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# Editorial

As will immediately be obvious, we have continued with the use of colour in this edition. I would however repeat the plea from my last editorial regarding digital pictures. Firstly, please do *not* embed images in documents. We cannot retrieve them and a lot of correspondence then ensues. Secondly, please save your images at as large a size as possible. Scanning them at 800 dpi should ensure success. If you have any queries, please telephone Jacqui Thorndick for expert advice.

We start this issue with a "calling notice" from Colonel Grimshaw and his team asking for comments regarding the long-heralded review of Corps publications. I urge you to respond to their questions; we at the Institution really want to supply our readership with what they want, or what they feel is appropriate, but you have to tell us what that is.

We have three items dealing with current issues and happenings. Major Tenison gives a detailed overview of Equipment Support functions – not a subject we think about every day, but vital to the work of the Corps in all theatres. Lieutenant Colonel Thomas R SIGNALS gives us an excellent report on Project *e-Volution*, the RSME study into E-Learning carried out by CTW at Minley. They necessarily based it on communications training, but in the current climate of less time for training, but having to fit in the same amount, if not more, it is a subject that concerns us all. Finally, Major Stephens, an FTRS officer with MWF, takes us through all the stages of the construction of Souter Camp in Afghanistan, expanding on the article he wrote recently for *Sapper* Magazine.

Major Parfect then takes us on a different track with his report on the work of The Pahar Trust in Nepal. It is probably fair to say that without exception, everyone who has dealt with Gurkha soldiers during their service has an immense respect for them and it is inspiring to read of the work of ex-WO2 Langridge and his team who are providing some much needed educational facilities for their children.

Armoured Engineer units are now a large part of the Corps and their equipment is familiar to everyone – but where did it come from? Captain Clegg, who was intimately involved with the evolution of Chieftain MBTs into AVREs, tells the story from conception to deployment in the Gulf War of 1991. To quote Major General Rougier the EinC(A) at the time, *"This is the largest capability improvement project the Corps has undertaken since 1945"*

We then start to go backwards in time. "Nominal" paints a vivid picture of a short period in the life of a troop commander on night operations in Korea. Since 2003 is the fiftieth anniversary of the end of that conflict, we look forward to more contributions on the subject in the next issue. We then shoot back still further to the turn of the century. An ex-Sapper, Mr R M Smith recently found a diary kept by his step-grandfather, Spr John Smeaton of the 1st Newcastle RE Volunteers who was called up for service in South Africa. We have published several officers' diaries in the past, but this is remarkably detailed and gives a soldier's perspective on what they were doing.

The South African War ended in 1902, the same year that the prefix "Royal" was granted to The New Zealand Engineers. Their celebrations in 2002 were attended by the present EinC(A), Brigadier Innes. He asked the RNZE to produce a centenary article and we are pleased to include an informative and interesting piece by Captain Luff of the New Zealand Centre of Army Lessons.

Our last contribution is a series of pen pictures of notable Bengal Sappers compiled by General Sir George Cooper and Major David Alexander. They are producing an anthology to celebrate the bi-centenary in 2003 of the Bengal Sappers and Miners Officers Association and the article is intended to complement this.

We end as always with Book Reviews, Memoirs and Correspondence. There is a good cross-section of books to choose from and hopefully our reviewers will whet your appetite to read some of them. There is also a reasonable cross-section of correspondence. We have not completely discontinued the practice of placing letters in *The Supplement* first, but as I said last time, the experiment was not an unqualified success. Letters are important however, so please keep them coming.

Finally, but not to labour the point, please give your consideration to the review of publications and make your views known. JEB

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# THE ROYAL ENGINEERS JOURNAL

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## Contents



3500

# The Royal Engineers Journal
# Do you want a Change?

THE
ROYAL
ENGINEERS
JOURNAL

*The purpose of the Institution of Royal Engineers is the promotion and advancement of the science of military engineering and to promote military efficiency. The RE* Journal *– the mouthpiece of the Institution – is there to promote education in the said science, disseminate information, encourage debate, promote links with other branches of the engineering profession and encourage and publish the findings of research*[1].

### A Need For Change?

Following direction from Council, the RE *Journal* Working Group has been set up to review the structure, format and content of the Corps *Journal* and make proposals for their improvement. We need your help. Some key questions are:

- Does the Royal Engineers *Journal* provide you with content and style that interests you?
- Do you regularly read it? If not why not?
- If you do what type of articles do you most enjoy?
- Have you any ideas for improvement?

### A "Blinding" Vision?

Visions are somewhat *"de rigeur"* these days and so to establish where it is believed the RE *Journal* should be going, a draft has been put together for you to consider. Please feel free to comment and make suggestions:

The proposed vision of the RE *Journal* is that within current resources, it (in priority order):

- Is the medium of choice for the discussion of topical Military Engineer issues within a Defence context,
- Contributes to the technical knowledge and understanding of its readership through contemporary commentary and historical analysis,
- Encourages members to develop their profession of military engineering,
- Communicates throughout all the diverse elements of the Corps and strengthens the link with the wider engineering profession.

**Therefore:**

- Is the current structure of the *Journal* right in terms of overall composition – a balance of history, practical experience, technical rigour and general interest (memoirs, book reviews and correspondence)?
- Are the articles readable and interesting in terms of their quality, type, style and length? How they are initiated and should there be established themes for each edition of the *Journal*?
- Is there a need to change the style by altering the balance between text, photographs, diagrams and formats, and how it is presented (size and use of colour)?
- Is the frequency of the *Journal*, *Supplement* and *List* right when viewed in conjunction with other publications? Are there gaps or overlaps in information between all the Corps' publications? Should the *Journal* be set around a theme, thereby targeting contributions and the initiation of articles? If so, how are those themes set? Is there sufficient incentive to write articles or is there a stigma attached to it?

### How Can You Help?

The Working Group has been selected to provide as broad a spectrum of the readership as possible. This includes all ranks of the Institution, serving and retired, TA and Regular and those who are professionally qualified. This also means that people have been gathered from different organizations within the Corps. The main task of the Working Group is to canvas opinion, its members being:

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[1] Institution of Royal Engineers,Charter, Bye-Laws, Rules and Regulations, Chatham, revised 1999.

| | | |
|---|---|---|
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Please feel free to write to the Chairman or contact the secretary. In order to fit in with the Working Group's timetable, your views are needed before the end of June 2003.

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The last known review of the RE *Journal* was conducted in 1977 as part of a wider Corps Publications study. During this time opinion was requested from all members of the Corps both serving and retired and this resulted in just six replies; three for the RE *Journal* and three for the *Sapper* Magazine! Lets see if we can better this figure, as it is your chance to effect a change, if that is what is required.

# Expeditionary Warfare and the Cheap Camp

MAJOR J M STEPHENS TD CEng MICE

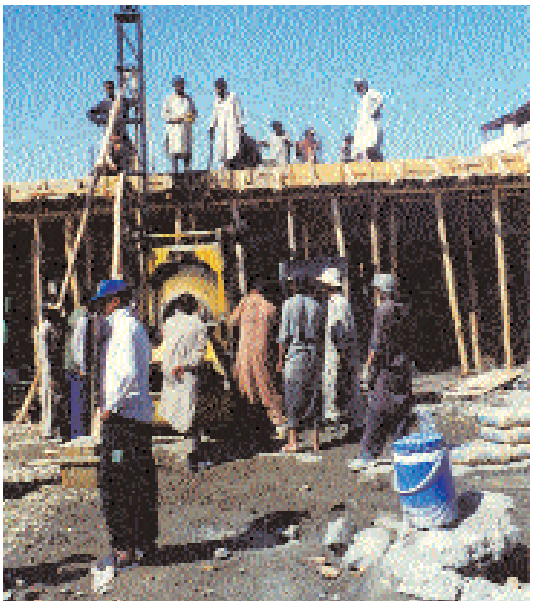
*The author, who has been a chartered engineer since 1971, joined the Corps via the Royal Welch Fusiliers, the Royal Electrical and Mechanical Engineers and the Adjutant Generals Corps. At the time of writing he was serving on Operation* FINGAL *in Afghanistan with 518 STRE (Wks) as Supervising Officer for the development of Souter Camp. While still serving with the Adjutant General's Corps on Operation* Resolute *in 1996 he was attached to 519 STRE (Wks) as a project engineer on the Gorazde Access Track for which he was awarded the Joint Commanders' Commendation. Since transferring to the Royal Engineers he has undertaken several periods of Full Time Reserve Service. In 1999 he was attached to 523 STRE (Wks) for that team's tour of Kosovo on Operation* Agricola *where he gained first hand insight of the Temporary Field Accommodation project. Before deploying to Afghanistan he designed the gates for the scenic drive at Sandringham that were the Armed Forces gift to Her Majesty The Queen to commemorate her Golden Jubilee. In civilian life he is a part-time gamekeeper, hobby farmer, and vermin controller. In his spare time he enjoys trainspotting and rough shooting.*

***If you deal with the lowest bidder it is best to set a little something aside for the risk you run, and if you do that you can afford something better anyway – John Ruskin.***

Souter Camp is the headquarters of the UK National Command Centre (NCC). It is based in a former fertiliser factory/warehouse that was built, it is understood, to a Bulgarian design of the typical communist five-year plan sort. After the collapse of the communist government in early 1992 it fell into disrepair, but it is now the focus of considerable development. This development will result in a camp, with all the usual facilities, for five hundred with an additional surge capacity of one thousand. It is referred to as the Tier 2 Enhancement and the vast majority of the development has been achieved by local contract. To date fifteen contracts have been let to local contractors, and there were more than four hundred tradesmen and labourers employed at one stage. The contracts cover both new construction and reconstruction, refurbishment and decoration. The rough order of cost for all of the work is $ 4,000,000.

Some of the more interesting projects accomplished by contract are described here. It should however be emphasized that much was achieved by the Military Construction Force, (48 Fd Sqn (Air Sp)). Their tasks were of the horizontal engineering nature and included the construction of concrete access roads, hard-standings, plinth blocks and the like. Even though not contractually bound to do so, 48 Sqn were always willing to assist when they could by supplying the type of plant and equipment that to the contractor was only a dream.

The most comprehensive of the contracts was for the construction of two, two-storey accommodation blocks. It was the original intention to construct three blocks, but when the tenders where returned and analysed it was clear that the cost would exceed the budget. These blocks as designed had additional rooms and facilities over and above bedrooms, so a pruning exercise was carried out which resulted in the same number of bedrooms but in just two blocks. This resulted in a saving of over thirty-eight per cent. This rethink meant redesign at the last minute with some fast footwork by the in-theatre design team to change things. It was



Accommodation Blocks: concrete production and hoist to first floor slab.

accomplished at short notice and quickly without delay to the programme, and is typical of the capacity for reactivity that these teams possess. The two buildings are not, by western standards anyway, particularly complex in either their design or construction. But, in the austere, turbulent and unpredictable environment of Afghanistan where there has been little or no development for decades, a whole set of factors militated against simple speedy project management. Some of these factors were managerial in that the contractors were not like the contractors we know in the UK. Initially we had very little knowledge of them or their capabilities, other than they were keen to get work. There was not the time to get to know what they could and could not do. Accurate assessment of capability was vital, and in two cases favourable initial opinions were not validated by subsequent performance. A contract strategy was thus developed to allow different contractors to undertake different tasks at different times thus managing the risk. In plain words we did not put all our eggs in one basket. This was just as well because some contractors were much better than others.

The accommodation blocks were designed as two-storey rigid frames in reinforced concrete with brickwork in-fill. The brickwork was subsequently rendered with a lime-rich mortar. Each block holds 216 soldiers accommodated four to a room. The designs were produced in theatre by the design team of 63 CRE (Wks). At the design stage one of the factors to be taken into account was the snow load, which was initially thought to be huge. Subsequent research suggested that a figure of 3.5 kN/m$^2$ could be expected. The original design called for an additional superstructure over the flat roof of the accommodation block. This would take the form of a canopy of steel profile sheeting supported on steel columns, I-beam rafters and channel purlins with a shallow pitch to a central drainage valley. The appearance is of a flattened V-shape and echoes similar devices used locally to assist with solar control and, significantly, ballistic protection. Substantial steel section was envisaged to reduce the number of supporting columns to rows of three (one at each edge and one at the centre of the roof). In the event steel of sufficient section modulus could not be obtained locally for either the columns or the rafters. The design was therefore changed. Providing intermediate columns between the outer and central ones reduced the spans, and the columns themselves were in reinforced brickwork instead of steel.

Concrete frame construction is not something new. It is used extensively throughout the Mediterranean, Adriatic and the Middle East.

Accommodation Block: temporary stairway to first floor.

Accommodation Block: first floor slab with brickwork partitions and rebar to reinforced concrete columns.

Most new buildings in the Balkans have concrete frames. Such buildings, if properly designed (and this is absolutely crucial) have good earthquake resistance and are relatively easy to construct; they now represent the modern local vernacular. The difference between them and the multi-storey concrete "Corbusian" tower blocks we love to hate in the UK is that they are a form of building and not engineering. Columns and beams are of reinforced concrete added bay-by-bay and storey-by-storey. Brickwork is built up in between the frames as they are formed, this in-fill brickwork, as it is raised, acting as a shutter for more columns and beams with only the un-bricked faces requiring formwork. The floor and roof slabs are also in reinforced concrete. In many parts of the world this system is open to abuse with the control of quality being at best indifferent. Aggregates are poorly graded and unsuitable. Concrete is poorly mixed and compacted. Reinforcing steel is not properly spaced and separated. Shutters are likely to be contaminated and struck too soon. All this leads to latent defects and all you know of them is when you hear a minor item on the news when a block of flats collapses in Spain or somewhere. Going back to the subject of bricks, all the bricks available here are handmade red brick. Almost identical to Cheshire originals or reclaimed, they cost $20 per thousand. I wish I could find a way of getting them home; they would build a lovely house. There is no local tradition of either "buttering" the perpends or pointing the joints. Attempts to educate them to improve jointing and pointing proved fruitless. The explanation for this apparent failing is that brickwork is subsequently rendered with a cement/lime/sand mortar, the poor brickwork being all the better to provide a key for the render.

In marked contrast to the norm, in Afghanistan site supervision has been rigorous by members of 63 CRE (Wks) and the contractors have had to come to terms with this. Initially it resulted in a battle of wills between the contractors and us with work being halted on many occasions to redress imperfections. In fairness to the contractors it has to be said they knew no better to start with, but were glad to learn from our constructive advice and guidance. An example of this was their intention to use river gravel as coarse aggregate in concrete. This practice was rejected at the outset and a foreman subsequently confirmed that properly graded aggregate was better to work with and they would not use river gravel again, anywhere. Some of their tradesmen were first class, but with all the years of destruction and negativity their skills had faded. Many of the old carpenters, some well into their 70's – Tajiks – hadn't forgotten much. They

Accommodation Blocks: formwork to columns and edge shuttering to first floor slab.

Accommodation Blocks: concrete batching plant and temporary timber supports.

were a joy to watch as they fashioned square section out of lumber roundels with adzes and other time-honoured tools. The two, 216-man blocks were built concurrently with over 300 men on site. The site diary records that some days there were over 40 bricklayers on site who, out here, are also required to render and plaster and do other wet trades. The reinforcing steel looked good being high profile and not corroded. A sample was sent back to UK for testing. It was found to be high yield steel. Its adoption enabled reinforcing details to be much simplified. As the contractors developed their skills the quality of work improved to the point where the need for intensive supervision which had initially resulted in the rejection of much finished work was minimal, but the point never came where they could be left to their own devices. The old adage to the effect that the last five per cent of the job absorbs 15 per cent of the total cost appears to apply in Afghanistan, too. As the contract concluded with painting and decorating, with so many men on site, much work had to be re-done and even done again. Different tradesmen working concurrently simply got in each other's way, often damaging expensive fittings.

In addition to the new accommodation blocks described above there were contracts for major reconstruction/refurbishment of existing buildings.

A former exhibition hall was found derelict, its roof having been destroyed, with the tangled steel trusses collapsed inside the otherwise sound substructure of the building. It needed reconstruction. The requirement here was to re-roof it and convert it to two-storey office accommodation for BRITFOR staff. A reinforced concrete first floor slab was constructed supported by the existing walls and additional internal walls forming partitions for the offices downstairs. The five original roof trusses were supported on reinforced concrete columns, which had remained substantially intact. The design undertaken by the STRE necessitated the stabilization of the column heads to provide support for continuous steel I-Beams along each side of the building which was 24 metres long. These would in turn support 13 Pratt trusses of nearly 16 metre span and 30º pitch. The trusses, to be clad in steel profile sheeting over channel section purlin, were fabricated on site out of steel equal angle back-to-back connected by steel gusset plates. All connections were by on site welding; one truss, having been fabricated, serving as a template for others. In spite of primitive conditions and ancient welding equipment struggling to provide adequate current for the electric arc, the results were by and large sound. The trusses, which weighed nearly a ton each, were eventually swung into position using an undersize crane and lots of manpower.

Exhibition Hall: soffit supports. First floor roof slab.

Exhibition Hall: first floor soffit for concrete slab in position with rebar being placed.

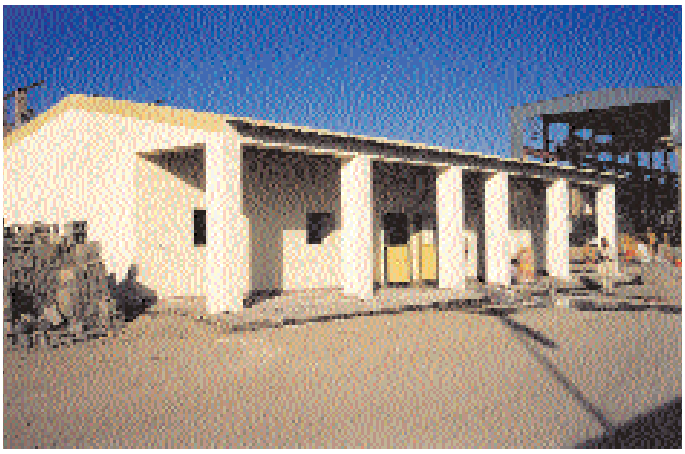
The conversion of a former warehouse into dining room, messes and sports facilities called for a lowered or false ceiling supported by parallel chord trusses (also known as lattice girders) fabricated from steel equal angle. Spanning 12 to 13 metres, these trusses not only supported a timber ceiling on the lower chord but also a fire curtain of mass concrete 100 mm thick on steel profile sheeting rested on the top chord. These trusses were welded on site too, but by a different contractor who struggled more than the contractor at the exhibition hall to achieve satisfactory welded connections. We were concerned that the welds might not be strong enough, so it was decided to include diagonal cross bracing of equal angle between adjacent beams at the third-span points to allow the trusses to act compositely. Level surveys of the soffits of the trusses before and after the emplacement of concrete revealed that there were varying amounts of deflection, but none exceeded 1/500th of the span. It was concluded that the welds were satisfactory.

Certain general observations and conclusions were drawn and were common to all tasks carried out by contractors.

First, only contractors considered competent enough to complete the work in accordance with the specification should be invited to tender. Judgement and discrimination together with a good nose are vital here. It is as much of an art as it is a science. One of the conditions of contract was that phased hand-over for beneficial occupancy would attract financial penalties if milestone dates were not met. This ensured a sense of urgency – to a certain extent – but the impression was gained that building progressed according to time-honoured practice, and local contractors can only be goaded to a certain extent. There was a very fine line between help and interference and regrettably there were instances where a policy of masterly inactivity would have been best with the contractor being left to his own devices. Although the contract for the accommodation blocks is a little behind at time of writing, it will be ready before the onset of winter – which is more than can be said for the hugely expensive and over-elaborate temporary field accommodation constructed in Kosovo three years ago. The two blocks will cost $1.5M. That really is "cheap-as-chips".

Second there was scant regard to health and safety. If the sites were in the UK they would have been closed down. There was no protective clothing. Ladders and access stairs were made on site out of roundels and split logs as required. Scaffold and temporary supports for soffit shutters were also made out of roundels propped up by bricks. There were few power tools, but none, including the belt-driven concrete mixer, was fitted with guards. Surprisingly there have been few accidents – a couple of minor falls, and a

Exhibition Hall: Roof trusses in place and being clad with steel profile sheeting



Guardroom nearing completion.

man struck on the head by a falling brick from which he soon recovered. Initially I was concerned for my own safety, but in many ways I was happier there than when on an over-safety regulated UK building site, floundering around, desensitised by protective helmets and boots, safety goggles and gloves.

Third, shortage of materials, with the exception of bricks, was of real concern. All electric and plumbing stores had to be sourced and imported from the UK. This presented difficulties, as we no longer have "Engineer Resources" at Long Marston. Instead everything came "just-in-time" via a civilian agency whose accountability and reactivity were found wanting. It caused us far too many problems – for example we tried to trace some parts that should have been on the last aircraft into theatre, but they weren't, and it was 4-30pm on a Friday afternoon in the UK.

Fourth, with the large amount of cheap labour available certain advantages that would have been unheard of in the UK accrued in Afghanistan. Mistakes were easily rectified at little cost. Some tasks that we thought would be difficult proved to be easy, but the converse also applied. Materials could be moved about and double handled quickly negating the requirement for expensive hired plant. Many hands really do make light (of) work.

Fifth, good workmen will do better with poor materials than bad workmen will do with good. Nevertheless there are limits and some of the materials particularly the flimsy profile steel sheeting exceeded those limits. Much of it was bent before it got fitted. Good old corrugated iron, the favoured roofing material all over the third world, would have been better even if it would have cost more to bring it in. Bad workmen will spoil things and this was particularly true when electrically powered small tools and plant were loaned to some contractors who invariably broke them.

Much of what we are doing here has attracted wide attention. We have had a visit from a reporter from "New Civil Engineer" that resulted in a picture on the front cover and a full article inside. We have been told that follow-up articles are planned. Not all the attention however has been welcome, particularly as a result of one staff visit where it was feared the wrong conclusions had been drawn.

During the visit it was alleged that there was no requirement for sapper commitment at CRE/STRE level, and that design and supervision could be carried out by local agents/consultants. To admit that is to miss the point and throws open the door for all the latent defects described above to be built in. In spite of the current vogue for cosy partnerships with contractors in the UK, in most parts of the world the contractor has to be carefully supervised, frequently under adversarial conditions if the standards required are to be met. Many of the contractors are little more than purveyors of labour, albeit some skilled and semi-skilled, but with little or no corporate technical skill, knowledge and experience. Only rigorous and robust supervision and the forthright rejection of shoddy work will do.

The CRE/STRE is a force multiplier that ensures this. It will not be guaranteed by proxy. It is the least the future occupants of the buildings – namely British troops on operations – can expect.

# The Pahar Trust

MAJOR J H G PARFECT MBE

*John Parfect was commissioned in April 1943 and arrived in North Africa in the following month. He then went to Sicily and joined 578 Fd Coy and was with them for the invasion of Italy in September 1943. In January 1945 he landed in Bombay and was posted to the Bengal Sappers and Miners in Roorkee, India. He was appointed a Company Commander in the Training Battalion and later in 1946-47 was OC 74 Indian Fd Coy (Bengal) in 5 Indian Div. After a brief spell back in UK, he became a founder member of the Queen's Gurkha Engineers in Malaya 1948-50. From 1950-53 he was Adjutant of the newly re-formed 6 Armd Div Engrs. After Staff College Camberley in 1954, he was appointed a GS02 for a couple of years. His final appointment was OC 40 Fd Sqn in Cyprus before joining ICI for the next 23 years. In 1981 he took early retirement at age 57, and for the next 21 years worked as a self employed financial adviser and part time training consultant to ICI specialising in the financial problems of people facing redundancy. During that time he was also a North Yorkshire County Councillor – for 16 years on the Police Authority, and latterly its chairman. A working life of 60 years full of variety, travel and interest!*

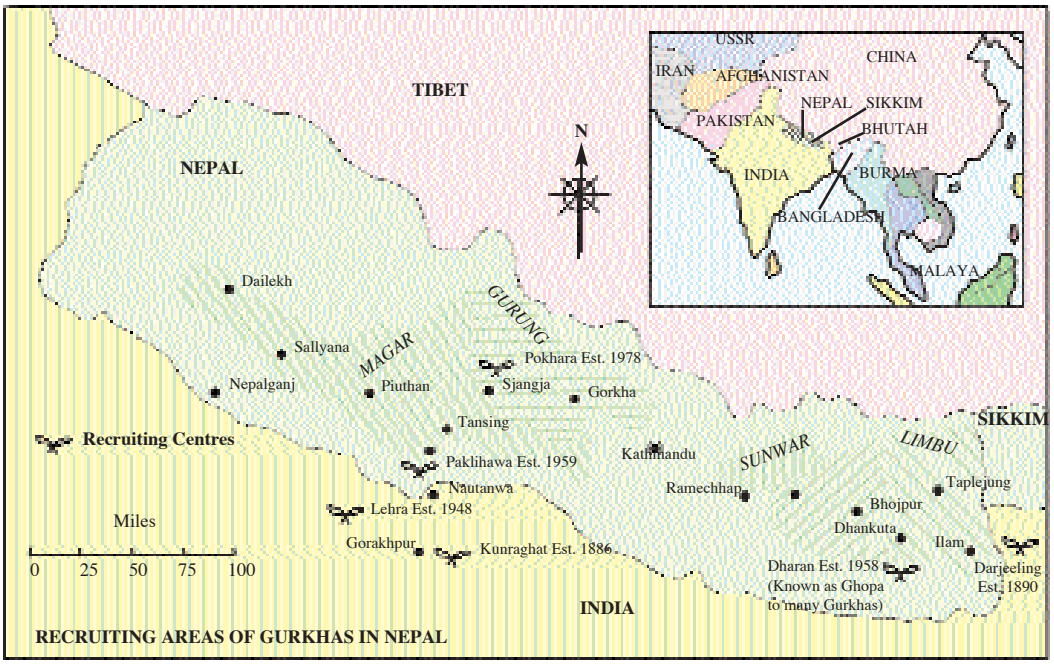
How does a head gardener in Berkshire get nineteen schools built in the hills of Nepal? And why? This story is of a quiet spoken and very modest ex-warrant officer of the Queen's Gurkha Engineers (1974-1977) with a deep respect and admiration for Nepal and its Gurkhas. In his last three years of service he was responsible for all the Gurkhas on courses at the Royal School of Military Engineering.

WO2 Tom Langridge retired from the Corps in 1980 and started a second career based on his love of gardening. He went on a one year full time training course on "Gardening for Professionals" and today he is Head Gardener on two major estates. (His Chairmanship of the Pahar Trust is an additional activity).

During his regimental tour he spent a lot of his time learning Ghurkali and gaining a deep understanding of Gurkhas. This dedication earned him a place on the last two weeks of the British Officer language course and he passed the colloquial exam with flying colours. In recognition of Tom's unusual achievement and his close interest in Gurkha matters, the Commandant allocated him a trekking vacancy in East Nepal where he had a hectic six weeks to report on resettlement projects. When his QGE tour ended in 1977, Tom kept his links with his Gurkha friends and was delighted to be offered a second trek in 1979, shortly before he retired.

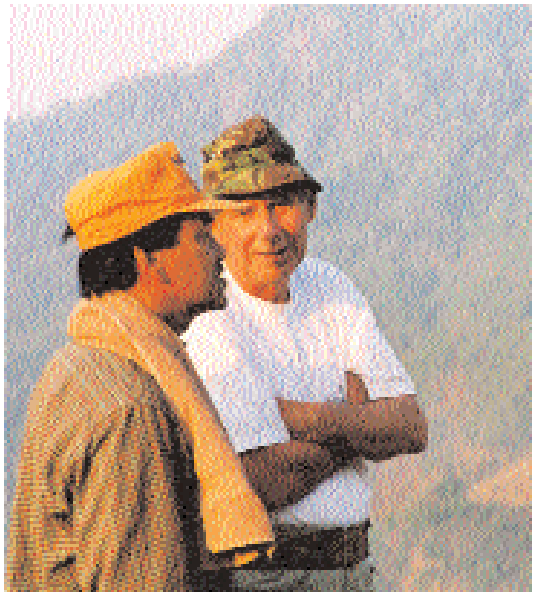
One of his friends was Cpl Chandrabahadur Gurung, a B1 Bricklayer. (Chandrabahadur later retired as a WO2). Chandrabahadur invited Tom to visit his village of Pokhari Tok, where his love of Nepal took him on a private visit. During his stay he was invited to see the village school with a view to advising what they should do to repair it. The condition was such that the only advice he could give was to pull it down and start again, perhaps with some help from the Gurkha Welfare Trust. By the time of Tom's return visit a year later, the request had been turned down because of the small number of pensioners' families who would benefit. The state of the buildings had also deteriorated further. Over a few jars of rakshi, Tom and Chandrabahadur made an ambitious plan to do it themselves. In the next few months they each raised about £2,000 from their two villages – in Nepal and in the UK.

Tom was determined that his building would last. With the help of Sgt Bhola Rai on the Clerk of Works course at the RSME, was fused the best of




The map has been reproduced by kind permission Greenhill Books, Lionel Leventhal Limited from their publication; "Gurkhas at War – In their Own Words" edited by Colonel J P Cross and Buddhiman Gurung in 2002.

both worlds – professional design using local labour and materials and in local style. The owner of the land donated the site to the village and work started in January 1990. Like all community projects, local people were fully involved – levelling the site by hand, making bricks, carrying materials, raising money and helping in whatever way they could. Under the supervision of Chandrabahadur the school was completed in under two years and Tom was delighted to be able to formally open it in the autumn of 1991.



Tom and Chandra have a chat about the Project.

If they thought that their work was completed they were wrong! It was just starting. The fame of the Pokhari Tok School (with accommodation for 125 children), had spread through the hills and requests for similar help came from all sides. And so was launched what is now named the Pahar Trust, which was established to "provide schools for children of the Nepalese mountain region" and registered as a charity in 1993. The Patron of the Trust is General Sir George Cooper GCB MC DL, a past Chief Royal Engineer and Colonel, The Queen's Gurkha Engineers. This explosion of activity needed management reinforcement and in 1993 another QGE pensioner, Gurkha Captain Purnabahadur Gurung joined the team for a period. Four more ex-QGE pensioners WO2 Narendra Limbu, WO2 Hitbhadur Rana and WO2 Kulbahadur Limbu and his brother Ranbir Limbu have likewise joined. They are focussing their attention on projects in East Nepal. Chandrabahadur has

Over 3,000 cubic metres were excavated by hand at Thuloswara to provide a site for the new High School.

given exceptional dedication to the Trust from day one. Tom describes him as the "Gurkha Major" of the Trust.

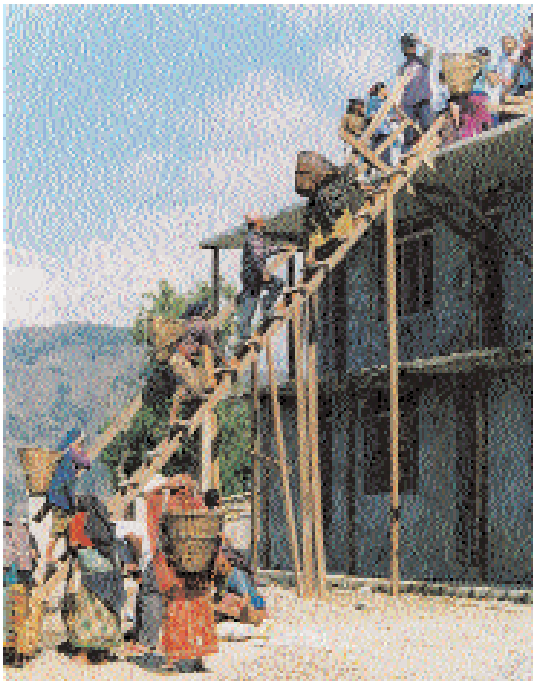
The achievements of the Trust in the decade Autumn 1991 – December 2002 are remarkable. Nineteen schools, seventeen in West Nepal and two in East Nepal and one hostel have now been completed. More than 7,500 children are now being taught in them. Work has started on a further four schools in West Nepal and five in East Nepal. A total building programme for twenty-eight schools and two hostels is due for completion between 2003 – 2005. Each school is always provided with one extra room for use by the village for community activities, and improvement to village water supply and sanitation is always involved. Tom's aim is to provide new accommodation for 10,000 children over the 20 year period 1991-2011, perhaps in as many as 40 schools. He keeps in touch with work in progress by making one or two treks each year to Nepal. To date he has logged up more than 30. Each school has a nominated sponsor (usually a resident of the village). Their role is to marshal the labour and local raw materials. The Trust organizes and pays for the professional artisans required (including QGE pensioners). The sponsors come from practically all the regiments which have made up the Brigade of Gurkhas plus local head teachers and other important people in the villages. The schools and hostel sponsored by QGE pensioners are shown in Table 1.

Financial supporters are widespread. Support from the Army has been the core – The QGEA, 69 Gurkha Fd Sqn, 36 Engr Regt and other RE units, 11 branches of the Royal Engineers Association, nine Trusts including *Nepal in Need,* sixteen schools spread over the UK and the Isle of Man, and many individual donors and firms. Tom and his team have raised more than £400,000 for the Trust. More is needed for future works.

