THE ROYAL ENGINEERS JOURNAL

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Guidelines for Authors

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

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

Length. Normally approximately 4500 words (approximately ten A4 pages double line spacing at 12pt) plus illustrations.

Copy. Ideally one copy of the text should be submitted, typed in double spacing, plus a short pen picture of the author and a head and shoulders photograph. Please don't forget to add captions for any artwork to be included.

Clearance. The author must clear his/her article with his/her CO where applicable.

Computers. Articles submitted on 3½in discs are very welcome. Please ensure that text is typed with no formatting, ie LH justified only, and saved as an ASCII file (with a .txt extension).

Copyright. If an article has been published elsewhere, copyright clearance must be sought; copyright clearance on photographs, maps or illustrations must also be obtained prior to submission.

Photographs should be black and white if possible, or coloured of good quality with sharp definition. Please do not submit laser/photo copies of photographs.

Rewards can be generous. The Publications Committee has about £250 in prize money to allot for each issue plus valuable annual prizes. All authors receive £10 to help cover costs.

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

Contributions should reach the editor by:

16 February for the April 1996 issue
Early June for the August 1996 issue
Early October for the December 1996 issue

Submissions before the deadline are particularly welcome.

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Editorial

It has been a momentous year for anniversaries and commemorations. The 50th anniversaries of VE and VJ days would have escaped no-one's attention. Others are perhaps less well known. This year also commemorates the 75th anniversary of the formation of the Corps of Royal Signals, which replaced the Signals Service branch of the Royal Engineers in 1920, and the 120th anniversary of the founding of the Institution of Royal Engineers. The latter event would perhaps have passed unnoticed except for the good wishes sent to us by one member.

The more observant readers of the *Journal* may have noticed a reduction in the number of pages. For the past two years we have been averaging just over 115 per issue, primarily to accommodate the surge in "50 years ago" articles. We intend in future to keep to our optimum, in terms of cost, of 96 pages although, as reported in the minutes of the Annual General Meeting in July, the Council has thought it prudent to review our publications as a whole in the light of the reducing active officer membership, increases in costs and the workload on the small publications staff. Consideration was given to reducing the frequency of issue of the *Journal* from three to two a year but any decision on this will be deferred for at least another year.

The Institution, mainly through its publications, reflects all sections of the Corps. The TA features strongly in this issue. *The Birth of a Regiment* is a a fascinating insight into the strengths and weaknesses of the TA and also provides evidence of how much its importance has grown in contributing to the Corps' and Army's operational capability. Historical articles continue to predominate, which have a particular appeal to many of our readers and provide a valuable addition to our archive records. *Wireless in the Boer War* is a tribute to those early pioneers in communications who could hardly have dreamt of the explosion in information technology which we are experiencing today. The change in emphasis between combat engineering and construction engineering continues. About one third of sappers in the Field Army are currently deployed on engineer operational and training projects throughout the world. *UN Electrical Fields in Bosnia* underlines the high standards demanded of them. In contrast, *The Berril Valley Obstacle Belt Project* and *TES: a New Type of Medicine* highlight the growing importance of simulation, with so little opportunity otherwise of practising combat engineer techniques and procedures in a battle group environment. Finally, in this brief survey of articles in this issue, *Management Theories, Long Shots and Safe Betts* provides much food for thought on how military engineers should be organized and trained to meet the challenges of the future.

Perusing some earlier *Journals,* many of the interesting and provocative ideas current at the time were debated in the correspondence section. There is less evidence of this happening recently and it is perhaps a reflection on the type of articles currently being published. History has shown that it is sometimes the provocative, impertinent or radical idea which germinates into a new concept of working and operating. Sappers have seldom failed to lead the way in this but perhaps the goal posts are moving too fast and pressures are such that there is less time now to sit back and reflect? Our thanks must go to all those contributors who, despite the difficulties, find time and make the effort to put their thoughts down in writing.

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Birth of a Regiment

LIEUTENANT COLONEL N A SUTHERLAND OBE BSc(ENG)

Lieutenant Colonel Neil Sutherland was commissioned in 1972 and then commanded armoured, field and plant troops in Germany with an interval to read civil engineering at the Royal Military College of Science at Shrivenham. Tours to Italy, Northern Ireland and Kenya with 34 Field Squadron were so enjoyable he was posted to the Field Engineer Wing and only escaped by being selected as Training Major 74 Engineer Regiment (Volunteers). Staff College and a tour to Ministry of Defence Main Building followed, during which he built a car to maintain his sanity. Command of 12 (Nova Scotia) Field Squadron came next, with tours to the Falklands and a return to Northern Ireland. His posting as SO2 G2/G3 in Engineer Branch, 1 (British) Corps was made quite busy by the Gulf War. A tour as Engineer Recruiting Liaison Officer preceded his appointment as Commanding Officer 78 Engineer Regiment (Volunteers). He was appointed OBE in December 1993. Neil Sutherland is an Army and Combined Service fencer and chairman of Army fencing.

BACKGROUND

WITH traditional timing for controversial statements, the Secretary of State for Defence announced the new *Options for Change* TA Order of Battle (ORBAT) Phase 1, on 10 December 1991 shortly before the House rose for the Christmas recess. His short statement heralded the start of the most radical shake up of the TA since 1967. Several reasons lay behind the decision to restructure the TA, the most pressing being the need to create a TA which matched the new military requirement for Reserves in a post-Cold War Army.

In understanding how the TA reacted to *Options*, Regular Army readers should not underestimate the dismay within the TA at some of the seemingly inept and certainly illogical decisions made at the time of the Gulf War. While 1700 TA reservists did deploy, there were many cases of well-trained, in-date volunteer specialists being sidelined in preference to long-discharged ex-regulars with largely forgotten military skills who suddenly (and often reluctantly) found themselves answering a call to arms. As part of the *Options* package it would be vital to have a new, more flexible "Reserve Forces Act" to permit a graduated call out and therefore earlier and easier use of TA units in war or operations other than war.

To fit the new ORBAT many units would need to change roles or even cap badges. Locations for new and existing TA units were decided in January 1992 during meetings between the Ministry of Defence (MOD), Arms/Service Directors, Territorial Auxiliary and Volunteer Reserve Association (TAVRA) staffs and United Kingdom Land Forces (UKLF) Districts. These decisions were not universally popular; county, cap badge and historic loyalties, often the strength of the TA, also create a natural inertia to change. Old Comrades' Associations, Members of Parliament, interested local councillors and retired senior officers represented strong views to press and Parliament which, though well meaning, sometimes added further complexity and unhappiness to TA units coping with difficult *Options* decisions.

On 6 April 1992, three new volunteer engineer regiments, 76, 77 and 78, were created. Within 78 Engineer Regiment, I gained the impression that despite an understandable apprehension with changing roles in mid-career, most volunteers were prepared to stay with the new unit provided (a) they continued to enjoy their soldiering, (b) they felt the new unit had a future (hence no further re-roling) and (c) they would have a "good" role with some chance of travel abroad.

Lt Col N A Sutherland OBE
Birth of a Regiment p220

Fortunately our regiment provided vital support to the newly created Allied Command Europe Rapid Reaction Corps (ARRC); we had been given the unique TA role of amphibious engineering and, with it, the opportunity to travel to Germany.

Roles and Orbat

The role of 78 Engineer Regiment was, in 1992, to provide engineer support to 3 (UK) Division in peace; and in war, to dispatch 127 Field Squadron (V) and 227 Amphibious Engineer Squadron (V) under command 36 Engineer Regiment. RHQ and 560 HQ Squadron were destined to support Southern District in war in the National Defence role reinforced by two field squadrons (V) from two different engineer regiments. All – er – perfectly logical, of course, but the thought of explaining this interesting deployment plan to the Regiment was avoided by insisting that we focused our complete attention on the ARRC role. (This war role has since changed and 78 Engineer Regiment now supports 3 (UK) Division within the ARRC.) The ORBAT of 78 Engineer Regiment (V) in 1992 was as shown below.

Sharp SD-types will have spotted the lack of any support squadron or resources troop within the orbat and, while support in war was planned, the problem in peace was that all engineer and training resources had to be ordered and collected by the squadrons themselves.

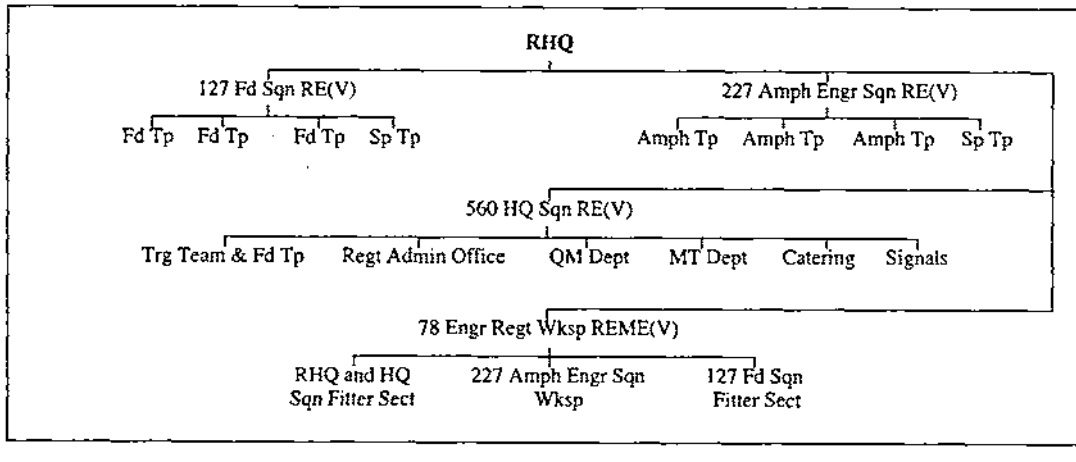
Early Days

Forming 78 Engineer Regiment was similar to mounting an expedition to Africa in the last century – one needed a clear aim and plenty of missionary zeal. There would be no route map to speak of, little of the right equipment, wary and occasionally hostile natives and the expectation of the occasional fight with a crocodile.

The total RE regular strength on day 1 consisted of seven, the composition of which seemed to owe little to a "grand plan", more to do with who was available for posting. No adjutant, no QM and no RQMS sets the scene with almost all regular staff, myself included, arriving on promotion. RHQ, lodged in two small offices in Gibraltar Barracks, borrowed some stationery from CVHQ RE, obtained a telephone and stole another and, armed with a thin instruction manual from HQ UKLF (which had no MOD authority, of which more later) on "How to Amalgamate, Convert or Re-Role Units", set out on a voyage of discovery.

For our first year, CVHQ RE had the unenviable job of looking after the embryo regiment and tremendous help was received from its commander, Brigadier Roddy Macdonald, and his staff. Some initial planning had been done by the staff and this was a useful start but well short of the rather trite passage in the planning booklet which said "...the new CO should receive at least six months warning of the date of conversion, assemble a conversion cadre to deal with transition problems and plan the conversion and retraining period... ."; together with the COs of 76 and 77 Regiment, we had a weekend in which to manage this. The first unit converted to the regiment on our first day of work.

One incident illustrated the complexity of the task. Just before the unit officially transferred to



78 Engineer Regiment (V) orbat, 1992.

The Regimental emblem – the drawing of Fort Rowner.

the Corps, 200 (Sussex Yeomanry) Field Battery RA(V) (destined to become 127 Field Squadron (V)) was stripped bare by its parent Headquarters of the bulk of its vehicles, radios and equipment with much personal "green" kit disappearing as well. This caused considerable anger and resentment and, despite strong protests up the chain of command, the decision which led to this "raid" was never reversed. Thus 127 Field Squadron was left to face its new fate with little more than the clothes it collectively stood up in and some old SLRs (self-loading rifles). However, the furore caused by this incident did put a stop to the practice.

Morale, Retention and Ethos

One of the founding principles of RE *Options* was that the converting TA units had to come over to the sappers *en bloc*. TA officers and soldiers grow up together as a family and will therefore face enormous stresses together; to split units up or to sack selected personnel because of establishment alterations on conversion would court disaster. There was an apocryphal account of a (non RE) regular CO who tried the "hard" approach to conversion during *Options* Phase 1 and reduced a healthy company-sized group to a small platoon in just under two months.

For the first few months there was sadness and even anger within the converting units. A parallel might be learning to adjust to a new life after a bereavement. Perversely, I gained the impression that the trauma of change was more easily overcome in units which were slightly less cohesive on entering the conversion process. Those who had worked with mechanical equipment had little trouble in adapting to our equipment or skills but the range and complexity of the tasks did present a major challenge as did the physical strength required to be an effective sapper. On the personnel side, I was certain that natural wastage of those who could not keep up or failed to adapt would solve many if not most of the manning problems – and over two years this has proved to be largely correct.

We made no special rules for women; they could take on any job within the regiment but had to do it efficiently. Many tried to become combat or amphibious engineers and some succeeded; those that could not cope with the strength requirements retrained into other vital roles (usually as drivers, clerks, radio operators) and were then better at their job for understanding the hard graft of the sappers on task.

Radical organizational changes were required, of course, but careful explanation of the plan and the benefits of the new structure were given, sometimes by myself but often by the OCs. Communication was important and we tried hard; however with hindsight we might have done better.

Locations

In deciding the location for 78 Engineer Regiment, there was a need to reduce the unwieldy geographic spread characteristic of so many existing TA regiments. Without the obscuration of long-forgotten reorganizations or county sensibilities, we could (in theory) have been raised anywhere but (in practice) the decision largely rested on the availability of a suitable training site or sites for the amphibious TA squadron. While Halton Training Area offered a reasonable river site, there were doubts about the suitability of the barracks and the recruiting potential of the area to support a 257-strong unit. After divers confirmed enough water existed to float M2 in Hawley Lake and the River Thames offered the possibility of flowing water sites, the general area was adopted, thus fixing the Regiment's location broadly within the South of England. Luckily the area not only provided good amphibious sites but also access for the rest of the regiment to some of the best training facilities in the UK. Where, then, was the rest of 78 Engineer Regiment to come from?

New Units for Old

Briefings revealed that I could expect to inherit six TA centres spread over Hampshire, Surrey, Sussex and Kent with units and detachments from the Royal Artillery, Royal Corps of Transport, Royal Signals, Royal Army Ordnance Corps and Infantry. Of the six TA centres, five existed and one was under construction in Aldershot to be ready for occupation by October 1992.

It may help to understand the size of the training challenge if the old and new units are compared ("V"s in titles excused):

Old Unit	New Unit
200 Fd Bty RA	127 Fd Sqn RE
233 Sqn RCT	560 HQ Sqn RE and amph tps, 227 Amph Engr Sqn
233 Sqn Wksp REME	78 Engr Regt Wksp REME
908 Tp R SIGNALS	560 HQ Sqn RE
308 Cdo Pet Pl RAOC	Amph Tp, 227 Amph Engr Sqn
3 Signal Sqn	fd and sp tp, 127 Fd Sqn RE
HQ B Coy 2 Wessex	560 HQ Sqn (fd tp and trg team)

In all we had a realistic strength of about 250 from the above units with non-attending soldiers discounted. Our target over the next two years was to recruit to 550. In the event we managed to achieve over 600 by the end 1994 but not all in the correct locations – a perennial problem for the TA.

TA recruits are drawn into the unit through advertising, contacts (friends of friends) and sheer curiosity. The turnover at junior levels can be as high as 30 per cent per year, generally reducing with rising rank. To prepare our recruits for the rigours of military life generally and their CMS (Common Military Syllabus) course at the training regiment in particular, sapper regiments have a regimental training team. Our team was based at Winchester with staff drawn largely from our ex-infanteers; this quickly led to our recruits having a strong reputation at CMS training. Over time we drew in staff from the squadrons to help with recruit training and aimed to "post" our better young NCOs to the task for a six-month tour.

The largest recruiting challenge was faced by 227 Amphibious Engineer Squadron which, for its first seven months, was raised, trained and administered from one room in a wooden hut adjoining the new TA Centre building site in Aldershot. A successful recruiting campaign in the Aldershot area was run using M2 rigs, diving tanks and CETs (Combat Engineer Tractors) which saw an exponential rise in numbers. Of those signing up for the unit, many were ex-regular soldiers and many were sappers too – very useful.

As a rough average across 78 Engineer Regiment, about 25 per cent of TA personnel had served with the regular army, rising to 33 per cent and even 50 per cent in some trades and locations. The benefits of recruiting ex-regulars are obvious but care was needed to avoid an instant promotion blockage for loyal, hard working TA junior and senior NCOs. It is not widely known that the CO of a TA regiment can "hire, promote and fire" personnel of any rank far more easily and swiftly than his regular regimental counterpart; a real bonus of TA command. The CO therefore also becomes responsible for almost every aspect of career planning for all ranks under his command. It was during a particularly difficult promotion and career conference that I fully realized what a great service personnel from the RE Manning and Records Office provide.

Training

Training was the first priority. With help from the Tactics Wing RSME, the Training Major, Major David Strawbridge, ran two TEWTs (Tactical Exercises Without Troops) for all the officers and SNCOs with the evenings in Chattenden used for "bonding" activity. For practical engineer training we needed equipment. It was essential we used the "honeymoon" period well, ensuring that the first introduction to sappering was well organized and properly equipped – that it generally was speaks volumes for the calibre and criminal tendencies of the Permanent Staff Instructors (PSIs) who made trips as far as Stirling, Weymouth, Hameln and Yorkshire to cobble items together for a weekend of training, often using their own cars due to shortage of transport.

The first M2 rigs from Germany arrived at Marchwood Military Port and were pressed into service immediately. We prayed that they would continue to work – the nearest properly equipped workshop being across the Channel. The rigs were a welcome sight, the first tangible evidence to the TA of a new future. The regular staff were glad of some on-site training aids too.

On transferring into the Corps, all the officers up to and including the rank of major became officially "untrained" and promotion was frozen until they passed the RE Troop Commanders' Course. We fought hard for the warrant officers, where I felt it unreasonable for them to be expected to return to Class 3 training, and we gained agreement that they should attend the RE TA Troop Commanders' Course which offered the most appropriate blend of engineering skills and command training. In one year, therefore, the regiment's warrant officers attended annual camp and the RE Troop Commanders' Course – and did very well on both.

Though retaining their pay grade for two years after transfer, the SNCOs and JNCOs reverted to

"unskilled" and returned to Class 3 training to become Royal Engineers. Thus began a long and painful haul for the bulk of the regiment's NCOs to regain their collective and individual pride. It takes little imagination to understand the extra strain on leadership skills when the whole organization, top to bottom, suddenly loses its military competence. All converting units and individuals managed to achieve adventurous two -year training targets earlier than planned; an excellent collective effort but a particular testament to junior NCO leadership skills.

For the SNCOs, informal coaching sessions became the norm and the RSM, WO1 (now Captain) Keith Angus and the PSIs, often found themselves running tutorials in the bar till the small hours. This was happening at every level. But the TA NCOs were also remarkably quick at learning to teach themselves and within a matter of weeks were able to run much of their own training. We also had excellent help from TA NCOs from the Royal Monmouthshire Royal Engineers and CVHQ RE who generously supported our busy combat engineer training programme at RETC (RE Training Camp).

Such was the high tempo of training, combined with a driving will to succeed, that our trade test results were startlingly good. In alarm, the RE Training and Development Team sent down examiners to check on the testing standards but left satisfied that all was well; the reason for the exceptional results was, of course, that we were training mature NCOs and soldiers and not new recruits.

Three months after the formation of the regiment, annual camp was held at Wyke Regis where those that survived the long hours, horizontal rain and hurricane winds felt a considerable common heritage.

The amphibious squadron, under its regular OC, Major Mike Law, went *en bloc* to 28 Engineer Regiment, Hameln, where they achieved very creditable passes at the regular army standard on the amphibious crewmen, drivers' and commanders' courses. Our pilots fared less well due only to a lack of river experience, but an agreement was made that the testing could be conducted in segments or modules on return to the UK. This was a highly successful camp, much enjoyed by the TA and, most importantly, dispelling the inevitable prejudices and myths surrounding the TA soldier's ability to cope with the complex role of amphibious engineering. Early in 1993 our first female TA rig commander gained her "ticket" during a regular course at Hameln and caused something of a stir by coming top of her course. It also caused the rewrite of the pass certificate which was clearly never intended to be issued to female soldiers.

Weekend training continued at a heavy pace across the regiment, not only in combat and amphibious engineer trades but also for signallers, drivers and plant operators. Plant operators were initially trained in the Tunbridge Wells area where the Plant PSI had found a farmer willing to let plant operate unfettered by restrictions. It is probably the best plant training area in the South of England. Our CET operators and CVR(T) (combat vehicle, reconnaissance (tracked)) instructors attended the regular army courses at RAC Centre Bovington.

I will always remain hugely impressed and proud of the dedication shown by the TA in this period; soldiers regularly turning out, often in the foulest weather, to complete some tough and often tedious conversion training. And all this on top of holding down a busy job during the week.

As with any unit, our training needed to be regularly peppered with the diversions of sports days, section competitions and regimental skill at arms meetings. Completely by chance we inherited some excellent shots. Shooting became very popular, which led to some outstanding team and individual wins at Corps and District Championships and at Bisley.

On Parade

On Saturday 8 May 1993 we held a formation parade in Gibraltar Barracks and were very fortunate to have the band of the Royal Engineers to play. The first (ever) rehearsals were held at 0730 hours – two practices with music – followed by the event itself at 1100 hours in front of a crowd of 300; and it went very well thanks to the uplifting effect of the Corps Band! The parade was inspected by the Chief Royal Engineer, General Sir John Stibbon KCB OBE, and was watched by our families and old comrades. After a cracking lunch at Minley Manor, a families afternoon was held at Hawley Lake where new-found skills were proudly shown off. From memory, 227 Amphibious Engineer Squadron won the MGB race, 127 Field Squadron was pretty sharp on the rafts while HQ Squadron and Workshops provided some spirited enemy for an assault river crossing. It was a great day and even the gruff,

General Sir John Stibbon inspects 127 (Sussex Yeomanry) Field Squadron RE (V) at the formation parade in May 1993.

seasoned TA hands admitted to feeling pretty pleased with themselves, and their new Corps.

Regular Staff

The unique establishment of 78 Engineer Regiment gave it many more regular officers, NCOs and soldiers, approximately 45 in all, than a "normal" TA regiment. This was partially due to the complexity of an amphibious squadron's equipment (M2 rigs, CVR(T) and CET) but also reflected a new approach to regular RE manning in TA regiments. This strong regular backbone gave the unit an excellent base to work from in peace and would, I estimate, have made the unit about twice as effective as any normal volunteer engineer regiment in war. Certainly, our regular manning levels were to be the envy of every non-RE CO I met throughout my tour and the Corps should take much pride in this useful "first".

We inherited many Non Regular Permanent Staff (NRPS), all retired regulars, who ran unit administration and maintained equipment during the working week. The Permanent Staff Administrative Officers (PSAOs) of the three squadrons were a particular strength during the conversion period, bringing considerable experience to bear on the vexed problems of re-badging paperwork, redundancies, hiring new civilian staff, supervising works programmes, papering over some fairly sizeable cracks and generally keeping their TA OCs out of the mire. As two of the three PSAOs had no knowledge of the Corps, you will appreciate they had a distinct personal challenge.

Getting Sorted

Enormous equipment problems faced the regiment for its first two years. The QM, Major Jack Pike with his own small HQ staff and particularly the "Q" staff of the squadrons, were faced with the need to return every unwanted item belonging to the former units (guns, tipper trucks etc), write the new unit equipment tables and then bid for all the items required to make the new units operational. The "Q" staff then received in excess of 130,000 items from units and depots across the UK and Germany. The movement of many large equipments such as the receipt of M2 rigs and

Corporal Leigh Clark, the first qualified woman TA rig commander (left), with John Martin (Mayor of Southampton), General Sir John Stibbon (Chief Royal Engineer), Brigadier Gael Ramsey (Commander Aldershot Area) at the helm, and Major Mike Law (OC 227 Amphibious Engineer Squadron (V)). Taken on the formation parade day, May 1993.

CETs with their bulky CES (complete equipment schedule) items could take regular and NRPS staff days to complete while the collection of B vehicles, tool boxes, "G1098" items and radios kept the "Q" and PSI staff on operational hours of work for nearly 18 months.

Our "camel's back" was particularly stretched by the "straws" of a regiment-wide SLR/5.56mm rifle exchange programme (complete with associated works programmes in four of the TA Centres), the need to write all manner of logistic, administrative and safety instructions to cover every activity and then pass a plethora of statutory Health and Safety and G4 inspections. I think we survived in good style but this short outline does not do justice to what was a tremendous team effort and a true feat of logistics.

One sad aspect of *Drawdown* was the poor state of some of the equipment and vehicles we received from disbanding units; I still believe this was a direct reflection on the standards of leadership within those units. Already logistically stretched, we found vehicles arriving with (typically) 20 to 30 driver and/or workshop tasks to be completed before they could be used for training. With very basic and, for the amphibious squadron almost nonexistent, maintenance and repair facilities this added an unwelcome burden – but we needed the vehicles and had to get them working. Again the load fell squarely on the regular and NRPS staff to sort out the problem.

On a happier note, I must add that the equipment received from sapper units in general and 28 Engineer Regiment in particular, was in generally good condition. That said, we did receive several strangely light artisan tool kit boxes from some sapper units, which, when opened revealed up to 30 "chits in lieu"!

Budgets

We were allocated just short of £1 million for TA pay in 1993/4. As TA pay is provided for training, the natural focus as budget manager was my training major who was able to match the training requirements against the money to pay for them. This worked very well considering that his previous budgetary experience was limited to keeping his credit card accounts straight. It does perhaps point out the need in this NMS (New Management Strategy) era for some budget training to be introduced quite early into a military career.

The ability to flex money from one budget to another gave a true measure of control over decision making. It was a unique experience to be faced with a decision such as "Can we afford to run a regimental section competition in the Isle of Wight in three months' time?" The answer was "yes," but we did have to consider what measures we might make to reduce the cost, such as using boats from 17 Port and Maritime Regiment to get us onto and off the

island. The discipline imposed by money (or lack of it) produced what was known as "creative tension": would I be sacked sooner rather than later?

I particularly enjoyed the "real money" given to us by TAVRA (about £3500 a year) where a decision to buy an item of equipment in the morning could be accomplished by lunchtime.

Top TA Ironsight Team, Bisley 1994. Team Captain, Captain Peter Tapsell, receiving the congratulations of Lieutenant General Sir Richard Swinburn, Commander Field Army.

History

I HAVE mentioned that TA members have a particular bond to their county and within the new units of the regiment we harboured the Sussex Yeomanry, the Surrey Yeomanry (both titles within 127 Field Squadron) and the Hampshire Yeomanry. While the Surrey and Sussex ties stemmed from the late 1700s with a clear lineage to the current unit, the link between 227 Amphibious Engineer Squadron to the Hampshire Yeomanry was, at best, economic on historical detail. Nevertheless, the bond between the old comrades and the units, the presence of some very fine silver and memorabilia in TA Centre display cabinets and, most important, the friendship forged at formal Yeomanry dinners all helped to give the squadrons a feeling of building on firm foundations.

One aside is worth mentioning here. The Sussex Yeomanry was originally a mounted infantry unit and saw active service in the Boer War. The arrival of the First World War saw their role change to cavalry in 1914 and then to dismounted infantry in 1915. In 1921 the unit changed to medium artillery and remained so for the duration of WW2 (Dunkirk, North Africa, Italy, Iraq). In 1947 it became an anti-aircraft unit and in 1967 a light gun battery before becoming a sapper unit in 1992. As an illustration of a TA unit coping with changing roles to suit the latest orbat, I can find no better example.

78 Engineer Regiment itself was the direct county successor to 115 Hampshire Fortress Engineer Regiment, disbanded during the defence cuts of 1967. With the agreement of the trustees, "whipped in" by our honorary colonel, Colonel John Evans, who had served with the old regiment, we were able to gain access to the title and some very handsome silver. A drawing of Fort Rowner, a sapper designed and constructed fort protecting Portsmouth, has been accepted by the Corps as the regimental emblem. For obvious reasons the "Hampshire" part of the title had to be dropped but the county baton was handed to 560 (Hampshire) Headquarters Squadron which was granted the right to use the county rose within its emblem.

Where the squadron numbers came from is more of a mystery; they were issued by RHQ RE when the unit was formed. I believe that 127 and 227 Companies served with distinction in the First and Second World Wars and were based in Sussex and Hampshire respectively. 560 Company was possibly a Surrey-based unit. Clearly some work in the archives is still required on this subject.

Consolidation

FOR our second annual camp, we urgently needed to train together as a complete unit and the time was right for an overseas camp for retention and recruiting reasons. Fred Astaire would have been proud of the footwork that resulted in the regiment being given permission to deploy to Germany.

Based in Ravelin Camp, Hameln, the regiment set about an enjoyable and very varied training programme with much help from the Combat Engineer Training Centre and 28 Engineer Regiment. Everyone settled down quickly and, for the first time, 78 Engineer Regiment occupied one location with all the intangible "identity" benefits that this brought with it, which unfortunately included a highly contagious diarrhoea and vomiting-producing virus.

My training major, Dick Abbott, and RHQ 28 Engineer Regiment worked hard to arrange some training in the surrounding area, and an

enjoyable three-day exercise culminating with 78 Engineer Regiment and some of 28 Engineer Regiment crossing the first "proper" TA amphibious bridge over the River Weser.

By the end of 1993, there was a perceptible change in off duty conversation; sapper experiences were being recounted more often at the bar than former unit war stories – a measure of success, I felt. Most soldiers were now Class 3 in their new trades, some Class 2 (mainly combat engineers) and a few close to Class 1.

January 1994 saw 127 Field Squadron working alongside 9 Parachute Squadron during the Chichester floods. Night after night, sapper skills were put to good use as flood waters threatened to engulf rows of picturesque cottages. The unit had earned its sapper spurs and in good style.

Conclusions

I have not tried to summarize all the events and processes that went into the formation of a new regiment, rather I hope to have given you a feeling for the sort of challenges, frustrations and successes that made forming 78 Engineer Regiment (V) a unique tour which made me proud to serve, for the second time, with volunteer forces.

Nor have I tried to mention all the headquarters or agencies which helped us, but special mention must be made of CVHQ RE, Eastern Wessex TAVRA, HQ 30 Engineer Brigade and HQ Aldershot Area, all of which we reported to in some shape or form over the period. Perhaps this says something about our chain of command too.

