operate measures.
- Utilities (water, power, waste water).
- Fuel supply (516 STRE (BP)).
- Personnel beddown.

Assessment and Repair of AOS. The strength of an aircraft pavement is the key determining factor for the deployment of aircraft to a particular base, and pavement evaluation is the highest priority task for the STRE (Air Sp) at the reconnaissance stage. This evaluation will generate a list of aircraft that can safely use the AOS. Pavement strength information may be available from national sources, or our NATO allies, or the host nation (HN) base engineer. Alternatively, in the absence of such existing data or in cases of doubt, the strength must be calculated from an analysis of the pavement itself by taking core samples of the pavement and California Bearing Ratio readings of the sub-base, and then reverse designing the pavement.

The analysis of all this AOS information is complicated by the variety of classification systems in use for defining pavement strengths and aircraft loadings. Pavement strength assessments at a number of airfields were a key factor in the selection of Solenzara air base for Operation *Engadine*.

Once a decision is made on aircraft types, repairs may be required to runways or taxiways before aircraft operations can commence. Detailed designs, particularly of asphalt/concrete joints, are required to ensure that repairs have both the strength and durability for aircraft operations. Recent pavement designs by 529 STRE (Air Sp) include asphalt taxiways at Gioia del Colle for Harrier, concrete taxiways at Ali Al Salem for Tornado, and concrete aprons at Ancona for VC10.

Aircraft Beddown. If hardened aircraft shelters or dispersed parking are not available then revetments will be required between armed aircraft to prevent an accidental explosion on one aircraft propagating to others on the flight line. 529 STRE (Air Sp) works closely with RAF specialist armourers and the Strike Command licensing authority to prepare designs for suitable revetments, and recently designed reinforced concrete revetments at Solenzara to provide 16 Tornado GR1 parking bays. Each wall had to withstand the effects of a full GR1 bomb load (1000kg net explosive quantity) at 15m stand off.

Modern high performance combat aircraft are sensitive to extremes of environment and need comprehensive facilities on the ground to help improve reliability. Sunshades are required in hot climates for aircraft parking, as is the case in both Saudi Arabia and Kuwait, and hangars are necessary for aircraft servicing and repair. The main task for the STRE is the design of foundations and floors, but power will always be required, along with lightning protection, obstruction lighting, aircraft earthing and aircraft tie-down. In the last six months 529 STRE (Air Sp) has completed hangar designs for Gioia del Colle, Ali Al Salem and Al Kharj. At Ali Al Salem the design included a full air-conditioning system for the fabric hangar. Other examples of flight line designs are a permanent engine test pad, tie-down points and additional aircraft parking areas for Harrier at Gioia del Colle.

Operations and Communications Facilities. Substantial operations and communications facilities are required for the sophisticated mission planning, command and aircrew briefing systems used by NATO air staffs today. A 12ft x 12ft tent is not sufficient; the high-value, sensitive equipment

employed must be set up inside rigid air-conditioned structures. Existing facilities will need to be adapted, or in the absence of such existing infrastructure new facilities will need to be designed. The main design challenge here is the electrical system, which must be surge-protected, have adequate uninterruptible and standby power, and must take account of the very high earth-leakage currents produced by the electronic equipment. Recent designs by 529 STRE (Air Sp) include the operations complex for Solenzara, which was housed in a mixture of new and existing facilities, the rewiring of the operations complex at Gioia del Colle and the design for a reconnaissance intelligence centre for Ali Al Salem, used for film development and photographic interpretation.

A bombed-up Harrier GR7 taxiing past the weapon preparation area at Gioia del Colle.

Explosive Storage Areas and Weapon Preparation Areas. The large quantity of bombs and missiles needed to prosecute an effective air campaign must be stored safely, and in peacetime the normal licensing regulations must be complied with. Unless adequate safe storage is available on a DOB, and this is unlikely, the STRE (Air Sp) is required to design weapon storage and preparation areas. Again the STRE must work closely with the RAF specialists to come up with a concept before committing to a detailed design. The scale of engineering works should not be underestimated. As an example the entire tipper fleet in Corsica, over 45 tippers, was recently mobilized by a contractor to construct the earth traverses for one of the explosive storage stacks, to contain 50,000kg net explosive quantity of munitions. This task was on the critical path for the declaration of an operational capability at Solenzara.

Protective Works and Survive to Operate. In any sort of threat environment a plan must be developed with the RAF specialists to protect the aircraft, operations facilities and personnel from enemy or terrorist action. A plan must also be put in place for ADR, which from an STRE aspect will involve the restoration of essential services.

Although Hesco Bastion walls are popular within Land Command for protective works, they are not enthusiastically received by the RAF on the flight line because of the risks of spillage and foreign object damage to aircraft. In consequence the STRE is likely to be involved in alternative designs for protective works.

Utilities. The difficulties in providing utilities are encountered by all STRE on deployed operations and so this problem is not unique to Air Support. Although most air bases have a robust utilities infrastructure, these may be damaged as in Pristina or space may be allocated within the base that is not as well served with mains utilities. This is the case at Gioia del Colle where the Harrier detachment is located in a corner of the base that has no mains utilities. 529 STRE (Air Sp) has designed a water, drainage and power infrastructure to support the flight line activities for 16 Harrier aircraft.

Personnel Beddown. Personnel beddown, whilst not a top priority for the army, is deeply important to RAF commanders who insist on high standards of accommodation for their personnel. Flight safety regulations specify periods of rest for aircrew and ground crew that require them to have reasonably soundproof (this is important on a fast jet base!), temperature-controlled accommodation. Whilst existing accommodation often provides sufficient facilities (I could mention the Hotel Swevo in Gioia del Colle), the STRE (Air Sp) must be prepared to adapt existing accommodation or design new rigid accommodation. Where possible normal UK regulations and Health & Safety standards will be applied. 529 STRE (Air Sp) recently designed the refurbishment of an existing semi-derelict accommodation block in Solenzara for use by RAF personnel; this included complete rewiring, provision of fire doors and escapes, and repairs to the water systems.

Future Challenges

STsRE support to the RAF on deployed operations is relatively new and the operational

Skippy[1] Goes to Skopje

MAJOR D G BOWYER BA(HONS) MA

Major Daren Bowyer read philosophy at the University of Bristol as an Army Undergraduate Cadet. After Sandhurst and the YO course he had troop command tours with 39 Engineer Regiment and the Army Apprentices College. He was 2IC of 1st Field Squadron during the Gulf War and then spent two years in the Directorate of Military Operations. After Division II of the Army Command and Staff Course at the Royal Military College of Science, he attended the Royal Air Force's Advanced Staff Course. He was then appointed SO2(W) G2/G3 in British Army Staff (Washington). He assumed command of 20 Field Squadron in July 1998, deploying the squadron to Macedonia on Operation Upminster *in December that year.*

BEWARE OF WHAT YOU WISH FOR – YOU MAY JUST GET IT

WHEN I first took command of 20 Fd Sqn I must confess a degree of disappointment at the programme for the year ahead. Refurbishment of Ash Ranges was not a great deal to look forward to as the major event of my command tour. Certainly the squadron had been busy – four operational tours in as many years – but 6 months weekday separation in the UK hardly seemed a suitable respite for us. Nor did it allow us to rehone our combat engineer skills, which had had little practice in recent years. I was looking at ways of making the most of Ash when the first of what was to become a rapid series of changes took place: lack of funding resulted in the indefinite postponement of the Ash Range project. We immediately set to work developing a programme for the squadron to address the lack of recent combat engineer training. Just two weeks after the news about Ash we were allocated *Pinestick 99* – an eight-week predominantly artisan exercise in Cyprus. This was welcome news indeed. We now had a major focus towards the end of the year, with time to address other priorities up until then.

I flew to Cyprus for the initial reconnaissance on 15 November. That evening I was warned of the need to return in order to join the PJHQ recce for Operation *Upminster* – the UK's contribution to the Kosovo Extraction Force. Completing what I could of the initial reconnaissance the following day, I returned overnight to Maidstone with an hour's turnaround to join the PJHQ party on a flight to Paris, and thence to Skopje in the Former Yugoslav Republic of Macedonia (FYROM[2]). In my previous appointment in the British Army Staff (Washington) I had been very familiar with the situation in Kosovo – it was one of my briefing responsibilities; I had often said, only partly in jest, that it would rescue me from Ash Ranges!

THE KOSOVO EXTRACTION FORCE

FOLLOWING the brokering of a shaky peace between the Kosovar Albanian separatist movement

[1] For those unfamiliar with 20 Squadron's badge, it is a kangaroo wearing a ball and chain – a reference to the squadron's early years building prisons in Western Australia.

[2] FYROM is an ugly compromise name forced upon the European Union by Greece, and much resented by Macedonians. For the remainder of this article the country will be referred to simply as Macedonia.

Major D G Bowyer BA MA

(the KLA/UCK) and the Serbian Government by US envoy Richard Holbrooke in October 1998, the Organisation for Security Cooperation in Europe set about establishing a monitoring mission. In November, following a French lead, NATO agreed to establish an Extraction Force in Macedonia lest military assistance to the unarmed monitors should prove necessary. The UK contribution to the multinational force was to be an armoured infantry company group, based on Burma Company 1 KORBR, together with a national support element (NSE). It was eventually agreed that at the six-month point this would roule with a Dutch mechanized infantry company. This decision was very relevant to us, as it meant a sharing of the necessary engineer infrastructure work with a Dutch engineer company. The Dutch were also to provide a helicopter company. France, Italy and Germany were the other major troop contributing nations.

The Reconnaissance

THE French as lead nation led the recce and national components were capped at five because of seat availability on the C160. The UK party consisted of ACOS J3 (Land), a SO1 J4 and an HEO J9 (budget/finance), all from PJHQ, CO 1 KORBR and me. Ideally, from the engineer point of view, a chartered engineer should have been included. Given the restrictions imposed (for both political and practical reasons) there was no opportunity for any form of detailed design work (it proved possible in fact to spend only a few hours at what was to become our task site). The role of the recce was to identify a suitable location for the UK infantry company group and NSE. My role was to scope the extent of necessary RE support. Thus I concur fully with Land Command's view that the OC of the likely-to-be-tasked squadron was the appropriate engineer representative. Certainly, given the very compressed time-frame for mounting the operation, I would have been at a considerable disadvantage had I not had the opportunity to see the ground in advance of deployment.