An important element of the Trust is the *School Friendship Link Scheme*. Friendship links between donor schools in the UK and Nepal have been established by the Trust to enable children from both nations to learn more about each other's cultures and to forge friendships which would endure over time. Some of the supporting schools have organized treks of teachers and pupils to their link schools and in addition, several students have spent time teaching in

| Sponsor | Name of School | District | Pupils | Year Completed | Capital Cost £ |
|---|---|---|---|---|---|
| WO2 Chandra Bahadur Gurung | Pokhari Thok | Lamjung | 125 | 1991 | 8.053 |
| Capt(QGO) Purna Bahadur Gurung | Ekiekhet | Kaski | 150 | 1994 | 7,123 |
| Capt(QGO) Tekansing Gurung | Bal Kalyan (Hostel) | Kaski | 24 (Boarders) | 1994 | 6,000 |
| WO2 Hitbahadur Rana Magar | Sawanagi | Khotang | 170 | 2001 | 10,337 |
| | | | 445 | | 31,513 |

Table 1.



All the villagers must play their part for their new School (Thuloswara).

Nepal during their "gap year". This includes several sons of Sapper officers.

The four most recently built Primary Schools in North Yorkshire had a capital cost (excluding cost of land purchase) of £7.7 million to provide for 980 – an average capital cost of £7,850 per pupil. Tom Langridge is currently building schools in Nepal for £45 – £50 per pupil. That's real value for money! (Tom's outstanding achievement as Chairman of the Trust was recognized by his award of the MBE in the New Years Honours 1997).

In April last year, I organized a fund-raising event for the Trust at our local School. With the help of the OC Gurkha Training Company, Catterick and the Gurkha Major of 36 Engineer Regiment, Maidstone, we raised £4,600. Father Leo Chamberlain OSB, the Headmaster of Ampleforth College, has offered to stage a similar fund-raising event on 3 May 2003. The College is extremely proud of its connections with the Army – the Gurkhas in particular. St. Edward's House contains memorials to two of its past students, Michael Allmand VC and Robert Nairac GC. Michael Allmand was awarded his Victoria Cross posthumously while serving with 3rd/6th Gurkha Rifles in a Chindit Column in Burma, when he was killed in action on 24 June 1944 aged 20. Robert Nairac of the Grenadier Guards was serving in Northern Ireland when he was murdered by the IRA in 1977 in circumstances which led to the award of his George Cross.

The purpose of this article has been to record the achievements of the Pahar Trust since 1991 in providing support for the people of Nepal, a "Third World" country which has been strongly allied to Great Britain for two centuries. It has been a combined effort with help from serving Sappers and Pensioners through their contributions to the QGEA, Sapper regiments and many branches of the RE Association.

Lieutenant General Sir Anthony Pigott KCB CBE, Colonel The Queen's Gurkha Engineers, who has trekked in Nepal and seen some of the schools built, recently wrote to Tom as follows:

*"At the AGM of the Queen's Gurkha Engineers Association held at Maidstone on 28 September 2002 a proposal was made, and then universally carried, that I write to you on behalf of all Members of the QGEA to congratulate you on your achievements with the Pahar Trust over the last year and to wish you all the very best for the year ahead. It was asked that these sentiments also be passed to Chandrabahadur when you are next in touch. In passing, I add my own personal thanks for all that you and the Trust achieve in Nepal. It is such splendid work in increasingly difficult times".*

Thuloswara.

# Project E-Volution

LIEUTENANT COLONEL R G THOMAS R SIGNALS MDA ACIM M

*Lieutenant Colonel Rod Thomas was appointed CI Communications Training Wing in December 1998. Previously he was the Chief of Staff of 2 (National Communications) Signal Brigade based in Corsham. Other tours include service with a Territorial Army Signal Regiment when the unit converted to specialize in long haul HF communications and a staff appointment within the MoD. He commanded a Ptarmigan squadron that enjoyed a successful deployment to the Gulf during Operation* GRANBY. *He soon completes a most enjoyable tour of duty with the Royal Engineers and will assume the appointment of SO1 TDT in HQ SOinC (A) during April 2003.*

PROJECT *e*-Volution was conceived in January 2001 as a Royal School of Military Engineering (RSME) investigation into E-Learning. This short article describes the project, discusses what has been produced to-date and outlines its future. The need to discover more about modern learning methods was driven by two separate proposals. First, training plans submitted by the consortia bidding for the RSME Private Public Partnership project included proposals to use more technology in the future. Second, General Dynamics (UK) declared that computers and simulators would be used in preference to real radio equipment to deliver BOWMAN and Digitization Stage 2 training.

Initially the basic Military Engineering Combat course was selected for the study but was subsequently replaced by modules taught within Communications Training Wing. A great deal has been learned about E-Learning and Computer Based Training throughout the project and it is important to share experiences with other departments who are interested in training development.

Previous military experiments with technology-based training have proved expensive, time consuming, inflexible and relatively ineffective. However corporations such as Scottish Power and institutions such as the Open University, were using Computer Based Training techniques, very effectively. In part, this became possible because of the rapid expansion of the Internet and availability of relatively cheap computers. Additionally, immense progress had been made to allow simulators and emulators to be compared directly to the equipment they were supposed to represent. A quick glance at a modern arcade game, or PC flight simulator shows what has become possible. These factors, coupled to the huge cost of capital equipment meant that the time was ripe to evaluate E-Learning and consider whether or not it could improve training or curb costs within the RSME.

## THE CASE FOR E-LEARNING

FROM the perspective of both the Army and its soldiers, it is highly desirable that time spent in training establishments is minimized and time spent in field force units maximized. Whilst it is self evident that initial soldier training is necessary, many soldiers are stunned when they realise how much more is undertaken in Phase 2 Training. The more time individuals spend in ATRA Operating Divisions, such as the RSME, the less they are available for military operations. Advanced, or Phase 3 Training further compounds manning and social issues by dislocating soldiers from their units and families thereby potentially adding to levels of dissatisfaction felt by some. Ideally, modern training methods should enable elements of training and testing to

be conducted by units in barracks or during operational deployments. A terrific advantage of being able to undertake developmental training during operational deployments, which are often mundane and dull, is that the time spent away from home is used wisely and profitably.

However, a sophisticated E-Learning strategy needs to have an adequate Management Information System in place that will support training programmes, testing regimes and reward mechanisms. Although not in place yet, the technology to achieve this is being steadily and progressively rolled out through initiatives such as the Defence Information Infrastructure (DII), TAFMIS and the Joint Personal Administration System (JPAS). The best, wholly joined up solution, requires Management Information Systems across Defence to be integrated rather than just interoperable. This will take a little longer to develop but the Defence Training Review (DTR) may provide the impetus and cash to deliver such a system. Figure 1 shows the basic model of what is required, however its simplicity masks the complexity associated with tying training, testing and reward systems together.

In terms of cognitive learning styles, research tests conclusively prove that human beings learn things that they "do" much more quickly than through either reading or being spoken to. Recruits in training consistently say how much more they enjoy practical exercises and activities than being taught through classroom "chalk and talk" which supports the data shown in Figure 2. While activities such as digging a trench will always be difficult to simulate, computer based training offers an opportunity for all students to have direct access to practicing skills such as programming a radio. The progress of all students can be measured as they work through training modules. This re-enforces each person's individual learning experience, rather than just that of a few pupils selected to answer questions at the end of a lesson or module. Moreover computers offer interesting and innovative opportunities for information to be communicated using pictures, graphics, sounds and video. The same training can support any pre-course revision or possibly pre-deployment training on specialist or obsolescent equipments.

| We Retain: |
|---|
| 5% of what we hear |
| 10% of what we read |
| 90% of what we do |
| Source: Internet |

Figure 1 - Retention of Information.

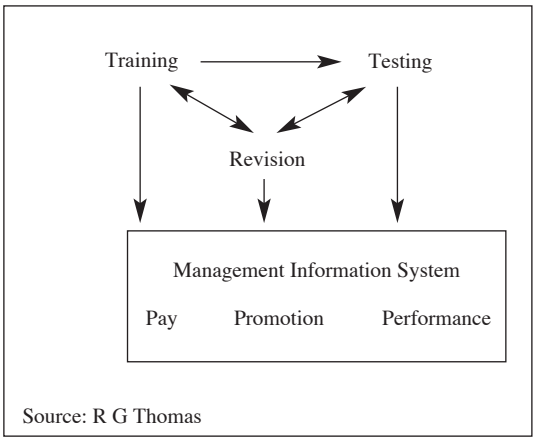



Figure 2 - An E-Learning Model.

### THE SCOPE OF PROJECT *E*-VOLUTION

THE scope of Project E-Volution was based on the model shown at Figure 2. Essentially two software tools were required, one to be a training delivery tool and the second to be a testing tool. It had been thought that a common tool, capable of both tasks might be the most efficient route to pursue however, there were limited options available on the market. After considerable research, the tools chosen for the project were selected because of their flexibility, interoperability, cost and easiness to use. Nonetheless the ideal tools would be integrated into a single product capable of training, testing, administration and management tasks. If E-Learning is to be adopted by ATRA in the future, TAFMIS or its successor needs to fulfil these functions, if duplication is to be avoided and efficiency maximized.

The main attributes of the selected tools are shown in Figure 3 and these, combined with ringing endorsements from Lancashire Fire Service, the Metropolitan Police and several universities convinced the project team that these were the best products to use; a view which prevails. A key strength is their ability to create effective modules that can be used in regimental lines on relatively unsophisticated computers, using CD ROM,

Questionmark
getting results...

Questionmark

**Perception for Windows by QuestionMark™**

A Windows based testing tool, with a built in analysis tool. This tool enables the instructor to create comprehensive, interactive and enjoyable test quickly and easily.

**ToolBook Instructor**

**Tool Book Instructor by Click 2 Learn™**

A Web based software tool designed for computer based training able to deliver training *online* or by CD. An interactive tool that can test both formatively and summatively.

**Stand Alone PC**

**PC**

A high spec computer was purchased to enable CTW instructors to Author the training package. PIII, Windows 98, CD/RW 12x8x24, CDx50 20Gb hard drive 128mb RAM

| Item | Cost | Remarks |
|---|---|---|
| Perception for windows by Question Mark™ | £2.4k | One Authoring licence no limit of test users |
| Tool Book Instructor by Click 2 Learn™ | £2.0k | One Authoring licence no limit of end users |
| High spec PC | £2.0k | Stand alone internet ready workstation |
| **TOTAL** | **£6.4** | |

Source: R G Thomas

Figure 3 - Selected Hardware and Software.

Floppy Disc or the Internet as communications media. In addition to these practical physical requirements the product licences also allowed the created applications to be "run" in units without the requirement to purchase additional software.

Both Questionmark™ and ToolBook™ are powerful software packages capable of integrating digital film, photographs, pictures and sound. To create the base line lesson modules and tests it was therefore necessary to purchase a standalone PC with a powerful processor and sufficient memory to handle large volumes of data, and a CD Rewriter to create and to distribute lessons and tests. The financial investment totalled £6,400.

## The Project Team

In the beginning it was thought that under the beady eye of a Project Manager, a technical expert aided by Subject Matter Experts and subject authors would be able to convert existing training material into an E-Learning format. However, because the individuals involved in the project were fully employed, across the whole of the Combat Engineer School, it was difficult for individuals to meet deadlines. Problems were compounded as individuals appeared to be posted, just as they were able to add value to the project. Although the cycle shown in Figure 4 suggests that work could be routinely created, validated and produced, this proved impossible and the project stalled. No guiding coalition had been created so interest and genuine commitment to the project waned. Figure 5 shows the replacement regime as it presently exists and is based more on the chain of command than its project-based predecessor.

These difficulties are not uncommon to innovative projects such as this. It also partly explains the military's uneasy relationship with E-Learning to date. What has been learned is that the best production teams should be based on Subject Matter Experts who are given the skills to convert their own training material into a digital format. There is a requirement for some

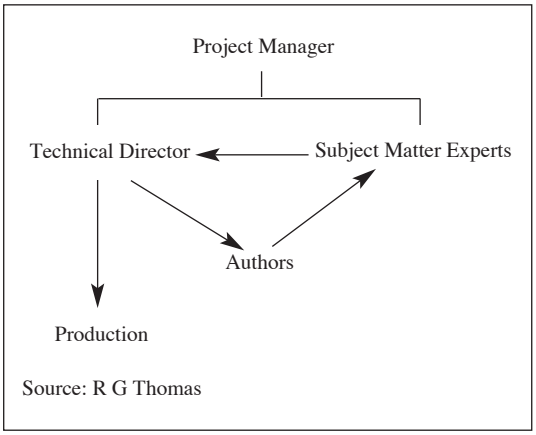



Figure 4 - Project People.

plates has greatly simplified the authoring process, saving time and effort. It is tempting to try and communicate too much information on each page, but application of that old adage "*Keep it Simple, Stupid*" not only speeds up the whole process, it also produces a much more effective product for soldiers to use.

### Selecting Subjects for Evaluation

Selecting a subject to experiment with proved quite difficult. To inspire stakeholders to take note and contribute to the project they had to believe that it would be worth their while as their efforts would be in addition to fulfilling their routine duties. After some debate it was decided that the Royal Engineers Combat Engineer Class 3 course offered the most opportunity for experimentation and success for the following reasons:

- The training impacts on all Sappers
- The training is a mixture of practical and theoretical training
- Pre-requisite for entry to Class 1 upgrade training is at Class 3 standards
- Large number of subject matter experts to draw on
- Course Training Plans would provide basis of lesson modules
- Extensive question bank already created

However the selection of the Combat Engineering Course for the project was flawed for several reasons. In spite of the best efforts of individual Subject Matter Experts they were unable to provide sufficient time to support E-Volution. Also, large elements of the course are delivered by JNCOs. While they may be experts in their field, most are not computer literate and some even saw the project as a threat to their future. Additionally, the relatively loose relationship between Course Training Plans and the practical training that is actually delivered meant that unreasonable volumes of work were expected of some project staff. However several good training modules were created and the complete question bank was converted to an electronic format. This suggested that the project remained viable provided more suitable subjects for consideration could be found. The answer lay within Communications Training Wing itself.

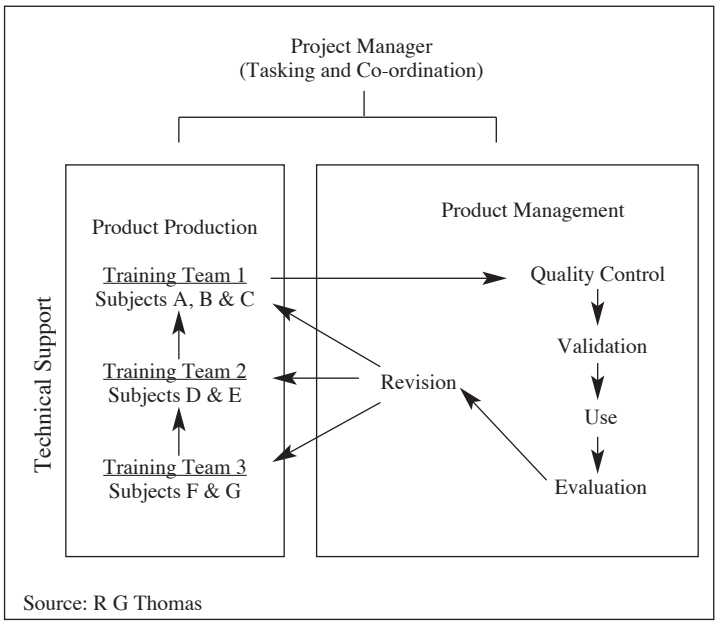



Figure 5 - Project Team Revise.

### Second Breath

The successful rebirth of the project required the lessons learned from previous experience to be applied. To that end a very clear mandate was placed on the Project Manager with less freedom for action and stiffer time lines. Perhaps more crucially, the topics selected for conversion and the individual Subject Matter

Experts all fell within his chain of command! By choosing to convert communications related subjects that would not be "digitized" as a consequence of the BOWMAN project, the Royal Engineers Communications Training Wing has the potential to produce lessons that will have utility in each of the All Arms Signals Schools. This would maximize the use of BOWMAN training platforms at each site. An examination of the Military Engineer, Command, Control and Communications Specialist ME ($C^3S$) syllabus highlighted that subjects probably lent themselves more readily to an E-Learning format than those concerned with Combat Engineering, as they tended to have a higher "knowledge" content rather than being skills based. In addition Wing staff had gained some computer training experience through the Computer Literacy and Information Technology (CLAIT) and European Computer Driving Licence (ECDL) programmes.

Figure 6 shows the block syllabus for subjects taught on the ME ($C^3S$) Class 3 course. The BOWMAN project will commercially replace what is currently taught as "radio equipment". It was therefore decided to convert to a digital format, the knowledge based elements of the seven course modules shown below.

- Electrical Principles and Battery Charging
- BATCO
- Telephone and Line
- Reports and Returns
- Antenna and Propagation Theory
- Voice Procedure
- Electronic Warfare

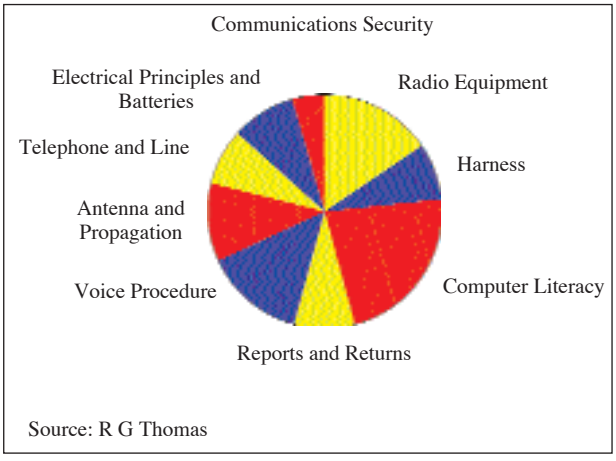



Figure 6 - ME ($C^3S$) Course – Block Syllabus.

If successful, the intention is to offer these modules to other All Arms Schools for their use and so they too could benefit from the RSME experiences and perhaps eventually contribute to the project.

In the fullness of time, digitization will nullify the need to teach topics such as BATCO, Reports and Returns and Voice Procedure, however the anticipated lag time is such that it is considered worthwhile including these subjects in the "test bed" portfolio.

All tuition remains instructor led but now students are able to revisit lesson modules for revision purposes during the evenings. Importantly they are able to confirm their knowledge through a number of question and answer games that are fun as well as relevant. For some readers this may seem to be little more that modernising what soldiers have always done using "flash cards" in the past; that may be so. However, individual soldiers are able to get much more practice than ever before and personal confirmation that they can approach end of course exams with some confidence. It must also be appreciated that our experience is insufficiently mature to be able to judge whether or not savings to training time could be made, the focus has been to improve standards.

The general move towards digitization coincides with a general trend in education towards individuals being expected to be more involved and consequently more responsible for their own learning. If soldiers are to be able to fulfil their half of such a psychological contract, they must have an acceptable grasp of the 3 R's or they will flounder in training situations and loose motivation. Although this is unlikely to pose a problem for the "technical" Corps it may be an issue for some Teeth Arms. Given that the overall quality of civilians offering themselves for service is unlikely to dramatically change in the near future, the time may be ripe to consider re-introducing basic education opportunities for young soldiers.

## Time Lines

To help revitalise the project, strict time limits were set to compel individuals to deliver their contribution on time or seek guidance or assistance. It was also important to prevent project drift through the skills fade that occurs naturally and quite rapidly in this area of work. In part this was achieved by breaking the project down into bite sized chunks. Furthermore, existing training mate-

rial, that could be subsequently improved, was exploited rather than trying to produce a definitive solution at the outset. For example, the existing question bank of 500 questions was quickly and easily converted into the new format. However by using the power of the PC to constantly change the figures used in calculations or formula, an almost infinite number of questions can be generated to make each test an original one if desired. Improvements to the multi-choice question style can now be considered and progressively introduced. More importantly, with effect from April 2003, ME $C^3S$ personnel will be able to confirm their knowledge by setting tests they can create for themselves, perhaps ahead of attending an advanced course; a fantastic revision tool. The goal is to be able to conduct upgrade course entrance tests in units that are instantly marked and used to select individuals for courses. I'd wager a pint that this occurs more quickly than some readers might think!

## To Conclude

THE most important lesson that has been learned is that digital technology can be a powerful tool to compliment existing, traditional teaching practices. A bit like fire, it is a good servant but a poor master. The master in this case must be the Subject Matter Expert and it is he, or she, that needs to be taught how to digitize training material using simple templates that convey information in the clearest, most simple way possible using words, pictures and sound. The chain of command must ensure the training material produced is relevant and confined to training plans that have been generated through the Systems Approach to Training (SAT) methodology. Whatever is produced must be capable of being easily amended. It is simply impractical to out-source this work, to do so adds unnecessary cost as well as delay to updating material. Finally strict time scales and firm leadership need to be applied to prevent project drift.

Looking to the future, as E-Learning becomes more commonplace, consideration needs to be given to the "*ownership*" of material so that a designated authority governs standards and quality. Additionally, material should be copyrighted because it may have a commercial value.

This is not the end of this story; it is just the beginning. Mark my words.

# Some Notable Bengal Sappers

GENERAL SIR GEORGE COOPER GCB MC DL

*In his early days, Sir George served with King George V's Own Bengal Sappers and Miners and commanded 70 Field Company in 1947. He was Chief Royal Engineer from 1987-1993 and is now President of King George V's Own Bengal Sappers & Miners Officers Association and very involved in putting together an anthology for the Group's bicentenary in 2003. It was originally intended to include profiles of a number of personalities but space has precluded this and, rather than discard the research involved, the sketches which follow are intended to give a flavour of the individuality which characterises the careers of some of the more distinguished officers who have served with the Bengal Sappers in the last 200 years. Their names were proposed by Colonel Bill Adams who also drafted the original profiles, with additional help from Major David Alexander, the Secretary of the Association. General Cooper's contribution has been largely editorial, though some additional research was also undertaken, his main source being Lieutenant Colonel E W C Sandes' excellent history "The Military Engineer in India".*

### INTRODUCTION

IN 1803 Lieutenant Thomas Wood was directed to raise three companies each of 75 men at Cawnpore. Wood was a Bengal Engineer, by specialisaton a surveyor, but it was envisaged that the new Corps should be officered by the infantry, so in 1804 command passed to Lieutenant John Swinton of the 21st Bengal Native Infantry and the Corps was designated as the Bengal Pioneers. Swinton made a great mark and had a brilliant career. He took part in some twelve sieges where he led the assaults with great courage, retiring in 1825, lame and battle-scarred but still indomitable, with the rank of lieutenant colonel – the "father of the Bengal Sappers and Miners".

The Headquarters moved to Roorkee in 1853 where, apart from a brief absence in 1854, it has remained ever since. Some one hundred miles north of Delhi, it lies alongside the famous Ganges Canal.

### COLONEL SIR PROBY CAUTLEY KCB FRS (1802 – 1871)

CAUTLEY, the son of a Clergyman, was commissioned in 1819 into the Bengal Artillery and was present at the siege of Bhurtpore in 1825. It may seem strange to include an artillery officer in a collection of personalities otherwise exclusively engineers, but it was by no means unusual at that time for officers of other arms to be employed on Public Works

and in 1830 Cautley was appointed assistant to Captain Robert Smith of the Bengal Engineers on the Doab Canal, later taking over charge. It seems therefore entirely appropriate to include Cautley as one of the earliest influences in the formative years of the Bengal Sappers and a notable engineer in his own right.

A Ganges Canal had been contemplated by Colonel Colvin of the Bengal Engineers and the severe famine of 1837 brought the project back into prominence. Cautley reported on its feasibility in 1840 and it was sanctioned in 1841. Progress was slow at first and although work was started in 1843, the Governor General Lord Ellenborough wanted a Navigation Canal and this delayed the project. Cautley's absence in England on sick leave from 1845 to 1848 further delayed construction. On his way back from the UK, Cautley took the opportunity to visit similar projects in Italy and Egypt. On his return in 1848, he became Director of Canals in the North West Provinces and received the very active support of Thomason, the Lieutenant Governor, and Lord Dalhousie, the Governor General, for the Ganges Canal, especially on the successful conclusion of the Sikh Wars. Progress was now fast and it was finally opened on 8th April 1854 as the largest canal in the world, with some 568 miles of main canal and 3,250 miles of distributing channels. The massive architectural embellishments, the famous aqueduct over the River Solani just outside Roorkee and the headworks at Hardwar in the foothills of the Himalayas are well known to generations of sapper officers who served in the Bengal Sappers. Cautley left India a month after the canal had been finished to a salute of guns from Fort William at Calcutta.

Unfortunately, though the canal was magnificent in concept there were, nevertheless, errors in detail. The most serious fault was excess of slope and this caused severe scour. Cautley found himself in a position of professional controversy with General Sir Arthur Cotton, the eminent hydraulic engineer to whose genius Southern India is indebted. The main point of controversy was the position of the headworks, which Cotton suggested should have been lower down the Ganges. If this had been done, money would have been saved on crossing monsoon torrents. The original cost of the canal had been 217 lakhs of rupees and remedial works cost a further 55 lakhs, but the final report of the Governor General to the Secretary of State for India in 1865 cleared Cautley's name and declared that his eminence as an engineer was in no way diminished.

Cautley was also a distinguished palaeontologist, in association with Dr Hugh Falconer who was in charge of the Botanical Gardens at Saharanpur. Their researches in the Siwalik Hills earned them the Woolaston Medal of the Geological Society in 1837 and some 214 chests of fossils, averaging 4 cwts each, were presented to the British Museum. Cautley's assistants, who included Baker (later Lieutenant General Sir William Baker) and Durand (later Major General Sir Henry Durand), helped him in this work.

Cautley died in 1890. His name will always be associated with Roorkee and it is not surprising that he is honoured by a memorial in the garrison church.

**FIELD MARSHAL LORD NAPIER OF MAGDALA GCB GCSI (1810 – 1890)**

NAPIER was born in Ceylon in 1810 and joined Addiscombe in 1825 from where he was commissioned into the Bengal Engineers in 1826 at the tender age of sixteen. He landed in India in November 1828 and from 1831 to 1838 was employed in irrigation duties on the Doab and Great Eastern Jumna Canals as the pupil and friend of Proby Cautley. Indefatigable at work, he was soon conspicuous for his devotion to duty, which became the characteristic of his life. At the same time he learned the practical lessons of construction, which were so valuable to him in later days. Illness forced his return to England on leave, which extended to three years, and he took the opportunity to study public works and industrial establishments there and in Belgium.

On his return to India in 1838, he was posted to Darjeeling, a new and undeveloped settlement where he completed the organisation of the local corps of Sebundy Sappers who provided labour for work on mountain roads and on the building of the settlement. In 1841 he was promoted Captain and became Executive Engineer of the Sirhind Division where he was engaged on the construction of a new cantonment at Ambala. There he remained until the outbreak of the Sikh war in 1845.

Napier acted as Chief Engineer at the battles of Mudki and Ferozeshah where he had two horses shot from under him and was severely wounded. Then at the Battle of Sobraon he was engaged as Brigade Major of Engineers and took part in the advance on Lahore. He was mentioned in dispatches and promoted to a brevet majority for his distinguished services in this campaign.

On the establishment of the Lahore regency, Napier was appointed Engineer to the Durbar but soon found himself Chief Engineer to the force besieging Multan at the commencement of the second Sikh war. Though superseded by Colonel Cheape, the Chief Engineer of the Punjab, Napier, who was wounded again and disabled for some weeks, gave brilliant service at Multan and the subsequent Battle of Gujerat, where he took part in the famous pursuit of the Afghans across the Punjab to the Khyber, and was awarded the brevet of Lieutenant Colonel.

Napier now became Civil Engineer to the Board of Administration of the Punjab and held this post for seven years, to 1854, before proceeding to England on leave. During this time he was responsible for transforming a war-ravaged wilderness into an orderly province by the construction of cantonments, civil offices, roads (including overseeing the extension of the Grand Trunk road some 278 miles from Lahore to Peshawar), bridges and canals. His expenditure on such work was so large that it led to a rift between him and John Lawrence, but there is no doubt that the excellent road system he left behind him in the Punjab was a vital factor in bringing the relief armies expeditiously to Delhi in 1857.

His subsequent career was spent on the staff or in Army command. Returning from leave in England in 1857, he joined Outram's staff at Lucknow as Military Secretary and was severely wounded during the relief operations. He was awarded the CB for his outstanding service at the siege of Lucknow and was subsequently second in command to Sir Hugh Rose in his pursuit of Tantia Topee and the final mopping up operations at the end of the Mutiny. He commanded the Engineer Brigade in these operations, and it was often Napier's views which prevailed and his plans which were translated into action over the next two years and which earned him the honour of being made KCB. He had by this time been promoted to Brigadier-General.

In 1860 he took command of the Second Division in the expeditionary force to China, making all the preparatory arrangements and taking a leading part in the successful operations. For his services there he was further promoted to Major General. In 1866 he was appointed Commander-in-Chief of the Bombay Army where he devoted himself to schemes for the welfare of his troops, which earned him their undying affection. He became the natural choice in 1867 to command the expeditionary force to Abyssinia. This was an "Engineer" campaign from start to finish, though no Bengal Sapper units were involved, but it was his supreme mastery of logistics that led to the satisfactory conclusion of the campaign. The trials and difficulties of the campaign were well described in his farewell:

*"You have traversed, often under a tropical sun or amidst storms of rain and sleet, 400 miles of mountainous and difficult country. You have crossed many steep and precipitous ranges of mountains more than 10,000ft in altitude where your supplies could not keep pace with you. You have stormed the almost inaccessible fortress of Magdala. You have released not only the British captives but those of other friendly nations. Magdala has been committed to the flames and remains only a scorched rock. Your gallant exploit will live in history. The Queen and the people of England will appreciate your services."*

Napier returned to England where he received a glorious welcome, was thanked by Parliament and raised to the peerage under the title of Baron Napier of Magdala and nominated a GCB. In 1870 he was appointed Commander-in-Chief in India, which post he held until 1876. In this position he was able to continue the reforms and measures of amelioration which he had begun in Bombay, but on a larger scale. This included an official enquiry into the organization of the three Corps of Sappers and Miners which led to the first of the reforms which gathered momentum after the Second Afghan War. After returning home, he became Governor of Gibraltar, an appointment which he held until 1882. By the time of his final return to

England, he had been nominated a GCSI and was made a Field Marshal, only the second Engineer to attain this rank. He was then appointed Constable of the Tower of London.

He died in 1890, vigorous until his last illness, and was buried with full military honours in St Paul's Cathedral. Perhaps Lord Lawrence's epigram sums up his abilities: "If a thing had to be done well there was no one like Napier for being trusted to do it". He was the most famous military engineer India has ever produced, and his statue stands in Waterloo Place, close to the Athenaeum Club, while another was erected on the Maidan in Calcutta.

*Further Napiers were to serve with the Bengal Sappers: Arthur Napier commanded 4 Field Company when they left Roorkee for Egypt in 1939 and a future Lord Napier of Magdala was Assistant Commandant of the Corps in 1945.*

**MAJOR GENERAL SIR HENRY DURAND KCSI CB**
**(1812 – 1871)**

DURAND was the illegitimate son of Lieutenant Colonel the Hon Henry Percy of the 14th Light Dragoons, who was a prisoner of war in France from 1812-1814. It was Percy, then ADC to the Duke of Wellington, who carried the famous Dispatch to the Government and the Prince Regent in London in 1815, announcing the victory at Waterloo. Durand's mother was French and his father died when Durand was young, so he was brought up by his guardians, the Deane family of London. He was commissioned into the Bengal Engineers in 1828 from Addiscombe where he won seven prizes and the sword for good conduct. There followed the usual technical training at the RE Establishment at Chatham, where he obtained special commendation from Sir Charles Pasley for his diligence, ability and conduct. He sailed for India in October 1829, was shipwrecked off the Cape of Good Hope and eventually landed at Calcutta in May 1830.

He joined the Public Works Department, where his first assignment was to design the Church at Meerut, but in 1832 he was transferred to the Irrigation Department. This was a fine training ground, where he worked alongside Napier and Baker. Due to his ability and political insight, he was appointed in 1838 Secretary to the Agra Board of Revenue, a post never before held by a soldier, but he never took up the appointment as he volunteered and was accepted for active service with the Army of the Indus, about to invade Afghanistan.

By the end of July 1839 the Army had reached Ghazni and, expecting to find the fortress undefended, instead found it fully garrisoned. It was not considered feasible to by-pass the fortress and the army had left its artillery in Kandahar; mining was impossible as the walls were surrounded by a watercourse, and escalading was impracticable due to the height of the walls and the shortage of ladders. It was decided that the only method of reducing the fortress was by direct assault after blowing in the Kabul gate.

Though Captain Peat of the Bombay Sappers and Miners was in charge of the whole demolition team, Durand led the explosion party of two British Sergeants and a Subadar and 15 sappers from the Bengal Sappers, to place and then fire the charge of 300lbs of gunpowder. Durand performed his part of the firing train with great coolness and self-possession, being finally exposed to enemy fire from the ramparts while he applied the match to the fuse, which he had some difficulty in lighting. Nearly 20 years later, Lieutenants Hume and Salkeld were to receive the Victoria Cross for a similar operation at the Kashmir Gate in Delhi but in 1838 there was no suitable award to give Durand, though Peat received a CB, and the Indian members of the party received the IOM.

After the campaign, Durand proceeded on furlough to England where he met Lord Ellenborough, about to proceed to India as Governor General, who offered him the post of ADC. Durand later became Private Secretary, which post he held till 1844 when he was appointed Commissioner of Tennasserim. He was a man of blunt speech and strong will and made himself unpopular by his rigorous repression of corruption, being finally recalled to Calcutta. Durand's friends considered he had been unjustly victimized. Durand himself took it as the commencement of a long course of disappointment and suppression, which affected the rest of his life and he returned embittered to England to lay his griev-

ances in person before the Court of Directors of the East India Company. He obtained little satisfaction from them.