It would be presumptuous to offer a recipe for survival during such a venture but I can say that endless enthusiasm and patience, a well developed sense of humour and the ability to bounce back after disappointments would not go amiss.

I close with a final illustration. A demolition party of sappers from 127 Field Squadron (V) (the ex-gun battery) debussed from a Puma helicopter near a gun position area on Salisbury Plain. They came across a 105mm Light Gun manned by 7 Royal Horse Artillery and asked if they could bring it into action. Thinking that this would be fun to watch, the gunners agreed. The sapper section brought the gun into action with great speed and using the right drills, while some rather stunned gunners looked on. As they turned to leave, the section commander said "Of course, regular sappers are even better at this sort of thing than we are; you must remember we're only TA!" With soldiers like these, who can doubt our credentials?

An Obvious Booby Trap

COLONEL J H SHIRLAW MA

"*Tuan* – Major *Sahib* wishes speak with you *juldi*". An odd jumble of languages, but that's what I remember being said. We had just reoccupied the island of Akyab, off the west coast of Burma early in 1945. I was laying out the alignment for a road improvement job, when a Burmese appeared at my elbow drawing attention to a British officer on the dusty track nearby who was making imperious beckoning signals in my direction.

He turned out to be a major in the Civil Affairs Department, much senior to me in age and rank. His immaculate khaki and brand new Jeep put to shame my rather scruffy state. For some reason he was enormously angry – apparently with me:

"You Sapper."
"Yes Sir."
"Deal with booby traps don't you?"
"Yes Sir."
"Got one, come on."
"But ..."
"No buts, come on."

With some difficulty I persuaded him that I had to report to company HQ before disappearing. On the way it transpired that what had got him so steamed up was a booby trap in a rice mill which had to be restored. He seemed to think it was my fault! – Well, sappers were supposed to disarm booby traps, I was the nearest sapper and should have found it and dealt with it already. Furthermore, unless he got his rice mill working PDQ (pretty damned quick), the population of the island would starve; General Slim's campaign in Burma would grind to a halt; and we would lose the war in the Far East. And all that would be my fault too! A great deal suddenly seemed to hang on the actions of a recently commissioned second lieutenant!

At company HQ I had been sent off with instructions to be careful and a reminder that previously encountered Japanese booby traps had been improvised, simple but nasty. The major explained that the trap consisted of a pile of guncotton slabs obviously attached to some infernal device. He had been in the Shanghai police for 20 years and knew guncotton slabs when he saw them.

The rice mill was quite the most rickety building imaginable; built of wood, bamboo and corrugated iron. The rice was somehow lifted to the top and under gravity ran down square-section open-topped wooden channels, undergoing various processes on the way.

Power was provided by an elderly steam engine on the ground floor, the steam for which was generated by a small but fairly new boiler fuelled by rice husks. The boiler had a very long narrow fire bed, but no ash pit or clinker door below. Presumably the husks were completely incinerated, leaving virtually no residue. The fire door was quite small, half open, and a pile of guncotton slabs could be made out in the firebox behind it. An obvious booby trap, probably worked by a pull switch when the door was opened. Visibility in the gloom of the ground floor left a lot to be desired. Someone brought a hurricane lamp, but I wasn't keen on bringing it too close to the explosive. An electric torch was a luxury I never had in Burma.

Very gingerly, holding the door carefully in place with one hand, using a thin piece of bamboo in the other I felt behind the door for the wire – nothing there! Indeed careful feeling all round the door, hinges and latch failed to locate any wire, lever or projection.

Consultation disclosed that some of the major's Burmese staff had in fact opened the door, seen the suspicious slabs and departed hurriedly. The door must then have swung back to the half-open position.

Back inside, I sat in the dust getting more puzzled – and more scared – by the minute. The slabs neatly filled the aperture of the firebox and the operating mechanism had therefore to be located behind them. In no way could I see how this was achieved or imagine what kind of mechanism had been used.

By now the civil affairs major was looking over my shoulder, breathing down my neck, but usefully holding the hurricane lamp. Quite unable to think of anything else to do I used my finger nails very carefully to ease out one of the top slabs and suddenly all became clear – they weren't guncotton slabs at all – just off-white coloured cardboard boxes with close-fitting lids, and filled with little copper rivets. Further careful examination showed there to be no mechanism or explosive charge. In fact it wasn't a deliberate booby trap at all – though it did seem to have caught one!

I never did know the major's name, nor did I ever see him again. His presence seemed to be urgently required outside about the time that removing the first box disclosed what his "guncotton slabs" really were. I left him all those little copper rivets, but have no idea what their intended use was, nor why they had been so carefully, and misleadingly, stored away.

Do Women Make Better Managers?

CAPTAIN H T S RICKETTS

Captain Henry Ricketts was commissioned into the Corps in August 1991. On completion of Young Officer Course 105 he was posted to 38 (Berlin) Field Squadron where he held the posts of troop commander, operations officer and second in command. In June 1994 he was posted to 35 Engineer Regiment as the Reconnaissance Officer and has acted as 44 Headquarters Squadron's Second in Command. At present he is attending the Junior Command and Staff Course.

This essay was written as an entry to the Institute of Management's "Managing for Tomorrow" competition earlier this year.

IN order to provide a suitable basis for this subject one must ask an obvious precursory question: what makes a good manager? Hundreds of books have been written on this subject but I shall attempt to squeeze a possible answer into a few hundred words. The term manager comes from the Latin *Manus*, a hand. To manage is therefore to handle. The 19th century French industrialist, Henri Fayol, said that to manage is to forecast and plan, to organize, to command, to coordinate and control. The *Industrial Society* defines a manager as "someone responsible for achieving results through the optimum use of resources." Management is therefore the synergy that comes from the efficient matching of technical resources and skills with human activity. It is a combination of both administrative and leadership qualities.

In order that a manager be an effective one she (or he!) must be able to plan, organize, command and control, to communicate, evaluate and motivate, but above all she must be able to make decisions, often under duress. Depending on the level of management, more time will be spent on some aspects than others. Junior managers will rely more heavily on technical skills, middle managers on administrative skills and senior managers on leadership skills.

Will women, then, make better managers? Do they possess those qualities required of them? Are men more successful simply because they write the rules and the Old Boy network keeps women out of the rule-writing positions? Scientists, psychologists and sociologists have all studied the differences between men and women and agree, in the main, on one thing – men and women are different. This may be glaringly obvious to many, but it will lead to dissimilar, but often complementary, management styles.

Women, historically known as the fairer sex until political correction informed us that this was sexist and unacceptable, are much more aware of people than men are. They are fairer (ahah!), more understanding, more sensitive, better judges of character, and better communicators than men. Men, on the other hand, are self-centred, intolerant, ambitious and motivated. They believe in conflictional management as opposed to women's consensual style based on personal relationships. This originates from men's competitive nature and a desire to reach the top in order to satisfy their egos.

With technical ability women are unfortunately at a natural disadvantage. In mathematics and engineering they lack the spatial awareness and

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analytical minds required in order to grasp and solve problems. Their wider peripheral vision allows them to draw in excessive and often irrelevant information which they cannot then organize logically and thus reach a decision. Men, with their narrow, (some would say blinkered or tunnelled) vision can concentrate on the relevant detail, extracting only the essential information from the circumstantial.

Men are governed by rules which allow them to gauge the competition and provide a defined route to the top. Women who follow this pattern are rare, but mainly because they lack the motivation required. They can administer well, especially where communication and evaluation skills are required such as in negotiation and personnel management. However, when it comes to command and control, domination and leadership, they lack the drive and flair that are essential. The following passage is from an address to the Australian Institute of Management by Field Marshal Sir William Slim, one of the foremost experts on leadership. "There is a difference between leadership and management. The leader and the men who follow him, represent one of the oldest, most natural and most effective of all human relationships. The manager and those he manages are a later product, with neither so romantic nor so inspiring a history. Leadership is the spirit, compounded of personality and vision; its practice is an art. Management is of the mind, more a matter of accurate calculation, of statistics, of methods, timetables and routine, its practice is a science. Managers are necessary; leaders are essential. A good system will produce efficient managers but more than that is needed. We must find managers who are not only skilled organizers but inspired and inspiring leaders".

Naturally there are exceptions. Britain has produced two formidable women leaders in Queen Boadicea and Margaret Thatcher. But generally women are more concerned with their own identity and relationships with others, while it is the men who are preoccupied with achievement and power. Women are less prepared to make substantial sacrifices of other interests (family connections particularly) in order to reach the top as opposed to a comfortable middle level. Comparatively fewer stress-related "executive" heart attacks in women are a testament to this.

The very environment in which managers exist is more accepted by men than women. The idea of teams, consisting of colleagues rather than friends, is less inviting to women who find it harder to handle relationships based solely on common working goals. Men will accept this and work it to their advantage, using their colleagues as stepping stones to higher places. However, should women work in a genuine environment based on real trust and interpersonal transactions then their stronger characteristics can be maximized. Their lack of self-assertion and self-confidence is overtaken by their ability to communicate effectively, to understand clearly other people's intentions and to incorporate the bigger picture.

Therefore, in answer to the question – no, or maybe yes. Exceptions aside, women will do very well in personnel management and as negotiators. Their place on boards or committees should be guaranteed so as to provide an alternative angle based on a broader outlook. Unfortunately though, it is unlikely that they will reach the chair, because in their hearts they do not desire it. Their success must be appreciated and thanked in a personal manner for not to, is to do them a tragic injustice and typically chauvinistic of men. Hopefully, when we have all realized that men and women are different and so have different skills with different applications, we will be honest to ourselves and work together in harmony. What we will then know is that humans have become better managers.

Wireless in the Boer War

B A Austin BSc(Eng) MSc(Eng) PhD CEng FIEE

Brian Austin is a Senior Lecturer in the Department of Electrical Engineering and Electronics at the University of Liverpool. He was educated in South Africa and worked there for many years, during which time he served for 14 years in the South African Corps of Signals (Citizen Force – equivalent to the Territorial Army), retiring in 1984 with the rank of major. His personal interests in electronics are very much in radio communications with a particular interest in antennas. These two activities have merged to some extent since he ventured into the technical aspects of South Africa's military history. In 1992 he described the development of a radar system in South Africa which first functioned as early as December 1939 and saw service both around its coastline and in the Middle East. More recently, he looked somewhat further back at the Boer War and uncovered the story which is told here.

Abstract

The Boer War in South Africa (1899-1902) was the first occasion in which wireless communications were used in a military conflict. This paper traces the history from the point of view of both the British and the Boer forces, both of which had intentions to use this latest invention on the field of battle. Marconi's apparatus, in its most elementary form, went with the British Army to the front, but failed. The Boer's German equipment was captured and never saw service. The British Army soon rejected wireless but the Royal Navy acquired the apparatus and made it work. No doubt circumstances and personalities played their part but by far the major factor in determining success and failure was the natural electromagnetic environment.

Introduction

The Boer War was declared in South Africa on 11 October 1899, just three years after Marconi had arrived in England from Italy with his elementary apparatus. While described by some as the last of the gentlemen's wars, it is probably more accurately the war which linked two centuries, in time, tactics and in technology. It was certainly the first military conflict in which wireless communications were used. The combatants were the commandos of the Boer republics of the Transvaal and the Orange Free State, against the might of the British Army. Fiercely independent and determined to remain so in the face of advancing British imperialism across southern Africa, the Boers were finally driven to declare war on the British garrison troops over issues of citizenship for the uitlanders, mainly from the UK, who had been attracted in their thousands following the discovery of gold near Johannesburg in 1886.

At the outset, some 48,000 Boers were ranged against the 27,000 British troops then in South Africa. Within a month an expeditionary force of 47,000 men, the largest for nearly a century, (Pakenham, 1), was on its way from England to fight a war in a vast, rugged land with poor communications.

Wireless interest in the Services

The British military were amongst the earliest interested observers of the first experiments with Marconi's apparatus which owed its origins to the work of Maxwell, Hertz, Lodge and others. Representatives of the War Office and the Royal Navy, were invited by Sir William Preece, Chief Engineer of the Post Office, to witness demonstrations of this system of communication without wires on Salisbury Plain in late 1896. Amongst those present was Captain J N C Kennedy RE,

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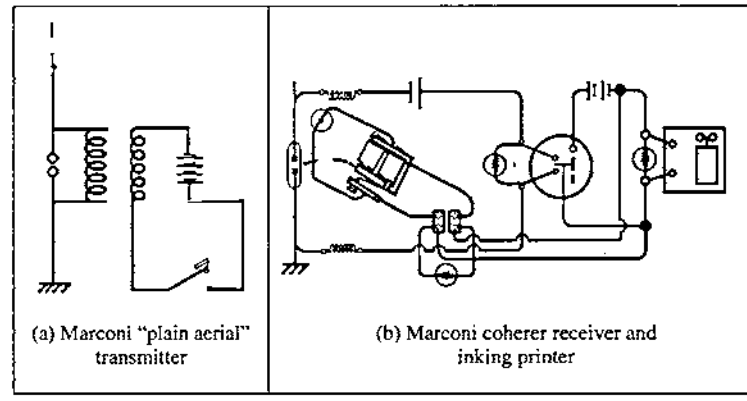
who subsequently not only assisted Marconi with many experiments and demonstrations (Marconi, 2) but was to play a key role in the deployment of the equipment in South Africa some three years later. During those tests, and in subsequent experiments over land around Bournemouth and over sea-paths between there and Alum Bay on the Isle of Wight (a distance of about 23 km), Marconi achieved reliable communications using vertical wire antennas up to 37m long which were connected to earth at one end. He subsequently reported (Marconi, 2) that it was possible to communicate up to a distance of 40 km regardless of the intervention of the curvature of the earth between the two stations in contact. The transmitter he used is shown in *Figure 1(a)*. It consisted of an induction coil capable of producing 250mm sparks between the spheres of a spark gap across its secondary winding when keyed by a morse key in series with a 14V battery of Obach cells producing 6 to 9 amps of current. This transmitter relied entirely on the natural resonance of its antenna for any degree of tuning or selectivity and, with a similar system in usé on the receiver, was known at the time as "plain aerial working" (Dowsett, 3). The receiver, *Figure 1(b)*, made use of Marconi's own version of the coherer, connected directly between the antenna and earth, as well as a "tapper" device for restoring the coherer to its non-conducting state after receipt of a morse code character. The output was displayed on a paper tape by the inking printer.



(a) Marconi "plain aerial" transmitter

(b) Marconi coherer receiver and inking printer

Figures 1(a) and (b).

In the summer of 1899 the outcome of the Royal Navy's annual manoeuvres was directly instrumental in the War Office's decision to send wireless equipment to South Africa with the British forces just a few months later. Three ships *(HMS Alexandra, Europa* and *Juno)* were equipped with the Marconi apparatus, with Marconi himself aboard the *Juno* under the command of Captain (later Admiral Sir) Henry Jackson (Marconi, 4), a notable pioneer in naval radio communication. This exercise took the form of a naval encounter between two fleets, only one of which was equipped with wireless and therefore had the ability to communicate well beyond visual range. Marconi's system performed admirably throughout, under typically testing naval conditions, with a maximum communication range of some 136 km being achieved. The antenna, again the only frequency-determining element in the chain, was attached to the main topmast and consisted of about 52m of wire running to the lower afterbridge where the wireless equipment was housed (Marconi, 4). Signals, exchanged both by day and by night, not only greatly assisted the tactics of the naval exercise for the fleet equipped with radio but also confirmed the efficacy of the "jigger" or impedance-matching transformer between the antenna and the transmitter and receiver. This particular device brought about a marked increase in the range over which communication was possible. However, the lack of any significant tuning or selectivity in the system meant that only one transmitter could be operated at any one time: a somewhat surprising fact given that Oliver Lodge's "syntonic (or resonant) system" had already been patented as early as 1897. Marconi's adaptation of the idea was only subsequently patented and used by him in 1900 (Aitken, 5). The crucial relationship between the length (or height) of the vertical antenna and the wavelength at which the radio system operated was first suggested by an Italian colleague of Marconi's, one Professor Ascoli (2). He calculated that the "length of the wave radiated [was] four times the length of the vertical conductor." This result, and the recognition by J A Fleming, at Marconi's lecture to the Institute of Electrical Engineers in 1899 (Marconi, 2), of the importance of the quality of the earth connection, will be shown later to be

Captain J N C Kennedy.

key elements in explaining the subsequent poor performance of the equipment in South Africa.

Preparations for War

Britain underestimated both the will of the Boers to fight and their resourcefulness to do so once hostilities commenced. The towns of Kimberley and Mafeking, with their British troops, were under siege by the Boers by 14 October 1899, with Ladysmith to suffer the same fate just two weeks later. On 14 October too, British reinforcements, of three divisions plus cavalry, set sail from Southampton for the South African ports of Cape Town and Durban (Pakenham, 1). With them, were six engineers from The Marconi Company (Messrs Bullocke, Dowsett, Elliott, Franklin, Lockyer and Taylor), some RE sappers to supply the necessary manual labour, under the command of Captain Kennedy, plus five so-called portable wireless stations made up from the Marconi apparatus of the time (Dowsett, 3); no doubt the "plain aerial" sets referred to earlier. The original intention apparently, was that the sets should be used for ship-to-shore communications to assist in the disembarkation of the troops. However, soon after their arrival in Cape Town in December 1899, Bullocke, at Kennedy's request, "gave a show" of the equipment's capabilities for the general and staff officers at the Cape Town Castle. This went off very successfully even though the distance signalled was "only a few hundred yards" (Bullocke, 6). Impressed by this achievement which was reinforced by Kennedy's first-hand experience from Salisbury Plain, the plans were changed and the five sets, plus their Marconi operators, were dispatched to the battle front.

The British soon realized that the Boer was a skilled horseman and an excellent shot. What they may not have realized was that President Kruger of the Transvaal Republic had been stock-piling weapons and ammunition and equipping his regular *Staats Artillerie*, since the breakdown of talks with Sir Alfred Milner, the British High Commissioner, in July 1899. War seemed inevitable. Support for the Boers' cause was running high in Europe (Pakenham, 1) and some governments, particularly the German government, offered assistance in kind, and signals training, under Captain P C Paff, featured prominently in the preparations of the *Artillerie*.

As early as 1897 plans were made to expand the Boers signalling capability by ordering equipment from Germany and by improving the training of military telegraph personnel who were already well supported by established civilian services provided by the railway's own telegraphs and by the State Telegraph Department (Breytenbach, 7). The extent of the telegraph system is described in "The Times History of the War in South Africa" which reported (Amery, 11) that at the outbreak of war all the Boer laagers around Ladysmith, on the Tugela and on the Biggarsberg were in constant connection with each other and with Pretoria.

The Johannesburg branch of the German company Siemens and Halske, provided Kruger's military with heliographs and signal flags as well as compasses, field glasses and even 12 pairs of dark glasses (Jacobs et al, 8). Most significantly though was Kruger's request of 24 August 1899 that Siemens supply him with its brand new wireless equipment (Jacobs et al, 8). Unfortunately for him and his Boer forces, when six of these sets duly arrived in Cape Town the war had already begun. They were impounded in customs and soon discovered by the British who "cannibalized" them for some of their superior components (Day, 9).

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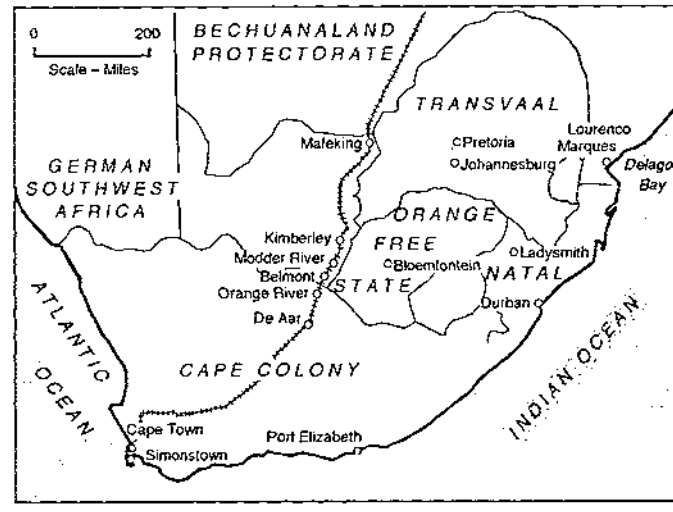
Wireless with the Army

In the first week of December 1899, Marconi's engineers, Kennedy's sappers and the five "portable wireless installations", left Cape Town for De Aar, an important railway junction and dispersal point for British troops moving north to the besieged towns of Kimberley and Mafeking. Certain shortcomings in the provision of equipment were already apparent. Most important of these was the lack of the appropriate masts or poles with which to support the wire antennas – the key elements in the system. The poles supplied with the Marconi equipment were too bulky for field use while the fortuitous acquisition of the Siemens equipment and masts provided no solution either because of their evident Germanic complexity (Day, 9). The "make-do" solution, so frequently necessary in the British Army, consisted of local, 9m bamboo poles plus balloons and kites, either borrowed from the Royal Engineers' Balloon School or ordered, posthaste, from the depot in Aldershot (Bullocke, 6).



Map of South Africa showing areas mentioned.

From De Aar three of the sets, plus their civilian operators, were transferred to the towns of Orange River, Belmont and Modder River, with the intention of establishing wireless communications between them. In addition a station was established at Enslin "about 27 kms from Modder", according to Bullocke (6) where Lord Methuen, commanding the 1st Infantry Division, feared "a surprise" from the Boers.

Whilst in transit from Cape Town the wireless contingent witnessed their first severe South African thunderstorm and reported that the accompanying lightning was "the most vivid any of us had ever seen." It was confirmed to Bullocke by those in the know that this was almost a daily occurrence in that part of the world and this prompted him to remark in his letter of 11 December 1899 to the Company back home in England, that it would be a "delightful time for Xs", the atmospherics which always disrupted wireless communications.

On 17 December Bullocke reported that attempts to communicate by wireless between De Aar and Orange River, some 112 km apart, were unsuccessful. He stated that he had used "a curly aerial about 18m in height and [a] good earth" but could not explain his lack of success. There was apparently insufficient wind that day to allow kites to be flown but even when there was wind Captain Kennedy at De Aar, with a kite-supported wire at 152m, had no success either because Elliott, at Orange River, "had broken his pole" (Kennedy, 10). By the end of that month though, wireless contact had been established between Orange River and Modder River, a distance of 80 km, but only by using an intermediate or relay station at Belmont (Bullocke, 6).

Attempts to make the Marconi equipment functional in the field continued for six weeks but for at least half that period most were unserviceable, due to cyclonic dust storms which splintered the bamboo masts, lightning-induced discharges which overwhelmed the coherers, or wind which either was insufficient for the flying of kites or ferocious enough to tear away the balloons. Not surprisingly, on 12 February 1900, the Director of Army Telegraphs gave orders for the three sets along the Kimberley line to be dismantled; a fate soon to follow for the two others which had been dispatched a month before, along with Bullocke, Taylor and Captain Kennedy, to join General Buller's forces attempting to relieve the besieged town of Ladysmith (Baker, 12).

Success in the Navy

The prewar naval manoeuvres of 1899 were very significant in the history of wireless in general and military wireless in particular. The lack of success, for whatever reason, when tried by

the British Army did not deter the Royal Navy from requesting that the discarded wireless equipment be transferred to their ships which were operating a blockade in Delagoa Bay and searching merchantmen for contraband destined for the Boers. The five wireless sets were soon transferred to the Delagoa Bay Squadron and by March 1900 had been fitted to the cruisers *HMS Dwarf, Forte, Magicienne, Racoon* and *Thetis*. The latter incidentally, was the first naval vessel to be fitted with wireless apparatus in an active theatre of war (Hezlet, 13).

In great contrast to the dismal results obtained when used on land, wireless communication at sea proved an invaluable aid to the Navy. Not only could ships cover a wider search area while still remaining in contact with one another, but concerted action by ships of the squadron was possible while out of sight both of each other and of their quarry (Dowsett, 3). In addition, speedy indirect communication was also possible between the ships at sea and the Commander in Chief in Simonstown, about 1600 km away, by using the *Magicienne*, lying at anchor in the Bay, to relay messages via its landline link to the shore and thence via the telegraph network to the Cape (Hezlet, 13).

To use the wireless equipment effectively required that the masts of the cruisers be extended to accommodate the long wire antenna. *HMS Thetis*, under the command of Captain Stokes-Rees, extended hers to a height of 44m above the water line for this purpose (Dowsett, 3). Subsequently she was fitted with a horizontal twin-wire antenna which proved to be so successful that it thereafter became the standard installation on naval vessels (Baker, 12). Experiments conducted on 13 April 1900 produced a range of 85 km (Pocock and Garratt, 14) while it has also been claimed (Day, 9) that it was possible to signal between Delagoa Bay and Durban direct, a distance of some 464 km. This unsubstantiated claim is unlikely though since no previous trials around this period had ever produced distances in excess of even 160 km.

Wireless equipment remained in use with the Navy until November 1900 when it went into storage, due almost certainly to the change in nature of the military conflict on land which had turned into a bitter guerrilla war to rage for a further 18 months.

The undoubted success achieved with Marconi's apparatus, both off the South African coast and during the naval manoeuvres a year earlier, certainly contributed significantly to the Royal Navy's immediate decision to equip 42 ships and eight shore stations around Britain with wireless by the end of 1900 (Dowsett, 3).

A MODERN PERSPECTIVE

MUCH has been written about the failure of the Marconi equipment when used by the Army (for which it is typically remembered), yet somewhat less has appeared about the success achieved with it by the Royal Navy. It should be appreciated that each service had use of the equipment for roughly the same length of time and in both cases it was erected and operated by the same six engineers, and yet its performance was markedly different in the two theatres of operations. One has to ask "why?"

When the wireless sets failed to provide the communications expected of them in South Africa, after the favourable reports which followed the Salisbury Plain demonstrations in 1896 and the naval manoeuvres of 1899, the immediate reaction of Marconi himself in England was to blame the military authorities for their "lack of proper preparation" (Marconi, 4) in not providing the correct poles to support the antennas. Those closer to the scene suggested that the problem was due to "the iron in the hills" while Marconi's own engineers, no doubt having some sympathy with their mentor's view, also believed that the environment of the northern Cape Colony, both geological and meteorological, may well have had somewhat more to do with it. Given the subsequent success achieved by the Royal Navy, operating in a vastly different environment from all points of view, leads one to conclude that antennas, geology, meteorology and the season of the year were, indeed, all to blame.

The Marconi wireless sets used the method of so-called "plain aerial working" which meant that the predominant frequency on which they radiated their energy was determined solely by the length of that vertical piece of wire and on its connection to the earth below. Essentially, when the wire was a quarter wavelength and the earth connection sound, the system would have been at its most efficient, at that particular frequency. The implications of these facts for the British Army in the "dry sandy plains of the Northern Karroo" (Dowsett, 3), were that no two wireless installations were ever likely to have

The combined Royal Engineers/Marconi Company wireless section in South Africa 1899.

been operating on exactly the same frequency, given the variability of the antennas erected on inadequate poles or hoisted aloft by bucking kites and balloons, but particularly because the quality of the earth connection was seriously impaired by the nature of the ground itself. Whereas any difference in frequency was probably somewhat nullified by the natural lack of selectivity elsewhere within the systems, the poor earth connection would have significantly decreased the amount of power actually radiated by the antenna and would have affected the ground wave, almost certainly the mode of propagation which would have applied at these frequencies and over the typical distances involved. Since the Marconi receiver consisted virtually of nothing more than a coherer, its performance, and hence the range over which communication would have been possible, was entirely dependent on the power radiated by the transmitting antenna and the quality of the ground both beneath the antenna and between the stations. It is reported (Day, 9) that "sheets of tin (sic)" were buried below the antenna masts, no doubt in an attempt to rectify the problem of the poor ground connection, but apparently to no avail.

To confirm these views one needs only to consider the electrical conductivity of the ground in that part of South Africa. Vice (15) showed that the conductivity southwest of Kimberley is between 6.5 and 10mS m^{-1} at a frequency of 500 kHz. Marconi's equipment might have operated anywhere from 500 kHz to about 4 MHz, depending upon the length of the antenna actually deployed, thus some variation in conductivity would be expected over that frequency range. These values should be compared with the 14mS m^{-1}, at 1 MHz (CCIR, 16) which is typical of Salisbury Plain, the site of so many of Marconi's early experiments. Not only would the Marconi antenna have been more efficient in England but the ground wave would have suffered less attenuation there as well. When used by the Navy, of course, the effects of the considerably, higher conductivity of the sea water, of 4000 mS m^{-1}, would have markedly enhanced both the performance of the antenna and the propagation of the ground wave. Thus, whether in the Atlantic Ocean in 1899 or the Indian Ocean a year later, the Royal Navy's consistent success with the apparatus can readily be understood.

There is an additional important factor which should be considered and that too was alluded to by Marconi's engineers at the front – the intensity of the lightning storms on the South African veld and their paralysing effect on the coherers within the receivers. South Africa is one of those

Wireless in the Boer War p237

regions of the world in which severe lightning is a fact of life. Measured as the number of flashes per square kilometre per year, this area south-west of Kimberley has typically three to five such events, which occur predominantly in the period between November and April (Redelinghuys, 17), precisely when the British Army was expecting useful service from the Marconi apparatus. This level of lightning activity should be compared with less than one flash per square kilometre per year which is typical of the British Isles (Golde, 18). When the Royal Navy pressed the discarded sets into service later in March, and used them throughout the southern hemisphere winter, such storms were essentially non-existent (Redelinghuys, 17). Thus, not only did they benefit from better antennas and propagation but the signal-to-noise ratio, in modern parlance, would have been markedly better too, given the lack of lightning and its attendant "Xs", the electrical noise or static, so perceptibly noted by Marconi's engineers as they moved themselves and their equipment from Cape Town to the scene of the very first military conflict in which wireless communication was attempted.

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The Raj Remembered

COLONEL W G A LAWRIE MA FIL MICE

In her long history India has seen many rulers – a thousand years of Hindu kings, a thousand years of Buddhists and another thousand of Muslims. The British Raj was a flash in the pan, lasting only from 1859 to 1947, but this period is still looked on with pride and nostalgia by both races.