We expected to view some partly derelict accommodation blocks in Ilenden Barracks on the northwest side of Skopje but arrived to find these had been denied us. We were offered instead a number of sites at Petrovac Airfield, the military adjunct to Skopje International Airport. None was inspiring. Services were at best limited, the real estate tight for the size of force envisaged, and accommodation non-existent. However, a preliminary plan was sketched out to utilize a partly derelict prefabricated building and four concrete aircraft shelters. It was initially determined that the building could be made into suitable accommodation for the high-readiness platoon, with ops room and company group and NSE offices. A dining facility would be created in one of the aircraft shelters, with the others utilized for stores, and a REME LAD facility. At this stage it was understood that a large area of hard-standing between this site and the airport runway would be available to us. This would have been suitable for the Warrior park, B-vehicle park, and the inevitable ISOs (though at that stage just how many ISOs would be required escaped all of us).

Mounting

ON my return from Skopje we set about in earnest the business of preparing the squadron for deployment. (Of course there had already been considerable concurrent activity in terms of drawing up possible Orbats – indeed, the 2IC had most of this done before I returned from Cyprus and had numerous individuals from within and without the squadron battering on his door to volunteer!) This period was an infuriatingly frustrating one as, despite everyone being very clear that 20 Sqn would deploy, promulgation of that decision was slow. When I attended the Land coordination conference the week after my return, it became clear that 1 KORBR already had their vehicles and ISO containers ready for loading. Since we had not formally been ordered to deploy we had not been included in the allocation of ISOs or shipping space. Indeed, we were not even included in the distribution of the movement instruction. There followed a weekend of frantic activity trying to address these issues – a period through which, I must add, we received remarkable support from Engineer Branch at Land, and by the Sappers embedded in the single supply chain. I must also give every credit to the G4 element of my squadron; the QM, SQMS and their staff did a quite incredible job, despite all the hurdles, of having us packed for a sea move within days.

The squadron's vehicles and ISO containers were eventually loaded and sailed from Marchwood Military Port (MMP) on 8 December. A further recce had been conducted

from 26 November to 1 December and this had included a chartered engineer (although not, unfortunately, the one who was to deploy). As he made preliminary designs he telephoned back outline stores bids and as much as possible of the predicted requirement was sourced through the Supply Chain Operations Centre, Bicester, in time to load onto the *Sea Centurian* at MMP.

A pre-advance party, including elements of 527 STRE (Works) deployed on 9 December to begin detailed design work. The squadron advance party deployed on 15 December and the main body flew on 17 December. Right up to the last the deployment continued to be plagued with difficulties due, frankly, to errors by movements staff. Our staff tables had been agreed and included an allowance for air freight with each flight. However, the advance party arrived at the Air Mounting Centre, South Cerney, to find that we had not, in fact, had any air freight allowance allocated and all our recce boxes had to be left behind. The main body had it worse. They were allocated a flight to Thessaloniki, Greece (the SPOD). Having then been rather poorly administered by the Port and Maritime Regiment they travelled by road to Skopje in coaches that had taken the 1 KORBR driver party to Thessaloniki (they having, perversely, been flown to Skopje!)

Arrival – Scope of Works

On arrival it quickly became apparent that plans had changed considerably since the recce. Most significantly the hardstanding was no longer available to us, leaving nowhere to park Warriors, light A-vehicles and B-vehicles nor to place the ISOs. The STRE had produced an outline plan for three separate areas of hardstanding – one each for the A-fleet, B-fleet and ISOs. However, OC 527 STRE (Works) (Forward) and I quickly reached the conclusion that these designs would need refinement and the considerable amount of plant work would (particularly given the lack of a plant troop SNCO) require a military plant foreman. In addition it had been decided that the semi-derelict building would all be needed for office space. The on-site accommodation requirement was to be met by flat-pack accommodation/toilet combination units which had already been sourced (from the 250-man reserve camp held by Resources Sqn, Split).

The revised scope of works was now as follows:

Hard-standing for A-Vehicle Park.
The A-vehicle park was to be approximately 50 x 70m and designed to take MLC 30. The area first had to be cleared of trees and then have hardcore laid to a depth of 450mm, reinforced with geogrid and geotextile and with drainage incorporated.

Hard-standing for B-Vehicle Park.
The B-vehicle park was to be approximately 70 x 100m and again first required to be cleared of trees. Hardcore was laid to a depth of 300mm and, like the A-vehicle park, reinforced with geogrid and geotextile and with drainage incorporated. Over most of its area it was designed to take MLC 15. However, part was subsequently reinforced with cement stabilization and additional geogrid to increase its strength to MLC 35 in order to provide parking for light equipment transporters.

ISO/Resources Yard.
The number of ISOs that would be necessary to support a company group was not fully envisaged at the time of the recce. However, it quickly became apparent that an additional area of hardstanding would be required. An area south of the main road, behind two of the hardened aircraft shelters (HAS) was allocated, which again had first to be cleared of trees and brush. Hardcore was laid to a depth of 200mm giving a strength of MLC 8 – sufficient to allow vehicular access to the ISOs which were levelled-in on timber baulks.

Refurbishment of HQ Building.
The site's main attraction was the semi-derelict building that was to be used as HQ both for the company group and the NSE. The structure was basically sound but the fixtures and fabric of the building were in a poor state of repair. The main requirements were:

- Removal of damaged plumbing and sanitary fittings. These were regarded as beyond repair and the ablution blocks were to be converted into offices. The only new plumbing required was into the medical centre and welfare room.
- Strip out existing wiring.
- Removal of damaged partition walls.
- Replacement of rotted floor panels.
- New partition walls as required.
- Sound-proofing for military intelligence detachment room.
- Faraday cage (created from Skopje's entire annual supply of bako-foil!) for UK COMCEN.
- Removal of damaged floor covering and replacement with carpet.
- Full electrical fitting, throughout – (and external lights).
- Repair/replacement of all windows/doors – by civilian contract.
- Wipe-clean flooring for medical centre – by civilian contract.
- Build concrete base and brick-in safe in RAO office.
- Build counters etc as required.
- Painting throughout.
- External painting – by civilian contract.
- Erection of two scaffold towers for satellite dishes.

Accommodation Site.
Fourteen FAUs and four TCUs were to be constructed on a site adjacent to the HQ building, plumbed in and provided with electrical power. As is normal in Bosnia, a covered walkway was to be constructed forming a central corridor between two rows of flat-pack units.

Erection of GP Shelter for REME Repair Facility on B-Vehicle Site.
In one corner of the B-vehicle hardstanding, a GP shelter was to be erected to increase the covered space available to the LAD. It was to be provided with electrical power and to be floored with AM2 matting. The standard front of a GP shelter does not allow vehicular access so a customized front was designed by the STRE and constructed consisting of a timber frame with full height double doors, all covered with sheeting adapted from the standard front.

POL Point.
To meet environmental concerns a hardstanding was to be constructed incorporating a fuel bund-liner and a v-ditch to run-off any spillage to a petrol separator. A further FAU was constructed as the POL office. An interesting and somewhat complex task for both plant operators and a field section, it was sad to see when we left that, despite my protests, this was being utilized as a rather expensive coach park!

Conversion of four HAS.
The Dutch engineers were given the task of constructing frontages to all of the HASs. Although they took a seemingly inordinate time to complete this task – the Dutch are very methodical – the end result was substantial and built to last. Each HAS was fronted with a fully-clad steel frame and incorporated wicket-gated double doors. We provided full electrical installation to each HAS and plumbing for the one that was to be used as the kitchen/dining facility. We also constructed a new soakaway when the existing one proved inadequate. The kitchen HAS was also provided with an extractor fan in what had once been the jet vent.

Electrical Distribution.
Full mains power was to be provided from a transformer to the office building, HASs, accommodation area and A- and B-vehicle parks (for lighting and for the GP shelter). This necessitated a total of four road-crossings.

Thus we had a range of works that would provide challenging tasks for every sub-unit. Plant Troop was particularly stretched as the initial recce had scoped little work for them and we had consequently come light in both machines and operators.

Weather and ground conditions were never ideal for plant work. Indeed, the ground clearance for the vehicle parks had largely to be completed by hand – an arduous job in temperatures, at that time, often well below -10°C and on several occasions as low as -26°C.

Christmas

THE squadron's second Christmas in succession away from home provided little respite from the increasing tempo of work. We did the traditional things – early morning "gunfire", a Christmas dinner and so on but much of the day was given over to VIP visits – just what everyone wanted! Phone cards were not yet available but sterling work by 30th Signal Regiment detachment ensured that every soldier was able to make a ten-minute telephone call on rapidly installed PTT (public telecommunication) lines. Those on guard at the airport were not forgotten – the SSM and I visited with mobile phones to ensure they, too, were able to make their calls. The evening saw an excellent squadron "smoker". Despite the limited preparation time some quite outstanding skits were put together. By a narrow margin the Oscar must go to the troop commanders and SNCOs for their "Skopje Primary School Alternative Nativity Play"!

It was also over Christmas that we paid our first visit to the Skopje British War Cemetery. This contains the graves of 223 British military personnel, and one British nurse serving with the Serbian Army, who lost their lives in and just after the First World War. Ironically the majority died not of wounds but from the horrific flu epidemic that swept Europe shortly after the war. Having discovered the cemetery on Christmas Eve, and spent a little time sweeping snow from the headstones, we decided to hold a remembrance service. This we did on 4 January, 80 years to the day after the death of two of those interred there. It was a moving ceremony in which the padre and a bugler of 1 KORBR, and a piper from the Highlanders assisted us.