He returned to India in 1848 and took part in the Sikh Wars, being present at the battles of Ramnuggar, Chillianwallah and Gujerat and was promoted to Brevet Major. At the end of the war he was appointed Political Agent at Gwalior, where he guided the delicate complications of Mahratta politics with consummate skill. From Gwalior he was transferred in 1849 to Bhopal and, though he may have been disappointed by these relatively minor political posts, he was promoted from them to Nagpore in 1853.

He once more returned to England in 1854. His early appointment as Private Secretary to the Governor General, while fully justified by his abilities, had given him an exaggerated sense of his own importance and engendered expectations of advancement which were not realised. When he came back to India in April 1856, he was appointed Inspecting Engineer to the Presidency Circle at Calcutta and promoted to Brevet Lieutenant Colonel. There he much impressed Lord Canning, the Governor General, and, in March 1857, he was appointed to take acting charge of the Central India Agency at Indore, one of the three major appointments in the Political Service. This was the turning point in Durand's career. Almost immediately on taking up his post he was thrown into the turmoil caused by the outbreak of the Mutiny and only his firm and decisive action prevented its spread in this part of India, though he lost his wife from the effects of the fatigue and exposure she had undergone. His actions cleared the way for Sir Hugh Rose's brilliant campaign in Central India. Durand received a CB and was promoted Brevet Colonel, but resented not receiving a KCB.

The mutiny being crushed, Durand returned to England and, in January 1859, he was appointed to the Council of the Secretary of State, where he rendered conspicuous service. He proved to have a statesmanlike grasp of the problems and his views carried great weight. From this duty he was recalled to India by Lord Canning, who appointed him Foreign Secretary at Calcutta. After four years in this Department, he was named Military Member of the Council of the Governor-General, a post in which he was called on to perform the duties of a War Minister. It was not until 1870 that Durand at last reached the goal of his ambition when Lord Mayo, the Viceroy, appointed him Lieutenant Governor of the Punjab, a post second only to the Viceroyalty. The Punjab was India's barrier against Central Asia and it was universally felt that he was the man for the place. Unfortunately, he met with a fatal accident when, misjudging the height of an archway, he was knocked from the howdah of an elephant when paying an inspection visit to Tonk, less than a year after taking up the appointment.

Durand was a man of iron with a will cast in a heroic mould, but these characteristics made him many enemies. Nevertheless, a contemporary obituary judged him to be someone of warm affection, courteous in manner and deeply religious. "He was by nature reserved, proud and sensitive, frequently taking needless offence". He must have been a difficult man to work with, but there is no doubting the sincerity of Lord Mayo's observation on his death that "the Indian service has lost one of its brightest ornaments".

*As a postscript, one of the oldest-established prizes in the gift of the Institution of Royal Engineers is the Durand Medal, instituted as a memorial to Major General Sir Henry Durand. It was originally presented annually, in rotation, to the three Indian Sapper and Miner Corps, to the officer, NCO or sapper who, in the opinion of the Commandant of his Corps, had most distinguished himself "as a Soldier and Sapper by good and efficient service". After the transfer of power in 1947, it was decided to award the medal on a basis of two years to the Indian Army and one year to the Pakistan Army. In 1958 Pakistan surrendered her right and it was decided to offer the award to the Queen's Gurkha Engineers instead.*

**COLONEL RICHARD BAIRD SMITH CB**
**(1818 – 1861)**

BAIRD Smith was born in 1818 the son of a Scottish Naval Surgeon. He was commissioned into the Madras Sappers and Miners from Addiscombe in 1836 and arrived in Madras two

years later. He became Acting Adjutant of the Corps in 1839 but, on an increase to the establishment of the Bengal Sappers and Miners, he was transferred to that Corps later in the same year and became their Adjutant. In the following year he was appointed as assistant to Sir Proby Cautley, Superintendent of the Canals Department.

After joining the Army of the Sutlej, Baird Smith took part in the Battle of Aliwal and was on the Staff at the Battle of Sobraon, but returned to his canal duties at the end of the campaign, having been commended by his Commanding Officer as a "most promising and gallant officer". In 1848 he was attached to the Army of the Punjab for the Second Sikh War, was present at the Battles of Chillianwalah and Gujerat in 1849 and was mentioned in despatches for his services in those battles and for the crossing of the Chenab.

He returned to canal work once more, but in 1850 obtained three years home leave. It was typical of the man that he persuaded the Court of Directors to commission him to visit Italy and produce a report on the Canals of Italy, for which he was offered an Italian Knighthood by the King of Sardinia, which, of course, he was not allowed to accept. But the Directors were sufficiently pleased with his report that, on returning to India in 1853, he was permitted to visit the irrigation works in the Madras Presidency, which led to the publication of another report. He was promoted Captain on 15 February 1854 and the following day to be Brevet Major for his service in the field. In the same year, he was appointed Superintendent of Canals in the North West Provinces and then succeeded Cautley as Director of the Ganges Canal at Irrigation Headquarters at Roorkee with the rank of Lieutenant Colonel.

Thus Baird Smith was stationed only sixty miles away when the Mutiny broke out at Meerut in 1857. When Major Fraser, commanding the Bengal Sappers and Miners, was ordered to proceed with 500 men by forced marches to Meerut, it was at Baird Smith's suggestion that he took his men by boat down the canal, so they arrived, perfectly fresh, within 24 hours. Baird Smith, meanwhile, took military charge of the station at Roorkee, formed a citadel for the women and children in the canal workshops and generally kept the peace in a very difficult situation. The Sirmoor battalion was coming down to Roorkee and, fearing that it would be taken as a hostile demonstration against the Sappers, he encouraged them to use boats which he had prepared on the canal, thus by-passing Roorkee itself. His foresight was considered to have saved Roorkee and the lives of the women and children there.

On 27 June, Baird Smith was ordered to Delhi to take over as Chief Engineer of the besieging Army. He enlisted the help of 600 pioneers to follow him, while he hastened to arrive in time for the assault, but it had been once again postponed. Armed with his knowledge of the city, he examined the plan of attack and found the resources quite inadequate for a prolonged siege, so he strongly advised a frontal assault, following the blowing in of certain gates. His plan of action was not immediately accepted, but when Brigadier General Wilson took over command, Baird Smith's energy and enthusiasm swept away Wilson's doubts and he yielded to the judgement of his Chief Engineer. Following the arrival of the siege train on 5 September, the bombardment began two days later and the final assault took place on 14 September. By 20 September the siege was over. Unhappily Baird Smith had been hit by shrapnel in the ankle earlier but he continued, despite his painful wound, to devote himself to the operations and did not give up his command until 23 September. By this time he was also suffering from scurvy and the effects of exposure, which laid him up in Roorkee for several weeks and may have permanently injured his health.

Baird Smith certainly earned the thanks of his commanders and the Government for his services. He was brilliantly assisted by very able subordinates, especially his second in command, Captain (later Lieutenant General) Alexander Taylor, to whom he was unstinting in his praise. His own reward was to be promoted Brevet Lieutenant Colonel and awarded a CB.

He returned to his appointment as Superintendent-General of Irrigation and in military charge of the Saharanpur and Mozaffarnagar Districts. In September 1858 he was appointed Mint Master at Calcutta and in 1859 an ADC to the Queen and promoted to Colonel. Then, as officiating Secretary to the Government in the Public Works Department, he undertook the survey of the great famine of 1861. This was perhaps the crowning work of his career as his report was a template for future relief operations, but the long journeys which the survey entailed,

and the depressing wet season, renewed the illness from which he suffered after the capture of Delhi. He left by sea for home leave but died on board on 13 December 1861. His body was landed at Madras and buried there with the military honours which he had so well deserved.

**COLONEL SIR EDWARD THACKERAY VC KCB**
**(1836 – 1927)**

THACKERAY was born in 1836 into a family which had strong links with India. He was a first cousin of the famous Victorian novelist William Makepeace Thackeray. Edward was at school at Marlborough from the age of eight where, it is reported, "he learnt nothing and had a very rough time", which, he used to say, afterwards stood him in good stead. He was next sent to a private school at Walthamstow, from where, pocketing the coach fare, he walked to London and back to see the funeral of the Duke of Wellington. Whether this inspired him to a military career can only be speculated, but the escapade certainly foreshadowed the unconventionality and enterprise which characterized his later life.

He was commissioned from Addiscombe into the Bengal Engineers, passing out third in his term in December 1854, with a reputation for being something of a dandy. (He was called "Lord Talbot" or "The Duke" by his fellow cadets.) It was there that he acquired a great liking for mathematics, which became one of his relaxations in later years. After two years at Chatham on the usual courses, he sailed for India, crossing the desert from Cairo to Suez by mule and horse-drawn caravan, sustained by "song, whist and bottled beer". He reached Roorkee on 3 March 1857, and the Sepoy Mutiny broke out at Meerut on 10 May.

When news of the Mutiny reached Roorkee, the major part of the garrison moved to Meerut, Thackeray being nominally in command of 10 Company, comprising less than 100 Indian Other Ranks. They reached Meerut on 15 May and on the very next day, when Captain Fraser, the Commandant was shot on parade by a mutineer, Thackeray acted with great coolness to prevent many men of his detachment on a working party outside the cantonment from joining the mutineers. He took part in the siege of Delhi and on 17 September he participated in the recapture of the Magazine, famous for the action in the early stages of the Mutiny. For the "cool intrepidity and characteristic daring" he displayed in this action, together with Lieutenant Renny of the Gunners, he was to be awarded the VC, but four and a half years were to pass before he received his award. Thackeray's part in the action was to extinguish a fire on the roof of the magazine. He climbed on the blazing roof while an Indian servant handed up "mussacks" full of water to him. He did not descend until he had successfully extinguished the flames, the rebels firing and throwing missiles at him at close range. The exploit did not come to light until two years later, due to his modesty in failing to make a report of his own part in the action, although he had been instrumental in obtaining the VC for Renny.

Thackeray was to be fully engaged in various actions after the recapture of Delhi and took part in the relief of Lucknow. He accompanied the Rohilkund Field Force in April 1858 and was present at the capture of Fort Rooyah, where his horse was shot under him. Not wishing to lose his saddle and bridle, he followed the attacking party on foot, carrying his saddlery on his head. He was at the capture of Bareilly in May 1858 and served with Sir George Barker's column in operations at the end of the year.

The experiences of the Mutiny had a marked effect on Edward Thackeray's sensitive temperament. His relations felt that the high-spirited boy of twenty had become in those two years a grave and serious young man. It was perhaps this reaction, together with what he perceived as little prospect of further active service, which prompted him to enter the Public and Military Works Department where he served until 1879. His service included two periods as PA to Colonel Grommelin, Chief Engineer of Oudh, and Sir Robert Napier, Chief Engineer of the Punjab, and executive posts at Gwalior, Allahabad, Meerut, Ambala and Upper Assam.

He was a keen all round sportsman, especially shooting and fishing, though, surprisingly for

that period, he only shot one tiger. He got bored waiting in a machan and preferred stalking his game on foot. This nearly brought him to an early death from a charging tiger which was fortunately brought down at his feet by a friend. He took part in the earliest meetings of the Meerut Tent Club when the Kadir Cup was started.

In September 1879 Thackeray was selected to command the Bengal Sappers in Afghanistan, during what became known as the Second Afghan War. He was then, from October till the end of December, in almost continuous action. Not a day passed without skirmishing or reprisal actions against local villages. A characteristic incident took place at this time. One afternoon, wishing to see Brigadier General Gough, commanding the Brigade attempting to get through to Kabul on the Khaibar route, Thackeray walked over alone from his own position to the Fort. The General was amazed to find he had come without an escort and told him he had no business to be alive. He gave him a horse and escort to take him home, much to the Major's disgust.

Early in December, General Roberts was besieged in Kabul, invested closely by 100,000 Afghans, and while they were fighting for their existence, Thackeray was putting up a gallant defence against 3,000 of the enemy in a small post at the Jagdalak Kotal. He had only the 2nd and 3rd Companies of the Bengal Sappers, armed with carbines, one company of the 24th Bengal Native Infantry, and twelve troopers of the 10th Bengal Cavalry. The Afghans attacked on 23rd December and poured in a heavy fire from all sides, but the little garrison showed such a bold front and fired so accurately that they held out for many hours till they were finally relieved after dark. During that afternoon, Thackeray was severely wounded in the arm. It was typical of the man that he had been standing exposed, the better to give his orders to his Adjutant. He continued to give orders during the remainder of the attack, but was eventually sent back to India, narrowly escaping the amputation of his arm, and thence to England. He returned to India in 1881 to resume command of the Bengal Sappers & Miners at Roorkee. In 1884 he was promoted Colonel and in 1886 he was created a CB, when Lord Napier of Magdala wrote that no man ever earned a decoration more completely on his own merits. After seven years as Commandant, he was employed in an Intelligence post at GHQ, but retired in 1888 on health grounds.

On retirement to London, his principal work was with the Order of St John of Jerusalem and in 1892 he became Chief Commissioner of the St John Ambulance Brigade. For his services to the Order, in 1897 he was promoted to a civil KCB.

At the end of 1898, he left London for good and settled, at the end of 1898, at Bordighera on the Italian Riviera. He played a leading part in the life of the place and became unofficial doyen of the considerable expatriate population. He was loved and admired by all for his distinguished bearing and for his support of local and patriotic institutions. Chess and painting in water-colours were his chief recreations, but he also continued his liking for mathematics. During the 1914-1918 War, Bordighera became the HQ of a British Military District and a large hospital base. Thackeray was the local President of the Red Cross and Order of St John. Though a civilian by this time, he was mentioned in despatches and received the two war medals.

He died in Italy in 1927 at the age of 91. There his memory remains green and he is recalled as an officer of indomitable spirit and untiring devotion to duty coupled with a great humility and singularly charming courtesy.

**GENERAL SIR BINDON BLOOD GCB GCVO (1842 – 1940)**

SIR Bindon came from an old Irish family and counted among his ancestors the famous Colonel Blood who attempted to steal the crown jewels from the Tower of London in 1671. One of his great-uncles served in a Spanish regiment and was wounded and taken prisoner at Algiers – next morning he was blown from a gun on the ramparts. Bindon himself was brought up initially in Warwickshire, while his father had an appointment under Brunel on the London and Birmingham Railway. In 1850 the family moved to Galway where his father became Professor of Civil Engineering in Queen's

College, one of the three Colleges of the "Queen's University in Ireland".

In due course, he obtained a scholarship to Addiscombe where the cadets had cubicles, known as "kennels", which were very comfortably fitted and furnished, except that there were no baths or bathrooms, "as the need for the daily tub had not yet been recognized by the authorities"! In 1860, he was commissioned into the Royal Engineers and he related how, on "Passing Out" Parades, it was still the custom for sub-officers and cadets in the gun detachments to appear with their hair showing as a neat row of curls beneath their busbies. He regretted not having a photograph of the elegant growth which he achieved.

The "Purchase System" existed in the Cavalry and Infantry, though not in the Artillery and Engineers, until 1873,and corporal punishment was still being carried out at this time. During his initial service Bindon Blood saw "corporal punishment of fifty lashes" carried out several times and he once witnessed two men flogged at Aldershot at a parade of 5-600 men, mostly young soldiers, when over a hundred fainted in the ranks and several officers fell out. One of the two men had been guilty of violent insubordination but became a reformed character and, some sixteen years later, Bindon Blood found him to be a most efficient Serjeant Major!

While his troop was at Chatham in 1867, it was decided that the pontoon bridge equipment was unsatisfactory and officers were invited to submit new designs. Blood's design was adopted and while trials were going on he was also entrusted with work connected with the telegraph organisation and army signalling arrangements that were being introduced at that time. When, in 1870, the RE Telegraph Section was formed, he was appointed the first officer to command it.

He was not posted to Roorkee till 1871 and in November took part in the concentration for drill and manoeuvre of some 25,000 men of all arms under Lord Napier of Magdala, the Commander-in-Chief in India. Never having seen anything like this number of troops collected together before, he felt that this was the start of his education in all arms tactics.

He saw active service for the first time in 1878 when he commanded the two companies of Bengal Sappers and Miners in the Jowaki Afridi campaign. They formed part of a strong brigade sent on a punitive expedition, with the aim of taking Pastaoni, the Jowaki's chief village. They evacuated it as soon as the advance began and the village was empty except for a young woman, the wife of one of the enemy, who had been left behind in charge of her elderly grandparents, as she had just become a mother and could not be moved. Bindon Blood was ordered to look after her, and found her in a state of alarm as she had evidently been told that the British were a bad lot! "However it was soon all right", he reported, "and when I sent her off in a "dooly" in a day or two, she wept floods of tears and wanted to stay and be one of my domestics, in what capacity she did not explain! I noticed that she was quite a nice-looking young woman". There were, however, some more warlike activities to occupy him when it was decided to march through the hills to Kohat. Next day they halted in a valley with several villages, all walled and fitted out with some very picturesque towers, which they were ordered to destroy.

He returned to the UK later in the same year and in 1879 became CRE 1 Division in the Zulu War and, though taking no part in the fighting, received a brevet Majority. He returned to India in 1880 to join Sir Frederick Roberts' force at Kabul in the second Afghan War and led four companies of Bengal Sappers back to Roorkee in the same year, becoming officiating Commandant during the absence on sick leave of Colonel Thackeray VC.

He returned to the UK again and in early 1882 embarked in command of a Company and was just in time to take part in the Egyptian campaign and the Battle of Tel-El-Kebir, returning to England in May 1883. He was promoted Brevet Lieutenant Colonel for his services in the campaign.

In 1885 he was appointed Commandant of the Bengal Sappers and Miners and held the appointment till 1892. During this period he completed, together with the Madras and Bombay Corps, a complete reorganisation of the Sappers and Miners and the results of his work provided the framework for the next 50 years. He still had a long career as a Staff Officer and senior Commander: Chitral (where he was Chief Staff Officer of the Chitral Relief Force, for which he received the KCB), the Malakand Field Force (which he commanded as a Major General), South Africa (where he was appointed

a Local Lieutenant General to command the Eastern Transvaal), and lastly the Punjab Command. He finally retired in 1907. It was during the Malakand campaign, though, that he became unusually well known through the young Winston Churchill who accompanied it as a war correspondent and subsequently wrote a book about it (The Story of the Malakand Field Force). He wrote that "Sir Bindon was a striking figure in these savage mountains…..He liked these wild tribesmen and understood the way to talk to them…..He regarded the attempted stealing of the Crown Jewels by his ancestor as the most glorious event in his family history, and in consequence he had warm sympathy with the Pathan tribes on the Indian frontier, all of whom would have completely understood the event in all its bearings, and would have bestowed unstinted and discriminating applause on all parties…..He had one personal ordeal in this campaign. A fanatic, approaching in a delegation, whipped out a knife and rushed on him from about eight yards. Sir Bindon, mounted upon his horse, drew his revolver, which most of us thought on a General of Division was merely a token weapon, and shot his assailant dead at two yards." It is easy to imagine how delighted everyone in the Field Force was at such an event.

Indian Ranks idolized him as one who knew and understood them and whom they recognized as a fine soldier, a slayer of tiger (over 40) and a thorough sportsman. It was not surprising, therefore, that he succeeded Colonel Sir Edward Thackeray VC KCB as Colonel of the Corps in 1918 and which position he held until his death in 1940. In 1936, when the post of Chief Royal Engineer was revived, he became the first to fill that appointment which, in spite of his great age, he filled with the universal approbation of his brother Sappers and with great distinction.

Sir Bindon Blood, perhaps more than any other Bengal Sapper officer of distinction, represented the very best of the virtues of the old style of Indian Army officer. He was a man of stature in purely military terms, he was dedicated to the traditions of the Corps of Engineers in which he served, he had a great affection for his troops and knowledge of their customs, he was a commanding and colourful personality with a sense of humour and a compassion which shines through the memoirs, which he published 27 years after his retirement. In sum, he was a man of whom the epithet "distinguished soldier" rings eminently true.

**LIEUTENANT GENERAL SIR FENTON AYLMER BT VC KCB**
**(1862 – 1935)**

AYLMER is memorable not only for his outstanding leadership and the award of the VC at Nilt during the Hunza-Nagar operations but for his pioneership of extemporized suspension bridges, built largely of locally available materials. He served with the Bengal Sappers and Miners from 1883-1897.

Aylmer was born in Hastings in 1862 and commissioned in the Royal Engineers in 1880 after passing out second from the RMA Woolwich and holding the appointment of Senior Under Officer. After a few months with the Submarine Miners at Devonport, he went to India, seeing service in the later stages of the Third Burma War, commanding 4 Field Company, but returned to Roorkee in April 1887. He was in action again in 1891 in the Black Mountains on the North West Frontier and in December 1891 was in Hunza Nagar.

The Hunza Nagar Expedition was a campaign waged almost on the roof of the world and spoken of as "a war of small parties, almost of individuals". The British force was so small that success depended more upon the daring and resource shown by every soldier than in any other expedition on the North-West Frontier. The enemy were brave, and showed considerable skill in defence. They fought in a land of glaciers, forbidding precipices and raging torrents. The season was winter. The theatre of war was the upper portion of the Hunza River, lying close beneath the mighty peaks of the Hindu Khush, and holds the two small states of Hunza and Nagar, nominally subservient to Kashmir but, because of their

remoteness, virtually independent. However, they paid an annual tribute to their parent state: in the case of Hunza it was 20 ounces of gold-dust, two horses and two hounds, and for Nagar it was some gold-dust and two baskets of apricots!

The Hunza River, fed by many large glaciers, is a raging torrent in summer and unfordable even in winter. The track up it was exceptionally bad and owing to precipitous cliffs it was ascended by nerve-racking zig-zags, the path sometimes carried on thin poles jutting from the face of the cliff. High up was the town of Hunza and near it lay Nagar – below them were various strong forts, one of which was Nilt, perched on the top of a cliff, 800 feet above the river. The fort was accessible only on the side facing the mountain and could not be seen properly until the attackers were close to it. Its walls, of large stones cemented with mud and strengthened by longitudinal timbers, were 14-20 feet high and up to twelve feet thick. Towers were sited to provide flanking fire, the main gateway was flanked by a loop-holed bastion, and there was an inner and an outer courtyard which could be swept by fire. It was regarded locally as impregnable.

In attempting an assault, Aylmer reached the main gateway under heavy fire from the fort and laid a guncotton charge with two sappers and, though wounded in the leg, managed to get under cover. The fuse however went out so he returned to rearrange the charge and relight it. This time his hand was badly crushed by a boulder thrown over the wall. However, the explosion was successful and Aylmer and the two sappers got through the gate into a tunnel where they carried on a hand-to-hand fight with the defenders until the main assault party arrived and the fort was taken. Aylmer had lost so much blood that he collapsed and was carried out of the immediate fight. He, with Lieutenant Boisragon of the Gurkhas, were both awarded VCs and the two sappers, Abdullah Khan and Hazara Singh, were promoted and awarded the IOM. In addition, Aylmer received a brevet majority and both Abdullah Khan and Hazara Singh became Indian officers in due course. Within a period of eleven years 4 Field Company won three Victoria Crosses and some eight Indian Orders of Merit, surely a record for any company before the First World War.

After two months light duties, Aylmer resumed active work and was constantly trying to find a solution to the problem of maintaining communications when the winter bridges were washed away. No materials could be obtained from India as all the passes were closed, but Aylmer made a thorough search at Gilgit and discovered some useful things including a quantity of telegraph wire and a case labelled “Old Brandy”. This was a glorious surprise and he promptly gave a dinner party, glasses were charged and a toast proposed, but alas the “Old Brandy” turned out to be furniture polish! The telegraph wire led to better results and a further lot was discovered at Bunji. Aylmer was noted for his fertility of resource as an engineer, evidenced by three suspension bridges, the longest having a 340ft span, the cables being constructed mainly from telegraph wire. The most difficult problem was to determine the height to place the suspension bridge to clear the summer flood level.

In 1893, at the end of the Usazai Expedition, Aylmer was wounded by a premature explosion as a mine was being filled with guncotton and, among other injuries, had an eye badly damaged. He had fared rather better in an amusing incident the previous year at a village called Baiyo. Major General Sir William Lockhart, commanding the expedition, had given orders to an officer to blow one of two high towers, which was done most efficiently, in the orthodox manner, with a small charge of gunpowder. There was a gentle “poof” and the tower subsided. The General, however, was furious. “That’s no good,” he burst out. “The tribesmen are all watching from miles around.” Then, turning to Aylmer, he ordered him to blow up the other tower properly. “I took the hint,” wrote Aylmer later, “and used a whole box of guncotton. A perfectly gorgeous explosion followed, and I am glad to say that none of the onlookers were killed, though there were some narrow escapes. Sir William was delighted.”

Two years later, Aylmer joined the Chitral Relief Force, still in command of 4 Field Company, and again his main task was bridge building, most of them suspension bridges. During this campaign he saved the life of a soldier washed away on an overturned raft. Such action reinforced his reputation as a leader and enhanced the esteem in which he was held by the men he commanded.

His subsequent career was on the staff and in command appointments. In 1912 he became

Adjutant General in India. In 1915 he attained the goal of every soldier, an independent command on active service, when he was appointed to lead the operations to relieve the beleaguered garrison at Kut-el-Amara in Mesoptamia. Unfortunately his good fortune deserted him. With inadequate resources and unaware that the garrison could have held out much longer, he failed in his hurried attempts to relieve Kut-el-Amara. However, he bore the disappointment with characteristic stoicism and it in no way affected the performance of his duties during the remainder of his active career. He returned to India to command the Mhow Divisional area and retired in 1918, having attained the rank of Lieutenant General. In 1922 he became a Colonel Commandant of the Royal Engineers.

Aylmer was endowed with a strong sense of duty and expected the same in others. However, he was tolerant of ordinary human failings and endeared himself to his troops, as well as to his junior officers, as a fearless and intrepid leader. He was heart and soul a soldier, a voracious student of the art of war and possessed inventiveness of mind, coupled with an ability to pass on his original schemes to the benefit of others – a true example of a dedicated and professional engineer officer. He had many virtues: courage, tirelessness, resourcefulness, and a ready wit, leaving a reputation as the leading exponent of rapid improvised bridging. He died in 1935.

**LIEUTENANT GENERAL SIR RONALD CHARLES KCB CMG DSO (1875-1955)**

"DON Carlos" or "Carlos", as he was known to friends, and to the Army at large, possessed the power of personality which makes a man stand out in any assembly. By ability, character and experience he was well qualified for, and might with greater fortune have attained the highest positions in the Service.

He was born in Calcutta in 1875 and won a scholarship to Winchester. In view of his splendid physique in later life, it seems strange that he should describe himself at that time as a "weed" with a strong dislike of any ball game. He passed into the Royal Military Academy seventh, was selected as Senior Under Officer and gained the Sword of Honour. He was commissioned into the Royal Engineers in August 1894. From Chatham, he joined 26 Field Company RE, first at the Curragh and then Aldershot, before sailing for South Africa in September 1899. On arrival, he joined 1st Field Troop, soon to be part of the Cavalry Division under French. On two occasions Charles was selected to join raids behind the Boer lines to cut the railway behind the retreating enemy. On the second of these raids, he was challenged by three Boers whom he bluffed by pointing a pair of wire cutters at them and gained sufficient time for his brother officers to draw their revolvers and capture their opponents. For these exploits Charles was twice Mentioned in Despatches and awarded the DSO. Luck turned against him however as he developed enteric and later phlebitis in his left leg and was invalided home.

After sick leave he was posted to India and in Feb 1901, after a short spell in "Works", he joined 6 Field Company of the Bengal Sappers and Miners at Kohat. Late in 1902 he took command of 6 Field Company and spent a year in Chitral. At that time, with his commanding figure and personality, his DSO and his obvious efficiency, he was to his juniors decidedly awe inspiring. He had a reserve, a gravitas about him which made him seem to many in later life as stern and forbidding. Yet he was the life and soul of a very cheerful Mess. He had a strong sense of humour, was an excellent raconteur and possessed a good baritone voice. There was no doubting his serious nature though, and his insistence on high standards. He did not suffer fools gladly, but never lost his temper.

Though Charles disliked ball games, he was able to indulge to the full in polo, pig sticking, big game and duck shooting. On leave in Baltistan, he shot an Ibex. In 1906 the Company moved to Peshawer where, in 1907, he passed top into the Staff College at Quetta, which he joined in the following year. While at Quetta he

took part in two minor operations on the frontier and earned two more Mentions in Despatches and a brevet majority.

On passing out from Quetta, he was employed continuously on the staff until, in September 1914, Charles joined the Indian Corps in France as a GSO2 at Headquarters and was present at the battles of Neuve Chapelle, Festubert and Loos. In August 1915, now a Brevet Lieutenant Colonel after a short period as GSO1 of the Lahore Division, he became Brigadier General General Staff (BGGS) of the Corps. When the Indian Corps moved to Mesopotamia in 1915, Charles stayed in France as BGGS XVII Corps until the summer of 1918 when, after a short period as commander 76 Infantry Brigade, he was appointed to command 25 Division where he performed brilliantly. There was no question of a "staff-wallah" being resented in command: he impressed his junior commanders by his strength of character, courtesy, military soundness and personal courage. Despite his somewhat stern manner, he was recognized as a friendly and understanding man. Already a CB and Brevet Colonel, he now received the CMG and Legion d'Honneur.

In 1919 he was posted as a Brigadier General and Senior Chief Instructor to reopen the Staff College at Camberley. He spoke of this as the most laborious period of his service. As a teacher, a soldier and a man, it was felt that Charles stood out head and shoulders among his fellow instructors.

This was followed by three years back in India as Director of Staff Duties in GHQ and then as GOC Waziristan. His former frontier experience and his fluent Urdu well qualified him for this command. It was also a time of engineer, rather than more active operations, which again suited Charles to the full.

In 1924 he became Commandant of the Royal Military Academy Woolwich, where he was considered a first rate Commandant, and this was followed by four years as Director of Military Operations and Intelligence at the War Office, after which he became an Army Board Member and Master General of Ordnance. In 1934, however, he decided that, although he could see future promotion to General, he was badly placed for the higher appointments and decided to retire. It was, he said, the hardest decision of his life but the decision was perhaps made easier by his acceptance of an invitation to join the Board of British Aluminium, with whom he stayed in an active capacity until 1950.

Charles had many friends and wide interests. From 1940 to 1946 he served as Chief Royal Engineer and also Colonel of the Bengal Sappers from 1940 to 1945. Perhaps the appointment that gave him most delight was to be President of the "Old Contemptibles" from 1946 to 1954.

He died in 1955 – a great soldier, a renowned Sapper and a fine example of duty and service.

## Lieutenant General Sir Harold Williams KBE CB (1897 – 1971)

Lieutenant General Sir Harold (Bill) Williams devoted almost a life-time of service to India. Educated at Mountjoy School, Trinity College Dublin and the Royal Military Academy Woolwich, he was commissioned into the Royal Engineers in September 1917. After a shortened Junior Officer Training Course, he joined 51 Field Company of the Bengal Sappers and Miners, part of the Aden Field Force, spending some of his time at Hodeida in the Yemen. Malaria was rampant and water, which came entirely from wells, was always in short supply. It was here that he realized that, without engineering, life in cities would be impossible and laid the foundation for the distinguished career which followed, both as a military and civil engineer.

51 Company stayed in Aden till it returned to India for disbandment in April 1921. Williams left India in 1923 and for the next four years attended various courses at Chatham, Cambridge and Aldershot before returning to Roorkee. In 1929 he became Corps Adjutant, a post which he filled with marked distinction and ability, recognized by a brevet majority.

He then passed a further three years at the newly opened Indian Military Academy at Dehra Dun, from where he became Professor of Civil Engineering at the Thomason College at Roorkee, with the specific charge of junior Indian Engineer Officers. He was not a good linguist but had a wonderful faculty for friendship and mutual respect in dealing with Indians of all creeds and levels of society, princes and politicians, soldiers and servants. He was particularly popular with the junior Indian officers and did much to smooth over the difficulties sustained by them in the early months of their commissioned service when there was a degree of misunderstanding with the British officers in the

Roorkee Officers Mess. He was early convinced that India should some day gain her independence and sought to help in any way he could.

Returning to the UK just before the outbreak of World War II, he became CRE 1st Armoured Division and saw service in France in the 1940 German break through. In 1942 he was back in his beloved India and was Chief Engineer 4 Corps, during the period of desperate struggle in Upper Burma, from June 1943 to August 1944. He was then appointed Brigadier Engineer Staff in New Delhi before becoming Commandant of the newly formed Indian School of Military Engineering at Roorkee from March 1945 to November 1947.

After Partition, he became Engineer-in-Chief India in January 1948 and held this post until his retirement in 1956. Those eight years are ample evidence of the esteem in which he was held by the Indian nation and form the period of his service of which he was most proud. Such was the esteem in which he was held that he was knighted in 1956, and on retirement the Government of India conferred on him the honorary rank of Lieutenant General. He then became Director of the Central Building Research Institute at Roorkee, a post which he held until 1962. He was Colonel Commandant Indian Engineers 1951 to 1958 and also served a period as President of the Institution of Engineers (India) from 1954 to 1956.

Although Bill Williams had the proportions of a heavyweight champion, he had the mildest of dispositions, gilded with a rare sense of humour. On one occasion in Roorkee, he sent a Corps elephant to carry an officer and his new bride to dinner. They went via the Mess to the bungalow of another couple and it was not realized by them until much later in the evening that the circuitous route and the means of conveyance were entirely unnecessary as their hosts lived next door.