In the dark days of 1914, when the German forces reached nearly to Paris, the Indian Army, in response to a cry for help, rushed thousands of troops to France. They were ill-equipped and untrained for trench warfare, but their brave efforts stopped the gap until more British troops became available.

To accommodate their heavy casualties the Royal Pavilion in Brighton was opened as an Indian military hospital and local nurses were taken on. Those Hindu and Sikhs who died were cremated according to the appropriate religious rites at a special site on the rolling Downs above Brighton and their ashes were cast into the sea. Muslims were buried in Brighton.

In 1921 a memorial in the form of a delicate *chattri*, or shrine, was built on the Downs and unveiled by the Prince of Wales in the centre of a 40-acre plot of land surrounded by pasture land.

For many years a pilgrimage to the *chattri* has been organized by the British Legion in the last week of June. I turned up for the first time this year, not knowing who would be coming or what would be the correct form of dress. When I reached the assembly point I was surprised to see about a hundred cars, many smartly dressed people, both British and Indian, a dozen or more banners carried by the British Legion, and a party of cadets.

I met many retired British officers wearing the familiar ties of Indian regiments, and three sappers – one each from Madras, Bombay and Bengal. Major General Misra, who I had served with long ago in Wana, told me that his career had been greatly helped by two Bengal sappers – Harold Williams, who wrote his report when at the IMA (Indian Military Academy) in Dehra Dun, and Ouvry Roberts, who had been his Directing Staff at Quetta. I enjoyed chatting to a distinguished looking party of Sikhs with white beards, about their villages in the Punjab which I had visited in the past.

The long line of cars was led through the suburbs of Brighton and on up to the Downs, past hundreds of very surprised cows along a cross country route that is opened specially for one day in the year.

Colourful banners were drawn up around the *chattri*, and the VIPs, introduced as the Lord Lieutenant of East Sussex, the Lady Mayoress of Brighton and representatives from the Indian High Commission and the British Legion, mounted the steps.

A letter was read out from the Prime Minister, John Major, and addresses were given by Anglican and Sikh clergy. After the sounding of the "Last Post" and "Reveille" by buglars, wreaths were laid on the steps of the memorial and the very moving ceremony was over until next year, when it is hoped that the Prince of Wales will attend.

Although there were plenty of reporters and press photographers present, I have found no mention of the event in the papers. It was of no interest to the British public and even less to the people of Brighton. Nevertheless, I was left with the feelings of pride and satisfaction that the goodwill generated during the British Raj has continued to this day among both races. I was also struck by the bearing and loyalty shown by the Sikhs, whose high moral code, intelligence and capacity for hard work make them welcome inhabitants of this country.

House party at Kapurthala, April 1946.
Front row: Heir to Kapurthala, Raja of Faridkot, Kapurthala princess, Nawab of Rampur, Lady Hutton, Maharaja of Kapurthala, Lady Feroze Khan Noon, Maharaja of Nabha, Kapurthala princess, Major General Sir Charles Harvey, Major General Sir Henry Hutton.
(The author is at the left of the back row.)

Col W G A Lawrie
The Raj remembered

The Berril Valley Obstacle Belt Project
Salisbury Plain Training Area (West)

CAPTAIN R S F GREENE

Captain Shane Greene was commissioned into the Corps in 1991 and after completing 104 Troop Commander's Course was posted to 21 Engineer Regiment in Germany. He completed a tour of Belize with 4 Field Squadron and is currently serving as Regimental Support Troop Commander in 6 Headquarters Squadron, 22 Engineer Regiment, and was Project Officer for the Berril Valley Obstacle Belt Project.

Background

With *Options for Change* having increased the demand on UK training areas, HQ Salisbury Plain Training Area (HQ SPTA) commissioned the *Shallow Option Study* to report on the feasibility of providing additional training facilities. One such facility, a large obstacle belt, was to be constructed in the Berril Valley, running south-east from Imber Village on SPTA (West).

In light of the increasing use of SPTA, the need to preserve the environment as much as possible was kept in mind, and one design criteria was to construct a track adjacent to the length of the obstacle thus making sure that exercising troops caused minimal damage to the surrounding area. Subsequent tracks have been scheduled for construction in the near future to further minimize damage.

The Berril Valley Obstacle Belt was built to enable exercising troops to carry out bridge construction, bridge demolition and obstacle crossing tasks, either as minor units or as part of larger battle groups. The client for the project was HQ SPTA with Engineer Branch, HQ UK Land Forces as the project sponsor and MWF as the project manager. In outline, the overall requirement was to construct:

- 2.5kms of military load class 80 track.
- 3kms of ditch simulating the obstacle and connecting all bridge gaps along the valley floor.
- Three major bridge gaps with spans ranging from 9m to 40m, one of the gaps also incorporating an isolated pier to practise combination bridging.
- A fixed 5-bay heavy girder bridge (HGB) with a 1½-bay HGB sliding span mechanism on all three bridge gaps.
- Two 9m-span minor alternative bridge gaps.
- All associated culverts, concrete aprons, bays and bellmouths.

The initial recce was carried out in November 1993 by 6 HQ Squadron, 22 Engineer Regiment, under direction of the OC, Major Steve Evans. Work started on 25 April 1994 with the aim of completing the project by the end of the summer. MWF had the demanding task, from January to March, of producing as many of the drawings as possible to allow construction to commence. The final design was not completed until June.

Mounting

Needless to say, with such a short planning phase problems were inevitable. Time and manpower

Capt S Greene
The Berril Valley obstacle belt project p240

were the biggest constraints to be considered when mounting and executing the project, with manpower certainly the most critical factor throughout. The lack of a Military Plant Foreman (MPF) or Clerk of Works (Construction) during the planning phase, for a project that was by nature so plant intensive, was by no means ideal.

As with most other units in the "Post *Options*" era, 22 Engr Regt was heavily committed to a myriad of other tasks and so there was insufficient manpower within the regiment, not least within 6 HQ Sqn, to start the work and make best use of the dry summer months. With this in mind, 4 Field Squadron, 21 Engineer Regiment, was tasked to provide additional men to help with the initial earthworks and wall construction of the bridge gaps and track. Only the senior management from 6 HQ Sqn remained with the project from beginning to end.

As a headquarters squadron is not established to undertake a project of this scale, additional plant had to be obtained. As well as plant from the regimental support troop, other units from within the regiment supplied various key machines, but the majority came from the Central Engineer Reserve of Plant (CERP) holdings at Long Marston.

A further useful and efficient source of plant machinery was provided by civilian hire, introduced to compensate for the reduced plant holdings at CERP. Whenever the hire kit became non operational it was fixed or replaced within 48 hours. Through this hire facility we managed to obtain two specialist pieces of plant, a road widener and extended backactor, which otherwise would not have been available to us. Towards the end of the project, there were 40 plus pieces of plant being used on site.

Environmental Concerns

With 4 Fd Sqn boosting manpower and the site office complex, and the plant park and fuel compound established, everything was set to start stripping the topsoil from the alignment and bridge gap sites.

Every move and all initial plans were closely monitored by various conservation agencies such as the National Rivers Authority and English Nature. Topsoil dump sites etc had to be chosen with care to minimize destruction of the infamous Berril Valley Fairy Shrimp population.

Thought was also given to some unfortunate blue butterflies after a popular nesting area had a bucket-load of topsoil unceremoniously dumped on top of it. Nevertheless, there was a bright side to this sad tale: the freshly turned topsoil was magnificent for some species of birds!

As our conservation-aware operators set about their task of stripping the topsoil, they discovered a badger set right in the centre of the proposed alignment and this was to prove a major headache. A closer recce revealed a further 15 badger sets dotted around the area, and these resulted in a repositioned alignment in order not to cause the premature demise of these Berril Valley residents. However, as with all road or track construction, an eviction of a defiant badger family had to take place. A month later, and with some gating installed, work continued on an area that not surprisingly came to be known as "Badger Hill".

Explosive Ordnance Disposal

Explosive ordnance also became a major concern, with plant operators frequently digging up various items, the biggest of these being a 5000lb bomb that luckily was not live. Numerous 1000lb bombs were also unearthed, giving the EOD detachment plenty of work to do.

Execution

During the early part of the project, with extra manpower and longer summer days, work was split into two-day shifts and one night maintenance shift which enabled maximum production to be achieved. Teams were established to carry out specific tasks on each of the sites, which meant that the method and quality of work reached and maintained a high standard.

The fine weather encouraged us to gamble that it would continue to be dry, and a large area of chalk was thus exposed without being capped, although this was partly due to the need to maintain progress and to the delay in setting up the stone contract. The gamble did not pay off as the weather soon gave way to the start of one of the wettest winters this area has seen for 50 years.

Towards the end of the project, exposed chalk on certain areas of hardstandings and alignment still under construction, could not be compacted to the required density because of the high water content. Often the offending area had to be dug out and reinstated with dryer material; needless to say, this used up valuable time and resources.

But the weather was not the main hindrance to progress; manning, or the lack of it, proved to be

Photograph showing bridge gap 2 nearing completion with sliding span in open position.

the biggest cause for concern and frustration. Ideally, the project needed a consistent 100 to 120-man workforce. At most we had 100 plus men, but all too often we found ourselves struggling with 30 to 40 men and at times were down to around 20.

As the project progressed, we were supplied from a number of outside units, the TA proving to be an excellent and reliable source, and various teams from within Central Volunteer HQ RE (CVHQ RE) provided men, and at times women, who were invaluable. Many had the appropriate trade skills necessary and worked over a number of weekends, ensuring that some momentum was maintained.

Other units providing manpower were:

- 5 Field Squadron.
- 3 Armoured Engineer Squadron.
- 8 Armoured Engineer Squadron.
- 36 Engineer Regiment.
- 38 Engineer Regiment.
- 33 Engineer Regiment (EOD).
- 69 Gurkha Squadron.
- RE Troop Combined Arms Training Centre.
- 23 Pioneer Regiment.
- TA Pioneers.

The "MPF network" also proved to be a valuable source of plant manpower and the unrelenting efforts of Staff Sergeant P Roberts' to sweep for stray POMs (plant operator mechanics) was admirable.

Although additional manpower was critical to the progress of the project, and was greatly appreciated, certain drawbacks were inherent with its provision.

Momentum was often lost as one unit left to be replaced by another whose men would then have to be familiarized with tasks and procedures which were often quite complex. The standard of work produced inevitably fluctuated with each unit takeover. Also, quality control was at times a testing procedure as it was necessary to monitor safety, quality control and progress very closely during the daily and weekly site meetings. Nevertheless, the project would certainly not have finished when it did had it not been for the

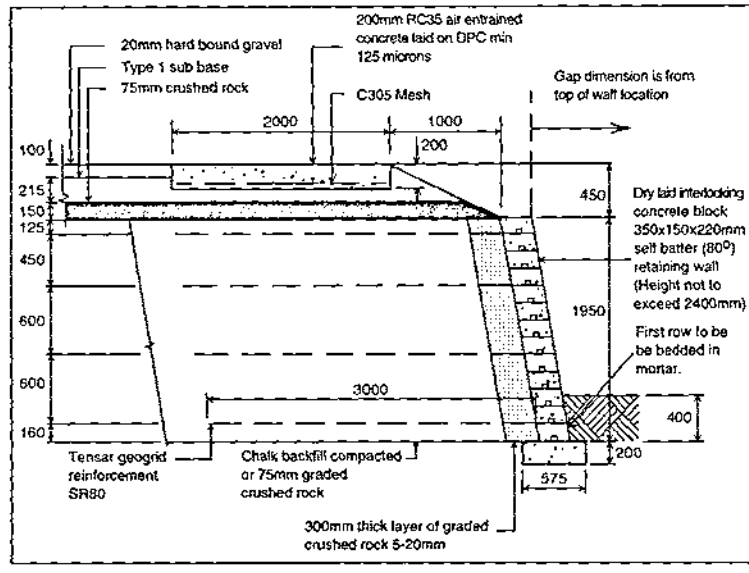
The Berril Valley obstacle belt project p242

excellent support provided by all the units mentioned.

Retaining Walls

To create the bridge gaps with their varying spans we built a reinforced earth retaining wall made out of dry-laid interlocking concrete blocks with a batter of 80 degrees.

The bottom row of blocks was mortared down to a concrete foundation and the top course was glued down with a special adhesive. Reinforcing was provided by 3m-lengths of geogrid mesh, laid every fourth course, interlocked with the blocks, tensioned and backfilled over with chalk and compacted in order to hold the blocks in place.



Typical section through retaining wall.

Once laying teams had mastered the method and established a routine, the retaining walls were constructed remarkably quickly.

HGB and Sliding Span Mechanism

Each of the major bridge gaps had a fixed 5-bay HGB which incorporated a 1½ bay HGB sliding span, except for one which had two fixed 5-bay HGBs with the sliding span positioned in the centre of the bridge, and not at one end. The design for the sliding span, conceived by Commander MWF, was very well thought out and produced an excellent result.

Modifications were made to various HGB components to produce a span held in place by a strop in tension that could be released by the detonation of a blow-out pin. Once released, the span is able to slide to one side down a 3-degree slope and come to rest in a sand trap at the end of each ramp.The sliding span can be winched back into position with the use of Tirfor jacks.

A problem encountered with the sliding spans was to achieve a gradient within the tolerance required. This was relatively easily overcome however by the use of shims secured under certain sections of the rails.

Another problem was the theft of decking units from the site. A decision was made to weld all decking units and ramps to the girders; even then a further theft was attempted!

Alignment and Bridge Gap Hardstandings

The alignment and the bridge gap hardstandings were made up of a 350mm layer of inferior capping stone, a 150mm layer of type one subbase and a 100mm layer of wearing course. The three super elevations at various points along the alignment required considerably more stone however in order to achieve the necessary gradient.

An elderly military BK 95 paver was used to lay the 100mm depth of wearing course and eventually achieved an excellent finish. Unfortunately, it was such an old machine, (and very temperamental), that much time was lost as the fitters struggled to keep it operational.

We found that graders were not effective in laying the wearing course because the tyres left large indents which were difficult to roll out; the finished level was very inferior to that of the paver.

Conclusion

The project was completed on 28 February 1995. By using RE labour instead of civilian contractors, it is estimated that £1.5 million was saved.

Everyone involved in the project gained valuable experience and its successful completion has provided an outstanding training facility for all arms, in particular the Royal Engineers on SPTA (West).

Notable Dissimilarities

CAPTAIN R KIRBY BA USA

Captain Kirby gained a Bachelor of Arts degree in geology from Iowa State University and then spent two years in the infantry before attending officer candidate school. He spent four years with 29th Engineer Battalion in Fort Shafter, Hawaii after his engineer training. He has since commanded a basic training company and recently taken a break from being chief topographic operations and instructor of topography to run the geographic section in Sarajevo.

SPEAKING of language difficulties, I heard of one between English and Serbo Croatian. One day in the mess an officer noticed that the tuna plate was empty. With all the politeness and good intentions in the world he went into the kitchen with the tray and asked if there was any more tuna? The female cooks speak very little if any English and immediately burst out laughing; they were practically doubled over in tears when he asked again for more tuna. It turns out that the direct translation for the word tuna, in Serbo Croatian, is a part of the male anatomy that is indicative of being a male. We try not to use that word around the cooks anymore.

I have learned that the backbone of the British Corps of Royal Engineers is the "staff". Similarly, the American Army expression refers to the NCO corps. I initially had the worst time not calling the "staff", Staff Sergeant White, the formal way of referring to an American staff sergeant. "Just plain Staff will do Sa," he would say. I was particularly amused when an American lieutenant colonel called him "pal". I guess it was how he blinked hard, inhaled sharply, and looked quickly at the sky as if he had been shot. Staff very quietly asked me later, "Sa could you please have a word with the colonel and ask him not to call me pal anymore?" Clearly, I was amazed at how much more power over subordinates this rank holds in the British Army. The incident that immediately comes to mind is, "Have the corporal call me back. It's a matter of life and death, his, if he doesn't call me straight away." It was also evident that staff had a loose, but very effective, interpretation of positive counselling. Note the process of telling a soldier that he is doing a good job and that you are proud of his work: "Ah yes, you've done a fine job on that printing plate, now go back in the wagon and keep doing a fine job until you get it right or I'll give you a good slap."

Another thing I think has rubbed off on the "lads" is weight training. British soldiers are much keener runners than their American counterparts. There are no cadences called when running in the UK. If you can sing while you're running you're not running fast enough. I personally believe in proper weight training. By proper, I mean if you aren't getting an aerobic workout while you are lifting weights then you aren't doing it right. The lads have achieved more than a modicum of intensity in their endeavours which is easily judged by the horrendous faces that they make. I keep telling them that all those bad faces don't make any difference but they continue to make them anyway.

A major difference between our two armies is in the use of morale-boosting calenders and newspapers. Putting up pictures of scantily clad members of either sex would be an absolute career-ending

Capt R Kirby BA
Notable dissimilarities (p244)

move in the US Army. In the British Army it is taken as a normal everyday sort of thing. Evidently the Serbs think that the calenders are flags because when they get them they invariably wave them over their heads, at arms length, while shouting to their friends.

Impressions While Serving with a British Survey Team

First of all, I am an American. My frame of reference is from the midwest. I have never been to the UK or to Europe. Any impressions stated herein are totally my own and are in no way meant to reflect badly on any person now living or dead.

The very first things that struck me, upon arrival at my scenic springtime vacation in the Balkans, wasn't the armoured high mobility multi-wheeled vehicle ride from the airport down "Sniper Alley", or lugging around way too much baggage, it was the British accent; these soldiers were talking to me in my own language and I, at first, couldn't understand them. This accent was difficult because midwesterners have little discernable accent as compared to the rest of the US. I prepared for deployment by watching my fair share of British films and Alex McKensey didn't sound anything like these guys. With much politeness and as many "huhs" as I dared, I began to understand three fourths of most sentences. I learned that three of the British accents were represented in my team and with about two days effort they became quite understandable. Probably, the most surprising realization came when I was told, "Sa, don't wurry we 'ave a 'ard enough tyme undastunding owselves."

Once the vocabulary differences were "sorted out" the hard part began. The differences in word meanings between the two countries astounded me! My first, and probably favourite, word is bollox; it's, well you know what it is. There are several American sayings that compare but few used as often. I read in the *Sun* how Prince Charles wanted to preserve the purity of the British language, so, I have tried my best to include all of the British expressions that I have learned in my everyday conversations; these include: cheers, slab, tab, pouf, cracking birds, knackered, wanker, bum, bollox, kit, bitts, quid, etc. There are several more that I have used accidentally and only once. A prime example of this would be slash. No, its not what your thinking. In American slang a slash is a shot, or small amount, or some, usually alcoholic, beverage. When dining in the officers mess I had occasion to sit next to a British female captain. We mix our drinks with water and Quosh, an orange concentrate used for flavouring. I asked the captain if she wanted a slash. She shot me a look that almost knocked me out of my chair, quickly regained her composure and politely asked "what does that mean in American?" I explained the Texas slang expression and she blinked several times and explained "its not the same in British". She's been somewhat standoffish ever since.

The national pastime of football is every bit as alive in the United States as it is in the UK, although very different games in the two countries, but the fans are both dedicated. Not having grown up playing much soccer or rugby and not being intimately familiar with the team names or championships I find them all fascinating. I have not found it hard at all to engage in a long enjoyable conversation about rules, favourite teams, star players and championships over an occasional Boddington. I am not sure how the American public would take tossing team-coloured condom packs on the playing field as in soccer games, however.

I have also noticed that drinking appears to be another major national pastime for the Brits. The bar games that I have been exposed to and heard about while drinking are tremendously more interesting and varied than an occasional game of pool or table football. The vision of an arms over shoulders chorus line dancing, complete with kicking and singing louder than 4ft speakers, exemplifies this and will always stay in my mind. Such sayings as "drink through it Sa," and "do it for the Corps", along with unwritten rules like, "you can't give away beer that someone has bought you," have all the earmarks of any traditional pastime.

All in all the entire tour has been enormously enlightening. I have the highest respect for the British Army and all of its traditions. Two of the proudest moments I enjoyed with the lads were fleeting, off-hand comments which were unnoticed by them, but to me meant a lot. First, when staff said, "don't worry Sa we'll stand by you." Second, when I was counted in their numbers as one of them. This to me, signified respect in my leadership and acceptance in the group. I wouldn't hesitate at having any of them on my fire team or serving another tour with them anytime, anywhere.

United Nations Electrical Fields in Bosnia

CAPTAIN M D COLLINS IEng MInstR MIMechIE

Captain Mick Collins joined the Corps as a Junior Leader in 1972. He served with 15 Field Support Squadron, 3 Training Regiment, 3 Field Squadron, and as an instructor Refrigeration and Steam at the Royal School of Military Engineering prior to attending 35 Clerk of Works (Mechanical) course. On qualification he served with 48 Field Squadron (Construction) in the Falklands and Kenya. Postings to Cyprus, Northern Ireland, and St Kilda in the Outer Hebrides with Military Engineering Services (Works) preceded appointment as Garrison Works Liaison Officer Catterick. On promotion to Warrant Officer Class 1, he returned to the Royal School of Military Engineering as Senior Military Instructor (Mechanical). Commissioned in 1995, he deployed with 522 Specialist Team Royal Engineers (Works) as Garrison Engineer (Mechanical and Electrical) on Operation Grapple 5, *and is currently serving on Operation* Grapple Surge.

Introduction

BANG! The sound that every soldier reacts to. This is particularly relevant to the Corps of Royal Engineers with its mines and demolitions capabilities. Mines are a constant hazard to every day life in Bosnia, and sadly the results of these weapons of war are highly visible.

Another killer in daily use but every bit as lethal is electricity. Electricity has the capability of striking at any time, without warning, and is invisible to the naked eye. It has an excellent killing and casualty record.[1]

This article considers power supplies and electrical installations, and the safety procedures adopted by the UN which affect all the troops serving under its mandate.

Power Supply

THERE are two main methods of providing power to the UN forces in the former republic of Yugoslavia. The first simply utilizes existing supplies, where available, from the local authority. The second requires the installation of generator units, which are sized to match the electrical power requirement (load) of the location. A combination of both local supply and stand-by generator power is the ideal solution, where feasible, for provision of a stable system. In remote locations or where local power supply is unstable, as in the case of central Bosnia, generators are installed to provide an independent source.

Where generators provide the sole means of electrical power, the UNs' normal scale of issue is determined on a value of 1.5kVA (kilovolt ampere) per man. This equates to approximately 1.2kW (kilowatt) or in simple terms, to the heating element of a one-bar electric fire.[2]

Based on this, it follows that a 400-man camp requires a 600kVA/480kW load. Generators are selected to suit this load, ie three x 160kW or two x 225kW sets to run in parallel. The scale provides an easy method upon which to base camp contingent loading, but experience proves that it does not allow for maintenance, breakdown, or extra loading in adverse weather conditions; for instance during the winter period temperatures of below -30°C are common.

[1] Every year about 1000 accidents at work involving shock or burn are reported within the UK and about 30 of these are fatal. Statistics for the UN within Bosnia and Croatia are difficult to quantify, however this year one fatality (French) and six major fires have been attributed to faulty electrical installations.

[2] 1.5kVA is generator output. The power factor of generators is about 0.8 giving a power output of 1.5 x 0.8 = 1.2kW).

Captain M D Collins
UN electrical fields in Bosnia p246

The problem can be rectified by incorporating an extra generator to provide for these contingencies. However, no allowance is usually made, thus inevitable failure of supply is built into the system design.

Type of Electrical Installations

Royal Engineers electricians are trained to work in accordance with the Health and Safety at Work Act 1974, Electricity Supply Regulations 1988, and the Electricity at Work Act 1989, in conjunction with the 16th edition of the Institution of Electrical Engineers (IEE) Regulations, upon which they have received comprehensive instruction. Field power supply is simple in concept, with the installation of low voltage (LV) distribution circuits being well within the capability of our tradesmen.

Low voltage is defined as exceeding 50V but not exceeding 1000V alternating current between phases. In practice supply from the generators is 415V 3-phase (Ph) 50-cycle per second which is utilized directly on 3 Ph equipment, and reduced for general loads to 230V.

The Corps also has a specialist capability in the form of Clerks of Work (Electrical), Garrison Engineers (GE), and Professional Qualified Engineers (PQE) with additional expertise from the Engineer and Transport Staff Corps RE(V). These specialists provide expertise in the design and operation of installations which are beyond artisan capability. In particular they are trained in the highly specialized field of high voltage (HV) electrical installations, HV being defined as electrical supply above 1000V between phases.

Electrical authorities normally supply power via overhead lines at 11,000V to an installation for distribution, or reduction in voltage, by use of transformers as required. HV supply is more efficient than LV as power loss through the cables is reduced, resulting in the use of smaller cables. Unfortunately HV systems are expensive because of the insulation required and, more importantly, are very dangerous, and a strict rigorous training programme is mandatory for all personnel who are required to operate and maintain them.

An intensive course, satisfying Health and Safety Executive requirements, is the first hurdle, followed by on-site familiarization and examination in competency. The successful student is issued with an "Authorized Person" permit signed by an "Authorized Engineer".

Members of the Corps are at present the "Authorized Person" for selective posts. Their employer, normally a works service manager contracted by the MOD, is responsible for ensuring that the duties of authorized engineer are correctly carried out.

Because of the temporary nature of operational accommodation, it is rare for a HV system to be installed. However, it became evident that this system was the most logical for one of the main bases in central Bosnia – the Gornji Vakuf Precision Factory.

HV Installation to Gornji Vakuf Precision Factory

The Precision Factory is located approximately 1km northwest of the centre of Gornji Vakuf, and was built prior to the war as a car component plant. Initially, the site was selected to accommodate an armoured divisional workshop and armoured infantry company during Operation *Grapple I*.

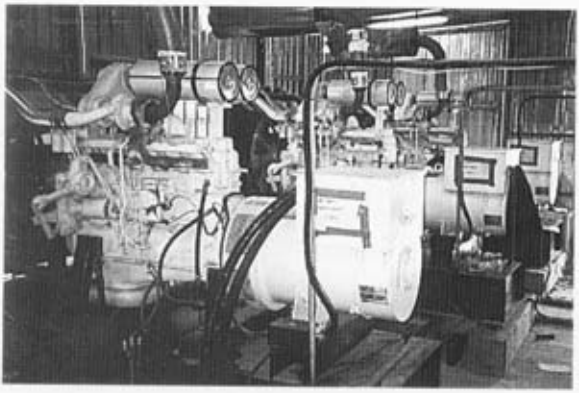
At present two British contingent generator farms, located at opposite ends of the camp, supply a maximum demand of 600kW. The area developed, for operational reasons, into a forward staging post, incorporating enhanced levels of manpower and equipment, with associated facilities; the power demand increased proportionately to 850kW.

British generators and associated switch units, provided at a time of acute shortage, were to be replaced by UN equipment. With this imminent removal of British equipment, planning for future power supply became an essential priority.

UN policy is to locate the power supply adjacent to the point of intake from the local authority supply in order to make use of it when it became available. The problem in this case was that the new generator location was remote from the load centre, resulting in long cable runs and therefore unacceptably high LV losses and large cable sizes.

On inspection, the existing factory HV installation appeared sound, although components were missing, presumably taken to repair war damaged HV power equipment in the local community. However the main cables were in place, and suitable replacement components were available from within the complex.

The logical design was to group four available UN generators, each rated at 360kVA, adjacent to the factory main switch room. An increase in voltage from 400V to 20,000V would be achieved by use of a factory transformer rated at 1000kVA. The HV electricity would flow to a



360kVA generators in location.

second transformer by utilizing previously installed underground cables. The original location of this second transformer, adjacent to factory switch gear, was ideal as it formed the camp electrical load centre point. The voltage, on being reduced to 400V, was to be distributed via switch gear to the the distribution panels.

The concept was simple but inherently dangerous! Fault level currents[3] would be extremely high. What standard had the equipment been manufactured to, and was it safe?

The isolation, disconnection, removal, relocation, reconnection, and testing of the HV transformer also required diligent overseeing.

The installation was privately owned. Approval from the owner would be necessary and a chance meeting with a senior representative of the Overseas Development Agency (ODA) Emergency Engineering Unit, provided the link which would be needed to ensure success. The representative introduced the Power Coordinator for Middle Bosnia to the Specialist Team Royal Engineers (STRE) (Works) who were responsible for the design. The Power Coordinator, himself a Chartered Engineer, was responsible for the repair of HV generator stations and distribution networks throughout Bosnia. He provided assistance in securing the owner's approval, and agreed to service, maintain, test and install the HV system, with assistance from both the UN and the Royal Engineers, for a small fee of course.

[3]A fault will occur in the event of a short circuit between phase conductors and/or earth. The transformer is rated at 1000kVA with an impedance of 6%, thus providing a fault level of 16.6MVA (1000kVA ÷ 6%). The equipment must be rated to withstand this maximum value in order to protect against equipment failure during fault conditions.

UN Safety Procedures and Standards

The UN maintains an engineering service (ES) establishment, with its HQ based in Zagreb. This organization is an essential component of the UN mission to provide services to military contingents, and consequently regional engineer units are based in each sector. Engineering service responsibilities include construction, refurbishment, and maintenance of living and working accommodation, including water, power, and sewerage services. The management and distribution of engineering materials, equipment, and stores also falls under their remit, although up to July this year the organization was not fully established, and Royal Engineers were constructing and maintaining camps as an operational necessity in order to cover the shortfall.

Engineering service staff are recruited worldwide, and it is therefore not uncommon to find personnel from 20 different nations working with a unit; it follows that these personnel will have differing backgrounds, engineering experience, training and standards of work.

At present the UN has not provided standards with which contingent nations must comply. Engineering stores and materials are multinational. For example, Italian shower and toilet units are not constructed to a standard acceptable by British IEE Regulations; they contain power sockets rated at 220V located around a shaving mirror, and the potential for electrocution in a washing/shower area is high. Confusion exists between German Deutsche Industrie Normale and British Standards (BS). The mix and match philosophy within the mission is at best unprofessional, and constitutes a potential hazard due

Captain M D Collins
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to the danger of incorrect wiring, which can and does lead to fires or electrocution.

British contingent tradesmen are expected to work with stores and equipment procured by the UN. They are given little or no information about the quality of items, or relevant safety standard that the installation is to conform to on completion. All Royal Engineers are instructed to comply with health and safety legislation in order to prevent injury to themselves and others, and also to prevent damage to property. A problem arises however when the organization responsible for procurement and tasking, fails to recognize British legislation or standards of work.