Domestic

INITIALLY the UK contingent was accommodated in a somewhat run down former hotel, the Panorama, which provided both domestic and office accommodation – HQ NSE was somewhat surreally located in the former casino. It was clear that this would be insufficient and rooms were taken in the neighbouring Olympic Village hotel. Despite appearances, the Olympic Village was still in business as a hotel catering primarily for east European airline crews and, it

would appear, an extra-marital meeting place for Skopje's seedier citizens! It was a bizarre place. Every effort was made, particularly at the Panorama, to change the image from hotel to military base. The Panorama became "Panorama (or Paranormal, or Paranoia) Camp" and the Olympic Village "Olympic Village Lines". With the imminent arrival of the KORBR main body a rapid recalculation was done which quickly identified that we would still be desperately short of accommodation. My QM together with the civil secretary (CivSec) and the contracts officer set about identifying an alternative location for the squadron. (It wasn't that we weren't enjoying the company of the KORBR – we were just the most appropriate sub-unit to move!)

We were eventually located in 1½ floors of a construction workers' hostel, the "Hotel Granit-Kozle." This was also still in use by workers of the Granit Corporation (Macedonia's biggest construction company). Facilities were limited and our accommodation was spartan but appropriate for an operational tour. The biggest disadvantage was that we had then to take all our meals at Petrovac – some 40 minutes away. This limited flexibility, but meant we were fed largely by our own – excellent – chefs, in the HAS which we were converting into a kitchen/dining facility for the force. Our own three chefs, assisted by one from KORBR, daily fed not only the squadron but also the Dutch engineer company and helicopter squadron and at lunchtime up to 300 or more personnel from the NSE and company group. It was rare that they were warned of the numbers they would feed and they sometimes catered for as many as 800. They were simply outstanding.

Progress and Changes

Although the squadron got quickly stuck into the job of stripping out the derelict fitments of the HQ building, and providing a perimeter fence, other work was, initially, frustratingly slow to get underway. Macedonia's economy, emerging steadily but slowly from its communist past, is not yet robust enough to support a vibrant construction industry – especially in the middle of winter. Added to that the UN (in the form of the US/Scandinavian UNPREDEP[3]) has been in Skopje for eight years, taking up any slack that may have existed in the supply of construction materiel. Now, with the French, German, Dutch and Italian contingents all in place – and in most cases with much more responsive financial and contractual arrangements, we were faced with critical shortages of resources. We had an excellent resources team and on-side and able CivSec and contracts officer. However, they were faced with a lack of immediate availability of much of what was needed and were undoubtedly hampered by the UK's bureaucratic rules for procurement. A refusal to allow sufficient and flexible delegation to the resources SNCO, placed an intolerable burden on the single contracts officer at a time when failures by the lead nation to meet earlier commitments left him negotiating equally important contracts for food, accommodation, laundry and so on.

The Dutch came much better prepared, bringing many construction materials with them. It must also be said that they were enormously accommodating towards us. Where they could, they helped out with the loan of materials that we would repay when able. I think, too, that we probably make an error in insisting on designing everything to UK standards and for UK materials. For example, the design insisted on copper plumbing supplies. Copper is not used for plumbing in Macedonia and so joints and pipes in the range of sizes and types could not be found. Procurement from the UK caused delay. I would suggest that we need to train our chartered engineers and clerks of work to design to appropriate standards and take account of local availability. The Italians did just this – and I will return later to their approach.

The extraordinary efforts of the resources team, coupled with excellent support from both the Sappers embedded in the single supply chain, and the Engineer Logistic Squadron (61) in Split, gradually overcame these difficulties and tempo increased. Certainly we were frustrated by frequent changes of design – some for understandable operational reasons as the requirement matured, others I have to say on more of a whim. But each new challenge was met by an incredible flexibility of mind and dedicated professionalism of our artisan tradesmen. I never cease to be impressed by the versatility of our soldiers, the quality of their trade

[3] United Nations Preventative Deployment, a small UN force deployed in 1991 to help ensure that the Balkan conflict did not spill over into Macedonia.

skills, nor their dogged determination in the face of adversity.

All Change

Our deployment had been scoped for 8 to 12 weeks. Notwithstanding the many changes, I refined this shortly after Christmas to give us a fixed return date of 21 February – a ten-week deployment. This was important not only for the squadron's soldiers and their families, but also to help fight off any threat of mission creep. With an end date set, additional work had to be balanced between its real operational need and its likely effect on return date. It was with this end date within grasp and work coming to a halt that we received notification of the new operation – *Agricola* – that was to put a much larger force into Macedonia in preparation for moving into Kosovo as the peace implementation force. Needless to say, our first question was where this left us. I was assured by CO KORBR that the Chief of Defence Staff himself on his recent visit had declared that there was no need to change our return date. Armed with that I felt confident to brief both the squadron and – through our newsletter – the wives. Sadly it was the very day the newsletter was distributed, 5 February, that I learned from Land Command that we were, in fact, to remain in theatre to see in the new force, until relieved by 28 Engineer Regiment. At this stage work for Operation *Upminster* was in its closing stages and I might have begun thinning down our manpower. It was a considerable challenge to keep everyone busy. To make things worse, although it was easy to identify tasks that would assist the in-load of Operation *Agricola* we were prevented from doing anything because PJHQ would not grant financial authority for the new operation! CO 28 Engineer Regiment arrived with his Tac HQ and advance elements of 65 Field Park Squadron on 18 February and we came under command 28 on 20 February. Finally on 22 February financial authority was given and we could begin work again. Sadly we were frustrated by many of the financial authority/delegation and resources availability problems that characterized the beginning of Operation *Upminster*. More frustratingly many of the tasks we undertook proved nugatory as plans, particularly for the scarce real estate, changed and changed again. Nevertheless, we had a range of tasks, some of which were very exciting and provided interesting and challenging variety. Of particular interest – and value – were the tasks we undertook to reinforce the main supply route from the SPOD at Thessaloniki to Skopje and on towards the Kosovo border. We completed two Mabey Johnson pier set reinforcements on this key highway. The building of the first of these, at Demir Kapija, is described separately in an article by Lt David Holdsworth.

Some Concluding Thoughts

With the aim of provoking debate but the probably vain hope of not stirring-up a hornets nest, I have to conclude with a few thoughts about how we should, in future, go about this form of construction-oriented operational tour.

Firstly, I have to say, this was an experience that changed my view of the MWF. Having had little previous experience of the organization and I suppose a touch of quite unjustified field army/G3 snobbery, I thought of it as a bit of a backwater. How wrong I was had begun to become apparent to me during the *Pinestick* recce. How busy the MWF is, and how operationally experienced, is well described in Lt Col Taylor's article in April's *Journal* "Is this the best job in the Army?" (but no it isn't; command of a field squadron is!) Certainly I began to appreciate how, for a suitably qualified officer, becoming a chartered engineer could offer a very exciting career. (Though here I must be slightly controversial and suggest that changing the title from PQE to CEng will not of itself encourage this career move. It is the impression that our junior officers gain from the CEngs/PQEs they are exposed to that will make up their minds, one way or the other – so, CEngs, – over to you!)

However, we must be clear about our chains of command and we need to firmly differentiate between command and advice. We faced some difficulties on Op *Upminster* precisely because the chain of command was unclear. There should be only one Sapper command chain and the All-Arms commander should ideally have only one Sapper point of contact. I would argue strongly that the only sensible chain of command on an operation like *Upminster* is for the deployed STRE to come under command of the field squadron. Arguments about contractual probity and separation of "designer" and "contractor" have limited applicability in this environment (indeed, the terms do not sit easily in a

military context). This "contractor" has no pecuniary advantage to seek from short-changing his "client" on a construction project, any more than he has in providing a shoddy job when his "commander" calls for a minefield or a bridge demolition in a more warfighting-oriented operation or exercise. Legally required separation of designer and constructor can still be achieved: OC of the STRE is the designer, the squadron operations officer is the constructor, both answering to the squadron OC. It is the proper role of the technical experts to advise on standards, and for the commander to determine whether, taking into account many other factors, he should accept that advice. Eventually for us the relationship found its own level, but it might have got off to a better start if this had all been understood, as a matter of doctrine, from the start. I think it also worth considering whether there should be a closer integration – perhaps through peacetime training affiliations – between regiments and STsRE.

A related issue is that of standards. Whilst our Italian counterparts undertook a similar project, with fewer men and in less time, by adopting a very "combat engineer" approach, we produced what, in my view, was a "Rolls Royce" solution. Such an approach adds to overstretch of both field units and the MWF. Whilst the need to work to civilian standards on a construction training exercise such as *Pinestick* is clear, the value of skirting boards, carpets and internal painting in a previously derelict building to be used as a field HQ for up to a year, is not. We would perhaps benefit from establishing exactly what standards we are prepared to work to, and making these clear to the rest of the field army. Of vital importance will be the need for RE field units and MWF to both sing from the same song sheet. But we should be clear that we are providing field facilities not major, long-term infrastructure – unless that is what is really required.

Finally, a word about our equipment. Field squadron G1098s are woefully out of date and have quite simply failed to keep pace with our changing emphasis. I still have on charge gravity feeds for Mk7 mines, but have neither wheelbarrows nor step ladders that would be so useful on construction-oriented tours. With the support of HQ EinC(A) we are now taking forward work to examine the squadron's equipment table for relevance and suitability.

Conclusion

Operation *Upminster* hit us out of the blue and provided the squadron with an exciting challenge from which we all benefited. There were difficulties, frustrations and lessons to be learned, but, taken in the round, this was just the sort of thing that most of us joined the Army to do. We need to look seriously at our command and control arrangements, and how we integrate the technical and the practical sides of the Corps. If we are to manage our over-commitment then we need to consider our approach to construction and the standards the rest of the Army can expect us to meet for short-term deployments. We need to examine the equipment we hold and adjust it to suit the tasks we most regularly perform. Finally, whilst none of us is clamouring for an early return to the Balkans (a Belize or Kenya tour would be a nice alternative!) Skippy had a worthwhile time in Skopje!

Memoirs

GENERAL SIR WILLIAM JACKSON GBE KCB MC*

Born 28 August 1917,
died 12 March 1999 aged 81.