One of his favourite pastimes was bird-watching, which perhaps speaks eloquently of the nature of his temperament. He was also a keen mountaineer and in 1952 led an Indian Engineer Himalayan Expedition that so nearly reached the summit of Kamet (25,447ft). By contrast, he sponsored the Society for the welfare of backward children in New Delhi.

Williams was a man calm in manner, impressive in speech and spotless in character. He stood out as a fine example for any young officer to follow and was loved and respected by all those whose lives he affected. He was skilful in getting people to arrive at a conclusion as to what should be done, conclusions which they found very similar to his own. With much of the learning and the retentive memory of a scholar, it was not wise in his presence to lay down the law on any subject for he was disconcertingly likely to have read more, thought more and remembered more on the same subject!

Bill Williams, who never married, fell in love with India from his very first day in the country. He kept returning to India for mental and spiritual nourishment to the very end, till, on the soil he loved so much, he breathed his last on 17th October, 1971, at Mussoorie, at the age of 74. He was buried with full military honours in his beloved Roorkee. He was one of those rare people who could be loved, trusted and accepted by anyone, any country, any government. His name is still revered in the Bengal Sappers and his grave honoured by visitors of all ages and creeds to that quiet corner of the cantonment of Roorkee. Nobody was ever more worthy than Bill Williams to be a Knight of the British Empire. In the words of the well known All India Radio announcer, Melville de Mellow, who was one of his students at the Indian Military Academy in 1933, "Roorkee was his Shantiniketan and his Sevagram – and finally his Samadhi", which translates, rather inadequately, from the poetic Hindi as being his "home from home, the heart of his selfless service and his final resting place".

**LIEUTENANT GENERAL SIR CLARENCE BIRD**
**KCIE CB DSO**
**(1885 – 1986)**

BIRD was born in February 1885, went to school at Cheltenham, was commissioned into the Royal Engineers in 1904 and, after a short spell in Works Services, joined the Bengal Sappers at

Roorkee in 1909. He commanded a Section in 4 Field Company there, and at Rawalpindi and in Chitral. His impressive photographs of Chitral are now in the Corps Library at Chatham. His company commander in 4 Field Company was Captain (later Colonel) A J G Bird who later preceded him as Commandant in Roorkee. To distinguish the two Birds, the Pathans of 4 Company nicknamed Clarence Bird "Chiriya" which is Pushtu for hawk, a nickname of which he was very proud.

When World War I began he was on leave in the UK but managed to rejoin his company while it was passing through the Suez Canal on its way to France as part of the Indian Expeditionary Force, arriving in October 1914. It was reported that in the fierce fighting near Givenchy in December, Lieutenant Bird was always to be found with his sappers where the danger was. 4 Field Company left France in 1915, but Bird stayed till 1917, apart from a spell of seven months recovering from wounds received at the second battle of Neuve Chapelle in March 1915. He was three times Mentioned in Despatches and won the DSO. He also attended the preliminary trials of the tank in the UK. His final appointment in France was as Brigade Major on the Chief Engineer's Staff, after which he returned to Roorkee to become Corps Adjutant, a post he held until 1921. During his time as Corps Adjutant he is particularly remembered for his helpfulness and the welcome he gave to new arrivals by meeting them personally, whatever time of day or night they arrived. This characteristic of courteous manners he retained throughout his long life.

A staff tour followed, as DAAG at Army Headquarters, and he then had a spell at the School of Military Engineering at Chatham, as a Brevet Lieutenant Colonel, until he returned to Roorkee as Commandant of the Bengal Sappers in 1930. Towards the end of 1932 the three Corps of Sappers and Miners in India were reorganized and Bird is most remembered for the tactful way in which he handled the sensitive problem of absorbing the disbanded Corps of Pioneers. He persuaded Army Headquarters to adopt a course which avoided any serious trouble over caste differences. Eventually, in 1933, the Jat Sikhs were allocated to the Bengal Sappers and the Mazhbi Sikhs to the Bombay Sappers. The Meo Mussalmans were satisfactorily absorbed and all went well. In November 1933 he returned to the UK and later became Chief Engineer, Aldershot Command in the rank of Colonel.

Chiriya Bird returned to India in 1939 as Engineer-in-Chief with the rank of Major General. During the period up to 1942 he laid the foundation of the vast expansion of the Indian Engineers from 10,000 volunteers in 1939 to 240,000 in 1945. Then, as Master General of Ordnance (India) for two years, he tackled the huge job of obtaining equipment for all the new units in the Indian Army, including Engineers. He was awarded the CB in 1940, was promoted to Lieutenant General in December 1941 and received the KCIE in 1943.

After his retirement from the Army in 1944, Bird stayed on in India for a further three years, holding various appointments in the Department of Food in the Government of India before returning to the UK to become Divisional Food Officer under the Ministry of Food. In 1948 he went to Africa as Chairman of the Rhodesian Railways, finally retiring in 1953 to live in Cape Town, returning eventually to England in 1961.

Music had been a life-long interest for Chiriya Bird, both as performer and listener. He was an outstanding violinist and played with various groups of instrumentalists as opportunities offered. It was small wonder that he took such a keen interest in the Corps Band.

Living to the age of 101, he became the Doyen of the Corps and was much admired for his physical ability and mental alertness in his old age. His handshake never became less than vigorous and he would accompany visitors to their cars to bid them farewell, no matter what the weather. Until her death in 1982, he had been greatly supported by his wife, Dorothy, who herself had been made an MBE and awarded the Kaiser-i-Hind medal for her welfare work in Roorkee and, in particular, the setting up of families' hospitals for the jawans (soldiers).

On his 100th birthday, he was visited by a delegation from the Corps, with messages from the Queen, the Chief Royal Engineer and all ranks of the Corps, with a unique First Day Cover specially prepared with stamps covering all the monarchs who had reigned during his 100 years. Chiriya Bird died on 30 July 1986, a man renowned as much for his personal qualities as for his abilities as a soldier and administrator.

### MAJOR GENERAL WILLIAM LIONEL DOUGLAS VEITCH CB CBE (1901 – 1969)

BILL Veitch was born in Dunbar in 1901, the son of a Church of Scotland Minister. He was educated at Edinburgh Academy and the Royal Military Academy, Woolwich, from where he was commissioned in 1921. After attending the usual Young Officer Course at the School of Military Engineering, Chatham, he was posted to the Bengal Sappers, arriving at Roorkee on 31 January 1924. He was to serve on the Indian subcontinent till his retirement in 1953. Most of his service between 1924 and 1946 was with the Bengal Sappers, with whom he served some 20 years, though he spent a period in 1931/1932 as Garrison Engineer on the Wana Road Project in Waziristan, where he was mentioned in despatches. He was again to serve in operations in the NWFP as OC of 5 Field Company in 1937, where he was once more mentioned in despatches and awarded the OBE. During his service, amongst other appointments, he had served in Calcutta and Rawalpindi, as well as being Superintendent of Park in Roorkee.

The outbreak of war found him once more as Officer i/c Workshops before moving to be OC of the Training Battalion in 1940. In 1941 he left Roorkee to become CRE 19 Indian Division in Southern India but shortly after, in 1942, he became Commandant of No 1 Engineer Group at Lahore and responsible for the raising and initial training of specialist Engineer units such as Electrical and Mechanical units (E&M) and Workshop and Park Units. When Veitch arrived, the state of the group was chaotic and it was due to his administrative ability that order was restored. It was no surprise that, late in December 1943, be became Commandant of the Bengal Sappers and Miners at Roorkee and perhaps the most successful Commandant since Cunningham in World War I, who was faced with similar problems. He proved a glutton for work, seemed to need very little sleep while tackling the enormous task of keeping the Group up to strength, not only in Burma, Italy and later Greece, but in all the less active theatres where the Group served. With his great grasp of the language, he would get men to come to his bungalow and sit on the porch and gossip. He was also inclined to consult VCOs and even NCOs over the heads of their officers; this did not always go down well with the younger British officers but their command of the language was often sketchy in the extreme, especially in the early months after their arrival from England. They had difficulty in supervising the execution of their orders and could not effectively judge the morale of their men, detect grievances at an early stage and nip in the bud any developing trouble. Great efforts were made though by these officers to learn Urdu and many hours were spent with their munshis in efforts to gain proficiency in the language.

When peace came, Bill Veitch faced up to the problems of demobilisation, and the return to peace-time establishments, from the formidable total reached of some 25,000 Officers and Other Ranks. Being very close to the Other Ranks, he personally interviewed every jawan who returned to Roorkee (albeit very shortly) to see that every individual had some say in what happened to him. He relinquished his command late in 1946 after being awarded the CBE. It was not till January 1947 that he became a substantive Lieutenant Colonel.

The rest of his service was in what later became Pakistan where, after a short spell as Chief Engineer, Northern Command at Rawalpindi, he became successively Director of Works, Deputy Engineer-in-Chief and, in 1950, Engineer in Chief of the Pakistan Army, finally retiring due to ill health in 1953. He died in 1969. With his close friend Dick Connor, who was Commandant of the new Pakistan Engineer Centre at Sialkot, he did much to put the Army's Engineer Corps into a viable state.

Many people thought he modelled himself on the great administrators of the Punjab in the l9th century, most of whom, like him, never married. Some thought he was biased towards Muslims and that he put their interests before the other castes making up the Bengal Sappers, but this seems unlikely as he left Roorkee well before Partition took place, but there is no doubt that he served Pakistan well, as Williams served India.

### LIEUTENANT GENERAL J S DHILLON

JOGINDER Singh Dhillon (or Jogi Dhillon, as he is affectionately called), hails from the former princely State of Faridkot where his father was a Minister. A Sikh, he was the first Indian Commandant of the Bengal Sappers at Roorkee, and an excellent one he was too. He had first come to Roorkee in February 1936, after being commissioned from the Indian Military

Academy, which had opened in 1932. He was the Senior Under Officer there and earned the Sword of Honour and Gold Medal for being the best all round Cadet. Three years training in civil engineering at the Thomason College in Roorkee followed, and he first saw active service in Iraq when 5 Field Company, of which he was Second-in-Command, disembarked at Basra in May 1941. They remained there for some months and were given the task of replacing the bridge across the Shatt-el Arab, which had been burnt by the retreating troops of Rashid Ali who had overthrown the Iraqi Government and assumed the office of Prime Minister. By 14th August, the first of the new bridges, built on country barges, was open. In two sections, on either side of Coal Island, the bridge was then the second longest boat bridge in the world. Life in Southern Iraq in summer was likened to living in the heat of an oven but in September they moved north to the oilfields of Mosul and Kirkuk, a 500 mile convoy journey. That winter in Iraq was the coldest in living memory and the temperature went to the other extreme, with snow and up to 20 degrees of frost at night, but the Company was kept busy improving defences, building camps and maintaining roads.

Major Mangat Rai took over from Ian Loch as OC in April 1942 but by this time Captain Dhillon had moved to the Far East theatre of war and was soon commanding 75 Field Company in Burma. They were working on communications in the Imphal Plain and on the road from Imphal to Bishenpur. They were then employed on the Tamu Road where shingling and metalling continued steadily during the monsoon with the help of 2,000 coolies, thus keeping the road open for motor traffic.

In July 1943 Major Dhillon handed over 75 Field Company and he next saw active service in the Dutch East Indies when he was commanding 2 Field Company at Sourabaya in Java. They landed there in November 1945 and, though they saw no actual fighting, they were heavily involved in clearing debris, lifting mines, opening roads and railways, repairing bridges, restoring the sewage system and providing accommodation and water supply – in fact the usual engineer duties in devastated areas. They remained there, with a short foray to Batavia in December, until sailing for India in April 1946.

In September 1946, the Indian Interim Government assumed office and, within a month, took up the cause of nationalisation of the Armed Forces. Under the Chairmanship of Mr N Gopalaswamy Ayyengar, an Armed Forces Nationalisation Committee was formed which immediately set about seeking the views of Indian officers. This was a chance for the Indian Engineers to highlight their officer problems and Major J S Dhillon was amongst those who gave evidence. Jogindar Singh Dhillon's next appointment, on promotion to Lieutenant Colonel, was as Staff Officer (Organisations) in the Engineer-in-Chief's Branch at New Delhi where he was intimately involved in the problems and aspirations of the Corps of Engineers, including the introduction of a "Corps Day" to be celebrated on 28th January every year. It was thus a natural progression for him to take over as Commandant at Roorkee in February 1948, on promotion to Colonel, where he immediately brought a feeling of stability to a still demoralized Centre after the turmoil of Partition. He reorganized all the many aspects of training, improved the standard of fitness, turn out and discipline, and encouraged sport and athletics. Everything possible was also done to improve the troops' living conditions and particular attention was paid to family welfare, a field where Mrs Dhillon played a particularly prominent part. The first Independence Day was celebrated in style on 15th August, followed by Diwali, with all the proper pomp and ceremony worthy of the occasion and the Quarter Master General taking the salute at a Ceremonial Parade. A few weeks later, there was a further Ceremonial Parade, under the command of Colonel Dhillon to celebrate the restoration of Roorkee after the ravages of the previous year. Jawahal Nehru, the Prime Minister, took the salute and was so impressed that he asked Colonel Dhillon to command the first Republic Day Parade in Delhi.

Colonel Dhillon undoubtedly made his mark on Roorkee, galvanising the Centre on every front, so it came as no surprise when his tenure was shortened and he was given command of 161 Infantry Brigade in the Uri Sector in Kashmir, and promoted to Brigadier. He then commanded 82 Infantry Brigade in Rajasthan to integrate various State Force units into the Indian Army. In 1953 he became Director of

Technical Development at Army Headquarters, followed by further promotion and appointment as Director of Weapons and Equipment, where he introduced the concept of the Technical Staff Officer in the Army, with their training being carried out at the Institute of Armament Studies in the School of Military Engineering at Kirkee. Major General Dhillon attended the 1959 course at the Imperial Defence College in London and then went on to command 26 Infantry Division before becoming Deputy Chief of the General Staff.

By 1965 Dhillon was a Lieutenant General commanding XI Corps in the Punjab. In the Indo-Pakistan Conflict that summer, XI Corps was ordered to launch a diversionary offensive against Pakistan to take the pressure off Indian formations in Kashmir. This was launched on the axis Amritsar-Lahore and fierce fighting took place until the cease-fire on 23rd September, by which time Pakistan had lost a large number of their newly acquired Patton tanks. For his distinguished services, he was awarded the honour of Padma Bushan.

*In the following August, Lieutenant General Dhillon became Army Commander, Central Command and held this post until August 1970 when he retired. He had been made Colonel Commandant of the Bengal Sappers in January 1967 and retained the appointment until November 1976. He now lives in New Delhi and is Patron of the Bengal Sapper Officers Association in India.*

Bengal Engineer officers in Northern India c1870 including (centre front row) Lt Gen the Lord Napier of Magdala and (third from right, front row) Maj Gen Sir Henry Durand.

# The ChAVRE Story

CAPTAIN D CLEGG MBE

*David Clegg joined the Corps in 1963. On completion of his training he joined 26 Armoured Engineer Squadron and thus began a long affiliation extending to the present day. His service with armour has taken him to Northern Ireland including Operation* Motorman, *Sardinia and Saudi Arabia. In 1983-84, he served a tour as QMSI at the RE Wing of the RAC Centre, Bovington where he was the innovator in the design and development of the prototype Chieftain AVRE. He was promoted to WO1 in 1985 and served as SMI of 32 Armoured Engineer Regiment. On commissioning in 1987, he remained with the regiment as Technical Adjutant. On Operation* Granby, *he was appointed Technical Adjutant to 1 (UK) Armoured Division. On his return from the Gulf, his military service was abruptly terminated by compulsory redundancy, but he remained with armour, taking up the post of Assistant Senior Instructor at the RE Wing Bovington as a Retired Officer. He was awarded the MBE in the Birthday Honours, 1987.*

"THIS is the largest capability improvement project the Corps has undertaken since 1945" – *Maj Gen CJ Rougier CB, EinC(A).*

## INTRODUCTION

DURING the mid-seventies, it was apparent that many bridge sites required Class 60 trackway, either to maintain them, or to create a crossing site by laying trackway on the home and far banks. Most sites required the services of two *Centurion* AVREs which, very often, were just not available. A method was then developed using one, which involved dragging a roll as a mat to the home bank, and then laying a roll from the fascine cradle on the far bank. This led to the suggestion of the development of a multi-roll dispenser armoured vehicle.

## USE OF A CHIEFTAIN HULL

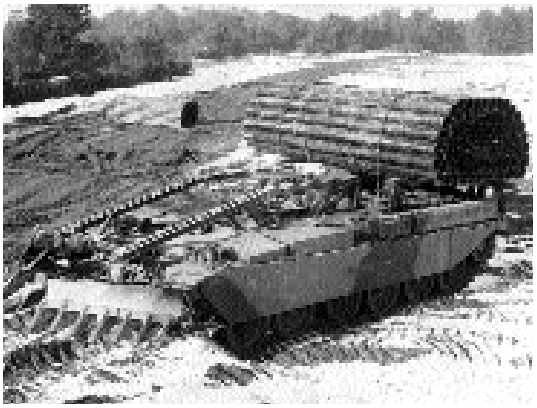
IN 1984, the Royal Armoured Corps was starting to use *Challenger* 1 MBTs, whilst at the RE Wing, we developed a collapsible fascine cradle for the *Centurion* 105 mm AVRE which allowed the main armament to be fired over the front of the vehicle without any restriction. A great idea, but it just highlighted the fact that as in the past, the Corps was two generations of heavy "A" vehicles behind the RAC.

The RAC Centre training vehicles at that time included two *Chieftain* AVLB prototypes (hulls with no superstructure). These were looked at with a view to developing the idea of a Class 60 roll-dispensing vehicle. The new plastic pipe fascines, which only weighed in at 2.5 tonnes, would also be able to be carried.

The idea was first demonstrated using a small plastic model which was then developed into a full size wooden mock-up on one of the *Chieftain* hulls. It was presented as a concept to the CO of 32 Armd Engr Regt, Lt Col P J Mackie MBE, whilst on a visit to Bovington. With complete support from the SI of the RE Wing, Maj David Holtby, a full working prototype using cut down Bailey panels was demonstrated in late 1984. The demonstration showed that two fascines could be laid either as singles or together, with a Class 60 mat laid from the rear and dragged over the fascine(s) just laid from the front of the vehicle. The load platform, known as the hamper, could also carry stores in the form of four Giant Viper boxes.

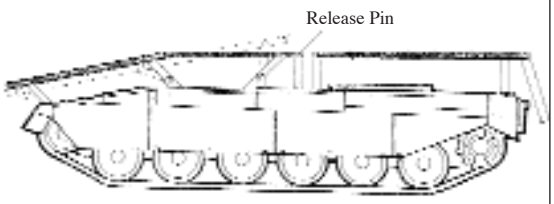
## THE TRIAL MOVES TO BAOR

LT Col Mackie returned to Munsterlager keen to demonstrate the concept of a Chieftain AVRE to the CRE and Divisional Headquarters. A turret-



Bovington Concept Demonstrator

1. The hamper in the travelling position is shown shaded.
2. With release pins removed, the hamper hinges forward, thus raising the rear and allowing the second fascine to slide off the vehicle. This action is caused by applying the vehicle main brakes, to jerk the hamper forward.




Bovington Concept Demonstrator – The idea.

less Chieftain MBT was acquired from the Berlin Brigade, the steelwork was stripped from the RAC Centre vehicle and shipped to Germany and the vehicle re-created ready for another demonstration. The audience ranged from sapper crewmen, to regimental, brigade and divisional staff, employees of Vickers Defence Systems and The Right Honourable D Mellow MP. The demonstration worked – BAOR was convinced the project was worth pursuing and a budget and resources were allocated.

### PRODUCTION STARTS

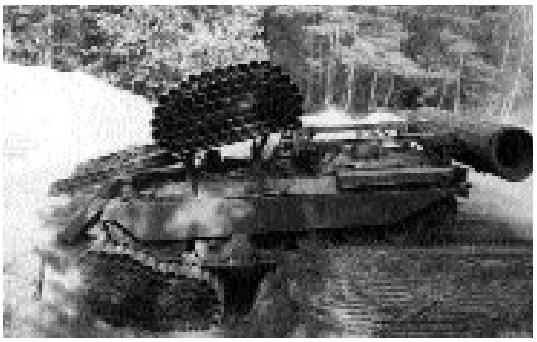
21 ENGINEER Base Workshop at Willich was given the task of producing 12 *Chieftain* AVREs based upon the concept demonstrator. The work however started at 38 Central Workshop at Chilwell where another turretless *Chieftain* MBT was made available to install and itemize all the components that would be required to convert an MBT into an AVRE. This included all the electrical and radio items, commander's seat and the cupola. Other items had to be acquired, manufactured or locally purchased. Once completed, the hull was shipped to Willich as the sealed pattern, and production started on the others. By this time, the required total had risen from 12 to 17. The first vehicle took six months to produce and it was then sent off to 32 Armd Engr Regt for trials. The Corps was very keen to develop the "Close Support" concept so nine AVREs and nine AVLBs were given to 23 Engr Regt for trials which were to last for two years. In the meantime, two extra *Chieftain* AVREs had been ordered. They were built by 23 Base Workshop REME and one went to BATUS with the other being retained by Vickers Defence Systems as a reference vehicle.

The BAOR Demonstrator.

### THE CONVERSION

The main tasks of the conversion were:

- New roof to replace the turret to form the crew compartment.
- Install commander's cupola and crew hatch.
- Install optics, with wash/wipe for the commander's sights.
- Install a complete hydraulic system for the winch and hamper, with controls for both in the driver's compartment.
- Take the drive from the main engine for the hydraulic pump, including an electrical clutch to enable the hydraulic drive train to be engaged and disengaged with the main engine running.
- Design and install a new radio fit including batteries.
- Design and install the crew compartment for three men with seats, stowage for personal kit, weapons, water and ammunition.



No 1 Fascine is Launched.

- Produce a Complete Equipment Schedule (CES) listing each and every item.
- Produce three-dimensional codified diagrams for easy identification of spares by the crew.
- Produce jigs in order that the production of the hampers and other locally produced items would be simplified, and of course that that items thus produced would be identical.
- Produce complete working drawings of the conversion.

The *Willich* AVREs were originally intended to remain in service for just one year. In the event, this stretched to eight years; they thus saw service in BAOR, UK, BATUS and the Gulf War. They were replaced by the Vickers version in 1994.

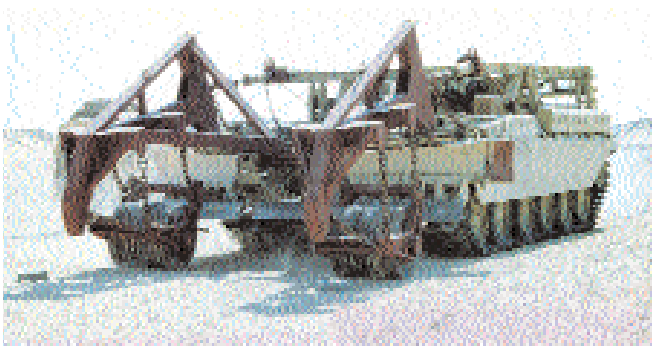
The Close Support trial, as everyone now knows was a success and in the end, six regiments were converted.

### Notes from the Gulf

**Mine Roller Set:** A *Willich* AVRE in the Gulf was fitted with a mine roller set, although it was never used in anger.

**Mineplough:** The mineplough required modification to work in loose sand. The blade tended to penetrate too deeply, resulting in the mines flowing with the sand over and around the plough. The modifications required were:

- Increase the skid bearing surface to improve depth control.
- Extend the mould boards to push the outer burns away from the AVRE, thus preventing mines sliding into the path of following vehicles.
- Extending the upper mould board fingers to sieve the sand for mines.
- Fit a set of inner tines to prevent mines flowing through the centre of the plough.



*Willich* AVRE with Mine Rollers – Gulf War.

### Capabilities

The *Chieftain* AVRE has exceeded all expectations. Its capabilities with a mechanical hydraulic drive train operating a 10 tonne winch and hydraulically operated hamper are as follows:

- Can carry three fascines or six rolls of Class 60 trackway or a combination of both.
- Loading fascines and Class 60 trackway from the front and rear, loading and carrying a No 9 tank bridge.
- May be fitted with either the UK Mineplough or a 'dozer blade.
- Can tow and fire the Giant Viper.
- Can tow the AVRE Trailer.
- Can lay up two fascines, singly or in tandem.
- Can lay up to three rolls of Class 60 trackway, two from the front, one from the rear.
- Can lay a combination fascine and Class 60 mat.
- Can carry a No 9 tank bridge for resupply purposes.

### Conclusions

At the start of the project, it was realized that the conversion of an MBT to AVRE would involve much more than slapping on a bit of steelwork to carry the engineer equipment. In all projects, the user tends to blame the design authority and the manufacturer for faults with the systems. In the case of the *Chieftain* AVRE, the Corps was the design authority, the manufacturer and the user and therefore had to be ready for criticism from all corners! In today's financially constrained world, one may question if the Corps within its own resources still has the capability of achieving what 21 Engr Base Wksp did with the *Willich* AVRE. If there is a lesson to be learned from that project, it is that it is vital to involve the experienced user throughout the design, manufacture, production and delivery stages.

# A Sapper's Diary
# South Africa 1900

5854 SAPPER J SMEATON RE(V)

*The following Journal was written by 5854 Sapper John Smeaton of the 1st Newcastle-on-Tyne RE Volunteers, attached to 12th Coy RE in the 11th Infantry Division Field Forces, South Africa. It was found by Mr R M Smith of Morpeth, Northumberland, when dealing with the paperwork of his step-father, William Smeaton, John Smeaton's father. It is remarkably detailed for a diary kept by a junior soldier at that time. Although he could not write every day, he kept a track of events. It shows a soldier's view and highlights some things that are perhaps not so clear in other accounts. One of these is the amount of marching which was done, and another that the men were often reviewed at a march-past by their senior commanders after operations. – Ed.*

**SATURDAY 10TH MARCH 1900.**

ARRIVED at dock at Southampton at 10.30 and after piling our kit on board the *Tintagel Castle*, we had breakfast at the "Absent Minded Beggar" stall which is kept up by The *Daily Mail* Fund. The signal was blown signifying that all was nearly ready for leaving. The passengers and troops were making their way on board and friends were saying their last goodbyes when the bell was rung and gangways were drawn up and the vessel cleared the quay. Among the friends to bid us farewell was Mr Pollard, our commanding officer's father and also Captain Sorsbie who accompanied us from Chatham. They stood on the wharf waving us farewell until we faded from sight of each other. At 4.00 pm we were full steam ahead and well on our way down the Solent. We then retired to the troop deck to have dinner and tea after which we came on deck and watched the shores of Old England receding from sight until they finally disappeared, who knows for how long? As the night was chilly, and being new to the game, we went below anxious to try out the sleeping capabilities of the hammocks. We drew them at about 8.00 pm and had them slung up and we turned in and on the average enjoyed a good nights sleep after the excitement of the previous forty-eight hours.

**SUNDAY 11TH MARCH 1900.**

REVEILLE on a troopship is at 5.30 am so next morning we had to rise and stow hammocks before 6.00 am. Breakfast was at 7.30 am and consisted of porridge, fish, marmalade, bread and butter and coffee. It being Sunday, no work was done. We entered the Bay of Biscay about noon and had dinner at 12.30 which consisted of three courses, soup, meat and potatoes and pudding with stewed fruits. As we travelled southwards, the weather became very fine and summer-like, quite a contrast to what we had just a day before. At 4.30 pm, tea was served with cold meat or fish, pickles, preserves and bread and butter. There was no stint of any article of food and so it continued throughout the voyage. A plan of diet was drawn up so that the menu was changed each day. At 7.00 pm, supper was put on the tables for those that cared for it, which consisted of cabin biscuits and cheese. The canteen was open for an hour at midday and again at 7.00 pm for the sale of beer and mineral waters. Everybody had to retire at 9.30 as lights went out at 10.00 pm.

And so the days passed, doing physical drill before breakfast and engineering lectures during the morning. Sometimes in the afternoons, running exercise was indulged in. Every morning at 10.30, the troop decks and utensils were inspected by Col Dalrymple-Hay the OC, Capt Bartelot the Adjutant, the captain of the ship, Capt Harris and the medical officer in charge, Dr McLean.

**TUESDAY 13TH MARCH 1900.**

THE members of the section were inoculated by the ship's doctor, and that night and most of the next day was spent in bed in great pain. On Thursday we were up and about but still very weak. Land was sighted about breakfast time and there was great excitement as we were going to call for coal at Las Palmas. We came to anchor in the bay at 12.30 pm and were immedi-

ately surrounded by bumboats loaded with fruits, tobacco, cigars, etc. All the troops on board crowded to the sides and bargained with the natives for the purchase of their wares. The native boys were rowing about in small boats asking for coppers to be thrown in. As soon as a penny touched the water, the boy sprang over the side of the boat and seized the penny before it had time to go far down and then scrambled back into the boat again. The British man-of-war the *Arrogant* was lying in the harbour and during the afternoon the sailors manned the boats and pulled round our ship and indulged in cheering us, which we returned, giving them a good cheer as they rowed back to their ship. The troopship Denton Grange was stranded, it having gone ashore while loaded with traction engines and horses and troops for the front. We left Las Palmas at 8.00 pm and the gunboat signalled "Pleasant journey, safe return". Just outside the harbour we passed the troopship *Fifeshire* having 310 horses on board bound for the Cape.

**FRIDAY 16TH MARCH 1900.**

WE were supplied with oranges and bananas for dinner and paraded at 2.30 in full marching order. Flying fish and porpoises were now seen in plenty. Sports were held on Saturday and kept on until dusk, the weather was now quite tropical and on Sunday we sighted a steamer, the first for three days. It turned out to be the Union Mail Steamer *Walter Scott*, the boat that had the honour of carrying our first letters to England! We had physical and semaphore signalling lessons on the Monday. Shark was seen during the afternoon and also some jelly fish. A concert was held on deck in the evening. On the Tuesday we had running exercise (temp 90 in the shade) and then on the next day, March 21st, we crossed the equator. The Maxim gun was practising firing at 2500 yards and at 8.00 pm, King Neptune came on board with his retinue and fireworks were set off.

**THURSDAY 22ND MARCH 1900.**

THE whole ceremony was gone through, shaving and baptizing in the big canvas bath they got hold of. Next day, a ship passed in sight. Parade in the afternoon for running distance 1½ miles. On Sat March 24th, one of the Somerset L.I. was buried at 8.00 am and the bugler blew the last post as the body went over the side. Had shooting practice at a floating target during the morning. Sunday got orders to parade in red uniforms but most of us had done away with them, having thrown them overboard. Church parade 10.00 am. We passed the troopship *Norman*. Sports were held next day (26th) and another ship passed on the 27th. On Friday 30th, the sea was a bit rough. At meal times we had a trying time with the crockery sliding about the tables. Parade in full marching order for inspection by the Colonel and in the evening we passed the Castle liner *Pembroke*.

**SATURDAY 31ST MARCH 1900.**

WE sighted Table Mountain and dropped anchor in the Bay at 7.00 am. We lay in the bay until noon on the Sunday when we then went into the harbour and disembarked at 3.00 pm. We then had to embark on the troopship *Urmston Grange* for East London. We had tea on the *Tintagel Castle* and then left it for good. We slept on the *U Grange* that night and in the morning it was discovered that the bunker coal was on fire. We had remove all our kit on to the *Lake Erie*. We had our first meal on board the *Urmston* on the Monday and it was a change for the worse, after being on board one of the best troopships to be put on one of the worst. We were on this ship for eighteen days and during the greater part of that time, the food that we were served with was unfit for eating, biscuits that had been in store since 1884 and the meat – it was sickening to see the condition it was in before being cooked. In the afternoon we had a march through Cape Town. A very nice town with electric trams in full working order and lots of hansom cabs, no four wheelers to be seen. There are also a great many rickshaws drawn by Zulus who adorn themselves with pairs of horns and feathers round their heads. It is marvellous the pace these men travel with their fares along the street. We returned to dock at about 5.00 pm being fairly tired out. It was a bit strange walking through the streets after having been three weeks on board ship.

**TUESDAY 8TH APRIL 1900.**

WE went on board the *Urmston Grange* again. We passed the morning fishing and at 3.00 pm set sail for East London. On guard at night for the first time since leaving England. Very dark and sea a little rough. On the Wednesday morning, the guard was turned out to arrest two firemen who refused to do their duty. They were made prisoners but the captain released them on their promising to work and not say anything

more about it during the voyage. The weather was thick and foggy on the Thursday, so the speed was reduced for safety, but we arrived safely at Port Elizabeth at 2.00 am on Friday where four sections of engineers left us to go to Bloemfontein. In the afternoon, we had to make khaki covers for our canteens and greatcoats. Our officer supplied us with fishing lines but we had no luck. On the Saturday afternoon we had a march round about Port Elizabeth and saw some new sights. We passed a very large native location outside the town, also a large remount depot in charge of 4th and 11th Hussars. Some very fine buildings in the town. Arrived on board again at 5.15 pm. All cargoes and troops etc. have to be landed by barges as there is no wharf or dock accommodation for large vessels. On the Sunday, the troopship *Brittanic* arrived in the Bay with the Scots Guards on board. We left Algoa Bay at 6.l5 that evening night and arrived off East London at l2.30 pm the next day, but at 3.10 we again moved off on our way to Durban. On the Tuesday we had to parade in full marching order and on Wednesday April 11th, we dropped anchor at Durban at 3.30 pm. We lay in the harbour for a week.