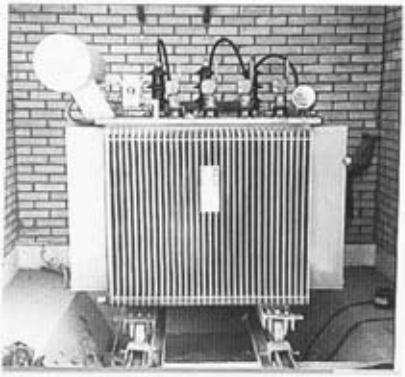
The installation of a HV 20,000V system into the Gornji Vakuf Precision Factory is of particular concern. Good working practices are essential to prevent injury or loss of life. The ES organization has failed to inspire confidence in this respect. Operation of the system requires firm control, with relevant safety notices, and must adopt permit-to-work procedures. Access to HV switch rooms should be controlled by an authorized person who in turn requires to be appointed by an authorized engineer on behalf of an operating authority, in this instance the UN.

The Health and Safety Executive recognizes the hazards involved and consequently insists on unambiguous standard operating procedures. At present the method of operation, control, and procedures to be adopted for this installation is unclear.

The protection of British troops and civilians must be of the highest priority, and the Corps clearly has a responsibility to ensure safe working practice. The STRE (Works) has, out of necessity, taken the initiative. A programme of electrical testing with emphasis on earthing for British camps is in operation. Permits to dig and work have been established, linking ES and the STRE in order to sanction work prior to commencement. The production of procedures to be adopted for LV and HV are in draft format for approval by UN Zagreb.

Recommendations

SAPPER maintenance teams should be employed directly by the STRE (Works) organization, to provide consolidated direction from the Corps experts, as was proven to be effective in the Falklands. The specialist team is under strength for this role. A CRE with a full complement of equipment is required if a long term solution to



1000kVA transformer.

engineering problems is to be addressed. This would enable closer links to be built with the UN ES organization; provide the potential to influence engineering policies; and ensure that the MOD is advised where policy is not achievable within the UN operation.

The nomination of authorizing engineers needs to be addressed; a solution may be for Defence Works Services to appoint suitably trained PQE and GE officers. The appointment of an authorized person could be carried out internally by/from the CRE/STRE.

A suggested method of resolving the standards for electrical wiring regulations would be to adopt international regulations produced by the International Electrotechnical Commission (IEC). The BS 7671:1992 Requirements for Electrical Installations (16th edition) is based on the international regulations produced by IEC and it is eventually their aim to have a common set of wiring regulations.

Conclusions

IRRESPECTIVE of what the future holds for the UN in Bosnia, lessons need to be extracted from the experience gained whilst operating in this role. It is essential that health and safety legislation requirements are resolved where incompatibility between national and UN practice is evident. The Corps has a responsibility to use its influence to enhance the safety standards utilized within British bases on UN operations. Imprecise and ambiguous directives which place soldiers at risk of electrocution are unacceptable.

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A Mine Rescue Officer on the Western Front

MR S R JONES MA

SINCE the author's last submission to the *RE Journal*, entitled *British Military Engineers and the Birth of Australia*, published in the December 1988 issue, he has relinquished his appointment as Exhibitions Officer to the RE Museum and is now employed by National Museums & Galleries on Merseyside as Curator of the King's Regiment Collection.

IN 1991 the First World War medals of Temporary Lieutenant Reginald Cecil Smart MC were presented by his family to the RE Museum. Rex Smart served as a specialist in mine rescue but the citation for his Military Cross, published on 14 November 1916, was for offensive mining. The following gives some background to the mining work carried out during WW1, and details the operation for which Smart and his men received gallantry awards.

RE TUNNELLING COMPANIES: THE WAR BENEATH THE WESTERN FRONT

SMART was one of thousands of miners and mining engineers especially recruited during the First World War from tunnelling contractors and collieries. Promised seven shillings a day, they were dressed in khaki and shipped to the front.

Their enlistment elevated the ancient science of military mining to its highest level of professionalism, and their task was to tunnel beneath opposing front line trenches to detonate charges. Such mining charges typically contained several thousand pounds of high explosive and when detonated produced a large crater which our infantry would rush forward to occupy and incorporate into a new line of defence works. In active mining areas the infantry on both sides nervously awaited the next blow (explosion) amid a landscape of vast, over-lapping, craters. Smaller charges, called camouflets, were used to destroy enemy tunnels and were limited in size in order to avoid breaking the ground surface and destroying our own defensive system.

The first Tunnelling Companies RE were formed in the spring of 1915 and the ferocious and specialized underground war continued until mid-1917. By autumn 1916 British tunnellers were slowly gaining an advantage. They used a new explosive, ammonal, with much superior lifting capabilities, and taught the most advanced rescue techniques, for tunnellers were liable to be buried alive by explosions and collapses. More hazardous still were the poisonous and flammable gases released by underground explosions, of which carbon monoxide was the greatest problem.

REX SMART

On the outbreak of war Rex Smart was a mining engineer at the Cannock and Rugeley Collieries in Staffordshire and the Dudley Mine Rescue Station. Already a sergeant in the Staffordshire Yeomanry, he received a temporary commission when the tunnelling companies were formed, and a posting to 176 Tunnelling Company in France in September 1915. He served with this company for about three months before taking command of the First Army Mine Rescue School, at Houchin, about three miles southwest of Bethune and seven miles behind the front line.

ARMY MINE RESCUE SCHOOLS

ARMY Mine Rescue Schools were created in France towards the end of 1915; their purpose was to train personnel in the use of breathing apparatus for rescue purposes. They were formed in response to the high losses through insidious accumulations of carbon monoxide in gallery workings. One tunnelling company in a month sustained 12 killed, 28 hospitalized and 60 slight cases of gas poisoning.

TECHNOLOGY AND PERSONNEL SELECTION

For mine rescue, the "Proto" breathing set, a self-contained apparatus made by Siebe Gorman & Company, was used. Developed in 1902 from the "Fluess" apparatus used at the Seaham colliery disaster of 1881, it combined a regulated flow of oxygen from twin cylinders carried on the back, with carbonate of soda held in a container on the chest, which absorbed exhaled carbon dioxide. The wearer could remain in a dangerous atmosphere for two hours. Smart drew up a detailed account of the work of the school in a manual of military mine rescue work (Smart 1921).

For training, Smart regarded careful selection of men to be all important, rejecting those who were physically weak or had breathing difficulties. He was precise about the personal qualities required:

> They should be men with a good fund of common sense, ready adaptability, and temperamentally suited for the work. They should have sound, steady, and sober nerves ... good judgement, and be able to carry out their duties in noxious atmospheres competently and with coolness and precision. (Smart 1921: 39)

Carbon Monoxide Poisoning

An odourless and colourless gas, a concentration of over 0.1 per cent carbon monoxide is dangerous to life, 0.2 per cent causes loss of consciousness in 20 to 30 minutes, and 0.3 per cent in 10 to 15. Initial symptoms are giddiness and lightheadedness, noises in the ears, blurred vision and fatigue. Sometimes miners appeared drunk; described by the tunnellers' medical officer, Captain Dale Logan, Royal Army Medical Corps, as "laughing immoderately, swearing and singing or shouting." In other cases men became languid, "with an irresistible desire to rest." Death often occurred in a convulsive seizure.

Lingering concentrations of carbon monoxide allowed men unknowingly to penetrate a considerable distance into a gassed mine. They felt no ill effects until the accumulation of the gas in the bloodstream induced physical symptoms which rendered their efforts to escape impossible.

Casualties could be avoided through immediate treatment with oxygen although the mental effects could be permanent.

Smart himself noted the symptoms of inhaling carbon monoxide:

> On recovering consciousness men are frequently dazed and confused, or may be delirious and fight, incoherent, shouting, laughing, or crying, in some cases very drowsy, may get sudden collapse and death in serious cases. (Smart 1921: 152).

The mental confusion caused by carbon monoxide might persist for several weeks. One man, nine days after gassing, appeared fit but could not recall his name or unit.

The case of an officer, comatose when rescued, showed the possible long-term effects of carbon monoxide: regaining consciousness after several hours he was quarrelsome, shrieking and swearing. He had no recollection of his accident and remained oblivious to his surroundings, not recognizing his mother two weeks later when she visited the hospital. After six months she still had to help him on "bad days":

> For instance, he has a pair of Oxford shoes, but he told me he could not wear them as he could not tie a bow; but he manages now all right after once being shown how. (Logan 1923: 573).

His memory was still unreliable when he was sent back to the front a few months later and he could not be trusted with any important work.

The First Army sector, which Smart's school served, was one of the worst for carbon monoxide gassing as the predominantly chalk strata absorbed large quantities of gas. Camouflets in particular trapped gas underground which could be released under pressure and without warning as miners broke into a fissure or blocked tunnel. At one time there were 250 mine explosions a month on the British front, of which at least half

Photo men at Rex Smart's First Army Mine Rescue School, demonstrate a mine stretcher. Twin oxygen cylinders were carried at the rear and carbonate of soda on to the left of the chest. (Logan 1923)

A mine rescue officer on the Western Front p251

were camouflets. This large number of blows combined with the chemical stability of carbon monoxide, the permeability of chalk and the pressure developed by detonating ammonal, caused "gas-logging" of the strata in many sectors.

No 3 Mine, Loos: Mining Operations August to September 1916

The Loos area, two miles northwest of Lens, was one of the most active mining areas of the First Army front which was within Smart's area of concern, since the offensive of September 1915 when the British had captured Hill 70. This specific sector was worked by 258 Tunnelling Company, commanded by Captain W A Pope. In late summer 1916 it became the scene of a local but intense underground struggle in which the Germans seemed on the verge of undermining the whole British position. On 17/18 August miners in No 3 Main, a British defensive tunnel which ran out beneath no-man's-land, reported sounds of German mining. Using the geophone, a French invention which detected both the distance and direction of underground sounds, it was estimated that they had passed 30ft below the British tunnel and were approaching the front line. Pope charged the tunnel with a large camouflet of 4000lb of ammonal and fired it on 21 August. A day later the Germans could be heard clearing out their tunnel, which was evidently still intact; by 24 August they resumed their drive towards the British line. On 28th they were again located in a gallery about 100ft deep and 60ft south of No 3 Main.

Determined to halt the German approach, Pope began to run a gallery from No 3 Main to meet it, and warned 40 Division that they may have to evacuate that part of the front line.

On 1 September the Germans were heard past the British lateral gallery which ran parallel to the front line and was the last line of underground defence. The following day, however, they had stopped driving forward and it was surmised that they were laying a charge. This was confirmed on 3 September when tamping was heard. 40 Division was told to clear the front line and they did so by 7.30pm. After a tense 75 minutes, a large charge erupted in no-man's-land blowing in 100ft of the British trenches.

It was a whole day before 258 Company could make a full underground inspection. Their three main tunnels in the sector were found to be badly gassed; several galleries and two chambers prepared for charges were destroyed.

The British defensive system thus effectively crippled, the German miners resumed their relentless drive to the British front line. On 11 September they could again be heard clearing out their gallery past the British lateral. Pope decided to charge this point with 6000lb ammonal but there was a further disaster on 13 September when a pocket of gas ignited in No 3 mine and a badly gassed NCO had to be rescued by the company Proto squad. The tunnel remained too badly gassed to enter without apparatus throughout the 14th. On the evening of the 15th, Pope reported the situation to the Controller of Mines, Lieutenant Colonel Guy Williams, who immediately placed Lieutenant Smart at Pope's disposal to halt the German drive by charging and tamping No 3 Mine, wearing Proto apparatus.

Preparations for The Task

The following morning, Sunday 16 September, Rex Smart arrived and took charge of the operation to charge No 3 Mine with 6000lb of ammonal.

The dangerous amount of carbon monoxide from the blow of 3 September was immediately evident. In the dugout at the shaft head, men were experiencing headaches from the carbon monoxide backing up from the mine and a canary was placed here as a continuous precaution. Smart preferred canaries to mice as they more readily displayed obvious symptoms of gassing – a lack of chirpiness, panting and eventual falling from the perch. Usually miners could withdraw to fresh air soon enough for the bird to recover.

Access to the tunnel was via an 80ft deep shaft. Smart had only climbed down half way when the canary showed that he could not safely remove his Proto set. He crawled the length of the tunnel which ran out 100ft beneath no-man's-land. The tunnel's size and condition made movement in a Proto set extremely difficult as the dimensions of the last 40ft were just 3½ by 2½ft. The floor was strewn with rubble and the tunnel culminated in a 16ft long right-angle chamber. Smart sampled the air in the chamber with a vacuum flask; the analysis showed 1.65 per cent carbon monoxide, more than ten times the recognized dangerous concentration. So much gas was flowing in from the surrounding strata that two electric Holman pumps were insufficient to clear it.

Having carried out the reconnaissance, Smart organized his men, 17 altogether, with Captain C C Henwood, the mine rescue officer. Two shifts of

six men each, were formed to work 2-hour shifts underground, led by Smart and by Corporal Robert McDougall, 258 Company rescue instructor. A dugout for recharging the Proto sets and resting the men as they came off shift was available 140 yds away from the shaft head. Here the Proto sets were refilled with caustic soda, cleaned and checked before re-issue. Sapper Arthur Trueman, with a trained assistant and a fatigue man, performed this vital duty. The two remaining Proto men stood by in readiness for emergencies. Four Proto sets were kept spare in the dugout, while a mine rescue stretcher and Novita oxygen reviving apparatus were placed at the bottom of the shaft. Smart arranged a system of signals for operating the winch: one pull on the signal rope meant "stop", two "lower" and three "raise".

Mine rescue personnel under instruction at the Chatham Mine Rescue School, September 1917. Oxygen and exhaled breath scrubbed of CO_2 were mixed in the bag worn in front (RE Library).

The Task Underground

By 11pm, over 12 hours after his arrival, preparations on the surface were complete and Smart was ready to take the first shift down. Their initial task was to clear obstructions which could foul the apparatus, and to affix an air hose and power leads to the tunnel walls. Electric safety lamps were fitted every few feet; candles could not be used owing to the risk of flammable gas. The largest falls of chalk were removed and a sandbag carpet layed to make crawling less painful. The tunnel was too cramped for the standard 50lb boxes of ammonal, so loads were reduced to 20lb and the explosives transferred into double sandbags (which were easier to handle) before being lowered down the shaft.

The two-hour limit of the Proto set obliged the first team to leave the mine at 1am on the 17th, when they were given hot coffee at the recharging dugout; heavy meals were prohibited.

After an hour's break, Smart himself took the second shift into the mine. The German miners could clearly be heard working close by but loading continued until 4am, by which time 5000lb had been carried down and stacked from floor to ceiling. Detonators and primers were bedded into the explosives so far stacked, but 1000lb more of the ammonal was still to come. Two hours later they were relieved by Corporal McDougal.

At 7.15am Smart again went down to carry an air hose up to the charge. He hoped that the bags of ammonal in the chamber would seal off the flow of gas, (like the sand stoppings used in a colliery) and that fresh air could be pumped in to clear what remained. Pumping continued all that day but failed to stop the flow of gas into the system and the gallery remained unsafe.

During the afternoon, Smart and Henwood brought back up the shaft 25 boxes of ammonal which had been carried down by mistake; the explosives were shovelled into sandbags and at 5.45pm the final 1000lb was taken down. By 7.15pm they were ready to begin the tamping, starting with 100 bags of clay. The tamping, or sealing, of the tunnel was vital to protect the British workings and to prevent the blast from simply being directed back along the heading. The broad barriers of backfill were alternated with air spaces to absorb the force of the explosion.

The expenditure of oxygen, caustic soda and electric lamps was beginning to outstrip available stocks and work was delayed while these were replenished from the mine rescue school. This gave the Proto men a rest until 10.30pm.

Smart took his pulse, having last worn the Proto apparatus at 2.30pm for six hours – it was

A mine rescue officer on the Western Front p253

The explosion of double mine charges. Note the scale of the explosions in relation to the trees. This photograph was probably taken at a training school behind the lines (RE Library).

90, normally it was 72. Wearing the apparatus for long periods was also causing bad chafing around his armpits which he thought was probably caused by climbing the ladders up the shaft.

At 1am on Tuesday, Smart took the second shift down. By 3am they had completed the first tamping block with solid chalk to a length of 35ft. There was now a threatening silence from the German miners which indicated that they had already laid a charge and had withdrawn. (After this shift Smart's pulse was 88, slightly lower than before.)

By 10.50am the caustic soda for recharging had arrived and Smart returned to the mine with the first shift. Leaving a 10ft space, they began another 20ft of tamping. During this shift a man unloading a bag of chalk at the bottom of the shaft caught the hook around his exhalation tube, which became kinked. Panic-stricken, he tried to struggle up the shaft ladder, breathing too rapidly for the regulated air supply of the set. Smart told him to "take it easy" and use his bypass valve to get a "refresher" of oxygen direct from the cylinder. He made the man rest at the third landing, and they reached the surface safely. A NCO who followed the man up to give him confidence was also distressed by the incident; he went back underground but Smart also sent him up to rest for the remainder of the shift.

At 12.15pm Corporal McDougall took down three men from the second shift and, because they were now so tired, three fresh men, probably Sapper Trueman and the rechargers. By 1.40pm they had increased the second tamping block to 16ft. The gallery was still gassed in spite of the constant pumping. Smart sampled the air at the shaft bottom and found that, even with the charge and most of the tamping in place, there was still 0.92 per cent carbon monoxide, well above the safe concentration.

At 4.15pm Captain Henwood, three men of the first shift and the recharging men went down and finished the tamping and by 6pm the work was complete and the mine ready to be fired.

It was more than 55hrs since Smart's arrival at Hill 70. The charging and tamping had been 16 hours work; loading the explosives at a rate of about 750lb an hour and tamping at 8ft an hour. Eighty-six twin oxygen cylinders for the Proto sets and 90 electric lamps had been used.

Simultaneous to this operation, 258 Company had been charging and tamping a smaller mine in a shallower heading to the left. Both were blown at 6.45pm, Germans could be heard working in their galleries right up to this time. The gas which had so dogged the team was dramatically released by the explosion of Smart's mine. Second Lieutenant R L Ward of 253 Company described the effect:

> In the case of the deep charge, a pillar of flame shot up expanding as it rose. It burnt like a blow lamp for quite ten seconds, and for a further ten seconds, a loud hissing of escaping gas was heard. (Pope 1916: 4).

Pope added that ten seconds was probably an exaggeration. It was reported that Smart's mine had completely obliterated an earlier crater, while the other mine had left a smaller, oval crater. The two mines had also collapsed 40yds of the British front line.

The raised lips of the craters were rushed immediately after the explosion so that their commanding height could be incorporated into the British defences. The 12th Suffolks, holding the line, sent men forward as a consolidating party; taking the nearer lip of the crater, they entrenched and wired it.

The next day, 258 Company miners again heard the Germans working in their blown gallery and three days later they managed to

A mine rescue officer on the Western Front p254

blow a small camouflet to the right of Smart's mine but it caused no damage to British workings. 258 Company responded with two explosions two days later.

The situation remained critical at Hill 70 for the whole of the following month.

Back in his billet at 11pm Smart again took his pulse, having last worn the Proto set at 12.10pm, nearly 11 hours ago, he found it was still at 90. At 5pm the following day it was 88. Seven or eight of the Proto men still had pulse rates over normal, ranging from 84 to 98. By the next day all were normal. Smart noted with detachment the effects of the ordeal on himself and Corporal McDougall:

> A corporal said his throat felt as though it was being burnt. Felt tired generally ... Sensation as though the nostrils were constantly expanding, also feeling of continued expansion of the chest. This lasted for several days ... Decrease of uric acid excreted; also much darker in colour. The corporal experienced the same ... Some of the men complained of a pain in the pit of the stomach, due to the bending and lifting of sand-bags in gallery, causing fatigue of abdominal muscles, no doubt. (Smart 1921: 231).

In his report Smart praised the Proto men:

> The whole of the work of the trained men employed underground was magnificent. Although the work was of such a fatiguing nature, there was no complaint of any sort raised, the work being carried on with cheerfulness and resolution. I cannot speak too highly of them.

He singled out four for special mention. Corporal McDougall he described as invaluable: "He worked during the whole time, with great keenness and energy." The work of Sergeant F T Lambert and Lance-Corporal Ronald Lynch "was worthy of the highest praise." "Sapper Trueman's care and skill in recharging the apparatus was," said Smart, "responsible in the first place for the success of the operation."

> He showed great keenness throughout, volunteering to go underground, when towards the end of operations, the men were extremely fatigued. (Smart 1916: 3).

The four men were awarded the Military Medal and all survived the war. Rex Smart received a Military Cross, the citation of which read:

> For conspicuous gallantry in action. He, in charge of a party, after 36 hours of strenuous work succeeded in charging a mine in close proximity to the enemy. It was due to his skill, courage and endurance that the mine was successfully fired in time.

His report was circulated amongst the tunnelling companies and appeared in the official medical history of the war where the author, Dale Logan, described it as "the biggest military mining operation ever attempted by men wearing apparatus." (Logan 1923: 602). He also paid tribute to Smart's "splendid work, which saved a critical situation" in his report on mine rescue work: "The men had implicit confidence in him and his orders were carefully obeyed" (Logan 1918).

In January 1917, while still at the mine rescue school, Smart qualified as an associate member of the South Wales Institute of Engineers. After 20 months at the school he was posted back to a tunnelling company in August 1917, but was evacuated to a field ambulance in December. In January 1918 he received a first class Certificate of Competency under the Coal Mines Act, and later that year was married.

Smart's temporary commission seems to have been extended until 1920 while he wrote the manual of mine rescue referred to earlier, drawing directly on his work on the Western Front. In the introduction, Sir John Cadman spoke of the great value that Smart's intimate experience with the Proto set would have for colliery rescue. His account of the mine charging operation in the manual omits any indication that it was he himself who led it.

Still under 30 when he left the army, Rex Smart resumed what was to be a long and successful career as a mining engineer and consultant to the coal industry and the Board of Trade. His only daughter died when still a child. On his own death, in September 1982 at the age of 90, he left most of his legacy to Great Ormond Street Hospital in her memory.

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Management Theories, Long Shots and Safe Betts

MAJOR D W TAYLOR BSc(Eng)(H) MSc(Mgt) CEng EurIng MICE MIMgt

Major Taylor joined the Army only because the Navy had few career openings for a potential civil engineer. He has spent a third of his 21 years' service on courses, another third supporting the RAF (partly in construction squadrons and partly in Works Services), and has divided the rest more or less equally between training at Church Crookham, Corps Support at Hameln, and staff at Wilton. He has now run out of excuses, and joined the Quartermaster-General's empire in Chilwell.

Disclaimer: Little of what follows is provably true, nor is it logically analytical. It relates to organizational analysis, and should not be misapplied to tactical decision-making.

A Caricature

Academic theses in general, and management ones in particular, share only one characteristic with military papers: long lists of references. The author's recent effort at the former was impenetrably obscure but contained 219 references, and went through on the nod. If this made it twice as good as those with only 30 references (that required resubmission), then the power of the argument must vary with the cube root of the number of references. But the real trick to writing academic papers is to make the introduction fill over half the space, then cram in all the arguments and recommend further research plus a grant to go with it. Any hint of that here merely goes to show how difficult it is to shake off bad habits.

Parameters

The purpose of this article is to distil the few useful thoughts that have occurred during a year at Manchester University, to help readers with open minds see familiar issues from less usual angles. No further reference will be made to Manchester, as the mix of sociology, accountancy, and business psychology is unlikely to appeal to many. It was intended to make no references to any other published works either (despite the resultant lack of potency!), but one or two ideas are so specifically personal that they are acknowledged where they occur.

It has to be accepted that some readers will already have skipped over this article due to the inclusion of the M-word in the title: those who are broader minded may appreciate the recent wonderful assertion that business practice should follow military practice and talk about leaders, because management is a sexist word. Whatever, this article would be irredeemably clumsy if it tried to avoid using the M-word, and so it is assumed that leadership is a sub-set of management (ie all leaders manage, but not all managers lead):

$$\begin{aligned} \text{Management} &= C^3I \\ &= C + C^2I \\ &= \text{Leadership} + \text{Administration} \end{aligned}$$

Assertions

It is firstly asserted, on the basis of very little objective data, that the military lead over civil industry in organizational efficiency is being eroded. We continue to improve, but they are doing so faster, and in the long run position matters less than velocity, and both matter less than acceleration.

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Three examples will suffice to illustrate this assertion: the military appreciation, critical path analysis, and the systems approach to training. Twenty-one years ago, these were at the cutting edge of academic thinking. Management schools now devote whole courses and learned journals to strategic planning and change management; the cold left-brain analysis of the military appreciation is considered plodding, and is of course open to the criticism that it is just as easy to do backwards as forwards ... or is it easier? In the second example, the construction industry has leapfrogged past the cascade plan wallpaper in the site hut, and found that time versus task is more related to the assumptions than to the outcome; it is not the key variable. Thirdly, the military implementation of systematic training has never really taken off since validation takes longer than the life span of many course structures, while customer-oriented modular training is all the rage elsewhere.

But one should not be dispirited by all of this. It was lonely at the head of the pack. The Armed Services equate only to a medium-sized multinational corporation, and while defence is unique so are the National Health Service and ICI. Emphasizing uniqueness is relatively unproductive, while looking for similarities allows lessons to be transferred in context. Military leadership is vital, but there is nothing to be ashamed of in a bit of organizational followership in areas where the others have caught up. A bit of this and a bit of that civilian idea is no threat to the military way of life.

On the other hand, one has to be careful not to follow every fad, as many are partial rather than global in their application, and misapplied they can be disastrous. Several management consultants have analysed the implementation of business initiatives, and suggest that up to 70 per cent fail. Some initiatives fail because they do not suit the corporate culture, but many fail because they tried to apply the KISS (keep it simple stupid) principle (vital in the face of the enemy) to complex situations. One academic study managed to debunk 36 such over-simplified theories on just two view-foils.

It is secondly asserted that, despite all the efforts to the contrary, military management is chronically bureaucratic.

The need for civil control of the military is an article of faith, and leads to a system of checks and balances. But those need only apply at the civil (political) interface: in practice they are replicated right down the multiple lines of responsibility at least as far as troop commanders, who must engage three or four regimental agencies just to turn live rounds into empty cases. As incumbents, officers enjoy the conviviality of consensual decision making, or can make a mark by overcoming a few checks or balances. But, as functionaries responsible for the expenditure of several per cent of the gross domestic product, we have an abnormally high overhead ratio, if self-administration at troop level and above counts as an overhead to the delivery of war-fighting capability.

Of course the fog of war is notorious for absorbing the efforts of headquarters, of supporting troops, and of logistic support. The functions that accountants may abolish in peace are the means of force projection and increased tempo in war. Many businesses now operate with the equivalent of autonomous subalterns reporting directly to a brigadier, and so might the army in peace. The supporting cast needed on operations just might be better employed elsewhere in the meantime, unit cohesion notwithstanding. The fact that a purple task force headquarters is being set up in parallel with existing headquarters, and that the Territorial Army is being inclined towards support and logistic functions, are merely pointers to the future.

Organizational Change

At least a minority of readers will recall the Army Restructuring Plan of the mid-70s. The thin red line (six brigades up, with just divisional headquarters in the second row) was replaced by two echelons of half-sized divisions. It was a bold plan, and predated the current business obsession of removing tiers and functions, but it did not last. The lack of compact, secure, mobile communications did not help, but a greater cause of failure was the internal resistance that it generated. It did not match the corporate culture, nurtured by a history of actions at brigade level, nor did its creators attempt to change that culture. "Resistance to Change" is now a distinct academic discipline, and change managers abound at board level. But if the simple analysis that "managers deal with complexity while leaders deal with change" is valid, then the failure was an indictment of military leadership. Implementing policies is harder than inventing them, but officers are paid to do both.

Times change, and the recently published Bett Report is no run-of-the-mill consultancy report.

Few organizations can ever have given such a wide brief to examine and criticize their inner workings to an outsider. Such strategic analysis is usually kept in-house and secret. The report is worth a read, if only to see the inner workings of a business mind, stripped of all the usual jargon. It happens also to be a careful reappraisal of the application of (personnel) resources to objectives. Yet it is seriously flawed. It makes operational recommendations without setting the strategic framework. And it asks that the customer takes the entire table d'hôte: democracy isn't like that – it sacrifices the contentious parts in order to implement the highest common factor. What the report does do is encourage imaginative continuous change in place of unpopular "do ten per cent more with five per cent less" policies.

It may be argued that there is nothing entirely new in this world, and organizational structures are a case in point. A century and a half ago, artisans were self-managing sub-contractors. Then steam power made large factories competitive, and management had to be centralized to avoid chaos. Enter the professional (general) manager and the accountant. Scientific management and Henry Ford reduced the middle manager to an information relay, and then the computer made him redundant. An example of the presently declining role of the manager is the American government's drive to have only one manager per 75 employees. Where would the average regiment be with only ten members of the combined Officers' and Sergeants' Mess? High officer-to-soldier ratios are a recent phenomenon, driven by non-user-friendly technology.

It may be assumed that much of the thrust of the Bett Report will be adopted in time, but ideas such as cutting out four ranks have at least generated discussion, if not resistance, and yet the report was if anything too tame in its recommendations. Retaining 14 ranks in an organization with only seven levels of command (section to Corps) is hardly revolutionary, and cutting only 22 per cent of grades can hardly be presented as a sweeping change. But implementing these cuts will not be easy.

Albert Einstein suggested that in the middle of difficulty lies opportunity. Bett is only the lower tier of difficulty, for on a higher plane there is the concurrent need to convert from a Churchillian, moral war-fighting capability to a post-Cold War, pragmatic one. Given the time it took to get to the Churchillian philosophy from the previous Bismarckian one (of necessary wars), there seems plenty of scope for the opportunist. Rather than continue to tread on others' toes, it is sufficient here to consider only particularly Sapper opportunities: delayering, project management, and quality management.

Delayering

"Those who ignore the lessons of history are condemned to relive them."

In the beginning was the squadron (of ships, horses, whatever), except when it was called a company, or troop. Spans of command downward became unmanageable, so the Italians invented a post below general, to command a column of troops – the *colonello*. Then the tempo of war increased a bit, and the colonels needed to employ deputies to command bits of their regiments; the French invented the title for these gentlemen. There is at least a passing similarity between this and the third paragraph of organizational change above.