General Jackson was the son of a colonel in the RAMC and grew up in India. He was educated at Shrewsbury School, at the Royal Military Academy, Woolwich, where he was the King's Medallist, and at King's College, Cambridge. He was one of a most able and talented group of officers who were commissioned into the Corps in the 1930s. Despite his success at "The Shop", he later recorded the criticism that being taught to charge with lance and sabre and studying no later history than the Napoleonic Wars was not exactly the best apprenticeship for taking on the highly professional *Wehrmacht*, which these gentlemen cadets would soon have to do.

He himself was one of the first British officers to engage the enemy in battle. Before he had even completed his YO Course, he was posted on mobilization to 55 Field Company. He spent the first winter of the war with training and planning for a wide variety of potential operations. In April 1940 he was sent to Norway with his field section to support 15 Infantry Brigade for its advance on Trondheim. There he won the first of his Military Crosses for gallantry and "astute" leadership under fire, when carrying out the demolitions to cover the ultimate British evacuation from that part of Norway. During this short, bitter campaign, virtually without air cover, he was wounded for the first time.

Returning from Norway he stayed with 55 Field Company constructing beach defences in Suffolk. In 1941 he joined 6th Armoured Divisional Engineers and, just before the division left to take part in the Anglo-American *Torch* operation in North Africa, taking part in the advance into Tunisia he was promoted to command the divisional field park squadron. Unfortunately he was badly wounded in a mine explosion during the first German counter-offensive south of Medjes-el-Bab, and after four months in hospital joined Eisenhower's Headquarters in Algiers as an SORE 2 (Intelligence) for the assault of Sicily and the subsequent invasion of Italy. Declared fit again for regimental duty in the autumn of 1943, he returned to 6th Armoured Division, this time to command 8 Field Squadron, and took part in the battles of the Garigliano, Cassino and the advance past Rome to the Gothic Line, winning a bar to his MC. He was wounded again near Arezzo and, after a short spell in hospital, served on Alexander's staff as SORE 2 (Operations) until he went to the Staff College, Camberley, in December 1944.

The war in Europe ended while he was at Camberley and so, with most of his course, he was sent to the Far East, where he became GSO2 (SD) in Fourteenth Army Headquarters for the re-occupation of Malaya, and was later GSO1 (SD) in HQ ALFSEA in Singapore. When that Headquarters was reorganised as HQ FARELF he became its first AA & QMG (Ops and Plans). It was during this time that he met and fell in love with an ATS Junior Commander, Joan Buesden. They married in 1946.

Two years later he returned to Camberley as an instructor. He was particularly effective in this role, as he was able to draw on his experience of war and to explain with great clarity what it was really like – to the enormous benefit of students.

General Sir William Jackson GBE KCB MC

Instructing Staff College students was followed by commanding the cadets of Somme Company at the RMA Sandhurst. In 1952 he went back to regimental duty to command 4 Field Squadron and two years later became Second-in-Command to 7th Armoured Divisional Engineers in Germany as a brevet lieutenant colonel. In 1955 he was posted to the War Office for the first time. During his tour as AA & QMG (War Plans) he was involved in the logistic planning and execution for the Suez operation, for which he was appointed OBE. Then in 1958 he was fortunate enough to be given command of the Gurkha Engineers. This gave him particular pleasure since he had been brought up in India and had hoped to have joined the Bengal Sappers and Miners on completion of his YO courses, but the war had intervened. His command of the Gurkha Sappers was all too short: in less than two years he was back, at Camberley as Colonel GS of the Minley Division of the Staff College. This appointment was followed by Deputy Director of Staff Duties at the War Office responsible for the Army's deployment world wide, and then a year's sabbatical at the Imperial Defence College before becoming a major general in 1966.

The imperial flavour returned to his career when he was appointed to run the last gathering of all the Commonwealth Chiefs of Staff at Camberley in 1967. Discussion here was mainly concerned with equipment policy and so it was a logical step to becoming the Army's first Assistant Chief of General Staff (Operational Requirements) responsible for Army weapons policy. From being the first ACGS(OR) he became the last C-in-C Northern Command as a lieutenant general in 1969, following in the footsteps of many other Sappers who commanded Northern Command. He was appointed KCB in 1971. When the Command disbanded in 1972 he began four years as Quartermaster General. In this his last appointment in the Army there was enormous scope for his talents as a widely experienced soldier. During his time he moved much of his staff and supporting organisations outside London and formed the Logistic Executive at Andover. Although this saved manpower and costs, few would have had the courage to implement such a radical plan. But it proved right, and was one of the first of many similar steps to move staffs from London.

But while QMG he contributed much more to the Army and Army Board than the responsibilities of his own department. His views were rightly sought and valued on all aspects of MOD policy. His military career was one of great distinction, succeeding as he did in being at once a brilliant staff officer and a fine, resolute commander. He was perhaps unlucky not to have filled the top appointment in the Army. He was appointed GBE in 1975. As Field Marshal Lord Bramall remarked at the memorial service:

"In all these jobs, Bill, as well as being well liked and greatly respected, proved himself, above all, a real achiever. Always ahead of the game (and often ahead of his time) he got quickly to the heart of any problem and was then, with his own clear agenda behind him, able to articulate with the utmost clarity and irrefutable logic what he felt needed to be done. This proved more than a match for any bureaucratic elements who might for whatever reason, be likely to thwart his plans. Any subsequent orders or instructions were short and precise without any ambiguity at all.

"He seldom lost his temper or raised his voice, except perhaps at those who tried to cover their ignorance with bluff and bluster. He could not abide any form of cant or hypocrisy".

In 1978 General Sir William Jackson was appointed Governor and Commander-in-Chief of Gibraltar, the fourth Sapper to hold this post. He loved Gibraltar and proved to be a most able and popular Governor. He went there determined to understand the residents of the Rock and make himself accessible to them. As a result, he developed a close affinity with them and became the champion of their interests and their rights to self-determination. Because of his intellect and feel for history, he was able to defend their case in a way that put completely on the back foot any who might have hankered after other solutions. He continued to champion that cause even after he had left, with powerful and well placed letters to the Press always referring to Gibraltar as the "Rock of the Gibraltarians".

He finally retired in 1982 and went to live at Oare near Marlborough where he continued to pursue his other life's work as a serious and much respected military historian, adding a further six books to the five he had published while still serving in the Army[1] and contributing book reviews and obituaries to *The Times*. He was not only a most talented writer himself (he had won two RUSI gold medals for Trench Gascoigne essays) but was always eager to encourage others to write military history and then to help them get their work published. His own style was lucid, concise and essentially accurate as a

result of most painstaking research. And with all his books, it was his intimate knowledge of what it felt like to be in a battle and of the men who had experienced it, which made him such a fine and respected historian.

General Jackson had great presence. He was tall and had a fine military bearing until late in life. He was much respected throughout all three services and was a man of utmost integrity. He was highly professional and always calm in a crisis. He was articulate and always clear as to what was required. He was a man who "needed to be stood up to" but he always listened to the advice of those who had won his confidence. In spite of his formidable intellect he was a man of great compassion and warmth. His sense of humour was never far from the surface and his audible chuckle often helped to ease solutions to problems.

His marriage to Joan Buesden was a blissfully happy partnership. She survives him along with their son and daughter.

HEMLG ENWB JMS

[1] The full list is: The North African Campaigns: 1940-43 (1975); Attack in the West – Napoleon's First Campaign Re-read Today (1953); Seven Roads to Moscow (1957); The Battle for Italy (1967); The Battle for Rome (1969); Alexander of Tunis (1971); Withdrawal from Empire (1986); (with Group Captain T P Gleave) History of the Second World War. Mediterranean and Middle East: Vol IV. Victory in the Mediterranean. Part I 1st April – 4th June 1944 (1984); Part II June – October 1944 (1987) and Part III November 1944 – May 1945 (1988); The Rock of the Gibraltarians (1987); The Alternative Third World War (1987); Britain's Defence Dilemma: An Inside View (1990); The Governor's Cat (1992); (with FM Lord Bramall) The Chiefs – the Story of the United Kingdom Chiefs of Staff (1992); The Pomp of Yesterday. The Defence of India and the Suez Canal (1995); Britain's Triumph and Decline in the Middle East (1996); (with Francis Cantos) Fortress to Democracy: A Political Biography of Sir Joshua Hassan (1996).

MAJOR GENERAL J M H LEWIS CBE

Born 5 April 1919,
died 6 March 1999, aged 79.

MIKE Lewis was the son of Brigadier Sir Clinton Lewis, an eminent Sapper who became Surveyor General of India. Mike was educated at Oundle and the Shop from which he was commissioned into the Corps, in 1939.

His immediate service after training was with 5 Scots Guards preparing for special service on skis in Finland. Like many officers at the time he had volunteered to resign his commission and adopt the rank of guardsman for this. The venture never came off and he had to settle for more orthodox service as IO with 18th Division RE which he joined in 1940.

By January 1942 18th Division was arriving in Malaya for its belated commitment to the defence of Singapore. Although still very young Mike Lewis had clearly made his mark and, a few days before the fall of Singapore, he was one of the few (including his CRE, three other officers and fourteen soldiers) who were selected to fill the very limited available shipping to escape. The escape was hazardous; it entailed being taken to Sumatra, where the party was picked up by a Royal Navy cruiser and moved to Java. The Japanese invasion of Java was considered imminent and so desperate measures were called for. A flat-bottomed Chinese river steamer was requisitioned, and with a scratch crew and the stars for navigation it set off to Ceylon, arriving safely despite three near misses by Japanese torpedoes.

There followed a short stint in a new headquarters set up in Ceylon to counter Japanese aggression. This chance arrival in Ceylon had the happy consequence of his meeting Barbara, the daughter of a tea planter, whom he married in Colombo in 1943. There was no opportunity to settle down to married life as he was sent to Gwalior to join General Wingate's Special Forces (Chindit) Headquarters to serve on the operational planning staff. The headquarters later moved to Rangoon, and Mike remained with them until the war ended.

There followed a number of regimental and staff postings, and he was selected to attend the Staff College, Camberley in 1948, from which he was posted to work in the War Office on the staff of the Director of Military Operations

From 1952 to 1954 he was SORE 1 to Colonel Harry Grattan (memoir *RE Journal* April 1998) the Chief Engineer for the largest building project ever undertaken by the Army, the construction of the new Headquarters for Northern Army Group at Mönchengladbach. Mike was appointed OBE for his work on the project.