**EASTER SUNDAY, 15TH APRIL 1900.**

THERE was a bit of a disturbance on board the ship. We had been three Sundays on board this ship and had been served out with biscuits. It would not have been bad if they had been in any way palatable, but the things were almost mouldy and so hard that they would not soften if soaked, so the men made a complaint. They could get no satisfaction and did not know what to do. Some of the more daring spirits got hold of several boxes of biscuits and threw them into the sea. The cruiser HMS *Theios* passed us and lay at anchor in the Bay. On the Monday we went into the dock and lay alongside the troopships *Lunda* and *British Prince*. The hospital ship *Main* was lying here also. We had a route march through the town of Durban and were well treated by the inhabitants, who gave us a good supply of fruit. During the day, the TLH embarked on board. Most of the men had either been through the siege of Ladysmith or at the relief of it so that we were entertained to some stirring tales of the war. Left Durban at 4.l5 pm for East London. On the Wednesday (April 18th), it rained, this was the first bad weather we went through. We arrived at East London at 8.00 pm. We went into the docks the next morning and prepared to disembark. We left East London at 1.15 pm on the train bound for the front. We were supplied with tea etc. at several stations *en-route* and on Friday morning, had breakfast at Fort Jackson. We passed Strombury during the day and were much struck at the strength of the place should it be held by a force of men. We reached Bethulie Bridge on the Saturday morning and camped on the bank of the Orange River. This place is the spot where the British first occupied the enemy's territory. There was an ostrich farm close to our camp and the birds were often seen walking round. The Railway Pioneer Regiment was stationed here, putting up a temporary bridge as the railway bridge had been destroyed by the Boers, five spans had been destroyed.

**TUESDAY 24TH APRIL 1900.**

THE section had a march to the town of Bethulie in the Orange Free State. The next day a swarm of locusts passed the camp, millions of them in the air and covering the ground just like a snowstorm. While there I met a chap who had been in the 1st NRE and had left in l888 (Robinson F Coy). Also met a corporal of the Life Guards who belongs to the Scotswood Road.

**MONDAY 30TH APRIL 1900.**

RECEIVED orders to leave for Bloemfontein to join the 12th Coy RE in Lord Roberts' march to Pretoria. Arrived there at 5.00 pm on May 1st to find that they had left that morning. We went to Karee Siding next day and joined the company in the afternoon. The column started out that night, but we were left to follow in the morning. Before daybreak we were up and had breakfast and started out in the dim light of dawn, our comrades assuring us that if we had not been under fire before, we would have our baptism before we went much further, and that we would get used to it. After a few miles we came up with the rest of the company and found that the major had his horse shot by the Boer outpost. We found the men busy on a drift. When they had finished we went on and had breakfast near a farm. This farm was burned down on account of the Boers firing on our men from it although the white flag was flying above it. All the cattle on the farm were commandeered and Mr Pollard got a pony. After the troops had finished breakfast we set out in extended order. It is hard to describe the feeling as we moved off. We had not gone far when we

**Field Marshal Lord Kitchener**
This portrait was painted on his return from South Africa. He was initially Chief of Staff to Lord Roberts and succeeded him as Commander-in Chief in the rank of Lieutenant General in November 1900. At the end of the war, he was promoted to General and created a Viscount, taking as one of his titles Viscount Kitchener of The Vaal, (one of the rivers bridged by Spr Smeaton's unit in May 1900).

found that the enemy held a long ridge of kopjes that extended east and west of the town of Brandfort. The Boers opened fire on our advance guard and the naval and garrison guns came and got into action followed by the Royal Artillery. The Mounted Infantry advanced under cover of the artillery fire and the Canadians attacked the centre position and drove the enemy off. The Boers retired and our troops entered the town unopposed. It had been a hard day for our fellows having marched about sixteen miles and not being used to it and we were not sorry when we reached the place where we were to bivouac. We stopped at Brandfort on the Friday and learnt something of our commanders. The CRE of the Division was Colonel Foley and Major Graham Thomson commanded the company under whom was Captain Schreiber, also Lieutenants Craven, White and Nation, also our officer, Lieutenant Pollard. The company was attached to the 11th Division under General Pole-Carew, the Guards Brigade was in charge of General Jones and the 18th Brigade under General Stevenson.

**SATURDAY 5TH MAY 1900.**

WE again moved on and encountered the enemy on the banks of the Vel River. The Boers kept at it until dark and the firing ceased. The next morning the coy had to advance to make the river passable. When our advance posts went out they found that the enemy's rearguard still occupied the banks of the river which afforded good cover amongst the trees. The Boers were driven out and in their hurry left thousands of rounds of small arms ammunition. We worked on the drift all day making the road passable, and then at night we moved on to Smaldeel. We camped here for two days repairing two bridges that had been destroyed by the Boers.

**WEDNESDAY 9TH MAY 1900.**

WE again advanced and marched seventeen miles, and then on the Thursday we marched on to the Zand River where we had to make a road across the river. While we were busy getting the guns through the drift, the enemy were perceived trying to get a gun into position to shell the drift. One of our Naval l2-pounders soon drove them off and then the cavalry got among them, completely routing them. As we did not get all the convoy through that day, we camped on the south side of the river at Virginia Road. On Friday we had to catch up the column – to do so we had to march about 25 miles to a camp four miles north of Holfontein. On Saturday May 12th we marched about 17 miles into Kronstad. We marched past and were inspected by Lord Roberts and Staff. Sunday we rested and then on Monday started to make a railway deviation. We remained at Kronstad until May 22nd, working from daylight till dark every day. Whilst here we were dished out with flour and had to make our bread without any leaven. We were put on short rations and it was some queer tricks that we were up to so that we could get something for the larder!

**TUESDAY 22ND MAY 1900.**

WE marched out of Kronstad and did about 23 miles. Next day we went on to Rhenoster River and worked on the drift all that day and up till

about 3.00 pm on Thursday May 24th. We went on and we had about 14 miles to go, but as it soon set in dark, we had to make the best of our way. We had not gone far when a light was seen and so we made for it thinking it was the camp fires, but as we drew near we found it to be a veldt fire. When we got through it we lost our bearings but we struck out and by a lucky chance came on the railway and so we took to the track and after a few miles tramp came across the camp. It was midnight before we got our tea and it was a cold miserable night to be without blankets, but we got them at last and then turned in until daylight. We marched about 13 miles on Friday and then on Saturday we went on and camped at Viljoens Drift about four miles from the Vaal.

**SUNDAY 27TH MAY 1900.**

WE crossed the Vaal by means of a floating bridge worked by manual power. We worked here assisting to get the troops over and then went on to camp at Vereeningen. We set out next morning and marched 22 miles and camped south of Klip River. On the Tuesday, we came to Klip Drift and found that one o our Naval 4.7 guns had broken through the bridge. We had to clear away the debris and get the gun out in a hurry as our column was in touch with the enemy. After clearing the gun, we made the river fordable and then erected a bridge for the lighter transport. Twelve of our fellows were left to take down the bridge and follow on with it after the convoy belonging to the division had got through. Just as we were dismantling it, an officer rode up with orders to leave it until the 7th Div had crossed. So there we had to stay without rations. We collected firewood and made a fire and bivouacked around it, but during the night, a wagon went over the side of the bridge. We tried to get it out but in vain so we let it stay until daylight when it was unloaded and dragged out. At about 3.00 am we were alarmed by the officer of the 9th Coy who sent us out on outpost as one of their sentries had been shot. We were out till daylight but failed to see any signs of them. At about 9.00 am we left Klip River and joined the company at Germiston where the Div had been resting for a day.

**THURSDAY 31ST MAY 1900.**

WE went through Johannesburg and were inspected by Lord Roberts and camped five miles north of the town. We rested there on the Friday and Saturday and were served out with full rations, the first time since leaving Kronstad.

**SUNDAY 3RD JUNE 1900.**

WE marched 13 miles and then on Monday, we came within range of Pretoria at about 11.00 am and the fighting was kept up until dark. We bivouacked five miles from the town and next morning marched into Pretoria unopposed, the Boers having hurriedly left the forts during the night. We rested near the station for a few hours and at 3.00 pm we marched past Lord Roberts in Church Square and then camped near the race course where the Boers had held a great many of our prisoners. We stayed here until June 7th when we received orders to go to Silverton, about ten miles east of Pretoria. A telegram of congratulation from HM The Queen was read out on the 9th and on the 10th, just after the church parade, the Boers started to shell our camp. They kept it up all day but their range was short so very little harm was done. We got orders that night that we had to move off at 2.00 am so we up soon and got packed up. Next morning we set out with the Naval Brigade with their guns to take up a position on Savarty Kop, where we arrived at daybreak after having floundered in the ditches and among the barbed wire for an hour. Very little firing was done until late in the afternoon and so we camped on the kopje that night. Next morning we split up, half the coy remaining with the guns, the rest went on with The Guards Brigade who held the centre position. But we did not get far as the enemy were in a strong position and it was late in the afternoon before we could advance under the cover of a battery of the Royal Hussars. The coy reached the cover of the kopje and were there halted. The firing was kept up long after sunset and right through the night. The artillery kept dropping shells where they supposed the enemy were trying to get away, but it was of no avail as when daylight came it was found that they had left their positions. We camped on Diamond Hill until Thursday when we came back towards Pretoria and camped at Hazledene, about 14 miles from Pretoria.

**FRIDAY 15TH JUNE 1900.**

WE marched into Pretoria and camped at Sunniside. We stayed for a week and then went on to Hazledene again. On the Saturday, we went to Donker Hoek where we encamped from June 23rd until July 24th making roads, huts, etc. (J.L.

went to hospital June 27th and died in Pretoria Hospital on July 23rd of enteric). Left Donker Hock on July 24th and camped that night at Bronkerspruit where the Rifle Brigade were cut up in 1881. We moved on next morning and camped that night three miles from Balmoral. It came on raining before we got into camp and kept on nearly all night. On Friday went to Brugspruit. Saturday and Sunday we were engaged in making up railway trucks to carry supplies to General French's column at Middlebury.

**MONDAY 30TH JULY 1900.**

WENT on to Groot Olifants River with two battalions of Guards. We camped in different spots here until August 20th when we went to join the coy at Middleburg.

**WEDNESDAY 22ND AUGUST 1900.**

WE went on the Pan and then next day arrived at Wonderfontein. Left next morning for Belfast. Arrived within sight of the town shortly after noon and found the Boers had a strong position. They commenced to shell us and our guns replied and the firing was kept up until dark.

**SATURDAY 25TH AUGUST 1900.**

THE fighting was kept up and the coy were sent out to dig trenches under heavy fire. On the Sunday we had to build a stone wall. On the Monday, the troops advanced but only got two miles as the Boers still made a good stand, but later in the day they were driven from their positions at the point of the bayonet.

**TUESDAY 28TH AUGUST 1900.**

THE column advanced on to Helvetia Farm and stopped for the night and next day we passed through the Drakenburgs on to Waterval Onder. Having been troubled with snipers since leaving Belfast, we camped above the town and went down the mountain side repairing the road which was very steep and about two miles long. The artillery searched the opposite side of the valley for snipers, but they held out for two days.

**FRIDAY 31ST AUGUST 1900.**

PRISONERS came in from Nooitgedacht having been released. A hospital convoy was sent to fetch the sick and wounded prisoners in, but the Boers took all of them prisoners and kept the convoy. We worked on the road and built a bridge across the river and then on Monday 10th September, the general advance was begun. The roads now were in a bad condition and we had to make the road sound for a mile where it had been flooded by the river.

**WEDNESDAY 12TH SEPTEMBER 1900.**

WE arrived at Noritgedacht having had to repair almost all the road. Thursday we arrived at Godwan River. Friday we passed through Devil's Kantoor and then on Sunday we marched to Jamestown, near Barberton. On Monday we passed through very mountainous country and camped near Albion Gold Mines. Tuesday we crossed the river five times in our days march, passed Sheba and camped near Avora.

**WEDNESDAY 19TH SEPTEMBER 1900.**

WE marched off at 4.30 am and after having a lot of work on the road camped at Lanwes Creek at 4.00 pm. Had dinner at 8.00 pm, the first food since 4.00 am. Thursday we arrived at Kaapmuiden having had to cut our way through the bush. All the troops were now being served out with flour and other rations captured from the Boers, it being almost impossible for our supply wagons to follow up the column. On 21st September we left Kaapmuiden to march to Hector Spruit. We started at 5.00 am and as the road had to be cut almost all the way through the bush, we had to stop four miles short at 9.00 pm having marched 21 miles. On Saturday we went to work on a railway bridge that had been destroyed by the enemy. At 4.00 pm we left camp to go to Hector Spruit, marched 6 miles in the dark and camped on the banks of the Crocodile River.

**SUNDAY 23RD SEPTEMBER 1900.**

WE had to fill every available article with water as we had to march to Coomatie Point and there was no water on the way. We left Hector Spruit at 1.30 pm and with darkness setting in we stopped near Tenbosch at 9.00 pm. At daylight on Monday, we set off again and reached Coomatie Point at 10.00 am having been fourteen days since setting out from Waterval Onder and having to cut our way every day through the bush, or travelling over mountains. When we arrived there were plenty of provisions of all sorts to which we helped ourselves, but the heat was unbearable and that took the appetite away. When the enemy left, they destroyed hundreds of wagons and stores on the railway, but the tracks were covered with rolling stock, estimated 30 miles, a great deal of which lay on the Selatr

line. During our stay here we were engaged in clearing the rolling stock and had to do some plate-laying to get it out in quick time. We also had to make a road up the kopje on the border of the Portuguese territory. The frontier was patrolled by Portuguese soldiers. A section of the coy was sent to Hector Spruit to repair a water supply tank. After being there two days, the job was finished and we were on the platform to proceed to Koomatie when a collision occurred and one man was killed and another injured, both belonging to 12th Coy. We buried the deceased *(318 Dvr CH Pearce)* and next day went on to Koomatie where we stayed until 10th October when we received orders to mobilize at Pretoria for home.

Major Thompson *(later Bt Lt Col A G Thompson)* bade us goodbye and the men gave us a good send off. After five days weary travel in trucks we arrived at Pretoria (298 miles by rail), on Monday October 11th and were sent to join the 9th Coy under Major Jerome *(later Lt Col H J W Jerome CB)*. Six sections of volunteers were mobilized by General Wood *(Major General Sir Elliott Wood KCB)*, Engineer in Chief SA. He spoke on the work that had been done by the RE Volunteers in South Africa, and after giving us a bit of advice, he bade us goodbye and said that we should soon be on our way home. The section attended the Annexation Parade in Pretoria on the 25th October, and we were present at Prince Christian Victor's funeral, who was buried in Pretoria Cemetery on November 1st with full military honours.

We had been anxiously waiting for an order to proceed home, but were disappointed when we heard that the order had been cancelled and that no volunteers were to leave the country, so we were kept at it, working in the hospital and laying a water supply into all the camps around, and building huts for barracks etc.

We were in Pretoria until December 27th when we went to Trene to fit up a camp for Boer refugee families. We built stores, offices and huts etc. and put in a large water supply. We received orders at long last for home and on April, 16th 1901, we left Trene on the Cape Mail train, but we were stopped at Dedar for mobilizing. We got to Dedar on the 18th and were sent to join the 29th Coy RE. We had the pleasure of seeing many friends from the north, as we same across the Northumberland TT and also our own No 2 Section.

We left Dedar on the 20th, arrived at Cape Town on the 22nd and embarked on board the *Lake Erie* and we sailed on the 23rd April at 4.00 pm.

*During the war, the Volunteer Battalions of the Royal Engineers supplied fifteen sections, totalling 23 officers and 407 NCOs and men, which were attached to various field companies.*

*For his service, Spr John Smeaton was awarded The Queen's South Africa Medal with four clasps; Cape Colony, Orange Free State, Johannesburg and South Africa 1901. – Ed*

**The South Africa Bowl Centrepiece.**
This silver centrepiece was presented to the RE HQ Officer's Mess in Chatham by Maj Gen Sir Elliott Wood KCB who was Chief Engineer of the South Africa Field Force during Spr Smeaton's service. The figures round the base represent two Sappers in the field service dress of the time, which would have been worn by Spr Smeaton, and also two Boer soldiers. These represent a "Boerbrandwagte" or an outpost sentry in a laager, and a "Voortrekker", one of the original Afrikaaners who left Cape Colony and trekked northwards into the "promised land" and a new future.

# Andover Isn't Just a Quiet Backwater (or what the Engineer Systems Support Integrated Project Team can do for you)

MAJOR S G TENISON BSc(Eng) MSc

*Major Simon Tenison spent two and a half years in DDOR(Engr & NBC) before being given a chance to breath life into a new post as Chief of Staff in the soon-to-emerge Engineer Systems Support Integrated Project Team (ESS IPT) at Andover. That these were two legs of the Acquisition Stream in succession, therefore fitting perfectly, must surely have been an oversight on the part of RE MCM Div! Three thoroughly enjoyable and extremely busy years at Andover ended in September last year with a move to the Land Warfare School (not an obvious successor to Acquisition!). Here he fills his days by acting as Chief Instructor (until a real one can be found), for the new Battlegroup Battle Planning Course that begins this month (April 2003). This article is based on that which was published in* "Landscape" *(the ES(Land) House Journal), with modifications appropriate to a Corps readership.*

## Introduction

Have you ever wondered who is responsible for remedying faults identified in Equipment Failure Reports (EFR), designing modifications or managing equipment safety, amongst other key through-life Equipment Support (ES) functions? If you have or would like to find out more, read-on.

The tri-service Defence Logistics Organisation (DLO) was formed in Apr 00, bringing together the single service Equipment Support (ES) branches, to make ES more efficient and to eliminate wasteful duplication. Responsibility for land-based equipment rests with ES(Land), the primary output being provided by the eleven Integrated Project Teams (IPT) each managing various types of equipment. Engineer Regiments use equipment provided by most of the IPTs, in particular:

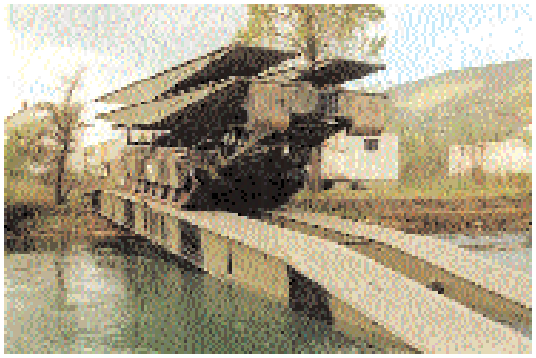
- Light Armoured Systems Support (LASS); CVR, 430 etc.
- Tank Systems Support (TSS); AVLB, AVRE.
- Combat Support Vehicles (CSV); B Vehicles.
- Combat Support Equipment (CSE); Explosive Ordnance Disposal (EOD) equipment, minefield marking systems, SA 80 etc.
- Engineer Systems Support (ESS); everything else!

This article describes the structure and responsibilities of the IPT as well as illustrating some of the equipment provided for the various zones of an operation. ESS IPT manages a huge array of equipment, valued at some £850M, for all three services, operating from the front line, through the logistic chain and support area to the Ports of Disembarkation (PODs). The team of about 18 military and 130 Civil Servants is based at Andover, Caversfield and Telford. Significantly and uniquely amongst ES (Land) IPTs, ESS has a Royal Engineer capbadge focus, both in terms of the military staff and its Customer 2 outlook. Although some of the equipment has tri-service, all-arms users, a significant proportion is used exclusively by RE.

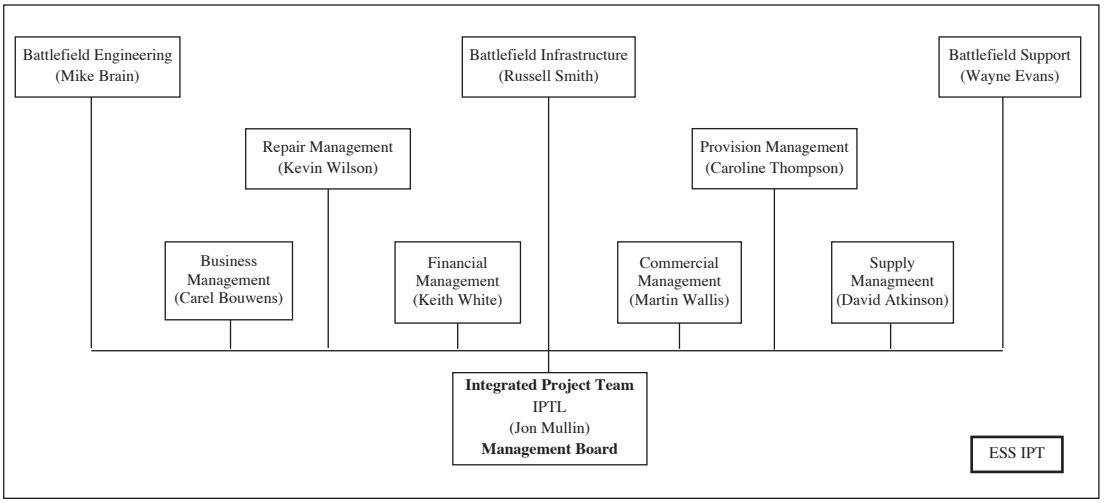
## Operations

It will not surprise readers to learn that like the Corps, the IPT supports all land-based operations, whether "heavy metal", light role, peace support, humanitarian etc. The current focus is on force sustainment, countermine, plant, fuel handling, water, power, Mechanical Handling Equipment

Light Wheeled Tractor on ADR duties in Kabul.



Chieftain AVLB with two No 12 bridges (BR90), Balkans.




Team Structure.

OP *Veritas* accommodation.

(MHE) and provision of construction materiel in Afghanistan, although the IPT is supporting most current operations with a variety of systems. At the time of writing (Sep 02) the most recent activity has been the provision of space heaters and dewatering pumps to assist with clearing up after the floods that hit Prague in Aug 02. ESS IPT equipment is used in the following areas:

**The Contact Battle.** Close Support Bridging for the 90's (BR90), fascines, trackway, Infantry Assault Bridge, Airfield Damage Repair equipment, PYTHON.

**The Indirect Fire Zone.** M3 Amphibious Bridge, Combat Engineer Tractor (CET) and SHIELDER minelayer, earth moving C vehicles, camouflage systems.

**Logistic Area.** General Support BR90, Logistic Support Bridge (LSB), power, fuel handling equipment, Mechanical Handling Equipment, cooksets.

**Ports of Disembarkation and Support Area.** Mechanical Handling Equipment, field accommodation.

### IPT Structure and Responsibilities

The IPT is organized as five, customer-facing output sections, three equipment sections (described below) with Repair and Provision Management being the other two. The Central Pillar, with a remit to enable the output sections to provide the most effective support to Customers, carries out business and operational planning as well as the finance and commercial functions. This is illustrated in the Team Structure diagram.

### Battlefield Support

**Field Accommodation.** A range of accommodation systems is available:

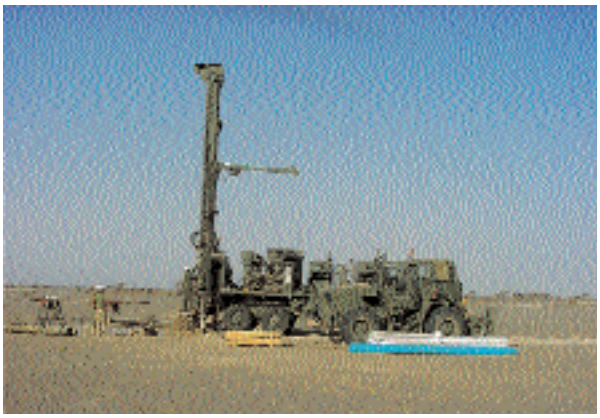
- basic GS tents
- the Interim Expeditionary Campaign Infrastructure (ECI) capability (with light, heat, air-conditioning, ablution units etc). This has been provided for operations in Kosovo, Sierra Leone, Macedonia, Oman and Afghanistan.
- Mosquito nets, cooksets, camp beds and other camp ancillaries.

**Camouflage Concealment and Deception.** This includes cam nets, decoys and camouflage systems for new equipment.

**Construction Resources.** The last twelve months have been particularly busy, with construction resources required to support Exercise *Saif Sareea II*, Operations *Veritas* and *Fingal*, as well as many other operations and exercises around the world. Stores for Interim ECI are also procured by this group, including Ecogrid, an open-celled interlocking plastic grid system for use as flooring within and between tents, water storage and water distribution equipment.

A recent innovation has been the introduction of "design and supply" contracts, used for procurement of two different steel towers: one for the RAF at Ali Al Salem the other for communications in Kosovo. The construction resources section also hires plant to supplement MOD owned equipment;

Harrier Decoy.



Well-drilling in Oman.

this includes a laser level and a concrete cutting machine with disks for ADR teams in Afghanistan.

### Battlefield Infrastructure

**Power**. The IPT manages a variety of generators from battery chargers to the medium range 8-40kW systems. An Enabling Contract with Finnings, managed by the Equipment Support Manager (ESM), can supply a range of containerized generators for a variety of infrastructure requirements. The existing fleet of 8/12kW, 16/24kW and 40kW generators is being replaced by the Field Electrical Power Supplies (FEPS) Private Finance Initiative (PFI), a family of trailer mounted, general purpose, generators provided by Vickers Specialist Engines. The contract has been signed recently and delivery of the first system is scheduled for May 03.

FEPS is a rugged design, capable of operating worldwide as well as being compatible with our allies' power requirements by having both 60Hz and 110V supplies. The sets have a stealthy, compact and clutter free external design to minimize their signature. The equipment will be fully compatible with the in-service Field Electrical Power Distribution System (FEPDS), used in formation headquarters.

**Fuel Handling.** The IPT supports the fuel handling equipment required to supply the large quantities needed for vehicles, fixed and rotary wing aircraft, generators, heaters etc. three sites were established in Aghanistan, with a total capacity of 1.5M litres, to supply all International Security Assistance Forces (ISAF); some equipment remains in theatre even though UK is no longer Lead Nation.

**Water.** All in-service Water Purification Units (WPU) and storage systems are managed by the IPT. In addition, Battlefield Support is responsible for procurement of storage systems, such as *Oxfam* tanks, for specific operations and exercises. The IPT would be closely involved with procurement and support for Reverse Osmosis plants that might be needed as Urgent Operational Requirements (UOR). If sources of water are not available on the surface, then dig for it! ESS has well drilling equipment and, through the construction resources team in Battlefield Support, also supplies the lining and wellhead material. A Contractor Logistic Support (CLS) contract is being negotiated with the manufacturer to support the WPU (saline); in time this might be extended to cover the NBC and standard sets. This would reduce the maintenance burden on units in barracks, whilst improving equipment availability.

**Surfacing Expedients.** A huge variety of surfacing expedients is available today, of both commercial and military designs, for the approaches to river crossings, helicopter landing pads, Harrier support, parking strips for C130 - the list is endless. The IPT has arranged a "nice little earner" with a company to hold, manage and arrange commercial leases for a number of rolls of Class 30 trackway, some of which were used at the Commonwealth Games in Manchester; all of this is available for recall if required for operations. The MOD is benefiting from industry support to maintain and develop this capability.

**Plant**. The IPT manages some 4000 pieces, of 127 different types, that are divided into five dis-

C-130 on AM2 Pad, Thumrait.

Motorised Grader on ABLE (BR90).

tinct categories; earthmoving C Vehicles, Engineer Construction Plant (ECP), Materials Test Equipment (MTE), Site Investigation Equipment (SIE) and Mechanical Handling Equipment (MHE) including Cranes. The equipment is predominately used by the RE & RLC, though other Arms hold some equipment, notably the Light Wheeled Tractor (LWT); plant is used by all three services.

In 1998 the decision was taken to investigate the viability of providing the complete plant capability through some form of PFI programme. Since then, the DPA has been running the project, colloquially known as "C Vehicle PFI", to develop a contract that is likely to be in place in mid-03 (as at date of writing in Sep 02). The aim is to pass all current assets to an industry consortium that will use best commercial practice to provide the complete capability.

The risks associated with providing such a front line capability in this way have been acknowledged, though imperfectly understood. In order to mitigate some of the risk and to become better informed about the potential of such a PFI, a Fleet Management Study (FMS) was conducted with three Royal Engineer regiments from Jun 01 – Feb 02. A plant hire company was contracted to run the MOD assets in a commercial fashion, using Management Information Systems to monitor availability, direct supply for spares and dedicated labour to maintain equipment held ready at second line. The FMS was a great success, providing a wealth of information to help both the MOD and bidding consortia during the tendering process.

### Battlefield Engineering

**Bridging.** This section manages all in-service bridging systems and is closely involved with development of accessories and the operation of support contracts. Besides the M3, Infantry Assault Bridge and BR90, the latest into service is the Logistic Support Bridge. It is the modern equivalent of the world-famous Bailey Bridge developed in WWII, made more capable by the use of modern materials and manufacturing techniques.

BR90 benefits from a CLS package, introduced specifically for the Long Span/Two Span components, but now extended to cover most of the system, including a "man in a van" service to Regiments in barracks.

**Armoured Close Support.** The Combat Engineer Tractor, a veteran of the Falklands War, provides the armoured digging capability for use in the Indirect Fire Zone. This will be replaced, within a few years by TERRIER, for which BAE SYSTEMS has recently been selected as the manufacturer. The SHIELDER minelayer is also part of the IPT's armoured inventory.

**Countermine.** The trailer for the explosive countermine system, PYTHON, is managed by ESS, though the Munitions IPT manages the hose itself. ESS also looks after the AARDVARK mineflail, originally purchased as a UOR for Bosnia, but since used in Afghanistan as well. In addition to buying spares for the UK system in Kabul, the IPT also supported the Jordanian Aardvark. Somewhat predictably, this was built to a different manufacturing standard than the UK machine; arranging for spares to be separated from the UK single supply chain once in theatre proved a considerable challenge. The Mine Protected Vehicle, MAMBA, also supports deliberate countermine operations; this is soon to be replaced by a new system, TEMPEST, entering service with a support contract.

# Night Life in Korea

"NOMINAL"

### A Quiet One

It was a dark night and strangely silent. Normally there was sporadic rifle or machine-gun fire with the occasional crump of a bursting shell, but tonight there was utter silence – so far. The sentries found it an eerie task, staring out into No Man's Land and listening for any sound from the enemy. Suddenly the searchlights came on from their positions two or three miles to the rear. They were aimed at a low angle, not against enemy aircraft, there were never any, but so that they could reflect off the low cloud and thus illuminate the enemy positions on the hills opposite. They were a mixed blessing though, as they cast innumerable shadows which seemed to move as the light flickered. The sentries stirred uneasily.

A sapper working party came forward with their stores to strengthen some forward positions. There was a Korean carrying party to assist them, bringing along great baulks of timber and concrete lintels. The Koreans didn't like coming so far forward, the enemy lines were only a few hundred yards away, their patrols even closer, but the sappers looked after them well and encouraged them along. Quietly and efficiently the sappers got to work, making little noise and showing no lights. Now and again they would have to freeze quite still as a parachute flare opened in the air somewhere along the front. On a dark night the flares seemed even brighter than usual and anyone exposed in the open felt very naked. It was no good flinging oneself to the ground as any sudden movement immediately attracted enemy attention and invited mortar attack. It was difficult to persuade the carrying party to stand still until the light went out, but perhaps the presence of the officer with his drawn pistol helped. In the distance, over to the left where the American Marine Division was dug in, there was the faint drone of a "Flare Ship" flying slowly round in circles, tossing out parachute flares to illuminate the battlefield. It was too far off to affect the working party.

After about an hour an enemy propaganda broadcast started, with a girl speaking very good English but with an unmistakeable Chinese accent. She promised safe conduct and good treatment to any soldier who crossed over to their side. She pointed out how the ordinary private soldier was the dupe of American Big Business. She asked why we were fighting in Korea and why our Government would not agree to a cease-fire. Her voice came from a loudspeaker placed somewhere on the hills opposite and her messages were interspersed with music, often quite recent popular tunes. The soldiers enjoyed the broadcasts but they did not have the expected results. Instead, they just irritated the officers as the work was slowed down by men stopping to listen and it was important to get the job finished and the men off the hill before first light. As a propaganda mission, the broadcasts achieved absolutely nothing.

By two o'clock the job was completed and the men moved quietly back along the narrow trenches to the rear of the position and down the track to their waiting vehicles. There was no dallying here as the place was a favourite target for enemy harassing fire with their mortars and the men were all looking forward to getting back to their camp, tucked into the side of a hill three miles away, where hot cocoa and bed were awaiting them.

The Sapper officer came along after them but first of all he checked in with the forward platoon commander to let him know that the job had been finished and his men were leaving. He stayed a few minutes for a gossip. The command post was dug well in to the hill with three feet of earth above it, safe from all but a direct hit from a very heavy shell. The platoon commander sat at a makeshift desk, constructed from empty cases of NAAFI beer; the signaller sat in a corner, his earphones over his head, waiting for any messages from our patrols out in front.

Just as the Sapper officer was leaving, a whispered message started coming through on the radio. The platoon commander listened intently. Enemy movement was heard in front of one of our standing patrols. He had to determine whether it was an enemy patrol or the start of an enemy attack. The Sapper officer quietly withdrew; he would only be in the way if anything started and he had still to see the company commander before being able to go off to bed. He moved on down the narrow trenches.

As he entered the Company command post he saw the company commander turn to his Gunner

officer and say "John has just told the standing patrol on his left to come in. It looks as if there is going to be an attack".

The Gunner nodded and said "Shall I bring some fire down then? As you know, it's one of our DF (SOS) targets and our guns are laid on that target, just in case".