After a while the rest of the Army cottoned on to the fact that giving near-autonomous command to the most competent 39-year-olds was a sound way of getting them noticed and promoted to brigadier (NB the author is now 40!).

Historically, regimentation is a very recent change, since even in the early 1970s half the squadrons in the Corps were still independent. But Sapper machismo has usually led to regiments being as big and complicated as possible. Adding to that both the tendency to be rusticated from the formations that they support and the game of musical squadrons on mobilization, makes the net present benefit of regimentation less than it could be.

Sir John Harvey-Jones has suggested that businesses should always be planning "the plant after next." On that basis, the structure of the Corps for the turn of the millennium should already be in hand, but what are the aspirations for the reshuffle in 2005? Should the Corps then still be involved in manual labour, be it combat engineers fixing demolition charges or artisans building one brick at a time? The real problem with manual labour is that annual productivity increases involve more sweat. "Bridging for the Nineties" has given a glimpse of what is possible, but more mechanization is usually associated with manpower reductions (in industry as much as in the services) and higher skill levels (fortunately 30 per cent of this year's school leavers seem destined to obtain

Location	Present Squadrons						Major Unit Squadrons			
	Fd	Armd	Fd Sp	Park	HQ	Other	Close Sp	Gen Sp	Log Sp	Other
Tidworth	1	2			1		2			
Ripon	2			1	1		1	1		
Maidstone	3		1		1		1	1or2	1	
Waterbeach					1	3				2
Osnabrück	2		1		1		1	1		
Hohne		3			1		2			
Hameln 1	3				1			2or3		
Hameln 2				1	1	1			1	1
Antrim	1		1		1			1		

A possible delayered reconfiguration.

degrees). The Corps can either willingly seek smaller, more efficient, and higher skilled units, or abandon its second motto and follow the crowd.

Given the complexity of a field squadron, its internal teeth-to-tail ratio becomes inefficiently low if its strength drops to the size of an infantry company. (It is remarkable how the Corps has managed to retain some of the largest and most complex sub-units in the Army.) This resistance to shrinkage conflicts with the needs of manpower economy: an effective squadron of about 200 men is little smaller than the minimum size of a major unit for purposes of Army sport.

The opportunity here is to follow a business trend (cutting out layers of management), to give commanding officers time to grapple with their growing span of technical control, to retain large squadrons, and to improve the internal teeth-to-tail ratio. The opportunity is to copy the RAF, and invent the major-unit squadron. (It could be called a one-squadron regiment, or a delayered regiment, or a myriad other things, but the RAF have set a precedent.)

Deft footwork was required in the late 80s to convert from two engineer regiments (one affiliated, one Corps troops) per division to the present three-and-a-bit or four. Similar work would be needed to double the ratio again: the infantry and artillery are hardly likely to welcome eight Sapper lieutenant colonels in a division. But, looking only at regular non-EOD field regiments, and adding regimental and squadron headquarters, there are at present 44 field headquarters to the equivalent of only 21 field squadrons. Chopping regiments in half, within the existing barracks, and tweaking a bit could achieve a 53 per cent reduction in headquarters. The cash savings would be less, after allowing for 12 majors to be promoted and 23 found jobs elsewhere, but should cover the cost of new regimental flags. One possible configuration for such autonomous squadron groups is shown in the table above.

No change is without its difficulties. Whether it is more difficult to arrange for two units to share one Mess, or to change the rules and allow majors who have commanded nothing larger than a troop to be promoted is not really relevant: Einstein would not have been put off.

Project Management

"Teamwork is the fuel that allows common people to achieve uncommon results ".

Turning from organizational structures to operational methodologies, project management has for too long been associated with construction engineering. It was invented for the procurement of the Polaris missile system. In the Corps its first use was for the procurement of major civil engineering works, and there it has nominally languished. But treating project management as an abnormal military activity belies the reality. The topical emphasis on following the chain of command for all decisions ignores the fact that the Army is a peculiarly fine example of the operation of matrix management ie having senior staff with overlapping responsibilities – one for men, one for machines, and another for all men and machines within boundaries. This is not daft, but does create tensions when issues of primacy are unclear.

The military, indeed, takes the above two-dimensional matrix to its logical extreme, in four

dimensions: force structure has a product hierarchy (contingency forces versus the strategic deterrent etc); manpower follows a functional hierarchy (Sapper or Gunner); command and, to a lesser extent, budgets have a process structure (commandos versus armoured brigades); but operations have a project organization (airborne forces in the commando brigade on Operation *Corporate*).

This association of project management – the control of flexible multidisciplinary teams, assembled for specific purposes – with military operations bears further analysis. Shorn of their respective jargons, product development projects, computer projects, accountancy projects, procurement projects, construction projects and military operations all involve the assembly of a task-specific grouping for a limited period of time to achieve a defined goal, using concurrent activity etc etc. The manuals are all but interchangeable.

The dictionary definition of a project is "a planned undertaking for presentation ... at (a) specified time." Its defining characteristic is its uniqueness, requiring more planning effort per unit of output than routine work. Project management is thus the management of change, and that is a euphemism for leadership. However the conventional teaching of project management conflicts with military leadership training: it calls for holistic not incremental planning, it needs self-managing teams, multiple lines of communication, and trust not checks and balances. While it is the antithesis of a staff hierarchy and a single executive chain of command, it does bear some resemblance to mission command.

Project management is change management, and relevant to all military commanders. It is especially relevant to the Royal Engineers, whose role is to change the battlefield. It is a five-dimensional problem, analytically insoluble without assumptions and simplifications, all of which must remain relevant. The key variable is time. The others are the tasks, manpower, resources, and location. Manipulating all five simultaneously should be the goal of the Sapper officer, and project management should be the uniting thread of Sapper command courses, not a somnolent module.

Project management is best identified by the circumstances of its absence. Bernard, from "Yes Minister", would have characterized it with one of his irregular verbs: "I produce an innovative solution to an unforeseen problem, you bodge it with sticky tape, he fouls it up completely."

Quality Management

"Attitudes are contagious. Is yours worth catching?"

The third opportunity considered here relates to performance standards. The Bett Report touched on the issue of performance related pay (PRP). Chief executives regard it as a god-given right (at least for themselves), management consultants recommend it, but academics can prove that (except in the short term) it is always counterproductive: people do what increases their pay, not what is good for their employer. Team cohesion is lost in the scramble for the biggest bonus, and once that has been achieved the best performers divert their energies elsewhere.

Within the military there is a particularly serious impediment to PRP, in that there is not even an imperfect financial yardstick by which to judge the correct level: it is self-evident that a PRP scheme must generate more value than it pays out, but it must also pay out more than the participants would gain by diverting their energies elsewhere. How much cash is an O grade annual report worth? Even in war, there is no objective test of performance, since war is subject to an extraneous uncontrolled variable – the enemy. Small wonder that the best efforts of HQ LAND to define training standards avoid the bear-trap of a scoring system.

Having begun with a brutal hatchet job on squadron commanders, a more cerebral approach will be used here, looking at the quality of the system not the quality of the individual.

Quality management has gained wide support in manufacturing industry, where processes are readily measurable, and the dysfunctional effects of an unskilled workforce was most evident. It is spreading into those service industries where the benefits of continuous improvement and less unproductive time outweigh the costs of task definition and data collection. Some consultants say that that means all service industries. Millions of pages have been written on several different interpretations of quality management, but the essence remains to engage the skills of the workforce in the planning and control of their work, to plan methodically, to work consistently, and to monitor numerically.

The civilian construction industry for years rejected quality management, assuming that it was an alternative to project management, relevant only to repetitive manufacturing. That resistance is now in decline, since it is being applied

to the management control systems rather than the detailed processes, and particularly as it is now a legal requirement, albeit in the guise of safety regulations.

The Ministry of Defence, having for years applied quality systems to equipment procurement, is extending its insistence on the use of quality assured (QA) suppliers into the works services field. Even RLC units are obtaining QA certificates, for their systems if not their products (ie they now supply consistently shoddy goods). Obtaining a QA certificate is not easy, but conceptually involves no more than writing what you do, and doing what you write. The purpose is to avoid Murphy's Second Law, "There is never enough time to get it right first time, but always enough time to do it again."

The opportunity here for the Corps is to use the methodology continually to improve drills and operating procedures. The difficulty in a compartmentalized organization is that an individual's bright idea tends to remain just that – individual – and is lost when he is posted. Quality management formalizes feedback loops in a number of different ways, but always with the aim of improving and standardizing. Bright ideas go in the suggestion box, are examined promptly, and either implemented across the organization or not at all. The tempo of change generated by prompt recognition of ideas, even if it involves no payment, can be orders of magnitude greater than with the traditional pattern of infrequent composite amendments.

A leading consultant, Crosby, likened traditional management to hockey, where the same problem is solved a different way every day. By contrast, he compared quality management to ballet, where choreography and rehearsal produce consistent, efficient perfection. Few combat engineers are likely to like being described as ballerinas. If the battlefield engineering side of the Corps takes primacy with project management, the route to implementing quality management would sensibly be via construction work.

Coda

No attempt has been made to reduce the value of studying foreign military doctrine as part of an officer's education, but there are also benefits in drawing on experience from domestic business practices. Industry is not too proud to borrow the best of military theories: we should borrow more of theirs.

The present trend is towards less manpower and a lot less management, causing increasing tensions within the regimental organization adopted 48 years ago. Profit-motivated industry would respond within weeks to these tensions, so it is scarcely revolutionary to suggest easing them by cutting out one level of engineer command over the next decade. Whether the manpower released is axed or redeployed is a separate issue.

The extent to which engineer command courses can be refocussed from the application of skills to the management of time depends on the degree of delegation the Corps is prepared to allow its junior ranks, and the degree to which the Army will tolerate the loss of hierarchical controls. But if the maxim that successful leaders always exceed their delegated powers is true, project management should be the cornerstone of battlefield engineering.

It would be strange for a technical officer to volunteer the loss of his speciality without finding a replacement for it, but in an ever-changing world quality management is the next hurdle to cross, and it is best introduced well away from the contact battle.

As for a view to the future, academic and business theories have short shelf-lives, so at least a few of the 23 redundant squadron commanders should be given industrial secondments, to keep the Corps up to date with best civilian practices.

Rule Britannia OK!

LIEUTENANT COLONEL C M G DE PLANTA DE WILDENBERG LVO

Commissioned into the Corps in 1954 (13 Swinburn's Batch), the author followed a typical trail through the vagaries of PB 7's thoughts, until the rank of major. Then, having gained a minor military qualification in French as a subaltern, he was suddenly committed to three glorious years at the French Army Engineer School, Angers, in the Loire Valley. His French improved and later it became the excuse for a two-year course at the Ecole Supérieure de Guerre, Paris, where it improved even more. This led to the job of Defence Attaché at our Embassy in Morocco and for the same reason, but more obscurely, to that of Military Assistant to the Commandant of the North Atlantic Treaty Organization Defense College, Rome. After a final job running the Aldershot end of the British Army Equipment Exhibition 1988, he retired in 1989 to do all those things he never got round to while serving.

ROYAL Engineers had been active in North Africa on several occasions before I got there, but the job I am writing about was unusual, even by Sapper standards. The Queen was to pay State visits to three North African countries in 1980 and at the time, I was accredited to two of them as Defence Attaché. Because this job included a naval hat, I suddenly became responsible for the berthing and security of Her Majesty's yacht *Britannia*. At first, I did not fully take in the depth and width of the task, but I soon learned that gangways (brows) must not slope more than 15 degrees above or below horizontal, that *Britannia* has special hull paint which must not be scratched, that security covers everything on the earth and in the waters under the earth and that if one engine of the royal barge is temporarily not in use, then the exhaust pipe for that engine will be painted with red lead on the inside for the first six inches from its outer end.

Nothing is left to the tiniest chance on State occasions, so one of the yacht's officers accompanied the Palace reconnaissance team, four months before the visits took place, and I was given a set of very detailed instructions. One of *Britannia's* ports of call was to be Tunis and the other, Casablanca, on my home ground of Morocco.

As I could not be in Tunisia at the time of the recce party visit, a civilian second secretary at the embassy was nominated acting naval attaché, got the works from the yacht officer and was left to get on with the arrangements. I was simply to be responsible for them. Casablanca, where *Britannia* would also be moored, was a different matter and here I went in at the deep end.

Morocco's main export is nitrates and much of it leaves the country through the port of Casablanca. As a result, this name is a complete misnomer and the harbour and city reside under a permanent cloud of dark brown dust. That was the first problem. The second was the berth itself. *Britannia* would be moored at the head of the main general cargo jetty and a vast amount of work would be necessary to make this suitable for the two monarchs to set foot upon. The task included the removal of a veritable mountain of loose grain, which had been off-loaded from a bulk carrier at a point where no bulk handling facilities existed. But what exercised the yacht's officer most were the fenders on the jetty at the point where *Britannia* would be moored. These consisted of four heavy chains, with a quantity of old truck tyres laced onto them. This would not do. The recce officer produced a drawing of a suitable alternative, called a catamaran. This is made up of several heavy baulks of timber lashed together, with tyres threaded along them at one metre spacings. Several of these were to be floated in the water so that they formed a cushion

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between the yacht's rubbing strake and the jetty wall. They would prevent any damage to the paint of the hull. They would have to be manufactured locally but the port captain, a helpful gentleman with many years of experience, said that this would be no problem. In time, I came to dread that expression, but it contributed generously to the success of the reconnaissance.

Time passed and preparations continued. The plan was that the royal party would arrive in Tunis aboard *Britannia*, then sail to Algiers and fly from there to Rabat, in Morocco, while the royal yacht sailed round to Casablanca to act as a floating palace in which the Queen would entertain her Moroccan hosts after several days spent visiting various parts of the country in the company of King Hassan II.

About six weeks before the visit, I went off to Tunisia to check on how things were going and much had been done. But we still needed a gangway long enough to satisfy the 15-degree limit, for the ship would be high out of the water. One was finally found at another Tunisian port and we were promised that it would be made available. Work was already afoot on the quay where *Britannia* would lay, to demolish some old sheds and re-tarmac an area bigger than a rugger pitch. Finding that things were well in hand, I returned to Rabat and soon after visited Casablanca to check on progress there.

The grain mountain had disappeared and the dockside looked as if it had been scrubbed. Maybe it had! The store sheds were all being repainted, potholes were being repaired and the railway line was being re-laid. The port captain showed me round with pride and asked if there was anything more to be done, so I mentioned the matter of the catamarans. He again said "no problem", for the present arrangements would be very adequate. So I went back to square one and made it clear that without catamarans, *Britannia* would not tie up. He made sucking noises and said that if they were really necessary, he would arrange them. I said they were.

A week before the Tunis visit began, I made another trip to Casablanca. Plainly, much effort was being expended. The loading of nitrates would be stopped while *Britannia* was in port, so as to reduce the dust. The governor of the city had toured the docks the day before and was satisfied with what he had seen. The bunting and flags were still to come, but a forest of flagpoles had sprouted and the jetty had been scrubbed again. But of catamarans, not a sign. When I spoke of these, the port captain felt that it was time to exert the superiority which 22 years in the job gave him over a foreigner in a khaki uniform. He declared with much dignity that a white-painted Polish passenger liner had recently used the very spot where *Britannia* would be berthed and had been completely satisfied with the present arrangements. I decided not to try to explain the difference between a Polish passenger liner and Her Majesty's yacht *Britannia*, but pointed out once again that without the catamarans, there would be no yacht. I then flew to Tunisia to check final arrangements there and to prepare for the royal arrival.

My female civilian stand-in in Tunis had done a marvellous job. Everything was in order, though plans had changed a little. The gangway problem had proved insoluble, so a substantial wooden tower had been constructed on the quayside at exactly the spot where the hull entrance of the yacht would be. A short, horizontal companionway would be launched from the ship to this tower, where the President would be waiting to go on board to greet the royal visitors.

The day dawned. In October, Tunisia is warm and sunny, but a light breeze kept the morning temperature at an acceptable level for wearing No 1 Dress and all its diplomatic accoutrements. The great and gracious assembled with an hour to spare, in the spankingly refurbished port. Tunis town is separated from the sea by a vast salt water lake, across which the royal convoy would process. Salutes were exchanged at La Goulette, at the sea end of the channel across the lake. *Britannia*, her escort, HMS *Apollo* and three Tunisian patrol boats then sailed serenely, if very carefully, towards the Tunisian capital.

The port had been cleared of all shipping for the visit and the waiting dignitaries, craning for a first view, eventually saw a topmast over the freight sheds, followed by the funnel and then the white upper works of *Britannia*. Suddenly she was upon us, turning grandly into the basin entrance and revealing herself in her royal blue glory as she came round the last building. In the bright October sunshine, her colours were in brilliant contrast to the grey of the dockside sheds. The massive Royal Standard at her mainmast stood proud in the breeze and "Rule Britannia", from the Royal Marine band on deck, came faintly to our ears. The vessel, with enormous dignity, slid alongside her berth and towered high above us as she came

slowly to a standstill. "Imperial" is the only word adequate to describe the scene.

Royal blue mooring lines flashed ashore, and Tunisian gunners fired a second, deafening salute from the dockside. Since the vessel had to be positioned extremely accurately to meet the landing tower, some time passed as the winches inched her to her correct position. The clock showed the hour of disembarkation was approaching. Steel wire hissed sharply through pulleys and in a trice, *Britannia* was dressed overall. Seconds later, the ship's company, in slow time and absolute silence, emerged one by one from the bridge, moving towards the stern like figures from a medieval clock, until, spread the length of the decks, they halted, faced outwards and dressed ship. But the companionway was proving difficult and our Ambassador, glancing at his watch, was becoming nervous. Since he had a live Defence Attaché with him that day, he turned to me and said, "Colonel, do go and see if you can help".

An ambassadorial command is not to be trifled with, so I set off. In the total stillness of this delay, with my spurs clinking, my dress sword ready to trip me and the temperature inside my No 1 Dress increasing rapidly as I stepped into the sun, I became the only moving thing on the quayside. Every television camera focussed on me in order to put something animated onto their screens, but fortunately, I was unaware of this at the time! I approached the ship at right angles and saw myself reflected in her paint work. Had I not taken great pains that morning to shave more closely than I had ever done before, I could easily have done it there and then, using her plating as a mirror.

I continued until I was virtually under the companionway, then I looked up, craning my neck. A large, impeccable Royal Marine sergeant was supervising two other white-gloved Marines who were fumbling to insert the safety pins under the companionway. Inspiration came to me and I called up, "Good morning, *Britannia*."

The Marine Sergeant looked down over the rail and replied, dourly, "Good morning, Sir."

Inspired a second time, I went on, "Can I help?" He replied, "No, thank you, Sir," So I went back to His Excellency, to report on my mission. He seemed grateful for my trouble.

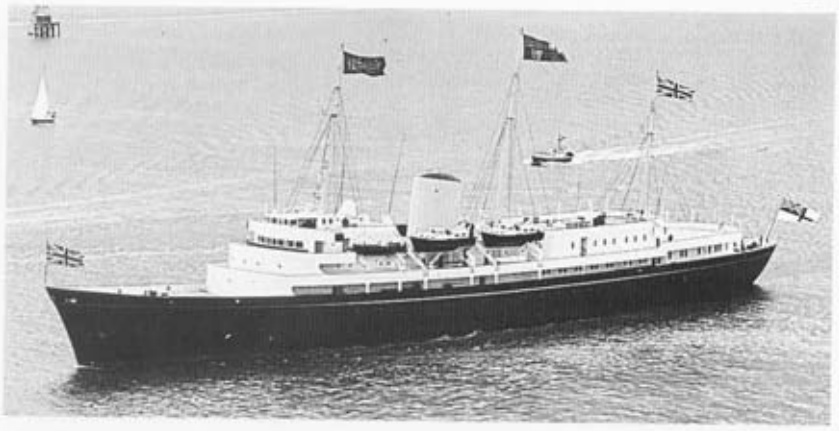
After the disembarkation, I was simply required to be present at various ceremonies and to attend a state luncheon at the presidential palace at the edge of the Mediterranean. My wife, also invited to the luncheon, was chauffeuring me, as it is not possible to drive a hired Renault 4 in No 1 Dress and spurs. She dropped me at the grand entrance and was directed by a palace gendarme to the car park 500 metres away, from where, under the now blistering sun, she had to walk back in her state luncheon dress and hat!

Later, I attended to the minor needs of the yacht and watched in awe as, unassisted by tugs, she was turned through 180 degrees in the basin, so as to be facing outwards for her departure.

On the evening she left Tunis, the Queen followed a routine which changes little on such occasions. She held a reception on board *Britannia* for state dignitaries and the Diplomatic Corps and as a climax to this, the Royal Marine band beat Retreat on the quay alongside, watched from above by the guests on deck. To the horror of the security men, this ceremony was performed in a darkened port, with only the yacht's floodlights illuminating the parade ground. This was done not only for its spectacular effect but so that, as the band marched off and the final drumbeat sounded, the floodlights could be extinguished and the whole port be plunged into darkness. At the same instant, on the facing quay, HMS *Apollo* lit up from stem to stern, her lines gone and already imperceptibly under way. She then slipped out of the basin to take up her position ahead of *Britannia* for the journey to the sea. It was a very moving and dramatic moment.

It did not last long. *Britannia* had 20 minutes to get all guests ashore, without hurrying anyone, and to be in motion herself. She did it with two minutes to spare, and we raced to our car, out of the port and on to the causeway which follows the channel across the lake, in order to see her pass. Her upper works floodlit in the darkness and with car headlights glinting on her gleaming hull, she was a vision of magnificence as she passed within 50 feet of us. Later, from the heights of Carthage, we watched till she disappeared round the distant Cape Bon.

The following day, despite having officially said farewell, the Queen came ashore at Sousse, on the east coast of Tunisia, to spend the day visiting the holy city of Kairouan. The yacht anchored off and the party came ashore in the royal barge. This, too, is a splendid vessel and an object lesson in how things should be done. At the end of her trip, Her Majesty took tea in the British-owned Hannibal Palace Hotel, and as she walked through the gardens down to the quay to board her barge, she passed through an amazed crowd of British holiday



Her Majesty's yacht *Britannia*.

makers, who apparently had had very little notice of her coming. Well done, the security boys! When she had gone, a large, somewhat sunburnt, but very happy Cockney lady turned to me and grasped my hand, saying, "I've lived in London all my life and I 'ad to come to Tunisia to see 'er for real"! And she burst into floods of tears.

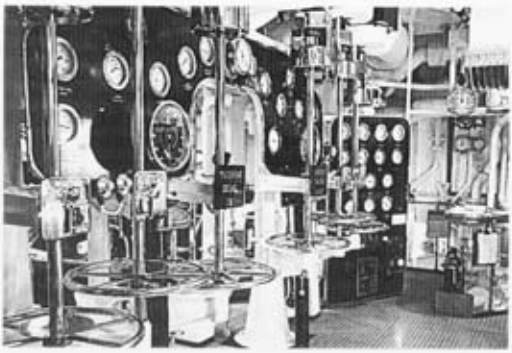
Seen from close to, a state visit is very impressive.

While the royal cavalcade moved on to Algeria, I returned to Morocco and to the final preparations being made there. In the week I had been away much had changed, for the King taking a close and personal interest in all the plans, had sought to expand the depth and generosity of his welcome. This had caused no little confusion and I had been lucky to be away in Tunisia while everything was re-scheduled. Once more, my primary responsibility was the yacht, for though the royal arrival was to be by air, *Britannia* was to be the base for most of the Queen's entertaining. I visited Casablanca again and made my final demand to the port captain for catamarans, backed by thinly veiled threats about the results of their absence, but I had little confidence in the effectiveness of these threats.

Then, I returned to Rabat, for the flight arrival. A magnificent Boeing 707, in the colours of British Caledonian Airlines and shining as if on its maiden flight, taxied to a halt before a large awning and the Royal Standard was broken from a miniature mast above the cockpit. Amid a panoply of traditional Moroccan uniforms and ceremonial, HM King Hassan II boarded the aircraft and emerged some minutes later accompanied by the Queen; my second state visit in two weeks was under way.

Overall, it was a great success, despite the efforts of the UK press corps. This tribe, no doubt under pressure from editors to get a story out of a three-week tour which had been almost totally devoid of tabloid-fodder, proceeded to misrepresent almost every action of King Hassan, who in fact displayed a personal interest and generosity of spirit which many court observers considered unique. That is not to say that the usually unruffled Palace programme ran to its accustomed split-second accuracy, nor that every event had been rehearsed to perfection, but throughout the visit, many gestures of welcome, often the inspiration of the King himself, underlined the warmth of feeling towards the Queen. A round of banquets, receptions, fantasias and visits to many of the spectacular sites of this intriguing country must have demanded every ounce of endurance from the royal visitors and it could be that the prospect of the calm and order awaiting aboard the royal yacht helped them to maintain the pace.

Indeed. On the morning of the third day of the visit, *Britannia* broke through a slight haze and entered majestically into Casablanca harbour. As almost every official of the city was in Marrakech for the royal events taking place there, her reception party was smaller than usual. The port captain was there and I was there, but no one else and for this I was to be grateful. I had arrived with time to spare and as a matter of course, had glanced over



Britannia's engine room controls – they are not made like this any more!

the jetty and noted the chains and rubber tyres were still in place. The port captain made no comment and changed the subject. *Britannia* swung towards us and hove to some 100 yards distant. There was a short pause, followed by a message from a very loud-hailer, "Get rid of those ***** chains!"

Up till then, the port captain had displayed no knowledge of English, so I was slightly surprised by his instant comprehension of an Anglo-Saxon naval signal. It took less than 30 seconds for two fork-lift trucks to appear at high speed from the landward end of the jetty and only a tiny number of minutes for them to retrace their route, dragging the offending chains, with the port captain mounted on the leading vehicle. I had noticed on previous occasions that Moroccans often react very quickly in emergencies.

That solved the problem of the chains, but did not provide catamarans. With the port captain *hors de combat*, I was a little out of my depth. But there is nothing to equal experience in such a situation and *Britannia* obviously had this experience. From somewhere, sweating seamen hoisted a number of heavy fenders on to her deck. A few skilful knots and a lot of lowering away produced, in minutes, what four months of nagging negotiation had failed to do, and HM yacht was able to come alongside. It occurred to me later to wonder what the loud-hailer might have said, had Her Majesty been on board!

Apart from some problems caused by large variations between the programme and the real timings of the visit, and the impossibility of forecasting the number of guests likely to appear for functions on board, including the state banquet, no further catastrophes occurred but one minor incident did cause some embarrassment on the morning of the Queen's departure.

It is the custom of Her Majesty to invite her Ambassador and his wife to spend the last night of a state visit as her guest on board the royal yacht. If the visit has been judged a success, it is possible that she will use this private occasion to show her appreciation by conferring a knighthood on the Ambassador. So, HMA remained on board while the rest of us returned home, to meet again at Casablanca airport early the following morning, to bid the Queen farewell.

We duly arrived there, to find that King Hassan had also come to say adieu in person, an event not common on such occasions. This caused a slight flurry and made ingress to the royal pavilion impossible on account of the extra security arrangements. Not even the Head of Chancery could discover diplomatically whether HMA had been knighted on the previous evening.

Since it was well known that Her Majesty had spent several lengthy periods in hot, dusty tents in the desert, passing the time idly while her host was supervising arrangements in person, it was by no means certain that she would necessarily have wished to lay a blade upon her Ambassador's shoulder as a sign of her gratitude. A cloud of uncertainty hung over his status and there was no apparent way in which it could be dispersed. We glanced quizzically at him, but his face was a picture of inscrutability and we bade our Sovereign farewell in complete ignorance of her feelings towards her Representative. An embarrassing period followed, for the truth was not revealed until the next day, when a short notice in French in the main national newspaper stated that at the end of her State Visit to Morocco, Her Majesty had been graciously pleased to confer upon her Ambassador in Rabat, a Knighthood in the Royal Victorian Order.

Congratulations were in order at last!

Tassé Revisited

LIEUTENANT COLONEL S N WHITE CD MA

In October 1939, 59 Field Company shipped to France as part of 4th Division, arriving in Cherbourg on 6 October. Travelling by train to Noyen-sur-Sarthe, the company then marched to Tassé a small village some three miles distant.

Tassé was a pleasant village mainly of farms nestling among trees and gardens. Our billets were most comfortable. Gus Galloway and I were in a house on the Noyen Road owned by a Madame Dramet, and the officers' mess was the Café l'Oiseau, where Madame was an excellent cook. The weather was good, the birds sang and the war seemed very far away. It was an idyllic existence but not destined to last very long.

On 9 October the OC (Major MacDonald) sent for me and said, "Tomorrow the company is moving further north to a reserve concentration area and you, as the junior subaltern, will take the first reinforcements to 2nd Echelon at the Base." (In addition to myself the reinforcements consisted of one sergeant, one corporal, 15 sappers and one pedal bicycle (military pattern).) "You will contact the Railway Transport Officer (RTO) at Noyen with regard to entrainment and before leaving Tassé see to the cleaning up of any untidiness left behind when the company moves out; and then check personally with *Monsieur le maire* (the mayor) that he is happy."

Next day the company departed and I shall always remember the feeling of isolation that descended on me. There I was with 17 men to look after in a totally French environment – and without even a French dictionary! Never did anyone's schoolboy French come back to him as fast as mine did. Anyway as soon as the company had disappeared, and leaving my sergeant in charge of the cleanup, I consulted a map and mounting the heavy old bicycle pedalled my way to Noyen.

I then presented myself at the *mairie* (town hall) and stumbled in French through the hope that everything was satisfactory; there appeared to be no problems and we parted company with amicable farewells.

Fifty four years later, on a Monday morning in 1993, my wife and I visited Tassé where I had hoped we could lunch in the excellent restaurant that had been our officers' mess. Sadly it was boarded up and the whole village, though still inhabited, had an air of desolation about it. None of the normal village establishments appeared to be in business, not even a *boulangerie* (baker's shop) – that basic institution of French life. However the *mairie* was still there and reading a notice posted on the door we discovered that it was open on Monday afternoons and so decided to seek lunch elsewhere and to return in the afternoon.