He was later sent to Tripoli to be second in command of 22 Engineer Regiment, which was part of 10th Division. The regiment was placed on a war footing during the Suez Crisis, but was not in fact moved. This was followed by two years as OC Troops and Commander Royal Engineers in Gibraltar, where he devoted his spare time, helped by his wife, to the important and historic library, which had been founded by Pitt the Younger, and is housed in a fine Georgian building. Neglect had led to serious deterioration of valuable books, and Mike set about getting the library into good order, and arranged the installation of air conditioning to prevent further damage. It was a task that gave him lasting satisfaction.

He had become recognized as an able and effective staff officer who paid meticulous attention to detail and who had the ability to present the essence of complicated issues in simple and explicit terms. In addition his charm, wide interests, calmness, humour and modesty made him friends wherever he went.

Major General J M H Lewis CBE

He taught at the Joint Services Staff College at Latimer, and then spent two years, which were to prove valuable in the future, in the International Military Staff of NATO, in the Pentagon. There he was confronted by and came to understand the differences in approach to defence problems taken by the Americans, French, Germans and other NATO allies.

After a year at the Imperial Defence College in 1966 Mike Lewis moved into senior intelligence and operation planning posts in London and NATO. These led to his final appointment as a major general to be Assistant Chief of Staff (Intelligence) in SHAPE. There, in the words of a very senior officer who was serving in the MOD at the time, "he managed the usual tightrope of relations with the Americans and Canadians on the one hand and the European members on his staff on the other with singular skill and grace." He was elevated to CBE, and retired in 1975.

Mike Lewis came from a family of five generations of professional artists. He made amends for spoiling this record by taking up picture framing and restoring on his retirement from the Army, and he had three books published: "Michele Marieschi 1710-1743" (1967), "John Frederick Lewis RA 1805-1876" (1978) and "The Lewis Family – Art and Travel" (1992).

The 1978 book on J F Lewis is the most comprehensive, authoritative and important publication on that artist, and will remain so for many years. It led to Mike being invited to address the Royal Academy, which gave him great pleasure. He also found it amusing to find himself, a soldier, speaking to this august body having read that Ruskin had addressed a military academy. He was also for twenty years a regular and highly respected lecturer for the National Association of Decorative and Fine Arts Societies. He had a name for giving an invariably polished performance, for lectures that stimulated and were always delivered without a note. He spoke on a variety of subjects including J F Lewis, 19th century views of Switzerland and art in war. It has come to light since he died that, typically, he gave his fees to the Royal Academy Trust.

From time to time his views were sought by the great auction houses and by scholars. They were given in his self-deprecatory style but were always highly valued.

He is survived by his wife and three sons.

RWML

JOHN SEARLE SHINNER BSc FICE

JOHN Shinner, who died on 7 February 1999, was commissioned in 1942 and served in 257 Field Coy and 3 Parachute Squadron before joining HQ RE of the newly formed 6 Airborne Division in 1943. As IO RE, with Lieutenant Colonel Frank Lowman, he was involved in the planning for tasks given to the Sappers to assist the Division to seize and hold an area between the rivers Orne and Dives in Normandy. The initial tasks involved the demolition of five bridges and several coastal guns, clearance of anti-landing obstacles, minelaying and assistance to glider troops tasked to seize bridges over the river Orne and Canal de Caen.

On the night of 5 June 1944 he flew in a Stirling with men of HQ RE and 591 Parachute Squadron, to drop at Ranville. Off course, the aircraft and the glider it was towing were shot down at Grangues, twelve miles east of Ranville. A second Stirling towing two gliders also crashed in the area. John suffered a badly injured arm and was left hanging upside down by one leg on his static line with part of the aircraft blazing. He was cut free and with other survivors was captured and taken to the nearby château. He was separated from the rest, eight of whom were later shot on the excuse of attempting to escape (see article p25, April 1994 *Journal*.) He was Mentioned in Despatches.

During his year in prison camps, and later as a civil engineer, John nurtured the ambition to raise a memorial to the men murdered at the Château de Grangues on 6 June 1944. Assisted by veterans of 6th Airborne Division RE and the Commune of Grangues, he raised the funds and a memorial was unveiled in the churchyard of the 14th century church, which bears the names of those massacred.

In 1999 a plaque is to be placed on the stable where the prisoners were held at the château. The plaque and the memorial will ensure that John and his men will not be forgotten.

After the war, he took up a career in the water supply industry and in the mid-fifties joined the East Surrey Water Company, becoming successively chief engineer, general manager and a director. He was appointed Deputy Chairman from 1989 until his retirement in 1991.

JSRS

LIEUTENANT COLONEL G G LAYTON CBE SQA

Born 18 May 1917, died 7 March 1999, aged 81.

GRAHAM Layton made an outstanding contribution to health care of the poor in Pakistan after a successful career in the construction industry, following his wartime service in the Corps.

Layton grew up in north London and was educated at Wellingborough School, in Northamptonshire. In 1940, he volunteered as a Sapper in No 692 (Costain) General Construction Company RE, and served in Belgium and France, before evacuation from Dunkirk on 28 May 1940 in the destroyer *Vimy*. Commissioned into the Indian Army in 1942, he was promoted to major in 1944 as Officer Commanding 536 Artisan Works Company RE. He was appointed MBE for the construction of the Eastern Army Boat Bridge crossing of the Barak River, during the campaign to recapture Burma. When a flash flood swept the bridge away, he showed his characteristic determination by staying on board with his team; he split the bridge into sections, one of which was recovered 25 miles downstream. Seventeen days later the bridge was reopened. Layton's company went on to build, from timber supplied by "Elephant Bill" Williams, 1200 boats to carry supplies on the Chindwin in the operation to retake Rangoon: this time their leader was rewarded with appointment as OBE. He completed his army service with the rank of lieutenant colonel.

In 1947, Layton returned to Karachi, where over 30 years he built up MacDonald Layton Company to be one of the largest and most successful construction companies in Pakistan. Among his other achievements he built the parliament building in Islamabad and is credited with "the construction of the heart of the modern commercial Karachi." He retired from active involvement with the business in 1977 and returned to England, developing a small house-building company in St Albans.

But he could not rest there. In 1984 he returned to Karachi and took Pakistani citizenship. "This country has been good to me. This is where I made all my money, so why not give something back", he said. With his friend Zaka Rahmatulla, Layton invested £50,000 and set up the Layton Rahmatulla Benevolent Trust (LRBT) in 1985, the same year opening the first mobile eye hospital at Tando Bado, deep in the wilds of Sind Province. A permanent, fully equipped brick-built structure at Korangi on the outskirts of Karachi followed in 1988 and the eight hospitals now in existence represent a multi-million pound operation serving the needy in all parts of the country. These eight hospitals provide free eye care to over four million patients, including 400,000 eye surgeries. The trust's work has been supported financially, and endorsed from the start, by Sight Savers International, the leading British charity devoted to eye services in the developing world. Further financial assistance in the UK has come from the Graham Layton Trust, set up to help fund the work in Pakistan; it has recently arranged the finance for the eighth hospital, at Lar near Multan. Like its predecessors, this project was supervised by Graham Layton with typical enthusiasm and exacting attention to detail. It was completed four months ahead of schedule, just three weeks before his death.

Until the last week of his life, Layton had continued as the dynamic chief executive of LRBT, despite a debilitating stroke in 1989, which had left him confined to a wheelchair and with a severe impediment of speech. To the end he remained the hands-on manager, with an ability to motivate, and generate loyalty in those around him. He was honoured for his tireless work in Pakistan with the Sitara-i-Quaid-i-Azam (Star of Pakistan) in 1990, and also in the UK, where he was advanced CBE in the 1994 New Year's Honours.

MSP

Lieutenant Colonel G G Layton CBE SQA.

BRIGADIER M O COLLINS CBE

Born 28 March 1905, died 30 September 1998, aged 93.

BRIGADIER Michael Collins' career, mostly in survey, took him to India during the Second World War and, after leaving the Army, to Africa where he eventually made his home and where he died last year.

Michael Owen Collins was educated at Victoria College, Jersey, and, after commissioning into the Corps in 1925, at St Catherine's College, Cambridge. He completed his training at Chatham and was posted to 54 Field Company, then at Bulford, as a section commander. He moved on from there for a three-year tour at the Experimental Bridging Establishment at Christchurch, and in 1931 embarked on a seven-year secondment to the Ministry of Agriculture and Fisheries for work on the Ordnance Survey. This involved organizing and controlling the large-scale surveys of southeast England and special surveys for land valuation and tithe redemption. He also initiated the Ordnance Survey's land registration system at that time.

On the outbreak of war Collins returned to uniformed service and became responsible for "mapping up" the BEF. He went to India in 1942 to help the Survey of India in its reorganization and mapping in the Far East. In 1943, Admiral Lord Louis Mountbatten arrived to form South East Asia Command and shortly afterwards, Collins joined the headquarters as Assistant Director of Survey, responsible for the provision of maps and survey data throughout the theatre. He was promoted temporary full colonel in 1945 and appointed CBE.

At the end of the war Collins returned to the UK, reverting to his substantive rank of lieutenant colonel and, after a spell at the Central Photographic Establishment at RAF Benson, raised and commanded 135 Survey Engineer Regiment, the first Territorial unit of its kind to be formed. He was Commandant of the School of Military Survey from 1949 to 1951, returning to Ordnance Survey to finish his time with them as Director of Map Production in the rank of brigadier.

Collins resigned his commission to take up the appointment of Director of the Department of Trigonometrical and Topographical Surveys of the Federation of Rhodesia and Nyasaland where he remained until the break-up of the Federation in 1963. He then retired and, keen to keep his mind active, set up a small scientific and technical publishing house in Rhodesia many of whose products are held in the Corps Library. He only gave up this work in 1982 when, then in his late 70s, his eyesight began to fail him. At the same time he investigated a number of rural projects including rearing Muscovy ducks and growing comfrey for medicinal use.