The company commander told him to wait a few moments to let our patrol get in and then to give the position a good thump; it was only a hundred and fifty yards away on a narrow ridge connecting our positions with the enemy's. It was a favourite line of approach. The position had also achieved a certain notoriety within the battalion as the enemy had taken to sneaking out and leaving small packets of tea there, with a slogan saying "Why not have a good cup of char and forget this hellish war". Pinned to each packet was a small porcelain "peace dove". This was all part of the Chinese propaganda to undermine our troops' morale but it had quite the opposite effect and soldiers who had been there on a standing patrol took to wearing these peace doves in their balaclavas to show that they had been out on patrol at the real "sharp end".

Minutes later the Gunner brought his fire down. From inside the command post, dug into the reverse slope of the hill with several feet of earth on top, it was impossible to hear the shells landing but the two soldiers on duty in the forward observation post said they had landed on target. These men were connected to the command post by telephone line and they were there at night when their officer had to be beside the company commander – by day the officer went forward himself.

No sooner had our shells landed than there was the unmistakeable crump of answering shells overhead. The Sapper officer could not leave but after a further few minutes the firing died down - it looked as though it had just been a probing attack to test the defences.

The Sapper officer decided it was time to go home. It had been another quiet night.

### The Patrol

In war both sides try to dominate No Man's Land. In Korea this was not so easy in the last year or so of the war when the line was largely static; each side was dug in on the tops of the hills and movement during daylight hours was almost impossible on the forward slopes. To control the valley bottom meant getting one's patrols down there as soon as possible after last light, not so easy for the British when the opposing Chinese lines were cast into shadow before ours.

The battalion commander was concerned that there was enemy activity immediately in front of our positions, perhaps by enemy lying up there during the hours of daylight. Due to the convex nature of the hill, it was not possible to see what was happening in the valley bottom. Air photography was inconclusive as the Chinese were adept at concealment, so a reconnaissance patrol was the only alternative.

Briefing took place in late morning, when everyone had had some sleep after the previous night's activities. It was decided that the patrol would be led by one of the platoon commanders from the reserve company who knew the general lie of the land. He would take a radio operator, one man to act as a scout and a sapper. They spent the rest of the day in preparation, studying air photos, ensuring that none of their equipment rattled, cleaning weapons and liaising with the forward platoon, through whose position they would move out and also return. They would not be able to speak on the radio, other than by whispering, so a simple series of signals using the pressel switch only was arranged. The Sapper troop commander felt that he needed to know what lay in front of the forward company and decided to go himself.

Late in the afternoon, a message came through that the battalion commander had vetoed the presence of the Sapper officer as he was senior to the patrol commander and it would place him in an invidious position should the patrol run into trouble. At this short notice, and after a personal appeal to the Commanding Officer had been turned down, the best available sapper NCO, an outstanding young Lance Corporal, was hurriedly briefed and set off to join the patrol which was getting prepared just behind the forward company. They set off as soon as it was dark enough. The weather was in their favour: no moon, overcast sky and a brisk wind making the clouds scud past and helping to conceal their movement. They made their way quietly along the narrow trenches and through the forward position and out into No Man's Land. They were on their own now.

Moving forward was not at all easy due to all the debris of battle and the coils of barbed wire and other obstacles which impeded progress. They crouched low to avoid anyone being silhouetted from below. It took the best part of an hour to reach the valley bottom. Meanwhile the Sapper officer,

feeling guilty that he was not on the patrol, was in the forward company's command post. Suddenly the field telephone jangled. It was the forward platoon reporting an explosion in the valley bottom. Whether it was a grenade or an anti-personnel mine, it was impossible to tell. An almost unbearable fifteen minutes followed. There was nothing to do but wait. There was no firing to be heard so it didn't seem likely that the patrol had bumped into any enemy. It became increasingly likely that someone had set off a mine. The tension was unbearable.

All of a sudden, the tension was broken by the radio coming to life. The patrol was on radio silence as it set out, but now there was a whispered message to say that there was a casualty, severely wounded, and that they were returning. More silence. The company commander had to stay in his command post but the Sapper officer moved forward and joined the forward platoon commander ready to give any help that might be needed. It would not be easy to bring any casualty back, especially if he was unable to walk, as the hillside was so steep and there were so many obstructions. After a long wait, the patrol commander whispered over the radio that the sapper Lance Corporal had set off a mine, had been desperately wounded and had now died. His best junior NCO dead. It was a bitter blow, and it need not have been him if there had not been that last minute change of plan. It took a further two hours to get back to our own lines, such was the nature of the ground. And what had been achieved? The patrol commander could only say that he had not made contact with the enemy and it seemed that they were not lying up in the dead ground in front of our positions. This was not to say that they could not do this at any future occasion but for the foreseeable future they need not be too concerned.

The sapper Lance Corporal's funeral took place the following afternoon on a lonely hillside behind our lines. The Padre from the nearby Armoured Regiment presided while every available sapper in the troop attended, together with the squadron commander. It was raining but nobody seemed to mind. He had been an extremely popular man and everyone felt his loss deeply. Halfway through the simple service, a jeep drove up and a company commander from a neighbouring unit, attached to the battalion as an extra sub-unit, alighted with profuse apologies for being late but he had only just heard the dreadful news. He explained that the Lance Corporal had been attached to his company the previous week, had impressed everyone with his ability and invaluable advice, and he just felt he had to come along and pay tribute on behalf of everyone in his company. There cannot be many Lance Corporals like this.

The troop slowly dispersed, each man with his own thoughts. The troop commander followed, wondering how he was going to explain things to the Lance Corporal's parents.

It had been a long 24 hours, and he still had a letter to write.

### All Hell…..

It started quietly enough. The troop commander was with the company commander in his command post on the reverse of the hill, discussing future requirements. The sapper working party had arrived an hour earlier and were busy with their work on a tunnel they were digging down a forward spur which, once they had broken out, would enable the infantry to fire in enfilade down the re-entrant at any enemy moving up the convex slope of the hill and thus getting too close to our forward platoon positions. Suddenly an intense enemy bombardment opened, obviously heralding an attack. Our own patrols were hurriedly called in, defensive fire tasks added to the noise and every infantry position was manned. The forward platoons were well dug in and, though nervous, everyone was confident.

The intense fire soon resulted in the land lines to the forward platoons being cut and radio contact intermittent. The Chinese gained a foothold and were soon on top of our position. It was vital that we should hold on and the company commander decided that the only way to clear the area would be by firing airburst shells over our own area. He turned to the Gunner FOO and asked him to get every gun he could find and bring fire down on our own heads. The Gunner blanched and pointed that such drastic action would surely result in casualties to our own troops. The infantry commander looked at him and said quietly "Fire". There was a pause while the FOO turned to his radio, gave his call-sign followed by "Victor target, Victor target, Victor target". It was the call for every gun in the Corps within range to open fire. The result was devastating, the whole ground trembled and the noise was deafening, even inside the deep dugout that was Company HQ. The enemy were swept off the position, while our troops shook themselves

and put their heads up again. By some extraordinary good fortune we had suffered no casualties, though that could not be said for the enemy.

A few days later the Chinese shelling began to increase and it looked as if a major attack was looming. Several days of intense bombardment reached a crescendo and the company braced itself for action. The sapper troop commander was again in the Company command post when the enemy attack was launched. Within five minutes all communication was lost with the two forward platoons. The company 2IC was sent forward, along the left hand communication trench, to find out what was happening but in the confusion he could not get anywhere where he could influence the battle and nothing further was heard from him. After an anxious wait, and aware that the situation was critical, the troop commander realised that the company commander was looking at him so he thought he had better volunteer to go forward himself. He made his way along the right hand side of the position and had only gone about forty yards when there was a blinding flash almost at his feet and he was blown on his back in the bottom of the trench. Stunned, he lay there for a moment wondering if he was still alive. Feeling himself all over, he stood up feeling distinctly groggy but miraculously unhurt. How he had escaped the effect of the 60mm mortar bomb he never knew. He staggered on, and reaching the forward right hand platoon command post, which he had only left thirty minutes earlier, he found the platoon commander, his platoon sergeant and the runner sitting exactly as he had left them. All three were dead. It looked as though a shell had landed at the entrance and the blast had killed them. It must have happened in the first few minutes of the action, just after he had left. There was nothing more he could do there so he started to make his way along the narrow trench to the left hand platoon when two men came towards him carrying their platoon commander. Apparently a 60mm mortar bomb had landed at his feet and he had taken the full blast in his stomach. It was obvious that he had been mortally wounded and he died moments later in their arms.

Both forward platoon commanders and a platoon sergeant killed in the first few minutes of the battle did not augur well, but the enemy had not yet been able to get onto the position in any numbers. The troop commander managed to get the news back to the company HQ, where the company commander had already called for reinforcements, and thought that the best thing he could do was to move forward to the FOO's daytime OP from where he could try and coordinate the artillery and mortar fire. The Chinese attack had been beaten off and with first light approaching reinforcements began to arrive. The commanding officer had ordered one platoon forward to sweep the forward slopes of any enemy but the platoon commander, newly arrived in the battalion, had never been on the position and looked somewhat daunted at the prospect of what he had been told to do. The troop commander briefed him quickly, pointed him in the right direction and off he went, returning a while later, wreathed in smiles having cleared the area and suffered no casualties.

The troop commander left the FOO's bunker once everything was back to normal, looking forward to a few hours in his sleeping bag. He was not to rest for long.

Work proceeded on the tunnel, but there were frequent interruptions from enemy activity. The Chinese had not been put off by the failure of their attack and brought up some heavy artillery. They were determined to succeed next time and renewed their shelling with enthusiasm. A new battalion was holding the hill and they watched with growing unease as the Chinese caused more and more damage to the defences, their heavier guns penetrating the overhead cover of the bunkers with delayed action fuses. It was only too evident that a major attack was imminent and that the Chinese were determined to succeed next time. Shelling increased in intensity, 20,000 rounds landing on the position, half of them on the last day, and all of them on a company position which measured only 300 yards by 150. Even the Somme couldn't match that. In the meantime, the sapper troop worked frantically to maintain and strengthen the defences.

After a week of this intense shelling, all Hell was let loose and the Chinese launched a sudden attack, just before "Stand To", catching forward troops unprepared, though they quickly responded and fought back ferociously. The enemy troops were well equipped, and brave. The leading men carried rocket launchers and satchel charges for destroying bunkers. Follow-up troops were often unarmed, ready to pick up rifles or Burp guns from those killed or wounded in front of them, but also carrying spare rockets, grenades and extra ammunition. The sapper working party for the tunnel had not yet arrived

as this was to be their last day and they were waiting for darkness to break out down the spur in front of them and install a bunker. Satchel charges destroyed weeks of hard work but fortunately there were no sapper casualties. It was a long night but the Chinese were eventually beaten back, leaving a scene of utter devastation.

As day broke the whole troop moved up to the position, followed soon after by another, as it was evident that a lot of work would be needed if it was to be held against further attacks. The remnants of tunnels and bunkers had to be cleared, the whole trench system was in tatters and there were still dead and wounded on the position. The infantry company withdrew, leaving the Sappers to hold the position until relieved by fresh troops shortly before last light. In the meantime the least damaged bunkers were repaired, but movement in the open was severely restricted and greeted by fire from 60mm mortars sited very close by. Moving round what was left of the position the troop commander heard cries of pain coming from somewhere out in front. On enquiring from nearby sappers he found that a Korean soldier attached to the infantry battalion had evidently been captured but being wounded and difficult to carry the Chinese must have dropped him. The subaltern thought it was too difficult to rescue the man in broad daylight, whereupon the troop commander furiously grabbed the nearest sapper and with a quick "Come with me", leapt out of the communication trench they were in and dashed forward to pull in the wounded man. The enemy must have been taken by surprise as they did not open fire and the casualty was gently lowered back into our position. Just as the troop commander jumped in after him, the squadron commander turned up demanding to know what was going on and asking the troop commander why he wasn't getting on with what he was supposed to be doing. A rather weak reply that he didn't really think he could leave a wounded man lying out in No Man's Land earned him the biggest bollocking of his life. Words like 'risking soldiers' lives', 'wasting time', 'the importance of getting defences restored, rang in his ears. He would never forget the explosive remarks and they were entirely justified. He shouldn't have let his emotions get the better of him and been so foolhardy. So no VC there!

The two sapper troops worked furiously to restore some semblance of order, not easy when every open trench or weapon pit had been reduced to a shallow scoop in the ground, littered with debris, tangled wire, torn bits of clothing and ammunition. As a defensive position it had almost ceased to exist but work went on ceaselessly. While the troop commander and one of his sappers were working in the confined space of a half-demolished bunker, shovelling earth behind them and trying to prop up the roof, they suddenly came across an arm sticking out of the earth. This was too much for the poor sapper, already exhausted from lack of sleep and days of constant shelling, who collapsed on the ground with a strangled cry. Weeping and wailing, he could work no more and was hurriedly evacuated off the hill and taken to hospital.

With last light looming an infantry company commander turned up, followed shortly after by the rest of his company. He had never seen the position before and as there was so little daylight remaining the troop commander told him where to put his platoons and sections, brushing aside his protests and saying he could move everything round the next day if he wished but this was what he had to do before dark. To give the company commander his due he accepted this sapper guidance and advice with good grace and did as he was told! Sufficient bunkers and weapon pits had been cleared to enable the infantry to hold the position and, as soon as it was dark, some very tired sappers trailed back to their troop locations and a hot meal.

### The Raid

A couple of weeks later and Brigade Headquarters was still concerned about the enemy's intentions. The approach from the north-east offered the enemy a better chance of attacking on a wider front and the commander had a feeling that they must be crossing the valley bottom by night and lying up in caves at the foot of the hills below. There were definitely signs of increased enemy activity and air reconnaissance confirmed that something was happening; it seemed that the Chinese were digging caves at the foot of three re-entrants, perhaps as a prelude to another major assault. They could lie up in the caves, immune from shelling, until they were ready. The Brigade Commander decided that the only way to be certain was for someone to have a close look on the ground and at the same time to make preparation for a raid on the caves with the aim of blowing them up. That night an infantry sergeant and the Sapper recce sergeant crept out from positions on the flank and made their way

along the valley bottom and got as close as they dared to what certainly appeared to be caves. There was quite a lot of activity and they confirmed that the Chinese were definitely up to something. The Brigadier decided that a company-size raid should take place the following night. The company was to be supported by a demolition team of sappers. There was not much time to get ready.

Having debriefed the recce party it was decided that the sapper element would consist of an officer and fourteen men. The sappers would each have to carry 20lbs of explosive across some 4,000yds of enemy territory so it was important that they should not be encumbered by too much extra equipment. Rifles were exchanged for Sten guns and grenades were issued to each man. The charges consisted of 2lb blocks of TNT packed into haversacks which could be carried conveniently on a man's back and which could be slung into any cave, utilising the haversack straps. At least one wouldn't know much about it if one was hit! Drills were practised, weapons tested, grenades primed, casualty evacuation arrangements made and RVs fixed in the event of any party becoming separated. The troop commander had a feeling that things might not go according to plan, though he was confident that his own men were fully prepared, and wrote a letter home, to be posted if he did not return. Others did the same.

The Assault Pioneers moved forward at last light to mark the route through our minefields with white tape and luminous discs and then take up a position guarding the exit. The main body moved off later in pitch darkness, the plan being for one platoon to move forward and form a firm base 500yds short of the objective. From there three fighting patrols would move forward for the assault. The sappers would be split between the three and there would be a small control group to coordinate the actual attack.

The two leading scouts had only gone forward about a hundred yards when there was the noise of a grenade exploding, followed by a message that one of the scouts was wounded. There was no sign of any enemy reaction and it was thought that they had mistaken a bush "moving" against the passing clouds and that they had probably failed to lie down after throwing their grenade – after all, the enemy always die instantly in films and the home side never gets hurt! The company resumed their slow progress, bunched together and in single file, moving along an ill-defined and overgrown path towards a ruined village which was to be the main base. Suddenly a man trod on an anti-personnel mine killing three men and wounding twelve. Numerous men had passed the same spot without harm. The company commander had failed to make any plan for casualty evacuation so there were any number of "volunteers" eager to help take the wounded back to the safety of our lines! Despite the mine, and ignoring the possibility that it might not be the only one, the company commander decided to make his firm base where he was, in the middle of a minefield as it turned out. He was also very concerned, as well he might, about the enemy reaction, at one time exclaiming that we were being fired on by enemy machine guns. He only relaxed when it was pointed out to him that the fire was over our heads and coming from positions on the hill above us, which was in our own hands. Things did not augur well for the rest of the night.

The casualties, and the men required to evacuate them, severely depleted the assault parties and necessitated a quick change of plan. He formed the three fighting patrols into one strong one, plus their small control group, with orders to attack only the nearest of the three groups of caves. Two of the sapper assault teams were left to help protect the company firm base. The enemy were by now thoroughly alerted and the prospect of success with so few men did not look too promising. By now it was 0200hrs and the fighting patrol moved off as quickly as possible, skirting a ruined village and slipping into some bushes beside a stream running along the valley bottom. The control group, which included the Company 2IC and the Sapper Officer, brought up the rear. They did not have a lot to do at this time, except to crouch low at every halt to have yet another pee and wonder why they were there! A small paddy-bund ran about ten yards from the stream and provided a convenient place behind which the small control group could take up a defensive position while the assault party covered the final hundred yards or so. The infantry were to lead the assault, closely followed by the sappers. As they moved up the re-entrant they were to deal with any enemy, throw grenades into any tunnels they passed and take up a position above the furthest tunnel until the sappers had placed their charges. They were then to withdraw, the sappers pulling their igniter switches as they accompanied them, and to pass back through the control group who would cover the

withdrawal to the firm base. Speed was essential.

The artillery fire to keep the enemy's heads down was intermittent as the Gunner FOO had been wounded in the first mine explosion. This was not realised for a while and by the time the assault party was ready to move up the re-entrant the only way the artillery fire could be coordinated was via the somewhat inadequate radio set carried by the sappers. The tanks, out on a flank, were firing tracer on fixed lines and though they could not reach the caves they could at least serve as a useful indicator of the direction in which to move.

By the time the assault was ready for the final dash the moon was well up but there was considerable smoke due to the continuous shelling and mortaring and it was difficult to see. As soon as the guns stopped firing the assault went in. The first tunnel was grenaded and passed, but then opposition was encountered and some close-quarter fighting took place. The Chinese were there in force and used Burp guns (similar to Tommy guns) and stick grenades. Several men were wounded, though none seriously, and fell back to the control group where they were told to make their own way to the firm base. Opposition in the re-entrant increased and the assault party found they could make no further progress; two more wounded returned to the control group and told them that the attack was being beaten off, but not before the sappers had hurled all their demolition charges into the caves. The officer in charge was forced to order a withdrawal and he himself dragged one of the sappers, badly wounded with six bullets from a Burp gun in his thigh, to the bottom of the re-entrant where he found temporary safety in some bushes, covered by one of the other sappers.

In the meantime, the control group was waiting anxiously near the stream. They waited as long as possible to cover the withdrawal but were running out of ammunition – the Bren gunner was down to his last magazine and the Sapper officer was trying to make himself ever smaller behind the paddy-bund beside him. Concerned about being cut off, they eventually had to leave and started to withdraw the way they had come but they found that they had already left it too late and were cut off. With Chinese all round them they decided to cross the stream, moving north as far as they dared towards the main enemy positions and then east again. The stream was nearly waist deep and they had difficulty in getting some of the wounded across. On the far side of the stream this small party regrouped before moving on.

A few minutes later the sapper who had stayed behind with the wounded man rejoined them and asked for help as they had been unable to move him further. He had left his Sten gun with them and set off for help, completely unarmed. Unfortunately the control party now consisted of only nine men, of whom five were wounded so nobody could be spared. The Sapper officer gave him his own Sten gun, as he also had a revolver. Without a second's hesitation, he returned to the re-entrant where he and the young officer eventually managed to bring back the wounded man to our own lines. Both of them were given immediate awards for their courage.

On arrival at the firm base, the control group party found that the Assault Pioneer Platoon had moved forward to help. Preparations were being made for casualties to be evacuated and everyone to withdraw. It was now about 0430hrs and beginning to get light when another mine exploded wounding five more men, slowing things even further.

Smoke was put down by the gunners to cover the withdrawal and as the company neared our lines, Centurion tanks moved forward in case the enemy should be following up behind.

The Sapper officer brought up the rear, carrying half a dozen rifles discarded by men wounded in the raid. It had been a very long night but the sappers at least had acquitted themselves well. Never had a mug of tea, liberally laced with rum, been more welcome.

The raid had been little short of a disaster, due to lack of planning. Out of some 130 men, one third had become casualties. It is virtually impossible to find scattered mines on a dark night in ground that has been heavily shelled, where electronic mine detectors are useless and prodding is too slow, added to which is the difficulty of knowing when and where to start searching.

That every casualty was brought back was a tribute to the determination of the British soldier not to leave his comrades. Those incurred on the approach march should have been carried by men from a reserve platoon and not by men from the assault parties, thus jeopardising the whole operation. Nevertheless the night was not entirely wasted as the Chinese evacuated their caves, thus removing one threat to our positions.

The troop commander retrieved the letter he had written the day before and decided he was allergic to night operations. They were much too alarming!

# I Nga Wahi Katoa (Ubique) – The Corps of Royal New Zealand Engineers: A First Century Commitment

CAPTAIN L LUFF BA RNZE

*Captain Lou Luff graduated from the Australian Defence Force Academy in 1995, where he gained a Bachelor of Arts degree in history, and from the Royal Military College, Duntroon in 1996. He was commissioned into the Corps of Royal New Zealand Engineers in December 1996 and completed his Young Officer training in 1997. He then served in 2 Field Squadron in various posts and took part in Exercise* Long Look *in 1998 with 23 Amphibious Engineer Squadron in Hameln. He deployed to Laos on Operation* Laxus *in 2000 as the technical advisor for UXOLAO. He is currently posted to the New Zealand Centre of Army Lessons.*

THE 15th of October 2002 marked the centenary of the granting of the title "Royal" to the Corps of Royal New Zealand Engineers. It is a century punctuated by a strong commitment to New Zealand (NZ) interests both at home and overseas in independent and coalition missions.

Currently five times its 1902 strength and made up of predominantly professional regulars rather than citizen-soldiers, the Corps has undertaken a transformation that has seen it build up into a capable force with strengths in particular niches. It has left its mark on numerous places in the world especially in the South Pacific, and although small in size it is nonetheless upheld as a committed and industrious capability that maintains the motto I Nga Wahi Katoa (Ubique in Maori) as a proud tradition.

At the time it was granted the title "Royal", the NZ Engineers as part of the Permanent Militia, numbered 80[1]. A strong bond has been maintained with the RE ever since through instructor exchanges, and is maintained today through coalition operations and exercises such as *Long Look*. At the recent commemoration of the Centenary, the UK Engineer in Chief (Army), Brigadier David Innes ADC, attended as a guest of the RNZE.

WW1 saw NZ raise an expeditionary force of division strength. The Engineers were represented by citizen-soldiers who provided a range of engineer skills including railway operation, timber milling and tunnelling. The baptism of fire for many New Zealanders in WW1 was at Gallipoli. Sappers were involved from the outset, providing infrastructure to the beachhead and developing trenches.

It was during the battle of Chunuk Bair that the first New Zealand Victoria Cross of WW1 was awarded to an Engineer responsible for laying landline. Corporal Cyril Bassett was recognized for conspicuous bravery on 7 August 1915 for his actions in support of the NZ Infantry Brigade. Later in the war a second engineer Victoria Cross was awarded to Sgt Samuel Forsyth, while he was attached to the Auckland Infantry Regiment. This was awarded posthumously for gallant service at Grévillers in 1918.

At the completion of the Gallipoli campaign, the engineers played a pivotal role in the Sinai-Palestine theatre in providing wells to sustain the force. In late 1916 the majority of the NZ forces redeployed to the Western front.

A NZ Tunnelling Company took part in the preparations at Vimy Ridge in 1916 and later, in Arras, constructed a large underground shelter and accommodation system. During the attack on Messines Ridge in 1917 the Tunnelling Company was heavily involved with the emplacement of three large mines that proved particularly successful. The Company was also heavily involved in development work on trenches, the provision of essential services and maintenance of communications.

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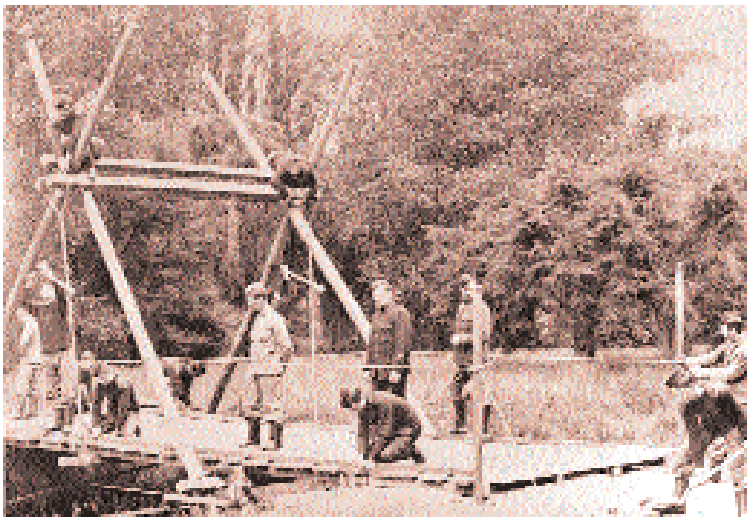
[1] McGibbon I, *Kiwi Sappers: The Corps of Royal New Zealand Engineers' Century of Service*, Reed, New Zealand, 2002, p11

New Zealand sappers also constructed a light railway that was used to transport ammunition and other supplies forward, and then returning with casualties to the various aid posts. This rail link operated by the New Zealand Light Operating Company was often maintained under fire and the NZ Official History states that its absence at Passchendale had a significant impact on supply and casualty evacuation and placed a tremendous burden on mules and duckboards[2].



Bridge building at the turn of the century in Christchurch NZ.

The Corps also maintained a capability to mill timber. Forests earmarked in the United Kingdom were cut and milled by NZ engineers. This timber was essential to the maintenance of the front lines and used as shoring in tunnels, for duckboards and other transportation routes through the difficult muddy conditions on the Western front. Perhaps originally a legacy of our pioneer past, timber milling was a heavily used skill again during WW2 and is a capability still maintained. It has proven its utility most recently in Bougainville (1997/1998) and East Timor (1999-2002).

The inter war years saw a downscaling of the military strength of NZ and when a division was raised for overseas service at the start of the WW2 in 1939, the Sappers numbered only four officers and 358 soldiers, almost all territorials. These and other volunteers soon boosted the division's ranks and railway, forestry, postal, construction and field engineers all deployed as part of the expeditionary force to Egypt. The diversion of a brigade group to the UK *en-route* meant that the initial work of these engineers was that of preparing anti- invasion defences in the United Kingdom. Again a strong commitment, three companies, was made in the forestry area, NZ Sappers working in the forests of Britain around the Cirencester region[3].

In 1941 the engineers were deployed with the NZ Division to Greece and were mainly involved in the conduct of mobility tasks. However the build-up and subsequent breakout of the German forces meant that this quickly turned into a withdrawal involving several reserve demolitions before the force was evacuated. The Sappers were often employed as infantrymen and in total nearly two-hundred were either killed or taken prisoner on Crete.

In North Africa the Sappers had many of the same tasks as in WW1, however this expanded with the wide scale use of mines, particularly at El Alamein. NZ Engineers were involved in laying protective minefields and later in the breaching of lanes for the tanks to advance through. It was Kiwi Sappers who opened the breach at Tel el Aqqaqir that allowed the breakthrough that ended in the capitulation of the Axis forces[4]. The engineers were involved in opening lanes in minefields at Tebaga Gap and clearing airfields at Nofila and Bir el Merduma. The North African campaign, in particular Operation *Crusader*, saw a significant effort by the railway companies; at one stage they completed 400 kilo-

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[2] Official History of the New Zealand Engineers NZEF 1914-1919, Evans, Cobb and Sharpe, Wanganui, 1927, p 149.

[3] McGibbon, opcit., p65. Also The Royal Engineers *Journal,* August 2002, pp 148-153

[4] Cody J.F, Official History of New Zealand in the Second World War: New Zealand Engineers, Middle East, War History Branch, Wellington, 1961, p362.

Timber milling operations in the Western Desert.

metres in only 265 days. The companies continued their work in Syria and up to Beirut until they were disbanded in late 1943.

The next theatre for the NZ Forces was as part of the allied advance in Italy. For the NZ Engineers, Bailey Bridging became a specialty. Over the period 9 – 16 April 1943, a total of 16 Bailey Bridges were constructed under fire throughout Italy, including across the Senio River and Lugo Canal, totalling some 880 feet[5]. In addition the Corps formed an armoured assault squadron equipped with bridge-laying and blade-equipped tanks. The bulldozer drivers were renowned for their bravery under fire with a number receiving decorations for their efforts in clearing and opening approach routes to bridge and ferry sites.

The Corps was also involved in the battle for the Pacific. With the onslaught of the Japanese forces and the bombing of Darwin, the threat to New Zealand escalated. A significant engineer effort was initially carried out in Fiji preparing forward defences, and work was completed with the developing of road networks and supplying water.

With the formation of the 3rd Division, the Engineers were deployed to New Caledonia and the Solomon Islands. Works tasks were again undertaken in developing port and camp infrastructure as well as roads. Due to limited resources in these islands, crushed coral was developed as a suitable road pavement and proved very durable[6]. A significant number of non-equipment bridges were also constructed, earning the name "million dollar" bridges because Solomon Islands mahogany was used as the decking[7]. Again sawmilling proved an essential skill;

*"A record turnout of 19,600 feet in a 15 hour day and a total of 800,000 feet for the period on Nissan (3 months) is evidence of how much sweat we lost"*[8].

The 3rd Division NZ Engineers fought their way from New Caledonia, through Vella Lavella and Bougainville Island. The engineer commitment to many of these nations continues today, particularly in Bougainville and the Solomon Islands where a significant commitment was made over the period 1997-1999.

With the defeat of Japan, NZ Engineers formed part of the New Zealand contribution to the British Commonwealth Occupation Force. From 1945-1948 a squadron of about 300 men worked on barrack facilities, hospitals and aircraft hangars. This period saw the beginning of a move towards the provision of a professional army which was a major shift from the citizen-soldier force of the prewar years.

With the introduction of Compulsory Military Training there was significant manpower for the RNZE and training was conducted by experienced soldiers from WW2. This training bore fruit during the Korean War. Members of the RNZE departed as part of K Force and their primary tasks again included the provision of camp infrastructure and HQ facilities. As the commitment developed other tasks included;

*"…the laying and supervision of minefields, supervision of ferries, the control of water points,*

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[5] ibid., p737.
[6] Pacific Pioneers: The story of the Engineers of the New Zealand Expeditionary Force in the Pacific, AH and AW Reed, Dunedin, 1945, p 31.
[7] ibid., p37.
[8] ibid., p45.

*and operation of cableways over the Imjin River and up the massive Hill 355, the key defensive location*[9]*."*

A total of 70 RNZE personnel served with K Force between 1950 and 1957[10] and it was with K Force that Lt (Later Lt Col) George Butcher was awarded the last Military Cross to be awarded to an RNZE officer. During this period the size of commitment of NZ forces started to shift focus from large bodies of troops to smaller more readily deployable forces. There was only a limited commitment of engineers to the Malayan Emergency and the Borneo Confrontation although in 1966 the RNZE undertook a joint roading project with the Thai Highways Department. The 145 kilometre highway project was completed in 1971.

Ferry Operations at Waiouru, NZ in 1988 after Cyclone Bola destroyed the bridge linking the town.

The Vietnam War (1964-1972) saw limited numbers of NZ Sappers employed in a number of roles during the conflict. The first NZ soldiers to serve in Vietnam were from a 25-man engineer aid detachment. Sappers were employed in a variety of roles with the NZ infantry companies and artillery batteries followed them. Some were employed with the Assault Pioneer platoons within the Infantry Battalions and this relationship with the infantry continued until 2001 when NZ battalions lost their pioneer platoons.

In the early 1970s, New Zealand provided the second in command and a number of other ranks to 28 (ANZUK) Field Squadron based in Singapore. The commitment to South East Asia was maintained until 1989 with an Infantry Battalion group in Singapore supported by a small works team comprising of mainly RNZE personnel.

The 1980s and early 1990s were years of significant change for the NZ Army as units were disestablished as various camps were either closed or downsized. The order of battle of the RNZE was consolidated on 1 July 1993 when the 2nd Engineer Regiment (2 Engr Regt) was established at Linton Military Camp. The regiment today comprises RHQ, HQ Squadron (including workshop), the School of Military Engineering, 2nd Field Squadron and 25 Engineer Support Squadron. The greater engineer family also includes the firefighters within each camp and a small detachment with the NZ SAS.

Since WW2 the RNZE has been involved in a number of civil support tasks within NZ. These tasks have been far ranging and have included the construction of the Queen Elizabeth the Second Army Museum at Waiouru, and relief after Cyclone Bola on the East Coast of the North Island. Following the Tangiwai disaster in 1953, when a passenger train crash killed 151 people, the RNZE constructed a temporary Bailey Bridge over the river where a lahar from a volcano had destroyed the original bridge. As recently as 2002, Bailey Bridges have been constructed to reopen major highways after flood damage, or to replace existing bridges for local councils.