Seeing two obvious foreigners approaching his office, which was on the ground floor overlooking the courtyard in which we parked, an obviously apprehensive *maire* came out to see what trouble was brewing. However on learning that I had been with the "*troupes britanniques*" (British troops) in 1939, he received us most warmly and invited us into his office. There, having been able to improve my French somewhat in the intervening 54 years, I was able to have an interesting conversation with him. I discovered that his name was Monsieur Fernand Cornuel and that he was the son-in-law of the *maire*, Monsieur Joseph Lelasseux, who I had reported to all those years previously and who had lived until 1952.

While in the *mairie* I noted that the interior walls were completely unadorned save for a picture of General de Gaulle, and being the only surviving officer of 59 Fd Coy from those days I thought the unit's visit to Tassé, however brief, should be commemorated in some way. On my return home, I sent the *maire* a Royal Engineers' plaque with a George VI crest and inscribed "59 Fd Coy RE, 4 British Division", and shortly thereafter received a warm letter of thanks which said "*... la plaque de votre compagnie ... est apposée dans la mairie près de la photo de Général de Gaulle, comme souvenir de ces jours.*" (... your company plaque ... is hanging in the town hall with the photograph of General de Gaulle, in memory of those days."

So that is how there comes to be a 59 Fd Coy plaque in the *mairie* of a remote village in la Sarthe – the first overseas community to receive the company in World War Two; and why any past or present members of the unit visiting this place should not be surprised to find it there.

The OSCE and Nagorno Karabakh

LIEUTENANT COLONEL M S NORBURY

The staff at Headquarters Land Command see many requests for manpower for an amazing variety of different tasks. In March 1995 a signal arrived asking for a Royal Engineers' lieutenant colonel to work for the Organisation for Security and Co-operation in Europe based in Vienna. The author, knowing that there are not many lieutenant colonels who were not in key posts, briefed Commander Engineers. His amazement at being allowed to go was only equalled by his gratitude for the opportunity to experience a thoroughly interesting sojourn in Nagorno Karabakh and Vienna. Having gained a taste for life in the latter part of the world the author is shortly to start German language training before being posted to the Pionierschule in Munich.

Acknowledgement

THE Senior Military Advisor to the UK Delegation of the Organisation for Security and Co-operation in Europe (OSCE) is Brigadier Philip Bambury, another Sapper, whose wise counsel and advice enabled the author to keep a sense of perspective under difficult circumstances. For that help and assistance I am extremely grateful. His enormous contribution to the work of the OSCE is acknowledged by the military advisors of many other member states – I only hope that his work towards peace in Europe will be recognized by a far wider audience in this country.

Background to the OSCE

THE OSCE was created in the early 1970s under the name of the Conference on Security and Co-operation in Europe (CSCE) as a multilateral forum for dialogue and negotiation between West and East. From 1975 to 1990 the CSCE, as its name suggests, functioned as a continuous conference. The Paris Summit Meeting in 1990 marked the beginning of an alteration in its role and organization, reflecting the recent changes in Europe and the new challenges of the post-Cold War period. The developments in the security situation in Europe in the 1990s led to a fundamental change in the CSCE and to a dramatic strengthening of its role. Reflecting this change the 1994 Budapest Summit, recognizing that the CSCE was no longer a conference, changed the name to OSCE. Today the OSCE comprises 53 participating states stretching from Vladivostok to Vancouver, including the United States and Canada and all the countries of Europe and republics of the former Soviet Union. The former Yugoslav republic of Macedonia has observer status, but the membership of the Federal Republic of Yugoslavia (Serbia and Montenegro) has been suspended. All participating states have equal status and are represented on the basis of common interest as well as common rules and principles.

In the last six years the CSCE, and now the OSCE, has gained an ever greater role in its contribution to the protection of human rights and the management of the unprecedented change under way in Europe. The Helsinki Document of July 1992 called for an ambitious enhancement of the role of the organization with the establishment of a post of Secretary General together with a supporting secretariat in Vienna. The following year a permanent committee, now called the Permanent Council, was set up in Vienna specifically to meet weekly and expand the possibilities for political consultation, dialogue and decision making.

The UK has a permanent delegation to the OSCE with its own ambassador and military advisor,

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A map of the area covered in the article.

Brigadier Bambury, together with supporting diplomats, linguists and administrative staff.

The Budapest Summit established the OSCE as a primary instrument for early warning and prevention of conflict, and crisis management within the OSCE region and it also authorized the organization to send a peacekeeping mission to Nagorno Karabakh. To this end a high level planning group (HLPG) was established to prepare a military plan to achieve this mission.

Background to the Conflict

In the former Soviet Union, Armenia and Azerbaijan had a common border but this disguised the fact that the region is as complicated in terms of ethnic groupings, cultures and religions as the former republic of Yugoslavia.

The Armenians are intensely proud and cheerful and feel that someone who does not smile and have a sense of humour is best dead. They are a deeply religious people being Armenian Christians and they have an enviable military history. In World War Two this region of the country alone produced one admiral of the fleet, six marshals of the Army and four marshals of the Air Force. The country is still closely aligned to the Russian Federation and the latter is keen to maintain its contacts and ensure a continuing flow of high quality recruits into their armed forces.

Azerbaijan is a much larger country with greater natural resources and a much larger population to call upon to man its armed forces. It is principally a Muslim country with close links to Turkey and is keen to distance itself from Moscow. Thus, whilst the Army uses Turkish military training teams to bolster the quality and backbone of its soldiers, the government refuses offers from Moscow to help police its long border with Iran.

The conflict between Armenia and Azerbaijan effectively started with the collapse of the former Soviet Union and the renewal of nationalistic aspirations in the region. Nagorno Karabakh is an area in the west of Azerbaijan inhabited almost totally by people of Armenian stock and background; they have no real affiliations to their official political masters in terms of culture, religion or history.

In 1989 Turkey imposed a blockade on Armenia which is still in force. Following the failure of

political moves by Nagorno Karabakh to break away from Azerbaijan and become aligned with Armenia, the Karabakh Army mobilized and attacked Azerbaijan. The conflict swayed backwards and forwards but in the end the Army, supported by Armenian units, cleared the Azerbaijan Army from all the territory to the west and south of the enclave, and cleared the ground to the east, establishing a front line which prevented Azerbaijan guns from firing into their capital, Stepanakert. Karabakh commanders are quite clear that their offensive to the east, with the exception of the battle for Agdam which lasted for a long time, was over in a matter of hours and that they stopped as soon as this important security line was reached, having no territorial aspirations and only wanting to secure the capital.

There has been an uneasy cease-fire along the confrontation line since May 1994.

The Karabakh government is unable to man the confrontation line properly, and approximately five strong infantry companys face just under five brigades of the Azerbaijan Army. You may be thinking "Why does the Azerbaijan Army not attack to recover its lost territory?" The answer is that they are unlikely to try because every time the two sides have met in battle, they have eventually been heavily defeated by the Karabakh Army supported by Armenia.

The historical antipathy between Azerbaijan and Amenia resulted in them both stating that they had certain pre-conditions for the composition of any peacekeeping force. Moscow insists that it has a major role in the force and especially in its command and control. Armenia supports this view but refuses to permit any Turkish soldiers on its soil. Azerbaijan on the other hand wants Turkish involvement but will not allow the Russian Federation units into Azerbaijan. As can be imagined, these considerations complicated the military planning process!

The Work of the HLPG

As a result of the Budapest Summit, in December 1994 the HLPG formed with a Finnish major general at its head, and gradually grew to a strength of 29 officers from 19 countries. The group's mandate was to report by the end of August with a military plan to achieve the aim of inserting a suitable force to keep the peace between the two parties on the confrontation line between Nagorno Karabakh and Azerbaijan, and then monitor their withdrawal or advance to an agreed boundary. The task should not have been too taxing since the size of the force was envisaged at a maximum of about 5000 men, a brigade-sized operation. The problem for the OSCE was really in getting contributing nations to promise troops and/or units and/or equipment and/or expertise and then train the force and get it to a region of the world that is somewhat remote. It was the responsibility of the OSCE to plan and coordinate all training, which would then be conducted by troop-contributing nations, and for the organization to move the men and equipment into the region.

Upon my arrival in the HLPG certain things became apparent very quickly. The first was that no appreciation or staff estimate had been done from which the size and tasks of the peacekeeping force would fall. All planning was done Scandinavian-style by a man who had been retired for five years as a colonel only to be plucked from obscurity to head the HLPG on promotion. No staff system known to either the NATO or former Warsaw Pact officers was being used. Draft papers were only circulated to officers considered by the general to be fit to see them and who would not disagree the contents. As the only British officer in a team whose work was in English but with several Finns whose understanding of the English language was totally different from mine, and two Turkish and one Greek officer whose English was poor in the extreme, I became the proof reader of all documents produced by the group. Whilst I was therefore more up to date than the other members of the team, this gave me additional work on top of the engineer matters for which I was directly responsible. Weekly staff meetings proved fascinating. The agenda was always short and, for example, that for 24 June was as follows:

Item 1 Public holidays
Item 2 Social programme
Item 3 Any other business to include:

Chain of Command and C^2 arrangements
Engineer Concept
Financial Recovery Plan

Frustration dogged every step of our work and the staff, which included some fascinating and charming as well as highly professional officers, was largely excluded from the decision-making process. Unfortunately some of the disciplines of some of the officers were not strictly relevant to the work of the group. One officer was a naval gunnery officer and another was a professional

helicopter pilot and neither had done any staff work before. Whereas some 60 per cent of the officers worked very hard others had proved their lack of commitment or efficiency by being moved sideways into one of two teams called military observers or special advisors. Being in one of these teams meant that your workload was effectively nothing and you could do what you wanted every day. One officer from a certain western country would grace us with his presence at 1000hrs and only stay for four hours, throughout which time he had his feet on his desk listening to his boogie box, apart of course from a 1½-hr lunch break. At his farewell he commented, with some impudence, how much he had enjoyed his work in the group!

As in any military operation there was a need for the group to spend time in the mission area. In the end 17 officers travelled to the region; five approaching the line of confrontation through Yerevan from the west and another team of seven through Baku from the east. The final group, including the Head HLPG and a Russian 3-star general, visited both sides of the line. The general's original intention was to use Sappers to find a way across the minefields along the line but this idea was turned down by the MOD.

I was in the western team and some of our experiences are worth recalling. Our first inkling of what was ahead was when we transferred to an Air Armenia plane at Charles de Gaulle airport in Paris. We noticed that our boarding passes simply had a Y where there was space for the seat number. On querying this we were told that the Y meant we had a seat and did not have to sit on the floor. Air Armenia operates a policy of 20kgs hold baggage and 40kgs in the cabin. Thus all the passengers carried aboard huge quantities of luggage including two bicycles and a goat to escape the punitive excess baggage charges. The plane only just managed to scrape itself off the runway and the safety brief came two hours into the flight. Yerevan, the capital of Armenia, is a city under the strictures of a war economy with all electricity being turned off at 2100hrs and water only being available for a few hours a day. Despite these problems the people are unfailingly cheerful and optimistic and always smartly dressed. Many of the young women are extraordinarily beautiful and I can foresee problems on this score if a peacekeeping mission is launched.

Initially our recce team went northwest to Gumri on the Turkish border. This town was almost flattened in an earthquake in 1987 and the effects of the damage are evident everywhere. There are no petrol stations in Armenia, rather private enterprise ensures that old tankers drive to the Georgian border for fuel and then drive back selling the fuel by the bottle or plastic container, or by the Jerry can if the driver can afford it. The cost of the petrol is about US $10 for five gallons but when the average monthly wage is $5 you can see why they more often sell it by the bottle. The shortage of fuel affects life throughout the country, hence the problems with water and power. When we visited Gumri airport to gain information about the infrastructure we came across the old-style Russian obstruction and paranoia about letting people see the facilities. We heard the airport manager speaking to the control tower and it was only by having a Czech officer in our group that we discovered they were speaking Russian. The implications were obvious. We then travelled east back through Armenia, which is a beautiful country somewhat similar to the Scottish highlands, towards the old eastern border with Azerbaijan. The narrow neck of land between the two countries is called the *Lachin Corridor* and the road has obviously been left to fall apart by the Azerbaijan government to discourage movement between Armenia and Nagorno Karabakh. Once into the enclave the countryside becomes far more mountainous and rather like a very hilly, scrubby Cyprus, with deep dry river beds. The distance from Yerevan to Stepanakert is about 370kms and the trip took over eight hours.

Our lodgings in Stepanakert were in the old KGB[1] guest house which proved an experience. I shared a room with the Czech officer and there was no electricity or running water throughout our stay. We lit the bathroom by candle and our water for the whole time we were in the country was in the bath on our arrival. We had to use this for washing, drinking and cooking so our purification tablets came in useful. We then spent many days touring positions on the confrontation line from the Iranian border in the south to the Omah Pass in the northwest. The terrain in the east is flat and gently rolling and ideal tank country, whilst in the north it is hilly becoming mountainous in the region of the Omah Pass. The climate is generally mild during the winter months but in the summer the temperature climbs into the 40s. Throughout

[1] Abbreviation for: the Soviet secret police.

the length of the confrontation line both sides have laid large quantities of mines and all the minefields I came across were unmarked. The Karabakh soldiers on the line are hard and obviously well motivated and highly professional. A company commander walked some 8kms to meet us before escorting us back to his position through another minefield. Our yellow OSCE berets were clearly considered to be a rather good target and we came under fire from the Azerbaijan positions. The company commander kept on walking so we followed his lead knowing that small arms fire from the Kalashnikov is notoriously inaccurate over any distance. On arrival, we were shown the trench system and a marked map with the flank positions and the location of supporting artillery.

An interesting incident happened when we were some 12kms from the Iranian border. We had with us the local regimental commander, yet in Fuzuli we were stopped at a check point and refused access to the south. We retraced our path and the driver, who was a local man, asked if we could divert into the hills to his village so that he could see his mother who was ill. We left the main road and found his village but his mother had been moved into the local old Russian Army hospital. When we drove into the grounds of the hospital we saw a Jeep with Armenian Army plates. Our escorts went quiet and were embarrassed that we had seen the vehicle. Whilst recognizing that it was an Armenian vehicle we did not read any more into its presence but the Czech officer, in an aside to us, pointed out that one of the registration letters indicated that it was being used by the Russians. What were they doing in the area?

The end product of the group's work was supposed to be a docket of concepts upon which the governments of the member states could comment. As the deadline for submission of these documents approached there was great concern in the group about the fact that we were spending all our time producing detailed plans to the exclusion of the concepts. The fact that we were working on the former before the latter was symptomatic of the way the HLPG worked. Some ten days before submission day, Head HLPG was reminded very pointedly in a public forum that the requirement was for "short concepts and not long plans". As the resident English speaker my advice was sought and duly given as to the difference between a concept and a plan. Imagine the consternation of the group at the next staff meeting when the general, with a beatific smile on his face, said, "There will be no change to our work plan. You are to call your plans concepts. Go away now and change the titles!" The document duly submitted to the 53 member states for comment was over 700 pages long and 4ins thick but did not include any map overlays referred to in the documents. Brigadier Bambury was heard to remark upon receipt of his copy of the document that if it had been produced by one of his Staff College students then he would have failed him before reading the first page.

What of the Future?

It is very clear that the peoples in these areas are desperate for peace. They have had enough of the privations of war and a war economy, and all of this on top of the loss of so many young men and women.

The problem is that the OSCE is attempting to interpose the peacekeeping mission and then move both parties back to an agreed boundary which is taken to mean their original borders. This is considered unlikely to be acceptable to Nagorno Karabakh. To throw away all that they have gained seems too incredible.

In the meantime the mandate of the HLPG has been extended to the end of the year, ostensibly to gather the comments of the member states on the "concept documents" and amend them accordingly. Sadly, it is anticipated that little of substance will happen and the doubts felt by most officers in the group, were that too much effort was being put into the operational plan leaving the gathering together of the force, its training, command and control, the budgetary aspects and moving the whole mission into the area, as side issues. Whether or not Great Britain plc becomes involved if the mission is launched, is a matter for our government. It would certainly be a challenge and there is, as ever, lots for engineers to do. The mine threat allied to the need for some detailed work to help rebuild the local infrastructure is considerable and the proportion of engineers in the planned Force is a healthy: 1 in 7. There is no doubt that the OSCE would like British Army involvement and would especially like the engineers to be provided by either Britain or Canada, but whether or not we will ever see Sappers in this beautiful but troubled part of the world only time will tell.

Connolly – The Quartermaster

Military Life in Brompton Barracks in the 1860s

MAJOR J T HANCOCK

Details of T W J Connelly's diaries were given in Connolly – the Man, *published in the December 1994* Journal. *From 1855 to 1865 Connolly served as a Quartermaster at Brompton Barracks and, amongst other things, his diaries give an insight into military life in the barracks at that time. As far as is possible, these extracts are exact transcripts from the originals.*

Wednesday 1st February 1860

Much employed finding quarters for 26 officers – 18 Royal Engineers and 8 Indian Engineers joined today. Having only 10 quarters disposable, not an easy matter to accommodate them, so that most of them have gone into dirty Brompton, poking their heads into any holes available. It is a disgrace to the Government that sufficient rooms are not provided, but it seems to be the practice to build barrack after barrack, or to add to them, without thinking that the officers need even a hovel for their convenience, and even the accommodation that is provided is of the scantiest sort for which each fellow pays 6/- a week. It is simply one room, having an oak table, two wooden chairs as rickety as two-legged stools, fender, poker, shovel and tongs, six brass pins for hats and cloaks, three keys and an inventory board. All else for comfort must be hired by the young gentlemen fortunate enough to be allotted one of the rooms. Happy it is that the young'uns, being raw, put up with this state of things in great good humour, but this humour is somewhat vitriolised when they learn, to their dismay, that when put to great expense to provide quarters outside the barracks, they have nothing extra to meet the added outlay.

Monday 27th February

Cast [rejected] a sheep at the rations this morning, and exposed the deception of the contractor's people in depriving it of its kidneys, leaving the troops to feed on the suet that was left. It would take a volume to do justice to the tricks played by the contractors upon the soldiery. To make money they resort to all sorts of deceptions, permitting conscience to take a long walk while they practise their baseness. But I have got so well the master of them, that their dodges fail when they have me to deal with.

Tuesday 28th February

All seem as busy as tinkers today, fixing stands, flags, devices etc for the forthcoming sight of laying the first stage of the monumental arch in memory of the officers & men who fell in the Crimea. My QM Sjt March[1] is as busy as an imp among sandbags. You can never see him for laurel and bags. He and Sjt Cooper have worked the word "Crimea" on an immense board, out of laurel leaves, so large it might, did not something intervene to prevent it, be seen from Rochester. There were two boards with this ominous word inscribed, one facing the plantation, as it is called, and the other the Square.

Thursday 1st March

A great day. The first stone of the Monumental Arch was laid at about ½ past 12 o'clock by the Duke of Cambridge, who looked jolly and hot. Everyone was present from the great man himself to the garrison sweep who was outside the cordon. There was a noble sprinkling of ladies, filling both stands, each of four rows decorated with various coloured flags, arranged by our men, but there was nothing soft to make the seats easy, and nothing to ward off the keen wind which blew aloft, from their delicate shoulders. They were wisest who came muffled up in cloaks & shawls. Those present were so numerous all cannot be named but such a batch of heroes were never seen collected before – that is in the Corps.

Digby Wyatt[2] looked dignified in bulk and beard, but when he threw a trowel of cement on the stone, he splashed the Duke's trousers gloriously. HRH laughed at the accident & Digby Wyatt was a little discomposed. While the stone was lowering, the Band, under my brother-in-law, struck up "Sleepers Awake". The lowering of the

1 RE – QMS Samuel March – 16 May 1854.

2 Mr M Digby Wyatt, an architect, designed and supervised the erection of the memorial.

stone was a wonderfully slow progress. The Duke looked at it, as it descended, as if he could tell the mechanics "to look sharp about it". When down, Digby Wyatt applied the Square, and finding the stone true, gave it to the Duke to use in the same manner, which he did right Royally. Then the mahogany mallet was given to HRH. "What am I to do with this?" Being instructed, he struck the stone three times, but so lightly, for fear of breaking it I suppose – a filbert nut would have escaped a cracking. This done he exclaimed loudly "I declare this stone to be well and duly laid", he should have said truly, but I suppose the hearing of the HRH was a little defective when that word was uttered. But what's the odds? The ceremony was just as complete with one word as the other.

Monday 9th April

THE Duke of Cambridge is to come [again] tomorrow, if he doesn't alter his mind. His final determination on this point will be announced by telegraph. Meanwhile Maj Gen Eyre, like a good Commandant as he is, sent for the Commanding Officers' Adjutants and Quartermasters, and gave us a sly hint to have all corners well raked out for fear HRH should have the itching curiosity to peer into them. We are to take care and have all smells removed for nothing can be more offensive to the Royal olfactories than fetidity. Use lime, lime, that is the great deodoriser and, of course we have done so, expending cart loads in the process. With all this, I have done a good day's work in addition. Made out my coal demand for the week. Drafted a long letter about arms – then copied it for the Colonel's signature. Assessed damages in three officers' quarters, and gave over one to a young fellow anxious to remove into barracks from his town domicile. Entered five letters, rather long ones, answered all sorts of questions put by all sorts of people, received money from some and paid money to others. – Now it is 8 o'clock, the wind high and nasty rain falling. Thank God there is a little beer at home to cheer me and a good bed in which to rest my bones.

Monday 30th April

PAYMASTERS have little to do. They expect the work to be done by others, merely paying & receiving money on documents furnished by others. A late order has been circulated directing Paymasters collecting the barrack damages, but this they cannot do without furnishing companies with bills showing what they have to do. This duty they ignore & I shall have to do it. There is a loophole for them to shift the duty elsewhere & they have a right to do it, if their consciences allow it, but the opposition comes with a bad grace from men, who take but two hours a day for their work, and while away even that time in smoking and reading. Our Paymaster Wilkinson is a thorough muff, and in saying that he spends two hours daily at the office, I am overwhelming him with credit.

Wednesday 2nd May

I OBJECTED today in the retention of the skirts in the forequarters of beef. They looked nasty, and were dank with blood. Attached to them were long pipes an inch in diameter. "Oh Sir", said the butcher, "these are very nice. They are much sought after in the Town." "Then," returned I, "you'll have no difficulty in selling them there to advantage, so away with them."

Monday 7th May

A BUSY day this, tomorrow being the half yearly inspection. My Quarter Master Serjeants are up to their eyes in dust & whitewash, and more brooms and scrubbers have been worn in this afternoon's work than for the month previously. Glass has been smashed to the extent of fourteen panes in cleaning windows, and no end of knives have been broken in scraping the mud from the corners of the stairs. The drapers feel, from our purchases, that an event is approaching, for we have exhausted their stock of dusters, house flannels, black lead, soft soap etc. Well, let us see what will be the effect, everything as clean as a new pin, grates, fire irons and coal boxes as bright as a cuirass. At my books I have worked like a lawyer's clerk, have balanced my stores to the moment of my making this record.

Monday 21st May

A MARINE, who had his accoutrements on, thought to amuse himself and others by turning summersaults on the Lines. His first attempt was enough, for his bayonet slipped out of its scabbard and, in falling, the weapon went nine inches into his body and killed him. He lived about an hour after the accident.

Sunday 21st October

LT Playfair[3] went his way today for Aldershot. He is short, pinched in and lean with a pale amorous

[3] RE – J O Playfair – Lt 21 December 1858. Resigned 11 June 1861. Died at Buenos Aires 19 August 1864.

looking face, with a dazzling eye covered by a glass. A tremendous fellow for making love to the ladies without entertaining one honest pretention towards them. He made his boast, not long since, that he would have Miss Ada Morton [an actress] in his quarters within a month. The mother & Miss were warned of the threat. The former wrote on the subject to the cadaverous spark, but he sent a reply so full of love and honour that she was satisfied and at rest. So the affair has gone on with some scandal attached to it, but without, so far as I can learn, the young winking flirt being coaxed to partake of the retreat the glass eyed Sub had boasted should be her end.

Tuesday 11th December

Lieut Playfair is married to Ada Stanmers (Ada Morton of the Marine Theatre), and he lives with her under regimental sanction. I saw her today and she made me a graceful bow. I acknowledged it and passed on. She wore a Spanish hat placed elegantly on her head, and a black closefall, called a "beauty deceiver". She looked very pretty and was dressed very neatly. Well I hope the ex-actress (and a bad one she was) will live happily and that her romantic boy of a husband will never regret the step.

Monday 17th December

The new stoves show themselves to be unmitigated cruelties. The weather is now severe & we cannot get up the temperature beyond 50 degrees. The men, at night, cannot sleep for the cold & they get up & walk about to keep themselves warm. But economy, no doubt, is the bottom of it all. With the old grate the allowance of coals was 260lb, with the new only 220lb.

Monday 24th December

Went into the Hut Barracks to see the new grates. The fires were miserable, the coals were insufficient. These are indeed bad days for barrack rooms. I felt them wretchedly cold – almost on a par with the outer temperature which this day is 23 degrees. A poor Line soldier, with a pale wizen face, told me that his wet sponge, over his bed head, not far from the fire, froze hard in the pipe clay box.

Tuesday 25th December

A fine seasonable day – as cold as one need care for. Our barrack rooms were dressed out in holiday fashion with evergreens and artificial flowers worked into regular devices. There too were floral and holly wreaths, and characteristic mottoes – welcoming the day and the season. Each company brought all its messes together, and dined in one room by moving into the others the bedding and utensils. The tables sagged under enormous plum puddings, turkeys, geese and roast beef etc. Beer was present in gallons & wine in decanters. Everything looked cheerful, gay and buoyant except the wretched fire which, from its form, cannot be made to produce a glow.

Saturday 29th December

'Tis rumoured that Playfair intends to retire. His pretty wife and he seem happy. They have been to town to see some members of the family & I hope all are reconciled.

Sunday 30th December

A terrific day – mud, rain, thaw and frost, each in turn & in pairs. The late heavy snow commenced a violent thaw, making streams of our streets & flooding our houses. Our barracks were penetrated by thousands of leaks. Past my cottage[4] on the cliff, which nevertheless is situated on low ground, the flood raged past it with a dismal roar, tearing up the road into channels down which a boat might swim, and finding a hollow for its reception, has swelled into a little lake among the women's clothes props. Tread where you will, select the ground as you may, each step takes you over your shoe tops. I have not had a dry foot today.

Tuesday 1st January 1861

Wrote a letter for Staff Sjt Killem to reside out of barracks. He has only one room in which he stows away 7 grown-up children among partitions, to the sacrifice of their convenience, comfort & health, and even without the power of making ordinary provision for their decent accommodation & care.

Monday 21st January

An explosion of gunpowder in the north gun shed this morning, by which five of the Indian Engineers and two of the Royal Engineers were injured. Two of the former were very severely burnt and disfigured. A portion of the roof was blown off, the lead ripped up and the gates forced from their hinges and thrown into the yard. There were some 20 or 30 at work tamping hand grenades. It is a miracle that the whole were not involved in the accident. The party was in charge of Serjeant Adams RE who, at the moment, was away. Sjt Michael Chapman with two sappers were blown from the shed with the gates,

[4] From this and other descriptions in the diary, his cottage quarter was roughly where the Band Room now stands.

but sustained but little injury. The clothes of some of the men were burnt into strips. The explosion shook my office and my cottage alarmingly. It is supposed that a man named Smith had tamped too hard and caused ignition, but I suspect some of the men were smoking, for it is said that fire was seen travelling along the bench before the explosion went off. A Court of Enquiry was assembled to enquire into the circumstances.

Wednesday 23rd January

The men blown up by the explosion going on very well. Sjt Adams is placed in arrest in consequence of the blow up. Court of Enquiry closed, but what the opinion arrived at is at present unknown.

Tuesday 5th February

Sjt Adams is released from arrest. No doubt there was some carelessness on his part & he has got off – happily for him. Blame is due, tho' he was the President of the Court of Enquiry, to Major Lovell[5], in carrying out experiments with powder. He ought to have seen that the proper precautions were taken to prevent accident or explosion, but I am not aware that he did so.

Thursday 14th February

Tonight was the concert, the best that ever was given in Chatham. The [Royal Engineer] Band played *Der Freischütz* with beautiful precision. It was perfect. *Parepa* was immensely successful. Swift was so-so. Hermanns had an amazing strong and deep voice, but it seemed as mismanageable as Stonehenge. His voice, in its lowest tones, was like thunder without the rolling. The notes were like bars of iron – inflexible. I never heard such a mighty voice, it was tremendous. Miss Fanny Huddart (Mrs Russell) was in bad train. She had only arrived from Manchester an hour before the concert, she was husky, poor and unpleasing. The audience in gallery was really fine, all were dressed, scarlet uniform preponderating. General Sandham[6] was present – all the great of the place, & the nabobs of Rochester. General Eyre[7] was not, nor Captain Goldsmith of the Navy, illness kept the former away & a death the other. On the whole the concert was decidedly Metropolitan.

Thursday 21st February

There has been a great uproar about the wasteful expenditure of gas in our barracks. In the quarter ending 31 Dec the expense per head was 3s 7¼d and in the Blocks where the married people reside £1–5–11 per man. This is an exorbitant consumption & outrageously wasteful.

Wind very high towards night, chimneys blowing down and tiles sliding from roof to ground with fearful frequency & violence. The Mess was put back for an hour because a fierce wind driving down the chimney carried with it a cart load of soot and smothered the room with it.

Friday 22nd February

Mess room chimney was on fire last night through the Butler stuffing some straw into it to prevent the soot falling.

Wednesday 27th February

The Duke of Cambridge was to have visited us yesterday. The troops were under arms from 10 o'clock to about 4. The day was to have been a glorious one, as each man had 15 rounds of blank cartridge, but the great man never came. We had the Guard of Honour ready. Twice, by order, it marched to Strood so that the poor fellows, in the going & return trips, marched 12 miles to do honour to an absent Duke.

Wednesday 6 March

The Duke of Cambridge down today. He looks every inch a Prince, but begins to evince the symptoms of a little age. He stooped somewhat. He was dressed for the field in blue frock, gold sash, cocked hat and leathered trousers. He inspected our mess-room and our schools, rising into a towering passion at their unsightly facade which does not correspond with the general style of the barracks. It was thought he would open the Crimean Arch, of which he had laid the foundation, but he looked at it with approval and passed on. Our Corps, as well as the troops in garrison, were reviewed by him on the Lines and they blazed away for a time with blank cartridge, no doubt warming the Prince's soldierly heart. The Duke also visited the prison – the scene of the late mutinies. He seems, moreover, to have gone to the pontoon hard and to have looked across to St Mary's Isle, now celebrated by the convict soup riot. All this may have been instructive to the great mind, surveying the dirty and restless Medway and its little mud island beyond, alive with vagabonds of the United

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5 RE – J W Lovell – Lt 19 June 1841, Col 3 August 1872.