Among the many honours earned by Brigadier Collins in his career were fellowships of the Royal Institution of Chartered Surveyors, the Rhodesian Institute of Surveyors (later FZIS) and the Rhodesia Scientific Association. He was also a Companion of the Rhodesian Institute of Engineers (later CZIE). In 1957 Collins became Commissioner of the Commandery in Central Africa of the Order of St John and was appointed a knight of the order in 1967.

Michael Collins was devoted to his family and they to him. In 1930 he married Nancy Gwendolen Ford who predeceased him. Two daughters, seven grandchildren and five great-grandchildren survive him.

JMB

Brigadier M O Collins CBE

COLONEL K W DALE OBE, TD

Born 20 November 1925,
died 18 November 1998, aged 72.

KEN Dale, who died last year after a serious operation for stomach cancer, was among the most distinguished heating and ventilation engineers of his time and a great friend of the Corps. He was born in Birmingham, and on leaving school he joined the RAF hoping to become a pilot but there were no more vacancies for training and he worked in meteorology until being demobilised in 1946. He was one of the first students at the National College of Heating, Ventilating, Fan Engineering and Refrigeration. He worked in contracting and consulting engineering firms before starting his own practice K W Dale and Partners in 1954. More recently he was the Senior Partner in Dale and Goldfinger (and subsequently Chairman and Managing Director of Dale and Goldfinger Ltd, Cirencester and London).

Ken was deeply involved with the building services industry throughout his career. He designed the engineering for many important UK and overseas buildings, notably Chatsworth House, Sheffield Crucible Theatre, The Royal Opera House, Westminster Hospital, Mecca and Riyadh Hotels and Conference Centres, The British Embassy in Riyadh and both the British and Indian Antarctic Survey Bases. Notable among a large number of social housing projects was Trellick Tower in west London. Ken was in the EEC team that addressed the heating problems of Romanian orphanages. His style was to undertake a rigorous examination of the requirements of a task, taking care to carry his clients and architects through the process which led, sometimes it seemed intuitively to elegant engineering solutions.

Ken's activities and interests took him well beyond his straight consultancy business. His involvement in the profession as a whole contributed much to the recognition of the then Chartered Institution of Building Services by the Engineering Council as a body of Engineers (CIBSE). He had been an external examiner for the MSc course in building services at UMIST and a lecturer at the Regent Street and South Bank Polytechnics. His reputation in the industry was recognized in both America and Europe. The American Society of Heating Refrigeration and Air-conditioning Engineers made him a Fellow in 1983 and a Life Member in 1992. He was President of REHVA (Federation of European Heating and Air Conditioning Associations) from 1993-1996, Chairman of the Co-operation Committee and long represented CIBSE on REHVA. The French Society AICVF (Association des Ingénieurs en Climatique, Ventilation et Froid) made him an Honorary Member in 1992. Public Appointments included service on the Building Regulations Advisory Committee for nine years, the chairmanship of the Building Services Advisory Panel, and service as a Tax Commissioner. He published a number of technical papers. Two of particular interest to the Corps were *Disaster Relief Overseas* and the *Royal Engineers and Sir Joshua Jebb and Pentonville Prison.*

Ken Dale's army career began in 1953 in 101 (London) Field Engineer Regiment at the Duke of York's. He first reported to the Regiment at Annual Camp and his then troop commander remembers how "... his distinctive personality soon made itself felt. Most of the soldiers were somewhat disaffected Cockneys doing a compulsory stint in the TA as part of their National Service. Ken's presence was a welcome

Colonel K W Dale OBE TD

calming influence and certainly made my job easier at that camp." He was promoted corporal almost immediately, and commissioned shortly thereafter. In due course he became 2IC of 223 Field Park Squadron and on the disbandment of the regiment in 1967 he transferred to the RE Specialist Pool becoming its commander in 1975.

He was appointed ADC to the Queen from 1977 to 1979 and was appointed OBE in 1982.

In 1978 he was appointed to the then Engineer Railway and Staff Corps in which he became a Colonel in 1986.

Ken devoted much time to the work of the Corps. He gave advice on the technician training courses, helped with the Royal Engineers Museum Foundation and gave free and invaluable consultancy for the highly complex provision of the heating, ventilation and fire protection arrangements for the Ravelin Building courtyard which his firm supervised for a nominal fee.

His generosity with his time also found an outlet at home where he worked for a local youth club in Barnes, and championed high standards of civic amenities in both Barnes and Cirencester. On top of all this he was a most engaging character with wide interests which included jazz – he frequented Ronnie Scott's Club. He was a model maker, amateur painter and art collector. He read extensively and was particularly keen on tales of the American Wild West.

His wife, Mary, survives him.

CJF CIBSE

COLONEL SIR RALPH FREEMAN CVO, CBE

Born 3 February 1911, died 24 August 1998, aged 87.

SIR Ralph Freeman, who died last year, was one of the most distinguished engineers of the post-war years who developed his wartime experience into a lifetime association with the Corps and its affairs. Ralph Freeman was born in London into an engineering family. His father, Sir Ralph, who had been a partner of Freeman, Fox from 1912 until his death in 1950, had designed the Sydney Harbour Bridge and it was for bridge design that the firm was particularly well known. Young Ralph was educated at Uppingham and Worcester College, Oxford, where he read Engineering Science, and joined Freeman, Fox in 1939. He was commissioned into the Royal Engineers in 1943 and worked on the development of Bailey bridging until, in 1944, he was posted to 21st Army Group to advise on military bridges needed during the Allied advance into Western Europe.

Freeman was largely responsible for the three multi-span Rhine Bailey bridges built at Düsseldorf, Wesel and Cologne, the first of which became known as the Freeman Bridge. He was appointed MBE (Military), and, in Holland, a Knight of the Order of Orange Nassau.

After the war he returned to Freeman, Fox and was thrown into the deep end when his father died at the critical stage of the building of the Dome of Discovery and Skylon for the 1951 Festival of Britain against very tight deadlines. He was appointed CBE for this work. Many fine engineering achievements were to follow such as the Auckland Harbour Bridge and the Humber Bridge, at the time the longest single span in the world. Freeman was also closely associated with the firm's involvement in transport planning which led in due course to the Hong Kong Mass Transit railway and the Cross Harbour tunnel.

Throughout his life he maintained a close interest in the affairs of the Corps and the professional advice he was always ready to give was much valued. He was a member of the Engineer and Railway Staff Corps from 1953 to 1974 and its Commanding Officer from 1969. During this time he was president of the Institution of Civil Engineers (1966-67). He was an honorary member of the Institution of Royal Engineers.

His wide interests outside the field of engineering included membership of the Royal Fine Art Commission from 1968 to 1985. He had been a good oarsman while at university and later in life enjoyed golf and sailing. He was appointed CVO in 1964 and knighted in 1970.

He married, in 1939, Joan Rose and they had two sons and a daughter. His elder son, Anthony, also a civil engineer, died from injuries sustained during the construction of the Vasco da Gama bridge in Lisbon.

IRE

BRIGADIER R A BLAKEWAY OBE

Born 30 May 1916, died 11 June 1998 aged 82.

BRIGADIER Richard Blakeway was the first Chief Engineer of the Malayan Federation Engineers, having taken over command of 51 Engineer Regiment in 1957 and then been responsible for the transfer and reorganization of its field and field park squadrons to the new regiment. He was born and spent his earlier life in India where his father was in the political service. Educated at Rugby School, the Shop and Cambridge University, he obtained a 2nd class honours degree in the Mechanical Science Tripos before being commissioned into the Corps in 1936

His first posting was with 4 Fortress Company, operating searchlights around the Solent, but on the outbreak of war he was sent to 4th Training Battalion at Colchester. In 1941 he set sail for the Western Desert with 1st Armoured Division Engineers as their Adjutant, and took part in the advance against the Italians and the retreat on the subsequent arrival of the Germans.

In June 1942, he was posted, on promotion, to take charge of a small British liaison unit in Mosul with the 3rd Polish Carpathian Division, formed from Poles who had escaped from Poland to North Iraq via Russia. Two training jobs elsewhere in the Middle East then followed until in early 1944 he was appointed OC of 220 Field Company, then recovering in Palestine after a hard time in the Anzio operations. He took them back to Italy, rejoining 56 (London) Division, and they spent several months in the fight for the Gothic Line, building Bailey bridges (many under fire) and clearing mines in the wake of the strongly-fought German withdrawal.

In December 1944, Blakeway was sent to Athens as CRE *Arkforce*, an ad hoc team set up under Brigadier Harry Arkwright, designed to deal with the communist subversive organization, ELAS, which was making life difficult particularly with mines and booby traps. In his own memoirs Blakeway records how, just before a visit by Winston Churchill to meet the Greek President, "I was woken up in my hotel bedroom by someone saying, 'I've just discovered some electric wires running through the sewers to a large cache of explosives. What should I do?' 'Cut the wires,' I said and the wires were duly cut. For this, I think, I was appointed OBE."

Postings in England followed: in the War Office, as an instructor at Sandhurst and eventually back to regimental duty as OC 28 Field Squadron in the newly-formed 6th Armoured Division Engineers of which he became Second-in-Command shortly after its move to Minden in 1951. Then it was back to England for a tour with MEXE at Christchurch dealing with mines and explosives including Giant Viper.

Next came the appointment to command the regiment in Malaya. Blakeway's initial disappointment that this was not a "normal" British regiment soon gave way to great satisfaction at what became "the best posting of my career". He relished the sense of fulfilment from forming the regiment, the operational challenge of the burgeoning emergency that included participation in the Kedah roads project, and the life in Malaya. At the end of this tour he was appointed AMN (Ahli Mangku Negara).

On promotion, his appointment as Colonel E, HQ BAOR, was followed, in 1963, by a return to MEXE. Again, initial disappointment gave way to satisfaction, as it was there that the family bought their first home and settled. Among his responsibilities in charge of the Plant, Roads and Airfields Group, was the development of a

Brigadier R A Blakeway OBE

combat engineer tractor and various other equipments in conjunction with the Americans. This took him on liaison visits to the USA.