Support to agencies and governments outside NZ is a major source of tasks for the RNZE. Sappers are annually employed in maintenance and development of the NZ base in Antarctica and in the last 30 years there has also been significant support given to New Zealand's South Pacific island neighbours. Much of this commitment has been disaster relief in the form of construction support. There is an ongoing commitment to the training of engineer tradesmen from a number of Pacific and Asian nations and since 1987 two RNZE personnel have been seconded to the security forces of Vanuatu. Experience gained in the Pacific has been well

9 ibid, 124.
10 ibid, 124.

utilised with Sappers who have had spent time in Vanuatu being appointed to senior positions in peace keeping operations in Bougainville and the Solomon Islands.

Since the late 1980s RNZE Sappers have become increasingly involved in peacekeeping. From 1989-1990, a detachment was deployed to Namibia as part an Australian construction squadron in the UN Transitional Assistance Group and from 1989-1991 NZ made its first commitment to humanitarian demining with the deployment of a training team to Pakistan/Afghanistan. Demining has become a long-term commitment for the RNZE with subsequent commitments of trainers or advisors to Cambodia (1991-present), Mozambique (1994-present), Angola (1994-2000), and Laos (1998-present). RNZE personnel are also posted to the UN Mine Action Service in UN HQ and to the US Humanitarian Demining School at Fort Leonard Wood, Missouri.

In 1997/1998 the Corps contributed to the NZ- led multinational Bougainville Truce Monitoring Group which deployed to the island following ten years of civil conflict. Engineer operations focussed on search, rafting, bridge repair, airfield repair and force infrastructure maintenance. Sappers with cultural and language skills gained from previous postings to Vanuatu played key roles in the initial negotiations, establishment and operation of this uniquely "Pacific" operation.

More recently Engineers formed a significant part of the NZ battalion groups committed to East Timor. This has been the largest NZ deployment for many years and since 1999 more than 250 Sappers of all ranks have seen service in East Timor over six rotations. Sappers have again had to overcome the challenges of force lodgment, winning resources (saw-milling again!) and operational tasks in a nation where much of the infrastructure had been devastated. The low number of non-battle casualties is a tribute to the standard of work conducted. Recently the engineer effort has also been able to expand to include repairing local infrastructure including schools and health facilities.

Other operations or countries in which NZ Sappers have been, or are still committed to operationally include; The Multinational Force and Observers (Sinai, 1982-present), UNPROFOR (1994-1996), SFOR (2000-2001), the International Peace Monitoring Team (The Solomon Islands, 2000-2001) and Afghanistan (reconnaissance teams, 2002).

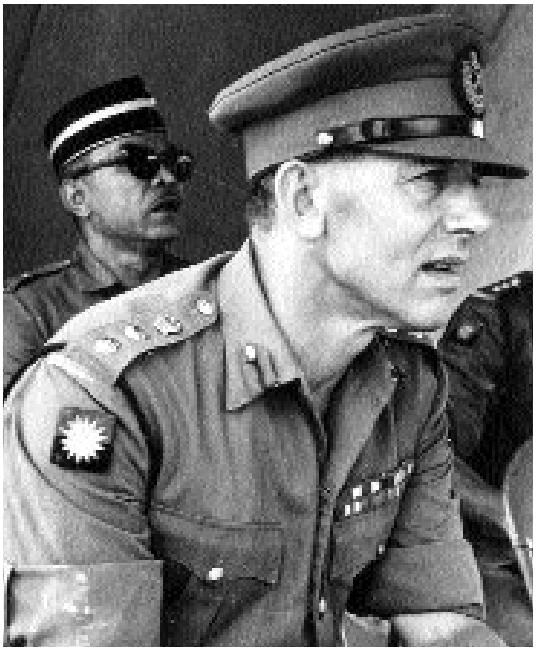
The RNZE commitment on New Zealand's behalf over the past century has been significant. Currently there are Kiwi Sappers in ten countries throughout the world and who knows what the future holds. The work completed, like any engineer effort around the world, has contributed to the success of operations, the well being and improved quality of life of many people and nations. It is likely that the next century will see a continuance of Kiwi Sappers deploying as part of coalition forces making a significant contribution to the international community.

*Aupaki, I Nga Wahi Katoa*
*Hold fast, everywhere*

# Memoirs

**COLONEL J H FRANKAU MC**

*Born 23 September 1918, died 28 November 2002, aged 84.*



JOHN Howard Frankau was born in India, the only child of a mechanical engineer working for the Colonial Government of India. His first few years were spent in the Central Province, a comfortable life being looked after by "ayahs", having a pony, etcetera. At the age of six, he was sent back to preparatory school in England. This was a miserable time as these schools had a fairly harsh environment, both physical and emotional and he did not see his parents for long periods. Later on, he found Rugby, his grandfather's and father's old school a more civilised environment and enjoyed his time there, becoming head of house. In later years it was a source of great pleasure that his grand-daughter Jenni was the fifth generation to attend.

At Cambridge, where he read Civil Engineering, he met Peggy who was a "Girton College Girl". They married in the dark days of 1940 and shortly afterwards he went off to serve with 571 Field Squadron through North Africa and later in the advance of the allies up through Italy. It was during his time in Italy that he was awarded the Military Cross. The citation read: *"Major Frankau took part in the construction of the Bailey Pontoon Bridge over the River Carigliano on 18th January, 1944, which construction was started as soon as the site was clear of enemy infantry. His Company thereafter maintained the bridge for a period of two months. The site was in full view of enemy Observation Posts and accurately registered by enemy artillery. It was intermittently shelled almost every day and night. To the example of courage and determination set by Major Frankau in repeatedly carrying out repairs under shell fire, is largely due the fact that this bridge was never out of action for more than very short periods."*

When he and Peggy celebrated their silver wedding anniversary, they realized that they had moved twenty-five times! Postings had included Germany, Thailand, Singapore and Malaysia (*see separate tribute on next page*). When his final posting to the Ministry of Defence came through, they were determined not to move again, so put down roots in Avening.

He immersed himself in local affairs, supporting the Avening Society and his local branch of the Royal British Legion of which he became Branch Secretary.

Peggy died in 1986. He maintained his interests and expanded his culinary skills. He set himself new projects – one example being drawing up a family tree of all the families that shared the name Frankau in the UK since their arrival from Germany in the mid-nineteenth century. He also enjoyed gardening and kept meticulous diaries from year to year of his successes and disappointments.

He had a life-long passion for fly fishing, although latterly his mobility was limited by joint pains. When he was offered an operation to fix his painful ankle, he asked the surgeon if he would still be able to put his waders on so that he could reach the best spots to fish. The surgeon said no, so he declined the operation!

He is survived by his sons Timothy and Nick. He will be missed by his family, not only as a much loved father and grandfather, but as a wise friend with a great sense of humour.

*TGF NF*

IT is with heart-felt sorrow that I come to know of the death of Colonel John Howard Frankau MC. Colonel Frankau was the Chief Engineer of the Royal Engineer Regiment, Malaysia (then Malaysian Engineers), from August 1965 till February 1968. Incidentally he was also the last Royal Engineer commander to serve as Chief Engineer of the Malaysian Army. He had undertaken a lot of engineering projects in assisting the nation's development. His leadership and commitment had laid the groundwork for the formation of an effective and capable Royal Engineer Regiment in the Malaysian Army.

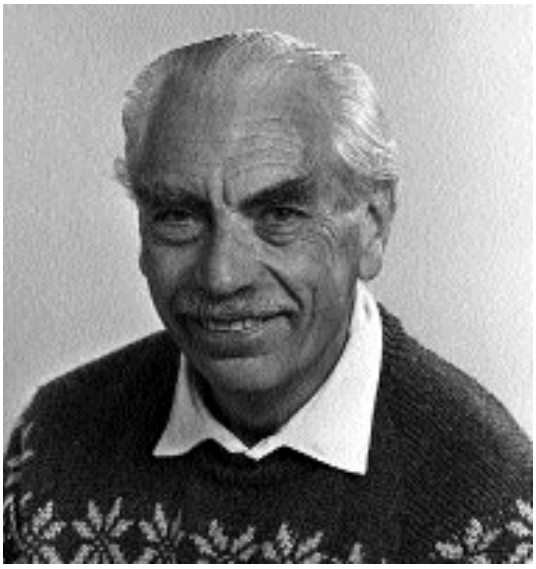
The Royal Engineer Regiment fraternity has lost one of its outstanding Sapper officers. Colonel Frankau's contributions and sacrifices to the Royal Engineer Regiment and to our nation, will always be noted as an important part of our history.

On behalf of all officers and ranks of the Royal Engineer Regiment, I offer my deepest sympathy on the demise of a great Sapper officer. Colonel (Retired) John Howard Frankau MC will always be in our memory.

*Brigadier Jeneral Haji Jamil bin Tahir,*
*Engr Directorate, Army HQ, MoD, 50634*
*Kuala Lumpur.*

## COLONEL I G WELLSTED OBE MA

*Born 10 December 1918,*
*died 27 September 2002, aged 83.*



IAN Gough Wellsted was a member of the First Special Air Service Regiment during World War Two, serving behind enemy lines from D-Day onwards. Following the crossing of the Rhine, he was wounded, shot through both legs, and had to be rescued by one of his troopers. His name is mentioned in several of the popular books written about the SAS after the war. His own book, "*SAS with the Maquis*", was published a few years ago and is based on an account written for his family shortly after the events he describes. Following the war, he transferred to the Royal Engineers and was to play a leading role in the formation of the Malaysian Engineers and, later, the Malaysian Ranger Group.

Ian Wellsted was educated at Wellington College and at Kings College, Cambridge where he read economics and law. Whilst at Cambridge he joined the Senior Officers Training Corps, a horsed cavalry unit and by the beginning of the war held a TA commission in a tank regiment. Later volunteering for the Parachute Regiment, he was well placed to apply for the SAS when they began recruiting from the airborne forces.

After the war he was in action again with 6th Airborne Division in Egypt and Palestine and transferred to the Royal Engineers in 1947. On completing courses at Chatham and the Staff College at Camberley, he took up the appointment of DAA&QMG HQ Land Forces Hong Kong in 1951, at a time when matters were still tense following the Chinese revolution in which Mao Tse Tung rose to power. It was the beginning of a long association Ian was to have with the Far East and South East Asia. From Hong Kong, he went on to spend the rest of the 1950s serving in Singapore and Malaya, much of it on active service during the Malayan Emergency. In 1954/55 he raised and commanded 76 Federal Field Squadron, Federation Engineers before taking up the new appointment of Brigade Major to 2 Federal Infantry Brigade. He was twice mentioned in despatches during this period.

Returning to Europe in the late 1950s, he took up a works appointment in BAOR before being promoted to lieutenant colonel and commanding a TA parachute engineer regiment in the UK, after which he was appointed an OBE. Then followed a challenging and interesting tour as a senior staff officer with BRIXMIS (British Commander in Chief's Mission to the Soviet Forces in Germany), a period in which his family shared some of his adventures which feature in *"Beyond the Front Lines – the Untold Exploits of Britain's Most Daring Cold War Spy Mission",* a book by Tony Geraghty.

Promoted to colonel, Ian returned to Asia, first as a staff officer, Colonel Malayan Troops, with HQ Far East Land Forces in Singapore, with responsibility for operations in Malaya and Borneo, and then in 1963 raised three Malaysian Ranger battalions for the Federation Army. He commanded the Malaysian Ranger Group during the period of Confrontation with Indonesia.

Returning to the UK in 1966 to be Commandant Army Air Transport Development Centre, Ian decided in 1967 to retire from the Army and emigrated with his family to New Zealand. He took up a teaching post at King's College in Auckland and went on to become a housemaster. He became involved in the Red Cross and civil defence affairs and then in the 1970s and 1980s became national secretary to the Full Gospel Businessmen's Fellowship International and through them was much involved in prison ministries.

His wife, Diana, survives him.

*TG (Air Cdre RNZAF*

## LIEUTENANT COLONEL J R RADFORD

*Born 11 November 1921, died 29 September 2002, aged 81.*

JAMES Rowland Radford, Jimmy to his friends, was born in Belgaum, India. He was educated at Bedford School and Loughborough Technical College and enlisted into the Royal Engineers in November 1940. He was commissioned in September 1941 and posted to India where he joined Queen Victoria's Own Madras Sappers & Miners. He took part in the siege of Imphal and having formed a bridge company from five independent bridge platoons, supported the 14th Army's advance through Burma. Jimmy and his bridge company more than played their part, building Bailey pontoon bridges, on the Irrawaddy and the Chindwin. His company then embarked for Malaya on Operation Zipper and thence returned to India. On the granting of Indian independence in 1947, Jimmy returned to the UK and spent a year at 8 Training Regiment at Elgin.

In December 1950, he arrived in Hong Kong and was originally attached to 24 Engineer Regiment. In April 1951 he was posted in to take command of 67 Squadron (Gurkha), just in time for the co-location of the two Gurkha field squadrons into Tam Mei Camp, which was to be the home of the Gurkha Sappers, and Jimmy Radford, for the next three years. 67 and 68 Squadrons, together with the British 54 Field Squadron, under command of 24 Engineer Regiment, were formed up in the infantry role for the defence of Hong Kong, to cover the gap left by 27 Infantry Brigade's move to Korea. When not preparing and manning defence positions the squadrons were expected to train up the men, most of whom were infantrymen, as field engineers. Jimmy Radford played a major part in the both the raising of standards and the merging of two independent-minded squadrons into a cohesive regiment. When 50 Field Engineer Regiment departed Hong Kong to return to 17 Gurkha Division in Malaya, Jimmy returned to the UK to attend the Long Transportation Course at Longmoor and Marchwood. He rejoined the Gurkhas as OC 68 Gurkha Field Squadron in January 1958. During his absence, the anomaly of having Gurkhas attached to the Royal Engineers but remaining on the regimental rolls of their parent infantry regiments had been ended and everyone, both officers and men, wore the cap badge of crossed kukris surmounted by a grenade which had been designed by Jimmy during his first tour.

His tour included the end of the emergency in Malaya and the development of the North Borneo Training Area. 68 Squadron under Jimmy deployed to Kota Belud on the construction and extension of the base camp, and constructed a causeway over the River Tempasuk. In August 1960, Jimmy left 68 Squadron to become Second-in-Command of the Gurkha Engineers. This was a period of great growth for the regiment. Also, unexpectedly, 68 Independent Gurkha Field Squadron was moved to UK as part of 51 Brigade. Jimmy Radford's talent for logical thought, calm reaction to events and precise practical planning were invaluable at this demanding and busy time, but in April 1961 Jimmy himself left The Gurkha Engineers to return to UK.

Sadly Jimmy was not to return to the regiment. The Army had gone through a major reorganization which transferred the Transportation Branch of the Royal Engineers to the newly formed Royal Corps of Transport and Jimmy was rebadged to the RCT. In September 1963 he was appointed Commanding Officer of 5 Port Regiment, Royal Corps of Transport.

Jimmy Radford was fun and a gentleman in the best sense of that word. It was not only his strict standards for his own behaviour, but the way he would put people at their ease and never knowingly upset or hurt them. He was liked, respected and loved by a great many people and for good reason. He was quietly humorous, always ready with a pun, friendly, able to get on with anybody, and despite a rigid set of personal ethics – non judgemental of others.

He is survived by his wife Stella, whom he married in 1956, and by a son and three daughters. He leaves a gap that will not easily be filled.

*DHB MJAC JHE RIR*

**BRIGADIER D ROSS CBE BA(H)**
*Born 30 November 1917, died 2 December 2002, aged 85*

DONALD Ross was born on St Andrew's Day in Malvern. He never lived in Scotland but remained a devoted Scot all his life. His father was in the Indian Army and through his maternal grandmother, was related to a former MGO, General Sir Henry Brackenbury. He was educated at Charterhouse as a classical scholar but halfway through this stage of his education, his interest changed to mathematics with a view to becoming a Sapper. He duly entered the "The Shop" at Woolwich in 1936 and was commissioned into the Corps in 1937. He attended No 38 YO course with some other soon to be well known Sappers such as William Jackson and Richard Clutterbuck. He then went to Magdalene College, Cambridge and graduated with a First Class Honours degree in the Mechanical Sciences Tripos in 1939.

In 1940, he became a Survey instructor followed by a stint as Adjutant RE of the Guards Armoured Division. In 1942 he was a student at the Staff College, Camberley after which, as DA & QMG of HQ 21 Army Group, he was involved in movement planning for Operation *Overlord*, including some work on the Mulberry Harbour project. After D-Day, he commanded a Field Squadron in the 49th Division. For his services in the war, was made an OBE. In 1945, he was for a short time an instructor at the Staff College in Haifa. Whilst in Palestine, he qualified as a parachutist then remained there as BM of 1 Parachute Brigade. For his services, he was Mentioned in Depatches. He then returned to the UK as an instructor at, successively, RMAS and the Staff College. In 1954/55, he completed his last regimental appointment as second-in-command of 37 Engineer Regiment in Germany and Cyprus. This latter tour was during the EOKA troubles, and for his services, he was Mentioned in Despatches for a second time.

He then started a round of staff appointments; GSO 1 to the Governor of Cyprus, Col (B Div) of the Staff College, Commander of 24 Engr Bde (V) in Liverpool, DQMG and Brig AQ in HQ FARELF, Singapore and finally, leading up to his retirement in 1972, he went to the MoD as deputy head of the UK LAND reorganisation review. He was advanced to CBE on his return from Singapore.

For ten years after his retirement, he was an inspector in the Planning Inspectorate of the Department of the Environment. This involved travelling all over England and Wales in a quasi-judiciary role hearing planning appeals, writing reports and making decisions. Such was his success that in two years he became an Established Civil Servant and two years later was promoted to Senior Inspector, in which role he had to deal with Enforcements (appeals against other inspectors' decisions). This frequently involved adjudicating between opposing barristers – a task well suited to his intellect and past training. In 1982 he really did retire – and found more time for his leisure pursuits.

Brigadier Donald confessed to a "nil achievement" when it came to sporting successes, but nevertheless was a major player in the organization and administration of army sport, and in fact was appointed an honorary member of The Army Physical Training Corps. He was well qualified in several disciplines. He was a Referee (Class A) of the Army Boxing Association, an Association Football referee and also sat on the Army FA Committee. In addition, he was a member of the RORC, Rear Commodore of the REYC/RESA and Commodore of the ASA. He was also interested in mountaineering, being a member of the

Alpine Club and the Army Mountaineering Association. Finally, he was a past Vice President and Captain of the RE Golfing Society and past Secretary and Captain of the Senior's Golfing Society.

Golf began to dominate his later life. He had first played at Liphook before the war and had occasional games throughout his Army career, achieving a single figure handicap. When in command of 24 Brigade at Liverpool, he had taken the opportunity to join the Royal Liverpool Golf Club at Hoylake and remained a Country Member there for the rest of his life. In 1969 he joined Liphook and this was to remain his home club. After only four years he joined the Committee and became Captain in 1975, President (a very active one, too) for three years from 1997; and in 2000 he was made an Honorary Life Member.

He was elected a member of the Seniors Golfing Society in 1976 and in 1985 he became their secretary, staying in the job for seven years. This post was ideally suited to his talents; he organized over one-hundred matches a year all over the UK and also arranged overseas tours to Australia, South Africa, the USA and Kenya. There were also two Championship Meetings a year in which some two-hundred or more members took part. There were also visits from overseas Societies to organize. All this from home with no computer (only his own brain), just one domestic telephone line and not even an answering machine – other than his devoted, patient wife. He very quickly built up an encyclopaedic knowledge of the Society's eight-hundred or more members and made lasting friendships and gained much respect in many Golf Clubs throughout the UK.

In 1993, he assisted the Committee of Woking Golf Club (the Seniors' Home Club) in organizing their Centenary Celebrations, and was made an Honorary Life Member of that Club also.

When travelling to golfing fixtures, Donald was always a most interesting companion. He always knew why a bridge was being mended and what was being done to it – he knew exactly what was wrong with the road – he knew of a house here or building there where he had been involved in with an enquiry, and of course he always knew the best route and any short cut going. On the golf course he was the eternal optimist. One of his favourite expressions was "It never rains on a golf course" – and considering his mountaineering and sailing experience, it was probably not surprising that he rarely made any concession to the weather. He only very occasionally wore a hat; and before he gave up smoking he was only very rarely seen on the course without his pipe. He was also known to say in later years, when his skill had perhaps declined, "Oh I did hit that well" as the ball sailed off into the woods!

At home, he loved bridge and always did *The Times* crossword. He was a somewhat reluctant gardener, though Anne did her best to keep him up to it. For some twenty years he was treasurer of the Milland Horticultural Society, a member of the Royal British Legion, and for a short time, a Parish Councillor and a friend-in-need to all in the village.

In 1954, he married Anne Gordon who survives him. They had three children, Alexander, Bruce and Alison.

*AH RM*

## COLONEL J K JOHNSON OBE

*Born 23 January 1925, died 26 December 2002, aged 77*

COLONEL Jimmy Johnson was born in Assam, India. At the age of five, he returned to England to attend Bishop's Court Preparatory School, in Freshfield, Lancashire. It was there he developed his great love for, and ability at all sports. In his final year there, he was appointed head boy. He went to Stonyhurst College in 1938 where he was also head boy. He was Captain of the Rugby 1st XV, played for the Cricket 1st XI, and was also Captain of both the Boxing and Shooting Teams. Rugby always remained one of the loves of his life and he continued to play in his early army life. When he had to give it up after dislocating his shoulder, he refereed for ten years for both the Army and Warwickshire.

When he left Stonyhurst in 1943, he went straight into the Royal Engineers. He did his initial training at Newark, was appointed a battalion commander at OCTU and awarded "The Sam Browne Belt". He then attended the RE University Short Course at Birmingham. He finished the war in Italy, where he liked to recount, he had a spell of convalescence in Sorrento! Following VE Day, he returned to India for what was going to be the invasion of Malaya, but the war in the Far East ended before that took place. He then transferred to The Bombay Sappers and Miners, but again that was short-lived due to the Independence and Partition of India in 1947. Returning to the British Army, he served in the Canal Zone, Egypt and Korea.

Shortly after returning from Korea, he met his wife Eileen and they married in 1956. At the time he was based at Gordon Barracks, Gillingham as an instructor, initially with the Cadet Squadron, and later with the YO Courses. From 1958-62, he was at The Staff College, Camberley, HQ Amphibious Warfare, London and The Joint Services Staff College, Latimer. He then went on to command 33 Independent Field Squadron in Cyprus. On Christmas night 1963, he and the squadron were ordered up to Nicosia where fighting had broken out between the Greeks and the Turks. They remained there for several months. After that, two years at the MoD was followed by a short tour as the second-in-command of 25 Engineer Regiment in Osnabruck from where he went to a command appointment at Long Marston.

He then went on two tours with NATO, broken only by another six months at the MoD. His first job was with Land Operations Division in AFCENT and the second was with Logistics Division, HQ NATO in Brussels.

Colonel Johnson's last posting was to Logistics Branch of UK Land Forces, Wilton. After retirement, he served a further nine years at NATO HQ on the International Staff, Logistics Division and for his services, was appointed an OBE.

Final retirement to his home in Oxted, Surrey, meant many happy hours on the golf course at Tandridge, being active in the parish affairs of his church and for a year, being President of his school's Old Boy's Association.

Sadly, with his memory failing after a very active and full life, Jimmy spent the last two and a half years of his life in a nursing home where he died peacefully on Boxing Day 2002. He is sadly missed by his wife Eileen, daughter Christine and his son David, an ex-Captain in the Corps.

*EJ GO*

**COLONEL J G HANSON DSO BA(H)**

*Born 19 January 1918, died 31 December 2002 aged 85.*

JOHN Grenville Hanson was born at Ajmer in India where his father was serving in the Indian Civil Service, having been a regular officer in both the British and Indian Armies. John was educated at Canford School and entered the Royal Engineers through the Royal Military Academy, Woolwich. He was commissioned in 1938 and went on to Cambridge where he gained an honours degree in Mechanical Sciences.

His early career followed traditional lines, and on the mobilization of the Army in 1939, he joined the 4th Divisional Engineers, serving with the British Expeditionary Force in France and Belgium. In 1943 he joined 5th Assault Regiment RE where he commanded 79th Assault Squadron. The Regiment formed part of 79th Armoured Division (commanded by Major General Hobart, a Sapper, and known as 'The Funnies'), and was equipped with Churchill AVREs. The Squadron landed in Normandy at H Hour on D Day, 6th June 1944, in support of 3rd Infantry Division. They met very heavy opposition and suffered severe casualties. However, eight lanes on the beaches were successfully cleared. John was awarded the DSO for his action on D Day: an extract from the citation reads *"With ten AVREs and no other form of support he was given the mission of destroying the defences of Ouistreham Locks which had already defied attacks by Commandos. This he did with such dash and skill that besides killing many enemies his unit took six officers and 51 soldiers prisoner. His quick action prevented the demolition of the lock gates, and he forestalled the demolition of the Western lock bridge by driving his AVRE resolutely on to the central pier. His fine quality of forceful leadership was a continual example to his men..."*

Following the break-out from Normandy the Squadron was then equipped with LVTs (Landing Vehicles Tracked) and amphibious armoured vehicles, subsequently known as Buffalos. They took part in operations to clear the Scheldt Estuary, including landing assault elements on South Beveland and Walcheren. They reverted to AVREs for the final stages of the war. In 1945 he attended the Staff College in Quetta. This was followed by staff and other posts in India, Malaya, Hong-Kong and the UK. He was an instructor at RMA Sandhurst and the SME, (later to become RSME).

In 1960 he took command of 25 Corps Engineer Regiment in Osnabruck, where he quickly established himself as a splendid CO. He made it clear what he wanted, and his squadron commanders were left to get on with it. He required high standards of operational readiness and cared passionately about welfare and morale. He was magnificently supported by his wife, Pam, whom he married in 1947. She was always concerned for the families with a constant readiness to help those in need. She was charming, elegant and warm-hearted, and John and Pam were most generous with their hospitality, which was always stylish and fun.

After command John went on promotion to a post in the MOD, which involved the development of engineer equipment. It was while there that he was invited by Major General Prior-Palmer to join the newly formed Overseas Containers Ltd, which had been set up by four major shipping groups in the early days of "containerization". He retired from

the Army in 1966 and was appointed Controller of Container Bases with responsibility for the development and commissioning of depots and bases for the Company and later for all the Company's estates. He became a considerable authority in his field, and was elected Chairman of the Institute of Mechanical Handling. He retired from the Company in 1982.

His wife Pam died in 1989. He never fully recovered from this blow, and suffered poor health. His last years were spent in a private residential home near his family.

John was in the mould of other successful Sapper officers. He proved himself a fine and brave officer in war, he was intelligent and innovative. He was modest, interesting, good company and a splendid friend. He had many interests and in his youth he had been a useful games player. He had captained the RE Corps Hockey team and rode for RMA Woolwich. He led a busy and fulfilled life and was devoted to his family.

He leaves three daughters.

*MWA PL RWML REW*

IN the early 1960s John (25 Corps Engineer Regiment), and I (35 Regiment), shared Roberts Barracks in Osnabruck. He was immensely experienced, and I a tyro in Germany. He went out of his way to help me, and I admired his serene temperament, and the drive that he could apply to any chosen objective. Later we worked together in the War Office, and in retirement he held an important appointment with Overseas Containers Ltd in which, among other things, he was concerned with a huge depot near my home in Scotland over which he presided with his usual calm. Our families have remained in touch to this day. He was an exceptional Sapper.

*CHC*

## BRIGADIER R F E STONEY CBE

*Born 28 June 1903, died 19 January 2003, aged 99.*

RALPH Francis Ewart Stoney was born in Kent but moved at an early age to Delgany, County Wicklow. It was a military family, his father being Colonel R D S Stoney of The Royal Irish Fusiliers and his grandfather a regular officer in the Royal Artillery. He attended the Royal Naval College Osborne in 1917, moving to Dartmouth from 1918-20. He then attended The Royal Military Academy, Woolwich in 1921-22 where he was awarded the Armstrong Memorial Silver Medal for Science. He was commissioned into the Royal Engineers on 31st January 1923 and attended No 8 JO Course at Chatham in 1923-24. From 1925 to 1937, he held several appointments in Anti-Aircraft Searchlight Units, broken by a year in 1928 as CRE Welsh Area. From 1937-39 he was a student at the Staff College, Camberley from where he was posted to the War Office where he remained until 1942.

His job during this time was in the Staff Duties Directorate formed on account of the enormous expansion of anti-aircraft units and equipment and the associated technical advances such as RADAR. He was the only sapper, the rest of the Directorate being an entirely Gunner preserve. His first task included liaison with the Air Ministry for the provision of civilian aircraft to undertake night flying for searchlight training purposes. Later on, he took responsibility for all types of anti-aircraft weapons and from 1941, as GSO 1, his work covered the Directorate's Technical Branch. For his work, he was appointed an OBE.

In 1943, he joined 26 Field Company at Potters Bar as Officer Commanding, and was still with the company when it became 26 Assault Engineer Squadron. In 1943, he joined 82 (West Africa) Division in Nigeria as CRE and stayed with the Division until 1946, moving with it to India and Burma (Arakan) where he was twice Mentioned in Despatches. In 1947 he became CRE of the 5th Division in BAOR for a year. He then moved to the 2nd Division as CRE and became the Commanding Officer when 2 Div RE was reformed as 23 Field Engineer Regiment.

In 1949 he returned to the War Office, this time in an Intelligence appointment as Col GS (Int). In 1952 he was promoted to CBE and moved to GHQ MELF in Egypt as BGS (Int).

In 1954, he retired from the Army at his own request and embarked at Port Said on HMT *Empire Windrush* to return home. The troopship caught fire and sank in the Mediterranean, but he made it home and joined RoSPA, the Royal Society for the Prevention of Accidents in August 1954 as assistant to the Director-General, Major-General B K Young (late RE), succeeding him as Director-General in 1959. He finally retired in October 1968.

Brigadier Stoney's interests in later life centred on golf, DIY and high-grade crossword competitions, although they were all eventually abandoned due to failing eyesight.

He married Kathleen (Kaye) Kirkland in 1939 and they had a daughter, Heather Elizabeth. Kaye died in 1973 and in 1979 he married Bridget St John Browne, who together with Heather, survives him.

*HES, JEB*

## CAPTAIN W HEATH MC

*This memoir is reproduced from The Dundee Courier and Advertiser and is published by permission of the author, Mr Dougie Miller of St Andrews, Fife.*

BRITISH war veteran Wallis Heath MC, who set up a secret printing press in a Nazi PoW camp to produce copies of maps to help inmates escape during the second world war, has died at his home in St Andrews. He was 86.

As a Territorial Army officer, Captain Heath was called up to serve with 237 (Highland) Field Company, Royal Engineers, with the 51st Highland Division in France during the phoney war of 1939.

When Rommel drove the British and the French back to the Channel ports in May 1940, he won the Military Cross for blowing up bridges under enemy fire before escaping from France via Le Havre, when the rest of the Division was captured at St Valery.

In Tunisia with the 78th Division in the First Army in 1942, he was second-in-command of the Royal Engineers company which built the first Bailey Bridge used in combat at Medjez el Bab. However, shortly afterwards he was captured during an ambush and sent eventually to *Oflag* 79 PoW Camp in northern Germany.

A printer in civilian life, Captain Heath helped set up a secret printing press to produce 3000 maps from an original silk map concealed in a Monopoly set sent by Waddington's to the camp in Brunswick for the inmates to make a mass breakout as the Nazis faced defeat in 1944. Along with two other PoWs – Pip Evans and Ken Whitworth, who with Captain Heath were to become known as the Brunswick Printers – they were able to print the colour maps for use by each of the prisoners in the camp. The mass-produced maps, which showed major towns, railway stations etc, were designed to help the PoWs find their way home from Germany. During 1944 it became clear to those at *Oflag* 79 that when the liberation eventually came they might face new problems at the hands of the defeated Germans, and that it would be every man for himself. Captain Heath used a book-binding machine, ground down tiles and boiled margarine to fashion the improvised printing press which was used under the noses of the German guards. However, despite their fears, the prisoners at *Oflag* 79 were eventually liberated by an American cavalry unit and the maps were not needed.

Born in Dundee, Captain Heath was the second son of Mr and Mrs Edwin Heath. Educated at Dundee High School, he joined the famous card and postcard printers, Valentine and Sons of Dundee in the 1930s where his father was a director. He worked in several of its departments before being called up for war duty. After the war, he returned to Valentine's and was appointed its works manager in Dundee in 1948. In 1959, he took up the post as personal assistant to the chairman and managing director.

In 1961, he was invited to join ICI's Kynoch Press in Birmingham as general manager where he remained until he retired in 1975. During his time at Kynoch he was involved in the development of several new techniques, including the automated publishing of computer-stored data.

A keen rugby player in his younger days, he was a member of Panmure Rugby Club. He also served as chairman of the Scottish Young Master printers in 1949-50. He was also a member and trustee of the conservation pressure group, the St Andrews Preservation Trust for many years, and served as its chairman in 1985.

Pre-deceased by his wife, Jane and elder daughter Jennifer, Captain Heath is survived by daughters Kirsty and Sandra, seven grandchildren and two great-grandchildren.

*DM*

## MAJOR M J McGARRY MBE BEM

*Born 8 February 1924, died 14 Februrary 2003, aged 79.*

MICHAEL James McGarry was born in Gosport and after what can be assumed to have been a fairly normal childhood for the times, enlisted as a boy entrant into the Army Technical School Chepstow in 1938, at the age of 14, where he trained as a mechanic.

He left Boy Service in the early forties, badged into the Royal Engineers and reported to Frome in Somerset for his basic Sapper training. It was whilst he was there that he met Kathleen, an evacuee, who would later become his wife.