6 RE – H Sandham – 2Lt 20 July 1813. Lt Gen 3 August 1866.

7 Garrison Commander – H Eyre – Ens 73 Foot 28 August 1817, later 98 Foot. Maj Gen 16 November 1858.

Kingdom. But one incident happened, tho' amusing to many, could hardly be relished by the unfortunate hero of it. Our Colonel[8], good little man, who sits on his horse like a top heavy sack of flour, failed to pull in his charger – a spiritless brute, troubled with inactive kidneys, and so he made for the river. Not liking the bath, the day being cold and keen, he had the sagacity soon to relieve himself by throwing our little, good humoured Colonel into the stream. It was well the Duke did not see him, or he would have burst his light frock from waist to axilla. Our little man rode home bemused and drenched from spar to plume, and in an undress garb, soon reappeared among the illustrious group, smiling as if nothing had happened. In fact it was just as if he had come from a richly intellectual pantomime, with the recollection of its delightful drolleries moving him to laughter. What a temper his must be to stand unruffled through such a catastrophe.

Saturday 20th April

The black mastic has been removed from the letters of the Inscription of the Crimean Memorial Arch and replaced by gold. The substitution has improved the whole fabric, but the letters themselves are very unsightly in form.

Saturday 31st August

Six young officers arrived from the Academy including Sir Arthur Mackworth Bart[9]. This is the first Baronet that ever joined the Corps, but he looks and speaks, not withstanding his high birth & title, as other men and quite as common.

Wednesday 18th September

Capt Hewitt[10] told me he wouldn't stop here for £1000 a year. The duty is all turnout, dissatisfaction & vexation. No one knows what to do. Orders are given which when carried out are countermanded, and then to put things right, ensues confusion, heart scalding and irritability. This I know is the case in my duty, and I am sure it must be as with others.

Wednesday 9th October

The recent Ball accounts of the Engineers have just been completed. For a few hours' dance the expenses were £251–4–5. The wine drunk reached the goodly sum of £76–11–9. Seventy nine subscribers paid 30/- each & there were 133 tickets issued by subscribers to their friends at 19s 11½d each. Col Harness took 15 friends, Lieut Patten[11], who hasn't a shilling, if his debts may be taken as an index of the cash at his bankers, had the hardihood to sport himself and four friends. This is fast work and Tailors, boot makers etc etc must pay for it.

Friday 25th October

Sapper Douglas delivered a lecture this evening, in the new Lecture Theatre, on Voltaic Electricity. He was very successful. His delivery is good, and his matter, 'tho scientific, had a popular and interesting cast. Applause was given him in plenty and Colonel Harness, who was present, warmly complimented him.

Monday 3rd February 1862

Twenty young men, after short leave, joined us from the Academy. Some of them look scruffy enough, and one of them is only a remove from a black. I have had much trouble in finding them quarters.

Monday 24th March

Lieut Ardagh[12] joined today with a detachment of engineer telegraphists who had been intended for service in Canada. The party had nearly reached the Canadas when the vessel was actually driven by storms back to this country a partial wreck. When put to rights again, she started and a second time, from the same adverse winds, was beat back to our shores so damaged as to be unfit for sea again.

Monday 14th April

Lt Armstrong[13] quitted Chatham on the 11th instant. He is the last of the Indian Engineers, and my pay as Quarter Master to the Corps, only 2/6d a day, ceased from the 1 April. Well, I have still my

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8 RE – H D Harness, Director of the Engineer Establishment 16 July 1860 to 15 June 1863. 2Lt 24 May 1827. Maj Gen 6 March 1868.

9 RE – Sir Arthur W Mackworth – Lt 1 July 1861. Lt Col 18 Nov 1886.

10 RE – E O Hewitt – 2Lt 14 August 1854. Lt Gen 8 May 1895.

11 RE – W H Patten – 21 Dec 1859. Col 29 September 1893.

12 RE – J C Ardagh – Lt 1 Apr 1859. Maj Gen 14 March 1898.

13 RE – R Y Armstrong – Lt 21 December 1858. Col 1 July 1890. His work on electricity later lead to the Institution's Armstrong Prize.

own pay of 11/- a day to keep me & my family from starving.

Wednesday 13th August

A man named Cameron, rather well looking, except that he had a kink in his nose & was flat footed, was this day bugled out of the Corps. The ceremony was imposing. It was a dress parade with arms & accoutrements. All the Corps was present with band and bugles. A square of three sides being formed, the prisoner with his armed guard occupied the vacant space. All the crimes he had been guilty of since he entered the service were read out, which took a full half hour of the time, then followed his last crime, the penalty of which was his degradation. He had stolen a watch from his comrade & his sentence was to be imprisoned for 336 days, to be discharged with ignominy & to be branded on the breast with the letters BC (Bad Character). When his name was stated in connection with his last delinquency, he took one pace in front of his guard & taking off his cap, there stood, stared out by some 5 or 600 men, to hear his doom. This done he covered his head & resumed his place between his guards. While the Corps was forming into line, the Bugle Major with his staff of energetic buglers [came] out with their knives, sharpened for the purpose, to strip the offender of his facings. They cut the scarlet stripes from his trousers & the lacing, cuffs, collar and buttons from his tunic. His chest was thus exposed, and his white face, faltering step & quivering lip told only too well how the disgraceful ordeal had worked on his nerves. The ranks being separated some distance apart and turned inwards, the culprit appeared with his guard at the bottom of this avenue, and marched through the ranks erect and in good military time followed by the band of bugles playing in a furioso style the "Rogue's March". He kept up firmly, his air and carriage were military, without any of the daring it was expected he would show, but he looked as if he felt the degradation. His face was stone coloured, but his eye shone brightly, and his white [teeth], the pale lips, being parted, were exposed. From all I saw, it seemed to me that the man was determined, tho' the trial was to the least degree trying, it should not kill him. When he reached the gate two policemen took charge of him to prison, but before they could handcuff him, he pulled off his denuded tunic & threw it among the crowd outside, who waited with curious interest to see the disgraced man and to taunt him for his theft. In this half naked condition, he was handcuffed & marched to prison, followed by the crowd, calling out in exasperating derision "Who stole the watch?"

Friday 5th September

A very disgusting order has just been received from Sir George Lewis dated 30 August 1862 No 2836, and circulated with the consent of HRH the General Commanding in Chief. We have some new water closets fitted up in our barracks – one patented apparatus by Jennings & another by Macfarlane. In military phraseology these water closets are called Latrines. As they are very liable to disorder from the materials soldiers use in them, the order requires that the Quarter Masters are to obtain from the Barrack Master four pieces of paper for each man daily & to serve it out. This is treating men as if they were children or idiots.

Tuesday 19th May 1863

Subscriptions are being collected for portraits of the Queen & her deceased Consort to be painted and placed in the Mess Room of the Corps here. Tho' ill able to afford anything for this luxury, have put down my name for 10/-. Bradford[14] & Youle[15], the other Quarter Masters, have returned themselves for a similar amount.

Saturday 5th September

At the Brigade Office about making an estimate of stores anticipated to be required by the Corps during the next 12 months. I wonder how the authorities expect a Quarter Master can get through his work. He is overwhelmed with duty. Seven tenths of the orders now issued assign him new employments in addition to his old ones. No man in the service is so hard worked.

Thursday 5th November

The musician Williams, who struck my wife's brother, Master of the Rl Engineer Band[16], had his Court Martial read out today. He was at first sentenced to receive 50 lashes & 80 days imprisonment, but as he was found unfit to bear the corporal punishment, Major General Eyre called on the Court to revise its sentence. This ended in awarding Williams 112 days imprisonment – the first 28 of

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[14] RE – M Bradford – Sgt Maj 1 Apr 1855. QM 17 Dec 1855.

[15] RE – D Youle – QM 14 Jan 1858.

[16] W G Collins, Bandmaster of the RE Band from 1 Aug 1856 to 1865.

which to be solitary. I am glad he escaped corporal chastisement, but he really deserves his 112 days.

MONDAY 1ST FEBRUARY 1864

A DAY'S work. – Up at 10 minutes to 6am, washed, shaved, cleaned & breakfasted. At a ¼ to 7 to Rations, issued bread & meat for 617 men in 56 messes. Walked for an hour on the Lines. Sent report to Brigade office of my inspection of the barracks etc. Demanded from French, the coal merchant, 282 bushels of coals to be distributed among 26 servants according to a list which I sent to him. Made up the coal accounts for January of 84 officers, and sent a bill to each. Inspected Lieut Knowles'[17] room, assessed the damages on it, and sent a list of them to the Barrack Master. Attended at the Adjutant's office, about Barrack damage Returns for January. Sent to the Barrack Master a damage paper to whitewash a ceiling. Waited on the Director to sign six Returns. Sent to the Ast Supn of Schools an application for the admission of a Pensioner's son to the regimental school. Read 'The Times'. Applied for orders about the issue of a new greatcoat just received from London. Drew up two fair reports of the Library & Recreation Rooms in these barracks, answered eleven questions concerning them, & made an abstract of the accounts for 3 months ending 31 December 1863. Read in United Service Gazette, *Military Engineering of the Ancients* and followed it up by reading in Chambers' Journal, Captain Speke's narrative of his discovery of the source of the Nile. Sent in a report, as ordered, about gas in 7, 8, 11 & 14 Houses suggesting that the gas in the passage lamps should pass thro' the private meters as pointed out in recent instructions from the War Office. This report I entered in my Letter Books. Called on the Adjutant to explain further this gas question. Read De Quincey's *Judas Iscariot*. Consulted with Brock, Clerk of Works, about the report to be sent in about Murray's qualifications as a clerk. Called on the Ast Superintendent of Schools, and also on Quarter Master Youle, instructing him about stencilled devices for the Corps knapsacks. Looked over the furniture belonging to Maj General Twiss[18] to be sold tomorrow by auction. Walked for three quarters of an hour, in the evening, on the Lines. Had an hour's chat with [Quarter Master] Bradford about his expected appointment of Adjutant to the 2nd Wilts Administrative Battalion of Volunteers. Entered this precis. Home at 9 o'clock pm.

[17] RE – J Y Knowles – Lt 18 December 1861. Resigned 31 January 1865.

[18] RE – J Twiss – 2 Lt 1 August 1816. Lt Gen 5 January 1864.

50th Anniversary Articles

The Editor of the *Journal* would be pleased to receive articles from anyone who took part in projects during the aftermath of WW2, or have something interesting to relate of happenings during the year of 1946, with a view to their publication on or near to the 50th anniversary of the event. Accounts of later events are also welcome as they can be kept for publication in the appropriate issue.

873 Movement Light Squadron RE (Volunteers)

CAPTAIN DEREK MOORE

Captain Derek Moore enlisted as a sapper in April 1951, was commissioned in 1975, and retired in June 1981. He then took the Permanent Staff Administrative Officer appointment with 873 Movement Light Squadron RE (V) until his second retirement in June 1993. Most of his regular army service was with engineer resources units and field support squadrons, including resources troop commander appointments with 2 and 45 Field Support Squadrons. He was Officer Commanding Bridging Park at Long Marston 1979-81. He served in Gibraltar, Yemen, Aden, Sharjah and many years with the British Army of the Rhine.

UNDER *Options for Change* 873 Movement Light Squadron (873 Mov Lt Sqn) reroled on 1 October 1992 to Explosive Ordnance Defence (EOD), was retitled 220 (Searchlight) Field Squadron (EOD) (220 Fd Sqn) and joined 101 (London) Engineer Regiment (EOD) (V), thus bringing to a close the chapter of history referring to the last remaining RE movement light squadron in the British Army.

The use of searchlights in the field was considered as early as 1886, when equipment was prepared at Chatham. However, the first searchlight unit was not formed until the war in South Africa during which a searchlight section was dispatched under Capt D H Redout. A full account of the development and use of searchlights in the British Army was published in the March and June 1985 editions of the RE *Journal*.

Searchlights by tradition are sapper equipments, but 873 Mov Lt Sqn was originally raised as a Royal Artillery (RA) battery on 1 May 1947 and was titled 873 (Independent) Movement Light Battery RA (TA), starting life in Staines, Middlesex.

Being one of four TA movement light batteries formed to support the four commands in England, and being situated in Staines within the framework of 89 Army Group RA (AGRA), the unit owed allegiance to Eastern Command at Hounslow, Middlesex. It consisted of a battery HQ, three searchlight troops and a Royal Electrical and Mechanical Engineer (REME) workshop. The total establishment was 355 all ranks RA and 31 all ranks REME. During the years 1950-60, the unit fielded a very successful motorcycle team winning divisional and command cups and prizes.

In 1958, 873 was moved from Staines to Twickenham (to accommodation previously used by 607 Searchlight Regiment RA which was also disbanded) and, with the disbandment of 89 AGRA, placed under command of Commander RA 46 Home Counties Division.

During the period 1958-61 the unit continued to flourish with recruitment reaching 100 all ranks, a proportion of lower ranks joining from the disbanded searchlight regiment. In the early part of 1961 another TA reorganization took place and on 1 May, the unit was rebadged to become 873 Mov Lt Sqn RE (TA) – after 21 years, searchlights were again in the hands of the Royal Engineers. In the period 1961-67 the squadron was placed under command of 29 Engineer Group (TA), later 29 Engineer Brigade (TA) (29 Engr Bde), and during the same period carried out a number of trials to decide the future of movement light as an aide to image intensifiers, etc.

During the next reorganization in 1967 the squadron's role changed, and it was placed in category IV along with the University Officers'

Captain Derek Moore
873 Movement Light Squadron RE (V) p280

Training Corps. A number of younger members were compelled to leave as the establishment was reduced from over 300 to 71 all ranks, supporting a squadron HQ and one searchlight troop. In the same year the squadron moved from Twickenham to Acton.

During 1968 the unit spent many dismal nights on Salisbury Plain carrying out Exercise *Gideon's Night* together with 1 Battalion Green Jackets. The exercise was to test and report on night-fighting aids for the eighties, in which at that time it was envisaged movement light may have a part to play. The squadron also became a frequent visitor to Salisbury Plain giving movement light support to Royal Military Academy Sandhurst, Royal School of Military Engineering, the School of Infantry and the Junior Division of the Staff College and continued to give such support up to 1991.

In 1974, the squadron was placed under command of 73 Engineer Regiment (V) (73 Engr Regt), subsequently becoming part of 30 Engineer Group (30 Engr Gp); during the following year the establishment changed, reducing to 58 all ranks. From 1979 the squadron was firmly committed to give battlefield illumination support to 1 (British) Corps in British Army of the Rhine (BAOR) and supported every major BAOR field training exercise from then until 1988. On 1 January 1983 the squadron, together with 73 Engr Regt, left 30 Engr Gp and rejoined 29 Engr Bde and the following year the establishment was confirmed as 78 all ranks to include a squadron HQ and two searchlight troops.

On 20 April 1988 the squadron was formally affiliated with a City of London livery company, The Worshipful Company of Lightmongers. In celebration of the occasion a formal luncheon was held at Tallow Chandlers Hall, attended by the master, wardens and liverymen of the company and all members of the squadron. Major General P C Shapland CB MBE, the squadron's honorary colonel, made response to the master's speech on behalf of the squadron.

Incidentally it was Major General Shapland, when in the rank of major in 1960, who pointed out to a general staff committee chaired by Hugh Fraser the then Under Secretary of State for War, that searchlights had originally been a Royal Engineers' responsibility; without further ado the committee gave searchlights back to the sappers. General Shapland at that time was GSO2 Assistant Secretary to the committee.

On 3 November 1989 the Worshipful Company of Lightmongers bestowed upon the squadron appointments OC and permanent staff administrative officer, honorary freemanship of the company. The incumbents of the appointments at the time were Major T J J MacAndrews TD JP and Capt D Moore, who made the solemn declarations of allegiance to the company.

September 1989 saw the squadron become part of 2 Infantry Division, although its mobilization role remained unchanged.

When the Gulf conflict loomed on the horizon in December 1990, the squadron was tasked to prepare their operational searchlights. They were also tasked to organize and run an intensive battlefield illumination and searchlight operators' course at Salisbury Plain training area for the benefit of 1 (British) Corps Lighting Troop, consisting of two officers and 24 other ranks, who were on standby to move to the Gulf in January 1991; Capt Heyes and the squadron sergeant major, WO2 Webb, both volunteers, were also placed on standby to join this troop in the Gulf. The squadron was one of the five TA RE squadrons actively involved in giving support to the regular army during the Gulf conflict.

Throughout the existence of 873, both as a RA battery and as a RE squadron, the unit gave searchlight support to many military tattoos, including at Aldershot, Berlin, Colchester, Edinburgh, and Tidworth, the Wembley Pageant, the Royal Tournament, the Household Division Annual Beating Retreat, and to Fortress Fantasia in Gibraltar in September 1990.

Having reroled and now carrying out extensive bomb disposal training, the squadron is most proud to have been selected to bear the title 220 Fd Sqn (originally raised before 1910 as 3rd (London) Field Company RE) which can trace its history back to 1st Middlesex Volunteer Engineers, raised in 1860. The Engineer in Chief very kindly agreed that the word "searchlight" should be included in the new unit title.

Editors Note: Searchlights have not yet disappeared from the sapper inventory. On the demise of 873 Mov Lt Sqn, searchlight troops were formed in Royal Monmouthshire RE (Militia) and 71 (Scottish) Engineer Regiment (V).

TES: A New Type of Medicine

LIEUTENANT R C D FAWCUS BSc

Lieutenant R C D Fawcus read a degree in geology at Southampton University. On graduation in 1992 he went to the Royal Military Academy Sandhurst and from there attended Troop Commanders' Course 110.

Posted to 26 Armoured Engineer Squadron, he served in Ireland and then lead his troop to the British Army Training Unit Suffield, Canada. He is now in command of Recce Troop 32 Engineer Regiment.

"It is quite right that the field Army takes the public credit for a job well done, but those of us on the inside are aware that the battle of Kuwait was won on the playing field of the National Training Centre." This is a quote by General Sir Garry Johnson (Inspector General Doctrine and Training), when asked about the reasons for the successful outcome of the Gulf War. It is taken from the November 1994 issue of *Army Doctrine and Training News*.

General Johnson clearly identified the advantages of Tactical Engagement Simulation (TES), which has been an important part of the United States' Army training, since its introduction at the National Training Centre (NTC) in the 1980s. The TES system has now been brought into service with the British Army and the days of battle groups rampaging around the battlefield, wreaking havoc upon numerous cardboard targets, are now over; the era of training against an aggressive enemy, shooting to kill, is now upon us.

The Queen's Royal Hussars battle group was the first to use TES in the British Army Training Unit, Suffield (BATUS). Their Engineer Close Support Troop, which I commanded, came from 2 Troop, 26 Armoured Engineer Squadron and elements of 42 Field Squadron.

The introduction of TES meant that the troop had a number of painful lessons to learn in order to survive on a very hostile battlefield. In this article I will explain how the system works and describe the effect it may have on the training and employment of engineers.

Concept

The concept behind TES is to use direct fire weapon simulators to instil in all ranks an understanding of the nature and reality of conflict. The US has been using TES for the last 15 years and has been able to hone the skills of armoured conflict, resulting in forces being better prepared for battle, despite a lack of real combat experience. As Captain McMaster (US Army) explained in the Gulf: "Sir, this was not our first battle. This was our 15th battle! We fought three wars at the NTC, California; we fought four wars at the Combat Maneuver Training Centre, Germany; and fought in a lot of other simulations ... Yes Sir, we have been 'shot at' before. Many times. This war was just like our training."

TES Principles

The following principles were agreed by the Army Board in 1989:

- Exercises are to be conducted across the whole spectrum of conflict, with all battle group weapons simulated, including indirect fire and mines.

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- Battle groups are to exercise against a representative enemy force (OPFOR).
- Simple monitoring is to be made to record, analyse and replay the battle to enable the quick dissemination of "lessons learnt".

Equipment

There are three categories of TES equipment:

Vehicle Mounted Equipment. Two types: the Attack Weapons Effect Simulator (ATWES), and a detector, the Target Weapon Effects Simulator (TAGWES).

- ATWES is an integral turret-mounted weapons system, which enables crews to engage targets as they would with live rounds. The firing system is combined with a control panel and "smart" card, programmed with the number and type of rounds used and a time delay to represent reloading. All engagements are recorded on this smart card for later analysis.
- TAGWES is a target system that can be fitted to a complete range of vehicles and gives off a signature in relation to the size and vulnerability of the vehicle. The outcome of an engagement is thus determined by the vulnerability, accuracy and lethality of the ammunition being used.
  TAGWES consists of two components: a detector which detects incoming pulses from attacking weapons, and an alarm system which indicates, through a series of tones and flashing lights, any hits or near misses.

Individual Equipment. Both Milan (code name for infantry antitank missile system) and LAW (light antitank weapon) have a variant of the vehicle mounted weapons system and are controlled by the same type of control card. The rifleman has the Improved Small Arms Weapon Effects Simulator (ISAWES), fitted to the personal weapon, the laser being initiated by the firing of a blank round. The system is unique to the individual, having a computer programmed key which can only be reactivated by a member of the control staff. With ISAWES there is no need to aim off for range, wind or target motion because the system uses a "one-way" laser. ISAWES is combined with a harness fitted with detectors making the wearer vulnerable to direct fire weapons. As with the TAGWES the harness will register either a hit or a near miss by means of an audible tone.

Control Equipment. Controllers are equipped with a control gun, colloquially known as the "God Gun", which can reactivate, reprogramme, reset and test the equipment fitted to both the vehicles and the individual. A computer also records and collates all the information from the "smart" cards for later analysis.

OPFOR

OPFOR is the live enemy set against the battle group. At present it is based on Spartans with "visual modification" attachments, representing a full array of vehicles which may be held by a generic enemy. OPFOR have their own tactics and missions which can be adopted to mirror those used by the specified enemy. They have to comply with the same logistical constraints as the battle group, but can free play in accordance with the mission.

If TES is to be used effectively, it should incorporate all elements of the battle group during exercise play. For the first time greater realism can be practised in logistic and equipment support and medical chains. This is done in the following way:

Logistics. In the past logistic play was often limited to fuel, water and rations and had very little effect on the tactical situation. However, with TES, commanders can no longer pay lip service to the logistic support plan. To prevent stores from simply being spirited across the battlefield, the movement of equipment is simulated by pallets fitted with tags, each tag representing a piece of equipment eg ammunition or mines. Demands are placed in the normal manner and the relevant pallets moved to site, where a tag is removed and, for example, a round is credited to the computer control panel in the tank.

Equipment Support. Vehicles may be damaged or destroyed as a result of enemy action, the extent of damage is decided by a casualty card that is carried on every vehicle. The information on the casualty card is diagnosed by a member of the REME, the relevant replacement bids submitted and "paper spares" then dispatched. Before the vehicle can be released, the relevant personnel and equipment must remain on site for the period required for a genuine repair. If a vehicle is destroyed then it moves to a holding area, to be released should a replacement vehicle be requested.

Medical. Casualties occur as a result of detectors being activated on ISAWES, or when a vehicle is destroyed. Individual casualty cards are then opened and, as with vehicles, details on the nature and extent of injury given. First aid is administered and evacuation arranged to the Regimental Aid Post (RAP). When the relevant treatment has been given, the casualty will be reactivated and returned to the battle. Those killed in action are removed to a holding area and form battle casualty replacements (BCR) to be released after the relevant demand from the battle group.

Shortcomings

The major criticism with TES at the moment, is the lack of indirect fire play. Indirect fire is simulated by a few exercise controllers in a Bedford moving to the location of a fire mission and throwing numerous thunder flashes. Naturally this Bedford becomes familiar and its intention clear, resulting in a case of "see Bedford, move away", much to the frustration of the Gunners.

To remedy this, there is an indirect fire system available in the US which will be in service with the British Army in the near future.

The Exercise

The conversion from live firing to TES occurred on D+11, with all of the engineer armoured vehicles and some of the more critical B vehicles being fitted with TAGWES; the TES equipped troop was twice the size of a Sabre squadron and the biggest target on the battlefield. However, our offensive capability consisted only of the two field sections fitted with ISAWES and four LAW, which we later found out does little to protect against a determined troop of OPFOR.

The first few exercises were designed to allow the battle group and OPFOR to understand the problems associated with TES and at the same time tease out any problems in the programming. The equipment proved to be very reliable, and the only change to the programming that was necessary was an adjustment to the vulnerability of Challenger and Warrior which were being destroyed by shots from SA80, a little harsh by any standards. Once these initial problems were resolved, we moved onto the real business of dealing with OPFOR

The first battle was defensive, with the engineers involved in counter mobility tasks, including minefields and route denials, and in the construction of defensive positions. The axis of the enemy was correctly established, however a squadron plus of tanks did manage to sneak down the flank and assault the echelon of the battle group, which unfortunately included the engineers. We were hit at such speed that we had no chance to flee – a tactic I usually favour – so we mounted a spirited defence on a hillside with our rifles and four LAW! The LAW missed and as reprogramming meant that tanks could no longer be destroyed by rifle fire, we were soon overrun. I would like at this point to dispel a rumour regarding an engineer officer who was reputed to have said "Don't shoot me, shoot three others instead!" It is without doubt a misquote from the midst of "the fog of war". However, during that battle we took some 20 casualties and lost 90 per cent of our vehicles. The battle as a whole was lost and we went into the next 1 – 0 down to OPFOR, but eager to seek revenge.

The next battle was a meeting engagement, not a lot of engineer input required so we followed along behind, ever wary of our flanks. Sighting reports were carefully recorded and plotted as things started to shift in OPFORs favour. We became ever more edgy and when the enemy finally broke through we "headed for the hills" and lived to fight another day. In fact we were the only group within the battle group not to take any casualties; we had obviously learnt from our earlier experience. The outcome, 2 - 0 to OPFOR.

The final engagement was an assault onto an OPFOR defensive position. The move forward was under cover of darkness; with dawn approaching and under OPFOR's smoke screen. Two crucial crossings over the River Suffield were established using AVLB (armoured vehicle-launched bridge) equipment and the battle was under way. The recce screen, including engineer recce probed forward and were engaged and destroyed by a mobile Milan screen put in by OPFOR. I moved forward to replace the engineer recce but with only a rifle for protection, was soon taken out. The injuries attributed to myself and the crew were minimal, a broken leg, mild concussion and a chest wound; we were eventually collected by a very much overworked ambulance crew and removed to the RAP. It was here that I discovered why all BCRs arrived with a suntan. Once medical treatment had been given, we moved to a holding area to await the call forward as a BCR. This takes time; great in the sun but not much fun in the rain!

After five hours of intense fighting and using a reserve squadron of tanks, the battle group became so depleted that the engagement was called off. 3 – 0 to OPFOR.

Lessons Learnt

There were many lessons learnt from the TES exercise, but those I wish to highlight are:

Logistics. Equipment support and the medical chains have never been tested to such an extent. It was extremely evident how stretched these agencies were as casualties had to wait anything up to three

hours for evacuation to the RAP; one alternative was to release vehicles from the front line to act as ambulances, but this naturally reduced battle group offensive capability.

Engineer Vulnerability. Using TES, the vulnerability of the engineers became quite evident. To get an AVRE or AVLB forward undetected is not easy, but with a highly mobile enemy it becomes next to impossible. Of the three minefield breeches attempted only one was successful, the others faltered as a result of vehicles being destroyed. From the experiences of TES, it is evident that engineers require a great deal of protection if they are to provide the mobility support required by the battle group. This protection could take the form of improved armour, active protection systems involved with the interception of incoming munitions, or intimate fire support from the battle group.

Tactical Implications. TES tests commanders at every level in such a way that they are exposed to the implications of their errors and can see the fruits of good tactics, flair and aggression. All decisions involve risk assessment and the implications of failure can be serious, this imparts a certain amount of caution in commanders. The speed with which the situation changes leads to reduced reaction time which complicates operations against a live and unpredictable enemy; the whole concept of mission command is then tested, as commanders react to a continually changing situation, whilst still endeavouring to fulfil their given mission.

Chain of Command. The chain of command is another area that is often overlooked; not with TES however. Because casualties are taken, commanders, regardless of rank, will often find themselves with sole responsibility for a local tactical situation not normally associated with that rank. The practice of assuming command, at whatever level, is one of the fundamental aspects that should make TES the basis for new developments in training for operations.

Conclusions

TES is a good system and makes the outstanding training opportunities provided by BATUS even better.

Our first use of it highlighted a number of weak areas in the support services, and raised the following questions:

- Can medical and equipment support services really provide the necessary support in major regional conflicts?
- Has the MOD made correct decisions concerning the procurement of RE equipment?
- Do all arms commanders understand the vulnerability of RE equipment and hence the fragility of their own plan if mobility support assets are destroyed?
- Do we train subordinate commanders adequately to assume higher levels of command?

The use of TES not only gives rise to these and other questions, but also provides realistic and enjoyable training. As Winston Churchill said:

"There is nothing so exhilarating as to be shot at without result."

Liberation of the Channel Islands – 9 May 1945

A Personal Reminiscence

CAPTAIN H W BECKINGHAM

AFTER the German advance across France in 1940, it was not long before the Channel Islands were occupied, on 1 July.

Some 36,000 troops were stationed on the islands for almost five years. For more than two years life changed very little; food brought in from France was plentiful and the German troops, when returning from leave, would bring back many luxuries in the way of perfume, etc to bestow on "lady friends".

Many of the male islanders who remained on the islands worked for the German forces in one capacity or another and were well rewarded financially.

A curfew was imposed during the hours of darkness, and the possession of radios and cameras was forbidden. In September 1942 the German command, with the assistance of the civil authorities and the police, rounded up and deported British-born men, women and children to internment camps in Germany.

As time went on, and it was realized that an invasion of England was not to take place, the Germans turned to fortifying the islands against possible assault.

Slave labour, consisting of Russian and Spanish prisoners of war (POW), was imported to the island to work under the Todt Organization (named after the German responsible for this organization's creation). They were used to work on the massive task of constructing major fortifications, ie bunkers, gun emplacements, tunnels, etc which were to turn the islands into impregnable fortresses.