In January 1966 Blakeway was posted to what became his last job, Director of Standardisation in the newly-formed Ministry of Defence. He found that promotion to brigadier was scarce compensation for the uninspiring job and the tribulations of weekend commuting and thus, like so many, his career ended on an anticlimax. Nevertheless his own memoir, put together at the end of his life for the benefit of his family, reflects a great zest for the soldiering that he enjoyed, his gratitude for the friendships of his time in the Corps and his devotion to his family.

He is survived by his widow, Pat, four daughters and seven grandchildren.

IRE

Memoirs In Brief

Brief memoirs are published below of distinguished men whose deaths have been notified recently in the press and who served in the Royal Engineers.

Colonel Douglas Burnett, who died recently aged 87, was a regular Sapper who served from 1931 to 1960. He was a surveyor who took part in the North African Campaign in the Second World War and was appointed MBE for his services. In postwar years he was an instructor at Sandhurst and also served with Ordnance Survey. He was a great sportsman who won three half blues at Cambridge, for lawn tennis, rackets and Eton fives. In retirement he and his family settled in Grasse, France, where he died. His wife and their three daughters survive him.

Lord Denning OM. Among the most distinguished judges of the century, Lord Denning had served in 151 Field Company during the First World War, joining them in the spring of 1918 when they were engaged in bridging operations on the River Ancre. No one who attended the Corps Dinner at which Lord Denning was a guest will forget the manner in which he extolled the Royal Engineers as "the best Corps in the best Army in the World." Originally a mathematician, at which he had obtained a first class degree at Oxford, he switched to law in 1921 and gained another first. " ... a fearless champion of the rights of the common man", "Whenever 'Tom' Denning was faced with a situation that seemed to him dishonest, unjust or wrong, all his ingenuity and erudition would be directed to finding a remedy." "Denning's devotion to justice was rooted in his strong faith. 'Without religion there is no morality,'" he wrote, and "without morality there is no law." "... his word came to carry an authority difficult to sweep aside."

Correspondence

RECONNAISSANCE – ACTION THIS DAY?

From: Maj M W Whitchurch MBE

Sir, – Jon Welch's article on Engineer Reconnaissance is an admirable record of study, research and practice of recce for RE. It must be studied by all who are in command, training or who hold doctrine appointments in the Corps, and put into practice.

I would like to offer some suggestions on how the Corps should proceed with the practical application of this doctrine. First, training. All Recce NCOs and officers must go through the appropriate course at Armoured Tactics and Reconnaissance Division (ATRD) at Combined Arms Training Centre (CATC). This gives our troops a common approach with the other arms. It also improves credibility of our recce and it will help our standing as a Corps with the Army. This course must not be an optional extra: it is an essential prerequisite before taking up a recce job. My evidence for this is that 22 Engineer Regiment provided most of the recce troop for Exercise *Medicine Man* 5/98 and the Troop Commander, Captain David Hemming, did the formation Recce Troop Leaders' Course at ATRD. This complemented his special to arm skills and allowed him to train his troop for the exercise.

Second, continuity and courses. Let us have recce as a trade. From sapper to staff sergeant we would have a stream which becomes thoroughly skilled in recce in all its facets. I envisage the trade would run much like armoured engineers do at present. Our troops can be just as good as other recce troops if only we would allow a core expertise to develop. The RAC and Infantry do it (and well) so why not us too? This leads to my third point which is special to arm training.

The ATRD-BEW trained core expertise would then be able to train the rest of their regiment in recce. As Jon Welch says, everyone is in the information gathering game. This training should take the form of a series of lessons and battle exercises like the Exercise *Monty's Delight* Recce Concentration. I have authored six of these exercises and challenge anyone to dispute their value. I hope to offer an article on this in the near future.

One of the assumptions in all the work involving the article was a setting of general war. It would be obvious to say that Recce holds good in any form of war. Yet at the time of writing on Operation *Palatine* in Bosnia 22 Engineer Regiment has no recce. We are changing this and intend to apply Jon Welch's paper to our current operation. Indeed, with the Balkans as they are, a simple operation other than war, like Bosnia, can so easily turn into something nastier. Thus Jon Welch's important paper holds good in OOTW.

What sort of capability should RE recce vehicles have? I believe that we must look like the other combat arm recce vehicles, we must be able to fight in order to survive if nothing else, and we must (other recce too) be able to swim. Equally we must not be seduced by high tech which is overstated. Although high tech gadgets have their place, lots of chaps on small vehicles (motorcycles, horses(!), landrovers, quads, and CVR(T)) with a determination to get good information have shown time and again on exercise and operations the way to do it. Serious study of this area should look at the article on recce by "J N Armoured Car" in the *British Army Review*, December 97. We in the Corps should be in on this debate.

I commend the paper to the planners at HQ EinC. It comes from a busy man who has found the time to record "best practice" (from 3 Div Engineers) which we ignore at our peril. Yours sincerely – Sticky.

MY FIRST COMMANDING OFFICER AND ME

From: Major General P C Shapland CB MBE

Sir, – I read with much interest the article in the April 1999 Journal "My first Commanding Officer and Me" by Major General M K Paul VSM, Indian Army.

Not only did I also serve in the Madras Sapper and Miners but I knew General Paul's first commanding officer very well.

In 1944, Subadar Sampangiraj as he then was and I, then a lieutenant, serving in the Depot in Bangalore, were responsible for running cadre courses, first for potential havildars (sergeants)

and then for potential jemadars, the junior rank of viceroy's commissioned officers. For those not familiar with the Indian Army, the VCO was a most important rank between the other rank and the King's commissioned officer. There were three grades of VCO, jemadar at platoon or troop level, subadar at company, squadron or battery level and subadar major at battalion or regiment level. In the cavalry, the title rissaldar was used instead of subadar. The ranks continue in the present Indian Army but are now known as junior commissioned officers (JCOs).

Sampangiraj and I became great friends. By the time that I met him, he had already served in the Western Desert and Italy, having been awarded both the Indian Order of Merit (IOM) and the Indian Distinguished Service Medal (IDSM). I was not surprised to learn that he had subsequently been granted a full commission and had been a most successful field company commander. I believe that his final posting was as the Chief Instructor in Fieldworks in the Depot in Bangalore. A few years ago, we corresponded briefly before his death a short time ago. Yours sincerely – P C Shapland.

Reviews

THE BEST LAID PLANS
A 20TH CENTURY ODYSSEY ON FOUR CONTINENTS
PETER M AMCOTTS

Published by International Research and Development Corporation, Hawaii – Price $24.95
ISBN 0-9657629-9-8I

THERE is much for Institution members to relate to in this readable autobiography. The author, born in 1924, was a Sapper officer in the Second World War, his service taking him to India and Ceylon. After the war he completed his training as a civil engineer and his life then took him through a variety of adventures to Kenya, at the time of the Mau Mau rebellion, Western Canada, Hawaii, the Middle East, Sabah, Thailand and many more besides.

The book gallops along at a good pace and the stories about engineering and business experiences that the author enjoyed in different parts of the world are worth reading. Even if there are some cautionary tales between the lines, it is clear that such a life with a fair measure of risk-taking along the way can offer much satisfaction and fun.

GWAN

AN ENGINEER IN THE WAR
MAJOR A S TURNER OBE

Published by Onyx Publishing, Brendon Books, Bath Place, Taunton, TA1 4ER – Price £6.99.
ISBN 0 9532876 0 2

THE author is a chartered engineer who, after nearly ten years in civilian practice, was commissioned into the Corps in March 1940 in answer to an appeal from the War Office for qualified engineers. He was demobilised in 1946. In between, his service took him into bomb disposal in the UK (handling live bombs after a morning's instruction) and then out to India as second-in-command of 8th Sikh Engineer Battalion. With them he went to Burma (Manipur, Mayo peninsula, Tiddim Road, Imphal) and was invalided back to India after recovering from smallpox.

This thoughtful and entertaining personal memoir tells of no heroics but plenty of adventure and not a little danger. Doubtless much the same experiences were enjoyed by many uprooted from peaceful civilian lives to serve in the war but we can be grateful to Major Turner for recording his for posterity.

GWAN

FAMILIES, DRUGS AND CRIME
KEEPING CHILDREN OUT OF TROUBLE
RICHARD CLUTTERBUCK

Published by Macmillan Press, Houndmills, Basingstoke, RG21 6XS – Price £15.99
ISBN 0 333 71199 8

THIS is Richard Clutterbuck's last (and twentieth) book, completed just before his death last year. It is dedicated to "...my daughters-in-law who are bringing up my grandchildren." He uses his great insight into the world of drugs and crime from which to launch this foray into such matters as parenting, education, criminal justice and punishment. Sappers who knew the author as a soldier may be surprised to glance at the chapter headings, eg, "The Brain of a Baby", "Special Educational Needs", "Sixteen Plus – off to a rotten start". They will not be surprised at the commonsense advice and unstuffy conviction with which it is presented. Parents of young children, however streetwise, will appreciate the wisdom contained in these pages.

GWAN

BURMA 1942
THE JAPANESE INVASION
IAN LYALL GRANT & KAZUO TAMAYAMA

Foreword by Field Marshal Lord Carver

Published by Zampi Press, 6 St Martin's Square, Chichester PO19 1NT, Fax (01243) 538794, Price £25 (£20 to Far Eastern Veterans & Indian Army)
ISBN 0-9521083-1-3

THIS book provides a most objective and comprehensive account of the First Burma Campaign starting with the failure to save Rangoon from capture, and then describing the long 900-mile retreat into India. Ian Lyall Grant took part in the campaign in command of a Bengal Sapper & Miner field company having arrived just as Rangoon was being evacuated. He makes the point that few can possibly know

all that is happening at the time, even in a local area. When most records are lost or destroyed and are reconstituted at a later date, it is only human nature for the writers to show themselves in as favourable a light as possible. Japanese records were also destroyed but Kazuo Tamayama has researched such archives as exist and with survivors' accounts the two authors have produced a history which is likely to be as close to the truth as is possible. Brilliant analysis of why Japan invaded Burma and why the War Cabinet took inadequate steps to defend it complete the story.