On completing his adult training he joined the 1st Guards Armoured Division and from there, volunteered for service with the Engineer Parachute Units, eventually joining 2nd Parachute Squadron in the 1st Airborne Division. With them he saw action in Italy, Southern France and Greece, making operational jumps into France and Italy. He was quite seriously wounded on the Italian front when, with a half section of Sappers, he was clearing mines on road verges. One was accidentally detonated, killing two members of the section, including the commander, and wounding the others. Michael sustained blast wounds to his face and body and was temporarily blinded, but happily made a full recovery. At the end of the war he came home and married his sweetheart Kathleen in 1945.

He was soon back on operations, this time in Palestine, where he served in 1945 and 1946, reverting to the home establishment in 1946. 1953 saw him once more in the thick of the action, with the 1st Commonwealth Division in Korea. From there, he went to Hong Kong where he was stationed until 1956, the year he was awarded the British Empire Medal for his outstanding service.

He continued in the UK and BAOR until 1965, when he was seconded to the Trucial Oman Scouts for a three year tour after which he came home to be commissioned.

He then carried out the usual jobs of a Regimental Quartermaster in the European theatre of operations, eventually being appointed the QM of a TA Regiment in Belfast during the height of the sectarian troubles of Northern Ireland. He was then seconded again, this time to the Army Air Corps at Netheravon – seeing out his service there as Quartermaster.

He was appointed an MBE in 1978 for his continued outstanding service to Crown and Country, placing him in the elite ranks of those who have received both the BEM and MBE, an achievement for which both he and we in the Corps are justly proud.

Mike continued with the Army Air Corps as a Civil Servant until finally retiring from the fray in 1987. The Army Air Corps thought so highly of him that they presented him with a magnificent silver rose bowl to mark his 14 years with them and his 50 years service to the Crown.

Mike and Kathleen lived in Cornwall for their last years together, Mike spending his own last years at a Residential Home in St Miniver where he was looked after very well by the caring and dedicated staff.

Mike was an outstanding and distinguished soldier, who saw service in the hot spots of the world during several wars and campaigns, and certainly lived up to the Corps Motto, *Ubique*. Mike was a man of great honesty and integrity. He was also an honourable man without malice and he was fiercely loyal to Crown and Country and to the Corps of Royal Engineers and the Army Air Corps, but above all this he was a gentleman. We will remember him.

He is survived by his daughters Laurie and Melinda Jane and by two grandchildren.

*RJO*

# 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 George Widdowson CBE TD,** who died on 15 December 2002 aged 91, was born in Chesterfield and joined the army at the age of 20, being commissioned into The Green Howards. In 1940, he was with his battalion in the BEF and was repatriated with them from Dunkirk. When the Parachute Regiment was formed, he transferred and served with the 10th Battalion in Palestine. He stayed with them, rising from platoon commander to second-in-command. At the battle of Arnhem, he just got past Oosterbeek crossroads when he was captured and spent the rest of the European war in a PoW camp in southern Germany. He left the regular army in 1946 and joined the Royal Engineers TA. His first task was to form 299 Parachute Field Squadron RE(V). He then went to RHQ of 131 Parachute Engineer Regiment where he was awarded the MBE, and finished his service in 1960 as Chief Engineer of the 51st Highland Division for which he was appointed CBE. From 1960-67 he was an equerry to HM The Queen. His civilian job was with Barclays Bank and from 1956 to 1963 was Chairman of Hull Clearing Banks. At the age of 85 years, he obtained a BA (Hons) degree in Spanish, the oldest ever graduate from Hull University. He is survived by his wife Mary, his son Howard from his first marriage and three grandsons.

# Correspondence

## WO1 P SLEEP MBE MSM

*From: Major General (retd) J H Page*

Sir, – There must be many hundreds of slightly elderly Sappers who, like me, were sorry to read of the death of WO1 Sleep in the December *Journal*. His impeccable upright figure as Band Sergeant Major always set the standard of the RE Band and his playing as leader of the orchestral section was often memorable.

One occasion is, for me, unforgettable. In 1963 when I was 2IC of 35 Engineer Regiment in Osnabrück, and when by chance the RE Band was touring Germany, we were enjoying a Regimental Guest Night with the orchestral section under Phil Sleep's leadership in attendance.

Brian Coombe was the Commanding Officer and towards the end of dinner the Mess Secretary came in and gave him a brief message. Dinner was completed and I noticed that Brian summoned Phil Sleep and spoke to him for about thirty seconds.

Immediately after the loyal toasts Brian rose again to his feet and summoned us to do likewise.

He announced that President Kennedy had been assassinated.

We stood for two minutes in silence whilst Phil Sleep played the "Star Spangled Banner" on his violin.

I can still hear, and will never forget the gentle, sensitive tone of his playing. Yours sincerely – John Page.

## WO1 P SLEEP MBE MSM

*From: Brigadier (retd) J F M Grear*

Sir, – It was entirely appropriate that an appreciation of WO1 Phil Sleep MBE MSM was published in the *Journal*.

To many of my generation of Sappers, the Corps Band centred on this most excellent Warrant Officer. Directors of Music came and went, but Phil Sleep seemingly went on for ever, maintaining the wonderfully high standards for which the Band was renowned.

In 1976 my wife, then on the Kent Council for Deaf People, enquired whether the RE Band would put on a Concert in Brompton Barracks for the Deaf Community of Kent, odd as this request might seem. We both recall with much fondness and pleasure how Mr Sleep and the Band leapt at the opportunity and provided an evening of music that was hugely appreciated by the audience. So successful was it that, at his suggestion, the Concert was repeated the following year.

The Corps is the richer for his service with it. He will be remembered as a wonderful musician, a top-rate soldier and a true gentleman. Yours sincerely – Jim Grear.

## DIVINING

*From: Major (retd) R I Radford*

Sir, – In Pakistan in the early fifties HQ EinC employed a seconded RE Officer as a full time Water Diviner, whom we borrowed to site a well at the SME Risalpur. The Commandant and I watched as he traced the lines of two water sources, measured their respective depths by (apparently) bouncing his signal off a crowbar, and indicated exactly where they crossed and where we should sink the well.

The Commandant sent for a park picket and having seen it driven four foot into the ground to mark the spot, we returned to our quarters for a cup of tea and the Diviner to Karachi, 700 miles away.

Unfortunately the well was never sunk, because the Quartermaster Havildar, concluding that the Commandant had finished with it, had the park picket withdrawn and returned to store. We were too embarrasssed to ask HQ EinC if the Diviner could come back home again. Yours sincerely, – Iain Radford.

## DIVINING

*From: Major (retd) C Spottiswoode*

Sir, – A vicar recently came under fire for telling children that "there was no scientific proof for the existence of Father Christmas". It seems that the same applies to divining; and I believe in at least one of these.

When I was DCRE Nepal, one of my locally employed Clerks of Works regularly used a strip of banding wire to find hidden pipes and cables around the camp at Dharan. I was fascinated by this and did some basic experiments to see which metals worked, to which the answer was ferrous, but not non-ferrous. However, my trials were interrupted at one point by a sceptical Commander BRIGLOC (Brig Tony Taggert) who demanded his turn with the rods. Having

seen them cross at the same place several times, he hailed a passing Nepali and put them into his hands. Same result.

Perhaps there is something in this Father Christmas thing? Yours sincerely, – Charles Spottiswoode.

*P.S. My wife was recommended her hairdresser by an acquaintance who chose the establishment by suspending a crystal over the relevant section of Yellow Pages! And very good she is too. Where's my old rugger sock?*

## COLONEL J K JOHNSON OBE

*From: Colonel (retd) E J Sharp*

Sir, – Jimmy Johnson and I first met in Korea early in 1953. He commanded 1 Troop and I was troop commander of No 3, and, if memory serves me well, he took over from General Sir George Cooper. Jimmy was a big man with a strong personality and displayed well-justified confidence. As I recall he was also a man with an infectious laugh and exuded good humour. His soldiers liked him; respected him and trusted him. These are the only qualities that really matter in combat situations. The rest of us in the Squadron immediately took to him and rapidly became his friend, one upon whom we knew we could rely. He was quintessentially an English gentleman; upright and honourable. There was not an ounce of malice in him and I never heard him speak badly of anyone: although fair criticism is a duty with which we must all comply. He was also a highly competent man and when necessary he could make his point logically and forcefully. From time-to-time and on occasions when the workload became over-stretched, we would lend each other a "Section". This always occasioned much good humour from the lads, and they sometimes proclaimed they did not know whether they were in 1 or 3 Troop. On the departure of the incumbent, Jimmy who was the senior captain then became the Squadron 2 i/c. At "O-crack-double-O", although a popular phrase at the time I am never quite sure what it meant other than an impossibly early start, he was always there to wave-us-off from the Squadron harbour area. Equally he also made sure that all had returned and hot food was waiting for us.

I then did not see him again for the next twenty years when he appeared with his family at AFCENT where I was also serving at the time. The only comment I am qualified to make here is that he commanded the same high regard and respect from other nationals that he did from the British contingent. One can spell the word "gentleman" in two ways: Jimmy qualified for both meanings. With his departure the world can only be a poorer place, and his memory will always be strong in the minds of those privileged to know him. Yours sincerely – Edward Sharp.

## CORONATION DAY 1953

*From: Major (retd) R Mason*

Sir, – Shortly before Coronation Day on 2 June 1953, the Duke of Wellington's Regiment had repulsed the last of a series of attacks by the Chinese on the Hook position on the left of the line, then held by the Commonwealth Division. Work on the defences before the attack had been the responsibility of No 1 and 2 Troops of 55 Field Squadron. On the night of the attack, as it died down, I was told to switch No 3 Troop immediately from a relatively quiet position at Yong Dong to clear up the very considerable mess that had resulted from the battle. No recce of the Hook position, which was new to us, was possible in the circumstances.

Coronation Day started for most of 3 Troop in much the same way as the previous few days. That is to say digging out the battered forward trenches to a respectable depth, repairing bunkers and trying to restore an acceptable amount of overhead cover. There was a general air of quiet and the troop was able to dispose of a considerable amount of spoil over the top of the trenches without reaction from the Chinese opposite.

At some stage, the Divisional artillery fired red, white and blue smoke shells into No-mans Land, of which the troop had a grandstand view. Gradually, in the afternoon, it dawned on me that we were the only troops working. I happened to be in the CP of a company commander of The Duke of Wellington's, who were by now in a reserve position but within 3 Troop's TAOR. He offered me a glass of champagne, my first, apologising that it was not chilled. "I would pack up old chap If I were you, no one else is going to bother you now", he said. As he had the MC and Bar, and was far more experienced than me, I took his advice and stood the men down early.

He was quite right; no one did bother us, certainly not Squadron HQ. Its entry in the War

Diary for the great day bemoaned that it had been on the regimental net of 72 stations for the past few days and "the impossibility of being able to get in a word edgeways". Coronation Day allowed it "gratefully" to revert to a squadron net.

There was also a mention that "Crusader", the armoured bulldozer, had finally expired somewhere. Perhaps it also had too much of the mechanical equivalent of bubbly. 3 Troop did not get its usual one line entry that day, so we were completely unbothered. Yours sincerely – R Mason.

## TALES FROM INDIA

*From: Lieutenant (retd) G P Webb*

Sir, – Sad! Our common Indian words are not understood any more. Dak (pronounced like "dark") means "mail" or "post". There were Dak Bungalows all over Northern India for the transport of letters. *(Apologies for translating Dak to Atak in the December edition – Ed).*

Usually there was a "Chaukidar" at every Dak Bungalow who also served as a cook. He would produce a meal with the inevitable dessert of *crumble custard* (caramel custard). I have eaten crumble custard until it is coming out of my ears! You knew, in advance, what you would be offered.

Royal Engineers must read "Mallory and Irvine" by Peter Firstbrook to extend the debate of whether they reached the summit of *Mt Everest* before finally falling to their deaths. The mystery is ongoing, whereas Hillary's conquest of the peak seems almost an anti-climax. The known becomes commonplace – it is the unknown that continues to intrigue! Note: ABC stands for "Advanced Base Camp", not the "Aerated Bread Company"!

During a short two-week leave in 1944, I journeyed to Srinager and trekked towards Nanga Parbat (26,680 ft). The trail was always dominated by the towering presence of Kanchenjunga (28,208 ft), which was never out of sight. The route was an endless succession of valleys and passes, no sooner up one than down another.

Eventually I stood at the top of one pass and could see Nanga Parbat in the near distance. I calculated how long it would take me to reach the base of the mountain and decided I would have to over-extend my leave to do so, with disciplinary consequences.

So, regretfully I said goodbye to the mountain and turned back. Of course I could never have made an attempt to climb it, so perhaps it was best to have seen the mountain in all its splendour at close range and the climb itself left to others.

Surely RE is Sherlock Holmes and Dr Watson combined - a mix of penetrating investigation and good humour? No other profession exhibits such a balanced approach, neither the military, medical nor any other. One is grateful for the privilege of having belonged. Yours sincerely, Geoff Webb.

# Reviews

## PLATOON COMMANDER
BY PETER STEADMAN

*Available from Dennis Ellacott,*
*37A The Broadway, St Ives, Cambs PE27 5BX.*
*Price: £14.95 (inc p&p).*
*ISBN 1 85821 901 9*

PETER Steadman was raised in Powys, Wales, went to school there and in Shropshire and at the age of eighteen qualified for training as an officer in the Royal Engineers. Our paths crossed briefly at this time (it was sixty years ago), and I remember him as a robust and enthusiastic redhead who was consistently close to the top of his class. On commissioning he lost no time in joining for active service in North Africa and Italy before taking part in the invasion of Normandy, the defeat of Hitler's armies there, and the subsequent pursuit and invasion of Germany. His service was distinguished, leading to the award of the Military Cross and a Mention in Despatches. When the war ended, he stayed on in Germany for a year and then, after a short spell in Denmark, left the army, took an engineering degree at Cambridge and pursued a successful career as a civil engineer. This took him initially to Gibraltar, Pakistan, Iran and Kenya. In 1957 he emigrated to Canada and spent the next thirty years in designing and constructing mainly hydro-electric power developments in several Canadian provinces and overseas. This book tells the story of his war years. Now that so many of those who took part in World War 2 have died or reached the end of their active lives, it becomes all the more important that these personal stories are set down, published and form part of the permanent archive of the time. Peter's book is a distinguished contribution in this field being a valuable memoir on the activities of an engineering platoon in various campaigns. He does not attempt to sensationalise his story, but represents a human side of war in an often understated manner, often reflecting on some lighter moments such as the events commemorating the 50th anniversary of D-Day. It deserves to find a place in any book collection, public or private, where military history in the first person singular is valued and preserved.

HWB

## YANKS
BY JOHN S D EISENHOWER

*Published by The Free Press, New York.*
*Price: £25.00.*
*ISBN 0 684 86304 9*

SON of the 34th President, John Eisenhower is a soldier and diplomat turned author. In Yanks, he has written a fascinating book on a subject about which we British know comparatively little, the US involvement in the Great War. Although at a cursory glance it is a conventional piece of military history, the story really revolves around one man, General John J Pershing, whose single-minded vision dictated how the American Expeditionary Force (AEF) played a key part in the closing stages of the Great War.

After the US declaration of war on 6 April 1917, the Allies urged the immediate dispatch of formation sized units to France; men were desperately required to fill manpower shortages created by the generally failed offensives of 1917. Indeed, Britain proposed transporting 500,000 doughboys to UK and, on completion of their training by British instructors, incorporating them into British units, a process called amalgamation. Pragmatic as ever, the French did not support this, recognizing the need for a political demonstration that the US was an equal partner in the war against the Central Powers. The creation of a two million man expeditionary national army from 130,000 regulars and 70,000 national guardsmen was no small task and the US decided on the draft system from the outset, the first draft commencing in mid 1917. Secretary of War Newton Baker recommended to President Wilson that Pershing be the CinC of all US forces in France, the AEF. The President's mandate was very clear; "...the US forces are a separate and distinct component of the Allies and their identity is to be preserved ... except where particular circumstances occur."

Black Jack Pershing – he acquired the name whilst an instructor at West Point because he had commanded the 10th Cavalry, a unit of Negro soldiers – was a man of great operational experience. Precise, autocratic, aloof, austere and ruthless, he arrived in Europe on 8 June 1917, slightly in advance of the regulars of 1st

US Division who disembarked for the start of the AEF's great adventure on 26 Jun 1917. One of his many immediate concerns was that he did not have the staff procedures necessary to control his army and he created the G1 to G5 system which, with minor modifications and additions, NATO uses today. He then had to negotiate with the French for a zone of autonomous operations for the AEF between the Argonne forest and the Vosges mountains. He also needed vast areas on which to train his burgeoning army – Pershing espoused manoeuvre warfare and individual skill with the rifle, even in the stalemate of the trenches. The next task for Pershing and his staff was to establish a LofC and the vast operational infrastructure necessary to support an expeditionary army. Not prepared to share the AEF ports and LofC with the British, whom he instinctively mistrusted and wished to be independent of, he selected three ports on the West coast of France. Pershing subsequently also created the semi-independent Air Service from the US Signal Corps.

In late 1917, the military situation in Russia and Italy had deteriorated considerably for the Allies. The Germans were thus able to redeploy divisions to the Western Front as a pre-cursor to a deciding offensive against Britain and her Empire, the French, Belgians and their new and inexperienced American allies. In recognition of this growing military threat, the Allies created a Supreme War Council and, as a consequence of Ludendorff's attack of 23 March 1918, a unified command was quickly formed under General Foch. Until this point, Pershing had remained obdurate about the employment of AEF units and formations under anything other than US command. However, he was a pragmatist and agreed to amalgamation at divisional level with both the British and French in order to ensure that the fragile military situation was not allowed to deteriorate so adversely that the Allies lost the war. Five further German attacks all but brought the Allies to their knees but the progressive commitment to operations of US formations operating mainly under French command, initially at Cantigny in May, followed by Belleau Wood and Chateau Thierry in July helped contain these attacks. Subsequent operations of the AEF at Corps and Army level under US national command at Soissons and St Mihiel, and then the final attack and pursuit between September and November 1918 on the Argonne, allowed Pershing to realize American military ambitions for the AEF as a national component of the Allies in its own right. This secured for the US a dominant position in the post-war peace negotiations at Versailles.

We British tend to scoff at the Americans for coming late to the support of freedom in both world wars of the 20th century. However, what they had to do in 1917 to mobilize a field army of two million men, almost from scratch, train it, deploy it to France, create an operational infrastructure to support it and then fight and prevail over a foe who, even in mid-1918, was still an extremely effective battlefield practitioner, must not be underestimated. Neither must their blood commitment of some 122,000 deaths.

Yanks is a good read. Although costing £25 UK counter price, it can be ordered on the web direct from the publisher in paperback at £10.99. My advice is to get it and learn that our transatlantic cousins played a bigger, and possibly more decisive, role in the Great War than perhaps is realized.

MDC

## THE SOUND OF HISTORY

RICHARD DOHERTY

*Published by Spellmount Publishers,*
*The Old Rectory,*
*Staplehurst, Kent, TN12 0AZ.*
*Price £20.00.*
*ISBN 1 86227 164 X*

DOHERTY is a skilled author, and this work, 60 years after those famous battles, does him great credit. At the beginning, he includes a brief reference to the strategic setting of those anxious four months, July-October 1942, starting as they did about the same time as the first American success of the war at Midway in the Pacific, and ending when the advantage of the Stalingrad-horror was just turning in the Russian's favour.

In the Western Desert of Egypt, those four months began with the withdrawal, almost rout, of the British Commonwealth Eighth Army out of Cyrenaica, and losing the fortress of Tobruk.

The command of the Army was then taken over personally by Auchinleck, the CinC Middle East, himself. Determined to preserve it as a fighting force, he avoided the course of trying to stop Rommel at Mersa Matruh and went right back to El Alamein, the well-reconnoitered "short" posi-

tion. There, the power of his personality was such that his dispirited troops stood their ground and gave battle successfully enough to prevent the enemy going any further eastwards towards their goal, the Suez Canal. That situation was so that the Royal Navy evacuated its main base in Alexandria, while GHQ *"filled the streets of Cairo with the smoke of secret documents being burnt";* an event judged by Mussolini as sufficiently significant to have his white charger flown over from Italy, so that he could appear mounted on it in a victory parade.

In the Desert, the tactical position on 1st July 1942 was touch-and-go for both sides, and all ranks were exhausted from lack of sleep and proper food. The Eighth Army however had the advantage of a short LofC, whereas the Axis troops and their vehicles were thirsty, and did not know the terrain. Throughout July and August both armies tried desperately to turn local tactical successes into significant results, but the relentless power of the Royal Navy and the Royal Air Force prevented Rommel's resources building up sufficiently, while the British were being reinforced steadily. The Auk's major problem was Churchill himself, whose impatience urged him to squander his new tanks before the units manning them were desert-worthy.

Eventually Auchinleck was replaced by Montgomery as Army Commander, and by Alexander as CinC Middle East; probably just in time, as the higher command in the desert were worn out by anxiety and lack of sleep.

Within a week of Montgomery's arrival, the spirit of all units in the Eighth Army had changed miraculously; the men's faces radiated confidence and everyone had seen, or even met, this cocky little General with a squeaky voice. "Monty", as he was known immediately, was fortunate enough to have been accompanied by lavish reinforcements of new army formations and, for the first time, by an air force almost reaching mastery. However, realizing that the odds were moving unfavourably against him, Rommel tried once more to break through on 31st August, and sacrificed his armour in a set-piece battle at Alam Halfa, as Monty had correctly foreseen.

This failure by the Axis forces was never reversed and, although much bitter fighting took place during September and most of October, the reinforcement of the base under Alex's skillful direction, while Monty made steady preparations for his decisive assault, led to the famous artillery barrage which opened on 23rd October. The sound of it was heard, the author says, by his sister – a nun in Alexandria! Even then, the steadfast resistance by the Germans, and by some of the less respected Italians, did result in a fortnight of heavy fighting, some at very close quarters. Doherty's descriptions of many of the tactical engagements are brilliant and convey the ruthless determination of the unit and sub-unit commanders on both sides, as they all realized how decisive was to be the outcome of each phase, until at last the way was open for the race to Tripoli.

Some of the most interesting items in the book are the quotations from Rommel's letters to his wife, in which he pours praise on Auchinleck's military skills, in contrast to the poor opinion of him expressed by Churchill. It is sad to see the many examples of Monty's petty animosities towards his predecessors in the field, especially "Chink" Dorman-Smith, who had acted as Chief of Staff to "the Auk". Indeed Monty must have suffered from an inferiority-complex, as explained by the author, who believes that almost all the Allied generals, having learnt the use of tanks in the Great War, were still tending at Alamein to handle them as if the Germans, skillful use of their Anti-Tank weapons was not so deadly. Added to that, the congestion of so many armoured and motorized formations, squashed in by huge minefields in featureless terrain, led to such difficulties of precise navigation that both manoeuvre and dispersion were terribly limited; the heavy casualties in men and machines were inevitable.

In my opinion this is a good book, carefully researched by the author but, although I knew the terrain very well both before the battles, and subsequently, the maps do not seem as clear as one could wish. Sappers reading it will be pleased to see the many compliments paid by the author to the bravery and performance of members of the Corps, but he seems to be unaware that the motto *Ubique* is shared with us by the Gunners. Again, he is on unfamiliar ground at the foot of page 73, where he demonstrates his ignorance of the historical occasions when "Follow the Sapper" has been the cry.

I was privileged to attend the conference at Sarafand in November that year, when the CinC, Alex, presided over almost all the Generals from the Desert spending some 24 hours deciding the

lessons of the Alamein battles. There, Monty emphazised the importance of the "will of the Commander" and Alex concluded "that everything will be laid down by GHQ". A fortnight later I was one of an All Arms group touring the battlefield itself to confirm the official reports; the majority of the wrecked tanks and other vehicles were all still in place, as were the wire and the minefields.

JC

**THE FORGOTTEN TRAGEDY**
**The Story of the Sinking of**
**HMT Lancastria**
BRIAN JAMES CRABB

*Published by Paul Watkins Publishing,*
*Available from BJ Crabb, 24 Exeter Road,*
*Portishead, Bristol, BS20 6YF.*
*Price £19.95 (including p&p except overseas)*
*ISBN 9 0028 950 4*

BRIAN Crabb's new book is not a work to be compared with others written on the subject. It is less "emotional" writing, with a difference to that of Geoffrey Bond and John West. He has composed his work from scratch and carried out extensive research.

It does include survivors' and other eyewitnesses' narratives, some of them published for the first time. They differ in as much they include interviews, and the author has been able to probe and obtain what he needed. Brian's experience gained in researching his other naval histories and his connection with maritime affairs has enabled him to approach the subject in a planned and objective manner. His participation in the 2000 Association pilgrimage provided him with valuable material and he has doubtless gained from the bond he formed with many survivors.

For survivors, the book will bring to the fore the many records and official files which exist and are only now being released. No doubt some will take issue over the omissions, but official documents have been reproduced unaltered. All this will add to the continued *Lancastria* "debate".

For relatives and loved ones, I consider that the book will give a better understanding of the massive force which was impacted upon both the servicemen and civilians before, during and after the attack. Even their children, some born posthumously, have been affected for the rest of their lives.

All books containing "facts" are subject to errors. The few insignificant errors in Brian's book are mainly due to assumptions being made, particularly when information provided by others is incompletely listed. Considering the age and condition of some references, the errors are excusable and easily corrected. He has through his merchant naval knowledge, also cleared up misconceptions that have existed since the day of the sinking.

It should be said that when Brian Crabb first announced his intention to write this book, the reaction was sceptical. His critics, myself included, have been confounded and he is to be congratulated for his dedication and scholarship.

BR

**ZULU VICTORY**
**(THE EPIC OF ISANDLWANA AND THE COVER-UP)**
RON LOCK AND PETER QUANTRILL

*Published by Greenhill Books,*
*Park House, 1 Russell Gardens,*
*London, NW11 9NN.*
*www.greenhillbooks.com.*
*Price £19.95.*
*ISBN 1 85367 505 9*

THE "Isandlwana Disaster" of 22nd January 1879, sent shock waves of disbelief through the Empire. An estimated 20,000 Zulus attacked and overwhelmed an ostensibly well-armed British and Colonial force of some 1623 defenders, plus camp followers, in a few hours. "Zulu Victory" comprehensively re-examines the sources in an unusually stimulating way, giving due weight to Zulu and Colonial Volunteer accounts not generally featured much in conventional histories. These, nevertheless, provide the basis for a much clearer reappraisal of how the battle actually started – its manner making the Zulu victory just a matter of time, and a certainty.

Lord Chelmsford's central invading column was both operationally and tactically wrong-footed. Masking manoeuvres to conceal the nearby concentration of the Zulu Army for an attack fortuitously caused Chelmsford to split his force into widely-dispersed halves. One was static and vulnerable at Isandlwana camp; and increasingly beyond the support of the other, which deployed further forward as the morning

wore on. The Isandlwana half was tactically maldeployed from the outset, more so as troops were unwisely dispersed. Suddenly, rifle companies and outposts could neither adequately support each other nor hold a coherent defensive line. The true nature of the main Zulu attack – an envelopment skillfully coordinated over a four-mile frontage – was recognized too late. Ammunition resupply probably collapsed very early on. The waning firepower of the six infantry companies, colonial volunteers and levies could not hold the Zulus at a distance. After heavy initial casualties they broke through and annihilated the desperately faltering defence. Those trying to withdraw in contact, or simply to flee, were rapidly cut down. Few survived.

Another key element of the battle was the lionhearted but controversial role played by Colonel Anthony Durnford RE, whose mostly mounted reinforcing column arrived just as the right flank of the Zulu attack unveiled itself. Durnford's actions receive searching treatment in the book, which dispassionately recounts his impetuous foray forward of the camp at what turned out to be the *moment critique* of the battle. The final chapters starkly review the various disreputable attempts to redeem Chelmsford's public reputation and lay responsibility elsewhere, firmly discrediting official attempts to blame Durnford for the collapse. An interesting Epilogue rounds off the story, and we are provided with a useful chronology and an analysis of the "Ammunition Controversy". There are minor flaws in "RE mentions", but none that spoil the book. Lt FH MacDowel of the 7th Fd Coy RE, perishes by hand of the authors under the name "McDougall".

Ron Lock is the respected writer of *"Blood on the Painted Mountain – Holbane and Kambula, 1879"*. His experience as a mounted policemen provides valuable insights into what man and horse might have achieved in time and space on this huge battlefield. Peter Quantrill is a retired 7th Gurkha, and has focused on the intrigue and conspiracy of the "Cover Up". Both display good military instincts, and do not flinch from forthright opinions. But these are either manifestly convincing, or are at least a credible and plausible interpretation – in areas where others have kept fit by leaping to conclusions. On contentious issues, the core evidence is marshalled to let readers form their own views.

This is a thoroughly admirable book, representing a significant milestone on the path to a better understanding of a complex battle, otherwise difficult to unravel. Its two authors have trod the battlefield extensively and their excellent photographs and helpful maps enrich the text. The overall product is pleasing in balance and appearance, and provides an easy to follow and engrossing read. It is well worth buying.

MCMcC

# Explanation of Abbreviations Used in This Journal

ADC . . . . . .Aide de Camp
AEF . . . . . .American Expeditionary Force
AFCENT . . . . . .Armed Forces Central Europe
ANZUK .Australia, New Zealand, United Kingdom
ASA . . . . . ... Army Sailing Association
ATRA . . . .Army Training and Recruitment Agency
AVLB . . . . . .Armoured Vehicle Launched Bridge
AVRE . . . . . .Armoured Vehicle Royal Engineers
BAOR . . . . . .British Army of the Rhine
BATCO . . . . . .Battlefield Code
BRITFOR . . . . . .British Forces
BRIGLOC . . . . . .Brigade Line of Communication
BM . . . . . .Brigade Major
Bt . . . . . .Baronet
CB . . . . . .Commander of The Order of the Bath
CBE Commander of the Order of the British Empire
CES . . . . . .Complete Equipment Schedule
CinC . . . . . .Commander in Chief
CLAIT . . . . . .Computer Literacy and Information Technology
CMG . . . . . .Companion of the Order of St Michael and St George
CP . . . . . .Command Post
CRE . . . . . .Commander Royal Engineers
CRE(Wks) . .Commander Royal Engineers (Works)
CSV . . . . . .Combat Support Vehicle
CTW . . . . . .Communications Training Wing
DA & QMG . . .Deputy Adjutant and Quartermaster General
DCRE . . . . . .Deputy Commander Royal Engineers
DF . . . . . .Direction Finding
DLO . . . . . .Defence Logistic Organization
DSO . . . . . .Distinguished Service Order
DTR . . . . . .Defence Training Review
ECDL . . . . . .European Computer Driving Licence
EFR . . . . . .Equipment Failure Report
ES . . . . . .Equipment Support
ESM . . . . . .Equipment Support Manager
ESS . . . . . .Engineer Systems Support
FA . . . . . .Football Association
FARELF . . . . . .Far East Land Forces
FEPS . . . . . .Field Electric Power Supplies
FOO . . . . . .Forward Observation Officer
FRS . . . . . .Fellow of the Royal Society
FTRS . . . . . .Full Time Reserve Service
GCB . .Knight Grand Cross of the Order of the Bath
GCSI . . . . . .Knight Grand Cross of the Order of the Star of India
GCVO . . . . . .Knight Grand Cross of the Royal Victorian Order
GHQ . . . . . .General Headquarters
GSO . . . . . .General Staff Officer
HMT . . . . . .His Majesty's Troopship
ICI . . . . . .Imperial Chemical Industries
IPT . . . . . .Integrated Project Team
JPAS . . . . . .Joint Personal Administration System
KBE . . . . . .Knight Commander of the Order of the British Empire
KCB . . . . . .Knight Commander of the Order of the Bath
KCIE . . . . . .Knight Commander of the Order of the Indian Empire
KCSI . . . . . .Knight Commander of the Order of the Star of India
LASS . . . . . .Light Armoured System Support
LofC . . . . . .Line(s) of Communication
LSB . . . . . .Logistic Support Bridge
LWT . . . . . Light Wheeled Tractor
MBT . . . . . .Main Battle Tank
MEC$^3$S . .Military Engineer, Command Control and Communications Specialist
MGO . . . . . .Master General of the Ordnance
MHE . . . . . .Mechanical Handling Equipment
MWF . . . . . .Military Works Force
NAAFI . . . . . .Navy Army and Air Force Institutes
NATO . . . . . .North Atlantic Treaty Organization
NCC . . . . . .National Command Centre
NZ . . . . . .New Zealand
NZEF . . . . . .New Zealand Expeditionary Force
PFI . . . . . .Private Finance Initiative
POD . . . . . .Port of Disembarkation
QGE . . . . . .Queen's Gurkha Engineers
QGEA . . . . .Queen's Gurkha Engineers Association
RAC . . . . . .Royal Armoured Corps
REMCM . . . .Royal Engineers Manning and Career Managment Division
RESA . . . . . .Royal Engineers Sailing Association
REYC . . . . . .Royal Engineer Yacht Club
RMAS . . . . . .Royal Military Academy Sandhurst
RNZE . . . . . .Royal New Zealand Engineers
RORC . . . . . .Royal Ocean Racing Club
RSMS . . . . . .Royal School of Military Survey
SA . . . . . .South Africa
SFOR . . . . . .Stabilization Force
SME . . . . . .School of Military Engineering
STRE . . . . . .Specialist Team, Royal Engineers
TAOR . . . . . .Tactical Area of Responsibility
TDT . . . . . .Training Development Team
TAFMIS . . . . .Training and Financial Management Information System
UNPROFOR . . . . .United Nations Protection Force
YO . . . . . .Young Officer

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