At the start everything was wrong on the British side. With the exception of 7 Armoured Brigade, most of the British troops came from an internal security role. Indian units had been heavily diluted so that 80 to 90 per cent of them had only recruit training behind them. Officers were mostly straight from OCTUs. Gurkha units were only slightly better manned. Many Burmese units were to prove unreliable. Though the Army had fought several jungle warfare campaigns in the past no one in this campaign had received any jungle warfare training. Scales of equipment of such items as aircraft, artillery pieces, wireless sets were meagre judged by 1944/45 standards. The Japanese on the other hand had never fought a jungle warfare campaign before but had trained meticulously for it and felt free to ignore many western conventions. Finally the British command structure in the early stages was intricate and complicated. This was gradually put right and a chain of command was set up which included Wavell, Alexander and Slim, whilst the Administrative Services were brilliantly handled.

What a fascinating campaign it was. The disaster at the Sittang bridge sealed the fate of Rangoon. The last days of Rangoon provide a story in themselves and were followed by the drama of the Taukkyan road block. The RAF performed well but by the time the retreat reached the central dry zone they had exhausted their resources and the Japanese had complete air superiority. In appalling heat, over 45°C, with a severe shortage of water 1st Burma Division were severely mauled at Yenangyaung. Finally the last stand at Shwegyin covered the Chindwin crossing and the last miles to India. The Army arrived at Imphal as the monsoon broke. They received a very subdued welcome with virtually no arrangements to receive them and within ten days over 25 per cent went down with dysentery and malaria. What a contrast it all was to Dunkirk.

It is an emotive issue but atrocities by the Japanese were in fact few. The prisoners they had captured however were treated disgracefully.

The book is well illustrated by both British and Japanese photographs. There are maps covering all the main actions which are clear and simple to follow. This is an important addition to the history of World War Two and is likely to remain the final word on the campaign for many years to come.

MBA

PILLARS OF FIRE
THE BATTLE FOR MESSINES RIDGE, JUNE 1917
IAN PASSINGHAM

Published by Alan Sutton Publishing Ltd., Phoenix Mill, Thrupp, Stroud, GL5 2BU. 86 illustrations, 26 maps, 223 pages – Price £19.99 ISBN 0 7509 1704 0

To sappers, the battle of Messines was the climax of the greatest tunnelling and mining operation in history. The effect of that crucial event on 7 June 1917 has been vividly described by many eyewitnesses and contemporaries, not least the official historian, the sapper Brigadier Sir James Edmonds, from whose words the title of this book is taken.

That two years of sapper work had remained undetected by the enemy and was eventually assimilated into Second Army's plans for the capture of the Messines ridge, was due to the foresight, meticulous preparations and firm execution of those plans under the leadership of the most successful general of the First World War, Sir Herbert Plumer. That the triumph of Messines was unable to be immediately developed into a flying start for Field Marshal Haig's main Flanders offensive that became the nightmare of Third Ypres (Passchendaele) is one of the great "might have beens" of the war.

"Pillars of Fire" is mainly concerned with Messines itself but, in this excellently constructed book, the author (himself a former regular soldier and son of a sapper) has demonstrated the significance of Messines in the pattern of the war. In a relatively short book of twelve chapters he has managed to include the essential all arms aspects seen from both sides of no-mans-land. He has drawn on many standard publications well backed

by some interesting original material. This adds both authenticity and colour to the story.

Plumer emerges as the hero, not only of Messines itself but also for his contribution to the later stages of Third Ypres. Unlike many accounts of the battle which often present the courage and endeavour of Allied armies as having been in vain, this one points out the dire price the German Army had to pay in defence of the salient. The book can be strongly recommended for its vivid and accurate description of the sapper contribution to that endeavour.

GWAN

Journal Awards

The Budget, Investments, Membership, Scholarship, Memorial and Publications Committee announces the following awards:

For articles of special merit published in the December 1998 *Journal:*

CLOSE SUPPORT ENGINEERS CONTINUED
by Major M W Whitchurch MBE – **£100**

SOME THOUGHTS ON WIDER PEACE-KEEPING AND THE KEY ROLE THAT MILITARY ENGINEERING PLAYS
by Lieutenant M H W Workman – **£75**

EXTENDED MILITARY ROLE FOR ENGINEERS IN BOSNIA AND HERZEGOVINA
by Major R H Brown TD – **£75**

THE "CULT" OF GENERAL GORDON
by Mr James Rattue – **£50**

THE KOTA MAMA EXPEDITION 1998
by Captain T J L Marriner – **£50**

For special merit published in the April 1999 *Journal:*

ENGINEER RECONNAISSANCE IN SUPPORT OF THE MANOEUVRE DIVISION
by Major J A H Welch – **£100**

IS THIS THE BEST JOB IN THE BRITISH ARMY?
by Lieutenant Colonel G Taylor – **£75**

BASKET HANGING IN GERMANY
by Captain M J Pavey – **£50**

FUELLING FIREPOWER
by Major A G Campbell – **£40**

The Committee wished to record that the letter submitted by Major R E Ward, commenting on Major Whitchurch's article, was highly merited although not qualifying for a prize award.

Annual Awards for 1998:

Best Article of the Year – £120
CLOSE SUPPORT ENGINEERS CONTINUED
by Major M W Whitchurch MBE

Montgomerie Prize – £90 or set of Corps History
CLOSE SUPPORT ENGINEERS: TOWARDS A COHERENT DOCTRINE
by Major J A H Welch

Best Junior Officer Article – £60
SOME THOUGHTS ON WIDER PEACE-KEEPING AND THE KEY ROLE THAT MILITARY ENGINEERING PLAYS
by Lieutenant M H W Workman

Explanation of Abbreviations and Foreign Words Used in This Journal

G2 ..... intelligence/security
G3 ..... operations and training
G4 ..... material
(A) ..... (Army)
AA&QMG ..... assistant adjutant and quartermaster general
ACOS ..... assistant chief of staff
ADC ..... aide-de-camp
ALFSEA ..... Allied Land Forces, South-East Asia
AM2 matting ..... very high quality portable airfield surfacing material upon which aircraft can land
ASD ..... army staff duties
ASLEF ..... Associated Society of Locomotive Engineers and Firemen
ATS ..... Auxiliary Territorial Service
AVLB ..... armoured vehicle-launched bridge
AVRE ..... armoured vehicle RE
AWACS ..... airborne warning and control system
BAOR ..... British Army of the Rhine
BATUS ..... British Army Training Unit Suffield
BEF ..... British Expeditionary Force
BEW ..... Battle Engineer Wing
BFB ..... British Forces *Bolton*
BFPI ..... British Forces *Palatine* Italy
BGE ..... battle group engineer/s
Boilies ..... boiled sweets
BP ..... bulk petroleum
CEng ..... civil engineer
C-in-C ..... commander in chief
Col ..... colonel
compo ..... composition
Coy ..... company
CRE ..... commander RE
CVR(T) ..... combat vehicle, reconnaissance (tracked)
DCI ..... Defence Council Instruction
D Engr Sp (A) ..... director engineer support (army)
DTs ..... delirium tremens
EEC ..... European Economic Community
EinC ..... engineer in chief
ES ..... engineer support
etc ..... et cetera: and so on
exam ..... examination
fags ..... cigarettes
FAU ..... flat-packed accommodation units
FCO ..... Foreign and Commonwealth Office
Fd ..... field
FRY ..... Former Republic of Yugoslavia
GP ..... general purpose
GS ..... general staff
GSO ..... general staff officer
HEO ..... higher executive officer
HQ ..... headquarters
ie ..... *id est:* that is
IO ..... intelligence officer
ISO ..... International Standards Organization
IT ..... information technology
JRRF ..... Joint Rapid Reaction Force
kg ..... kilogram
KFOR ..... Kosovo Force
KORBR ..... Kings Own Royal Border Regiment
KRH ..... The King's Royal Hussars
LAD ..... light aid detachment
Lt ..... lieutenant
maj ..... major
MEXE ..... Military Engineering Experimental Establishment
MLC ..... military load class
MOD ..... Ministry of Defence
MWF ..... military works force
NAAFI ..... Navy, Army and Air Force Institution
NATO/Nato ..... North Atlantic Treaty Organisation
OC ..... officer commanding
OCTU ..... officer cadet training unit
OOTW ..... operations other than war
opcon/OPCON ..... operational command
ops ..... operation/s
OR ..... other rank
ORBAT/orbat ..... order of battle
Oxfam ..... Oxford Committee for Famine Relief
NBC ..... nuclear, biological, chemical warfare
NE ..... northeast
PJHQ ..... Permanent Joint HQ
plc ..... public limited company
POW ..... prisoner of war
PQE ..... professionally qualified engineer
PRI ..... president of the regimental institute [fund]
QM ..... quartermaster
QMG ..... quartermaster general
RA ..... Royal Artillery
RAC ..... Royal Armoured Corps
RAF ..... Royal Air Force
RAO ..... Royal Army of Oman
RAMC ..... Royal Army Medical Corps
RAOC ..... Royal Army Ordnance Corps
RE ..... Royal Engineers
REME ..... Royal Electrical and Mechanical Engineers
RLC ..... Royal Logistic Corps
RMA ..... Royal Military Academy
RTO ..... Railway Transport Officer
RUSI ..... Royal United Services Institute for Defence Studies
SAS ..... Special Air Service
SHAPE ..... Supreme Headquarters, Allied Powers, Europe
SNCO ..... senior non commissioned officer
SORE ..... staff officer RE
Sp ..... support
SPOD ..... sea point of disembarkation
SQA ..... Sitara-i-Quaid-i-Azam (Pakistan)
SQMS ..... squadron quartermaster sergeant
Sqn ..... squadron
SSM ..... squadron sergeant major
STRE ..... Specialist Team RE
Tac ..... tactical
TCU ..... toilet combination units
UK ..... United Kingdom
UNHCR ..... UN High Commissioner for Refugees
UMIST ..... University of Manchester Institute of Science and Technology
USA ..... United States of America
VCO ..... viceroy commissioned officer
VIP ..... very important person
WO1/2 ..... warrant officer class 1/2
YO ..... young officer

Please note: the above abbreviations are those which appear within articles published in this edition of the Journal 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.