When the invasion of France took place in June 1944 the islands were by-passed, and this caused problems with regards to feeding the garrison forces and civilians because previously adequate food and material supplies from France were no longer available. For the last six months of the war food was very scarce, although the problem was to some extent alleviated when the Red Cross arranged for food parcels to be sent at the end of December 1944.

Following the invasion in Normandy, plans for the liberation of the Channel Islands were put into operation. A task force consisting of 6000 men was assembled and trained in the Plymouth and South Devon areas, and was known as *Force 135*. The operation was named *Nestegg*, and the islands of Jersey and Guernsey were given the codenames of *Booty* and *Agent* respectively. Landings were planned to take place on the two islands simultaneously.

On 9 September 1944 I was posted to command 24 Bomb Disposal Platoon RE, which was to form part of *Force 135* with special responsibilities for minefield clearance, beach obstacle clearance and the demolition of reinforced concrete bunkers and gun emplacements.

On 3 May 1945, with the end of the war in Europe imminent, Operation *Nestegg* was put on alert.

On 5 May a radio message was broadcast to the Channel Islands stating that the General Officer Commanding (GOC) Southern Command was authorized to receive the unconditional surrender of the German occupying forces.

On 6 May the German radio station at St Peter Port acknowledged the message and replied "The Commander in Chief, Channel Islands, receives orders only from his own government."

On 7 May a second message was sent to Vice Admiral Huffmeier, who replied that his representative would rendezvous at the Les Hanois light at 1200 hrs on 8 May, and Brigadier Alfred Snow sailed in *HMS Bulldog*, with escort *HMS Beagle*, from Plymouth to the rendezvous.

The rendezvous was kept by a Captain Lieutenant Zimmerman, who was authorized to discuss armistice terms only. Brigadier Snow gave him a copy of the surrender document which the German High Command had signed on 7 May, and advised that there was no question of an armistice, and that only unconditional surrender was acceptable.

At 0714 hrs on 9 May the instrument of surrender of the German occupying forces was signed on the quarterdeck of *HMS Bulldog* by Major General Heine, Commander (Guernsey), and a small advance party, which had sailed in *HMS Beagle* under the command of Lieutenant

Colonel Stoneman, then went ashore in Guernsey to hoist the Union Jack.

The main task force was embarked and sailed from Plymouth on 11 May, and Brigadier Snow landed at St Peter Port at 1045 hrs on 12 May to accept the personal surrender of Vice Admiral Huffmeier at his HQ at the Crown Hotel.

259 Field Company demolished a section of the heavily constructed sea wall, (built to protect L'Ancresse Common from tank landings), and much of the equipment and supplies brought in by *Force 135* on LSTs (landing ship tanks) were off-loaded there using the DUKW amphibious craft.

I landed at 0820 hrs and was immediately struck by the strength and depth of the German fortifications. All the beaches had been secured against sea landings. Behind the beaches and along the cliff tops, some 68,000 mines had been laid. About 70 per cent of the island's land area had been secured against glider and parachute landings by means of poles linked together by wire, which in turn were wired to explosive charges. (See article *Minefield Clearance in Guernsey*, August 1993 *Journal*, pg 208.)

All around the coast were numerous concrete bunkers housing coastal and antiaircraft batteries. In short, the islands were the most heavily defended territory in Europe.

The second significant thing I noticed was that every shop on the island was empty of commodities and St Peter Port resembled a ghost town.

No words are adequate to express the pent-up feelings of the majority of the islanders who greeted us on our arrival after five years of captivity; they were "free" and wanted to express their joy and appreciation. One incident I recall vividly is being approached by a mother and her young daughter, who handed to me a half bottle of brandy. She explained that she had kept the bottle throughout the occupation for this very special occasion. The euphoria of the liberation lasted for quite a few weeks.

Our men were handing out their personal rations of chocolate and cigarettes to the grateful islanders.

It was not all joy however. On a tour of the island it was very noticeable that a number of houses had been daubed with swastikas. This was the work of islanders seeking revenge on women who had befriended German troops and had been christened "Gerrybags", and on islanders who were believed to have collaborated with the Germans. Initially attempts were made to shave the heads, and tar and feather a number of females in the port area.

Landing craft were used to take POW back to England; one noted how undernourished they were. In attempts to stave off hunger they had collected nettles to make soup, and had even breached minefields to get down on to the beaches in the hopes of catching fish. Also, every cat on the island had vanished!

Immediately following liberation day, work got under way to clear all minefields, barbed wire, etc and to repair houses, hotels, etc. Slipways onto the beaches were opened to allow local fishermen access and bunkers on the piers and in other places were demolished.

Towards the end of 1945 those who had been evacuated from the island started to return and life very quickly got back to normal although the lifestyles of many changed. For instance, the growing of flowers and tourism replaced prewar industries which grew potatoes and tomatoes.

Postscript

On 9 May 1995 the islanders celebrated the 50th Anniversary of their liberation. Some of us met up with old comrades and relived the experiences shared 50 years ago. The States of Guernsey marked this very special occasion by presenting members of *Force 135* with a commemorative medal.

An LST squeezes between the North and Albert Piers to unload in the inner harbour where a convenient stone ramp leads up to street level.

Did I Really Get Paid To Do All That?

SECOND LIEUTENANT R D PLATT

Richard, like so many youngsters trying to fill a 12-month gap before going to university, looked for a well-paid but not too taxing job with good travel prospects. After failing to find a job which matched this description in the real world, *he applied for a Short Service Limited Commission. Thus began a* Travel Show *odyssey, which lasted for nine months and covered thousands of miles, Westbury, Royal Military Academy Sandhurst, Hohne, Sweden, France, Canada, the Herz and finally sailing from the UK to Kiel. He was given a part-time appointment as support troop commander in 26 Armoured Engineer Squadron, in which capacity he was occasionally to be seen in uniform.*

Cambridge will be quiet in comparison to his brief sample of life with the armoured engineers.

It was New Year's Eve 1993 when the letter came through. "You have been accepted to study Engineering at Cambridge, beginning in October 1995." Noting an obvious gap in my diary, from the end of A levels in June 1994 until the said date, I popped down to the careers library, intent on finding a job that paid an extortionate amount of money to an untrained student, who only wanted to work for six months before swanning off round the world to do some serious travelling. Unfortunately jobs like this are few and far between and in fact I couldn't find any. After much hunting through "Gap Year" booklets and deciding against working in an Israeli kibbutz, (where you have to pay for your flight to Israel, and then work extremely hard, for free) I stumbled across this "Short Service Limited Commission" business. "Looks like a good laugh" I thought, "so I'll give it a go," nothing ventured, nothing gained and all that. Before I realized what was going on I wound up at Westbury to have a crack at the Regular Commissions' Board and for some reason, which is well above my understanding, I passed. I had to quit my summer job so that I could get in the old holiday mood before Sandhurst, as that was what I was told Sandhurst was going to be like. Good joke lads! It had some excellent moments and I enjoyed it but I wouldn't have said that I excelled there. No military experience prior to the course was a definite disadvantage and falling down the stairs, spraining my ankle, ten minutes before the course was due to begin couldn't have been a worse start.

Anyway, three and a half weeks later we passed out as young, highly trained and skilled leaders of men – or so we thought anyway! We could just about point the SA80s in the right direction, never mind stoppage drills. And Voice Procedure! "Hello this is err aah no wrong, hello aah Mike 42 this is no, Mike 42 Alpha this aah Charlie 12 Delta. Oh sack it, I'll tell you later! OUT!" Regardless, after four days R&R (rest and recuperation) and a day at Chatham to learn all about what the Royal Engineers do, I found myself in the back of a Hercules bound for Germany.

Arriving at 32 Engineer Regiment, I went into the guardroom and simply said "Hello, I've just been posted here," and before I could finish my sentence, "Well get on the bloody line then!" was bellowed in my face. This guy seemed to know what he was on about so I did as I was told until he asked me where I had just come from, "Sandhurst" I naturally replied. "Oh, sorry Sir, I didn't realize you were an officer." "Not a problem," was all I could say. (I was slightly taken aback by this "welcome" especially since I had put on my "officer clothes", ie jacket and tie – I drew the line at the yellow moleskin or purple corduroys.

Second Lieutenant R D Platt
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The next morning I was issued with all the "Gucci" kit, ie 58 pattern webbing and large pack, before I was told I was going out to visit 26 Armoured Engineer Squadron for the day; the regiment was on exercise on the local Bergen-Hohne Training Area. "Oh, and bring your sleeping bag just in case the Land Rover breaks down and I can't get out to pick you up tonight," were Major Heal's exact words: I didn't see him again for two weeks.

During the exercise I was attached to 2 Troop, commanded by Lieutenant Fawcus, where I spent a few days on each vehicle learning first what it was called and then its specific job. It wasn't long before I realized that the Chieftain tank wasn't as reliable as I had first imagined, in fact it was a bonus if it was actually working! For the last few days of the exercise, I was with Corporal Tapply and Sapper Birks learning about the Armoured Vehicle Launched Bridge. At the start of the exercise I was assured that only Combat Engineering Tractors could swim but someone in 77 Armoured Engineer Squadron seemed to think differently. After a three-span combination bridge had been built across a water gap, one commander retrieved his bridge and left the vehicle on the bank without the hand brake applied! He was obviously checking whether it would float, but all he discovered was that it takes months to dry out a drowned tank!

The morning after the exercise had come to its grand finale and I had tried to get rid of the dirt that had accumulated on me, I was told that I was to assume the post of 26 Support Troop Commander. Luckily I had Staff Sergeant Best to give me a large amount of guidance, so for the first two weeks I shadowed him to see how he had managed without me for the last six months.

One morning, Captain Wood walked into the mess and asked if anybody was free to go skiing with the regimental ski team for two months as someone had just fallen ill. I said that I would go if I was allowed by the OC, but that there was one small problem, I'd never skied before. Apparently it didn't matter as it was to be a novice team anyway, so three days later after much dashing around to get some ski boots, we set off for Idre Fjall in Sweden.

The first morning started with a "short" run which turned into a rather long run and, because we were all very tired, we decided to take a short cut across a very flat-looking field. About a third of the way across, some distinct cracking noises were heard. Motivation to run faster? Definitely! We ran so fast we would have beaten Ben Johnson with a year's free supply of steroids.

When we got onto the lang lauf skis we were what could only be described as abysmal, falling over every couple of seconds. Luckily for us we weren't going very fast when we fell so we didn't get hurt although we went through several sets of skis. After a couple of days tuition on waxes and skiing from the lads of 35 Engineer Regiment (the elite Nordic ski team) we were soon heading around the 7.5km loip (lang lauf track or loop) with which we were to become so familiar. Now we were only falling every couple of minutes but at greater speed and with more finesse. After three and a half weeks of intensive training and going round the loip about three times a day, we were doing quite well in the races we were having with 21 Engineer Regiment and the Royal Electrical Mechanical Engineers' team (not to mention dizzy going round that loip!). Even the Hameln-based team were getting worried in case we beat them. OK, they weren't worried at all but we liked to think they were. At the end of the training period in Sweden we thought that we could be in with a chance of qualifying in the Divisional Championships (Divs) to get to the Army (and Great Britain) championships. Before we left for our nine days' Christmas leave Captain Wood gave us a training programme to complete over Christmas. Well, we nearly stuck to it!

Back at the regiment again and we promptly set off for Les Contamines in the French Alps, to see if we could still ski and to make technical adjustments to the skis because snow conditions were so different in the two countries. As the Divs were to take place here straight after we had finished training, this was a good bit of foresight on Captain Wood's part – at least knew which corner we were going to fall at.

On arrival, we found an excellent flat awaiting us although the Frenchman who showed us round spoke at about 200 miles an hour, so we just smiled and nodded. It didn't take long before we had settled in and that day we were back on skis trying to regain some of the coordination and technique we had lost over the Christmas break. That evening, Staff Sergeant "nearly a veteran" Ian Parrish, who had come as our coach, drew up a training programme so that we could peak during the Divs. We also began "carbo-loading" to gain the vast amount of energy required to be able to train harder. This involved eating great mounds of pasta. As an Irishman I tried to persuade "coach"

that the good old potato was just as good a source of carbohydrates as pasta, but he was having none of it. So, sadly, I resigned myself to four weeks without my staple food.

The next couple of days were spent training and practising technique. We also had to rehearse a race day so that we wouldn't be flapping when the real thing took place. We were up early, got to where the races would begin, tested the snow conditions and waxed up; nothing to it. Two days before the races began, however, one and a half metres of snow fell in 24 hours. Wax selection and hence training became an absolute nightmare. If the wax was too sticky, the skis ended up with about an inch of snow iced underneath. Oddly enough, this impaired the ability of the ski to glide which meant you would have to virtually run the whole way round the course and nobody relished the thought of doing this. On the other hand, if the wax didn't give enough grip, you would have to use your arms to propel you round the course and as I don't have arms like Arnold Schwarzenegger, I wasn't too keen on this idea either!

The day eventually came however to compete in the first race (the ten-kilometre individual). I was number 14, due to leave at 0937. I approached the start area to watch the first couple of competitors and noticed how timidly they were leaving the slightly raised start box. At that point I decided I was going to burst out of the box, just to gain a few extra seconds on the man in front. As I saw number 13 leave, my nerves started to tingle, the rest of the team were shouting encouragement but I was totally focussed on my big moment. Five seconds to go and the beeper started to do the business. On the second beep I felt my hands grip my poles so tightly I thought I was going to crush them. The third beep sounded, my toes curled in anticipation, I was an athlete honed to perfection. Beep, my blood was saturated with adrenaline. Beep, one second to go and I was bursting to get away. It seemed like an eternity before I heard that slightly elongated, high pitched tone from the start clock. Suddenly all my muscles tensed and I exploded away from the box like a greyhound from its trap.

Milliseconds later I realized why they had been leaving so timidly as I found myself lying face down in the snow! There was a tiny strip of wood just in front of the start box which looked too insignificant to make a difference. Obviously not! I got up and luckily neither skis were broken so I soldiered on to the end without further mishap, although my pride had taken a rather large blow. The next two races also passed without any major drama but when it came to the biathlon, despite hailing from Northern Ireland, I proved not to be a crack shot so I was left on the sidelines.

The grand finale to the Divs was the dreaded Patrol Race, possibly the most physically demanding race in NATO. It is a military race wherein you have to ski 30kms in arctic combats with a bergen and SA80 on your back. Three times during the race, you have to go into a range and fire at the targets in the vain hope that you can hit something. Again, I missed out on this one because only one officer was allowed in the four-man team. I was, however, a range official for the day and when I saw these fit young men come into the range for the third time I was definitely glad it was them and not me.

When the race was over we had an agonizing wait to hear if we had qualified. We had been lying in fourteenth position and had been told that the top 15 got through. We managed to keep our place and were really disappointed when we realized that we would have to go to Les Saisies for another two weeks of extremely hard work! Terrible, but someone has to do it.

So we packed the minibus and set off for the Nordic resort used for the 1992 Winter Olympics. We found some of the hills a problem, as they were virtually vertical. We had to beast ourselves to get up and close our eyes and hope for the best on the way down – some of the speeds reached on the down side were absolutely hair-raising. It may not look too fast to the man in the street but when you're the man on the three-finger wide skis its pretty scary, especially when you don't have 100 per cent control.

The rest of the races in Les Saisies passed without further incident and we finished 18th out of 23, and were pleased with the result, especially as we had beaten our arch rivals from Nienburg – 21 Engineer Regiment.

When I finally returned to the regiment in February, I was launched straight into "Officers' Week" which was designed to refresh our military knowledge. I must have missed, or slept through, all these lessons at Sandhurst because they were all new to me.

Then it was back to some real work at 26 Armoured Engineer Squadron. I got back to find a new OC and Administration Officer waiting to give me lots of work. Luckily Staff Sergeant Best was able to assure me that everything was

under control; how did he manage without me? I soon got to know the men in the troop I was supposed to be commanding, so it was clearly time to reorganize; I heard that I was to be replaced by a real troop commander who had done the full Royal Military Academy Sandhurst course. Fine, so I was given the squadron sports and public information to organize.

A couple of weeks later, after a little gentle persuasion, my boss allowed me to go to Canada on the *Medicine Man 1* Exercise in BATUS (British Army Training Unit Suffield). When we arrived I saw a very different landscape to that of the Alps. I had been told it was going to be very flat and barren – they seemed to have hit the nail on the head with that description. With no specific job, I struck lucky and was passed around the troop and battle group to see how everyone operated. I was attached to a company of 2 Royal Anglians, for a day to take part in some armoured infantry work. This was a brilliant day as I had never been in a Warrior or with an infantry unit before. In the morning, I was tested on my rifle drills and then sent off with a section to do some section attacks. Whilst trundling along in the back of the Warrior, I was given a quick brief on how to debus from the vehicle so that nobody got hurt. About ten minutes later we were given the signal to get ready to debus so bayonets were handed out but we didn't fix them in the wagon, for obvious reasons. Anyway, we were hurtling towards this enemy position, completely "psyched up" for the big event and were given the all clear, so the Warrior lurched to a halt as the section commander shouted "Debus, Debus, Debus!" We jumped out, ran round to the side and "hit the deck." By this time we had a full magazine loaded and our bayonets were fixed. The safety staff gave us permission to "go to red" so we opened up on the targets. We skirmished forward and it wasn't long before I had used up a magazine; I fitted a full one and immediately the section commander ordered me to go forward to about 10m from the target and empty my magazine into it; just like the films! When I had finished we went up and bayonetted what remained.

Later during the exercise I was attached to a field section for a bridge demolition. I had never realized so much work was required to blow up what appeared to be a fairly simple structure. It took about five hours to prepare the bridge and another hour to check everything. Unfortunately, when we were due to blow it up, the safety staff signed the bridge off us and demolished it when we were long gone. At the end of the exercise, I went back with echelon to refurbish the bridge and was extremely impressed with the damage that was caused by such a small amount of PE4.

So, that was my Canada training finished. Well not quite! Again, I was selected (against all my protestations) to do three weeks of adventure training in the Canadian Rockies.

My first five-day exercise was Western-style horse riding. Five minutes after I got on the horse, my behind started to hurt and it didn't stop until the five days were over. We stayed at a fly-camp for four days and each day had excursions from there. I particularly enjoyed the trip to the top of Black Rock Mountain as it was a crystal clear day and we could see Calgary (about 60kms away) from the top. Next came Exercise *Bear Dawn*, a multi-activity package including mountain biking, ridge walking, rock climbing and abseiling, hill walking and on the final day, white water rafting. An excellent week.

For my final activity I just failed to get onto the parachuting course and was told I had to go glacier skiing instead. We met our guide early on the first morning and just before we started out, he checked our bergens to see what we were carrying. He binned half of it! No soap, towels, only one T-shirt, one jacket, one change of underwear and socks each and only one tube of toothpaste for the group. We thought he was mad, but by the time we had walked up to base camp, we were glad! The rest of the space was taken up with skiing equipment.

When I finally returned to Hohne, I discovered that I was to go adventure training with Support Troop in a few days time, all jacked up by Lieutenant Owen, the new Support Troop Commander. Not a problem, in fact I was glad to go to the Herz for a week's hard work. This was one of the best weeks as it was so relaxing and there were no major dramas. Canoeing still remains a mystery to me though – just going in straight lines and staying upright was a problem.

As I write, there are only two weeks to go before leave on 27 July, and I resign my commission on 17 August. But, one final fling; I have just been given eight hours' notice to go sailing, completing the final leg of an expedition from the UK to Kiel.

Looking back I can only marvel at the varied life which I have lead since my inauspicious start at Sandhurst last November and I just ask myself; "did I really get paid to do all that?"

Are You Planning To Write and Publish a Book?

LIEUTENANT COLONEL E E WAKELING ERD MIMGT

IT is said that that there is a book in every one of us, and I feel that to a certain extent that is true, particularly for those who served in the last war, or are serving in the Corps at the moment. There is a lot to be recorded and disseminated.

A number of sapper officers have published books and all those to whom I have spoken have said that they didn't make a penny profit from their efforts.

Having had a book published last year, fortunately a sell out, I can speak from some experience and thought I would pass on my new-found knowledge; it may enable those thinking of writing up their memoirs for publication to make a small profit.

I started writing my book many years ago, 1979 in fact. I had been a technical adviser to Euston Films, for episode ten of their series *Danger UXB* (for Thames Television) – the one about "Butterfly bombs". Lieutenant Colonel E E (Jimmy) Gooch was the series adviser, but had never dealt with any SD2s, so had asked me to help. That started me thinking about a book.

In those days I had a peculiar machine called a typewriter; not a machine conducive to making the many, many corrections that an author has to make, and so I gave up. About eight years ago, however, (that is four years after I had retired, for the second time!) I acquired a word processor and in my spare time transferred the old typewritten manuscript onto a disk!

After about five drafts – its so much easier with a word processor, you don't have to retype everything every time – I gave it to a friend in the book trade to read. He made some recommendations, which I accepted and incorporated.

Then started the problem of finding a publisher; I spent three years and a lot of money – about £5 every time I sent a copy of the manuscript to a publisher – and eventually thought to myself: "How do others get their books published?" Looking at the numerous book reviews in the RE *Journal*, I chose the names of four publishers which appeared most frequently and wrote to them. Two were not interested, but two made offers.

One proposed a print run of 1000 copies, to sell at £14.95 and required me to put up £7848. I would be paid a royalty of 40 per cent on all sales, every six months.

They went on to point out that the discount structure for shops was 25 per cent on single copies and 35 per cent on two or more.

Working on the (worst) premise, that each bookshop would buy two at least, the sales would be: 1000 x £14.95 = £14,950, less 35 per cent, leaving £9717.50. Out of this I would get 40 per cent = £3887. So, for the outlay of £7848, I would get back £3887, maximum!

Needless to say, I did not take up that offer!

The second came up with what I thought was a better offer. The original quote was £3646 for 500 copies. Although I got a subsequent bill for £130 for "additional work" and a further £60 for delivery! The recommended selling price was, again, £14.95.

Their offer, was that I received **all** the money from **all** sales, this time paid monthly; however, the publisher would take 5 per cent of all sales for "expenses" and, of course, shipping the books would be an extra 10 per cent of all sales, plus cost of postage and packaging another 10 per cent. In addition, the "trade" would expect their 25 or 35 per cent.

So we were back at square one!

Up front costs were £3646 + £190 = £3836.

Maximum return 500 x £14.95 = £7475. Actually a lot less, in the event more like 470 x £14.95, which equals £7026.50. Less the various discounts: 5 per cent + 10 per cent + 10 per cent + 35 per cent = 60 per cent, giving me a return of 40 per cent on £7026.50 which is £2810.60!

To sum up, not a lot of choice!

In the event, I decided to do the distribution myself, thus saving ten per cent. I happened to spend the equivalent of ten per cent on marketing, for direct selling, plus postage. In this way, I saved the 25-35 per cent trade discount, and was paid for the postage, which improved the gross profit per sale.

Until I had ventured into the realm of book publishing, I had been under the impression that it was the publisher who did the marketing and selling. Nothing is further from the truth. In my case, if I hadn't done my own marketing, I doubt whether I would have sold 50 copies, let alone

470. I was not told beforehand that one is required to send quite a few free books to various organizations, such as the British Library. In the event I gave away 30 books, some of which were the result of "damaged in transit". One particular firm had six books damaged in transit. I only had a total of ten damaged – out of 500! It does make one wonder just how honest the book trade is.

I enjoyed being the distributor. It meant that I got every order, most of which were direct sales and many from people with whom I had served during the last war or later; the Retired Bomb Disposal Officers Club increased its membership by ten as a result. My marketing had been concentrated within the Corps. I had leaflets printed, which were inserted in the *Supplement* and the *Sapper*. As a result, I received orders from Australia, Canada, Denmark, France, Germany, Holland, and latterly, from the USA where the book was destined for a library in the Pentagon!

Being the distributor also meant that my publisher had to account for every penny they received in payment of orders they sent to me. They were not very good on arithmetic and almost every month I had to point out the error of their ways – usually in their favour. In fact, I probably saved myself in the region of £150-£200. *This I would not have known about if they had done the shipping!*

I kept account of the source of every order which ran out as follows:

- 174 from bookshops – many of these as a result of my advertising, bought by people who preferred to go to a bookshop rather than pay the extra £2.05 postage.
- 131 orders as a result of leaflets being sent to the publisher.
- 100 direct from army associates and personal friends.
- 36 in the village bookshop! Local author and all that!
- 27 from local bookshops as a result of separate marketing.
- 32 free copies, to family, friends, libraries, replacements, etc.

Total received £6324.46

Expenses:		
Publication costs	£3836.00	
Printing of leaflets	£ 365.00	
Insertions in *Supplement* and *Sapper*	£ 336.00	
Cost of book postage	£ 600.00	
Cost of packaging etc.	£ 120.00	
Miscellaneous costs, post, stationery, telephone, etc	£ 110.86	approximately
Total	£5367.86	

These costs exclude previous costs of reams of paper for earlier drafts and submissions to publishers.

I therefore recommend that if possible all budding authors do their own distribution. I can assure them that it is very interesting and not all that irksome – 500 books do not take up a lot of room in the garage! Always assuming that you have got the books by the time the advertising breaks, orders arrive in dribs and drabs. Last year I was in the unfortunate position of having the advertisements appear in June but delivery of the books in August! I had a backlog of 200 to ship all at once. (I hate to admit it but, as I wrote this article, I had received over 30 orders for my second book – "A Pictorial Story of Wartime Bomb Disposal". Again I advertised in the June *Supplement* and *Sapper* but the book hadn't even gone to the printers by that time! The same firm was responsible for the delay as with my first book.

An aspect of marketing included this time was to make the second book "mail order", with a price set to include postage, which has to be paid whether a copy is sent to a shop or an individual. Hopefully, this will cut out the shopkeeper and his 35 per cent.

I also decided to become my own publisher. It is not difficult! I have registered with "Whitakers", in the name of B D Publishing and have my own range of ISBN numbers.

As far as getting a book printed it really is only a matter of looking in *Yellow Pages*, to see who the local typesetters, book printers and book binders are and getting a few quotes. Any sapper officer could organize this without much of a problem.

Finally, I would certainly advise any budding author to do his own publishing. You never know, you might even make a profit. Of one thing I am sure, if you get someone to publish and distribute your book for you you will **never** make a profit!

Even though I am now a publisher, I am not offering to publish any books, but would be happy to pass on the knowledge gained from my experience, should anyone ask.

I remember being quite hurt when talking to a friend, who thought that people like me, including quite a few other sapper officers who had paid to have their books published, were guilty of the crime of "vanity" publishing. (I gather he was "commissioned" to write his book.) If you make a profit then I don't think you are! Although I agree that some may be "guilty as charged". Being out of pocket could just be due to lack of experience or the sort of spiralling costs pointed out above.

I wish all my successors well!

Redevelopment in The Royal School of Military Engineering

MAJOR R L SMALLMAN SQ

READERS may not be aware that there has been considerable redevelopment work within The Royal School of Military Engineering at Chatham and Minley during the last couple of years. The move of combat engineer and signal training to Minley, and the resultant alienation of Chattenden Barracks, has focused much of the training resources upon Brompton Barracks, with additional resources at Minley.

This article describes briefly recent redevelopment works carried out at Chatham and Minley.

CHATHAM

Brompton Barracks. The RE Headquarter Mess has undergone changes to the public rooms, reception area, and the north facing areas.

The north and south passages, anteroom, conservatory, dining room and top bar have been recarpeted throughout. Reception has been completely redesigned and redecorated, and the next step will be to provide better male cloakroom facilities behind the reception area.

Outside and to the north, the two squash courts, the steward's flat and the mess garages have been demolished. In their place, a new building has been erected almost adjacent to the north wall of the lower conference room (formerly the lower billiards room), in a style which is pleasant and in keeping with the Georgian mess building. It is named "The Lintorn Simmons Annexe" after Field Marshal Sir John Lintorn Arabin Simmons, and will provide single officers' quarters for about 60 residents.

The four mess guest rooms, high above the entrance hall and anteroom, are being adopted by the three Indian Sappers and Miners Associations and the Queen's Gurkha Engineers. Each will be furnished individually with artefacts from these four organizations, and named accordingly "The Madras Room" etc. These names will not confer an automatic right as to occupation!

The loss of the old squash courts has had its compensations. A single self-contained court has been built in the vegetable garden area to the northwest (where the greenhouse was located), and a new block of three courts has been built near the gymnasium; both designed to be in sympathy with adjacent buildings.

Extra car parking for the mess has been provided by levelling the area behind the kitchens to the west, between the new squash court and the mess garden itself.

The Warrant Officers' and Sergeants' Mess has also benefited from a new building for its residents' accommodation, further down the hill towards the band block and the assault course. This building has been named "The Ince Annexe", after Sergeant Major Ince, who became famous for his idea of tunnelling through the rock during the Siege of Gibraltar.

The stables area and main car park, between the Ravelin Building and Khyber Road, were completely levelled; the RE Saddle Club now occupying much better facilities at Lodge Hill. A vast new workshop complex, named "The Nicholson Building", after Field Marshal Lord Nicholson of Roundhay, has been constructed in this area to train newly arrived apprentices. The older workshops, built in the 1960s and named "Denison Block", remain and are being revamped.

All five of the Corps' field marshals are commemorated by the naming of buildings (or in the case of Kitchener, a barracks) at Chatham.

A new main car park has been laid out in the moat between the Ravelin Building and the older workshops.

The new buildings at Brompton were opened formally by the Chief Royal Engineer on 15 June 1995.

Command Wing (formerly Tactics Wing at Chattenden) has moved into revamped office and lecture facilities in the old chapel in North Block, where the RE Museum used to be, spilling into part of the accommodation houses as well.

Lodge Hill. The Counter Terrorist Search Wing which, along with the Royal Electrical and Mechanical Engineers' workshops, and plant,

roads and airfield branches, has stayed north of the river Medway, has moved into a new complex in Lodge Hill Training Area. The wing was formally opened by the Chief Constable of Merseyside, Mr Jim Sharples, and named "The Warren Building", in memory of General Sir Charles Warren, a distinguished sapper officer, who was chief commissioner of the Metropolitan Police as a lieutenant colonel in the 1880s.

Kitchener Barracks. 24 Field Squadron, now entitled 24 Training Support Squadron, has moved back into Kitchener Barracks, after a sojourn of some 20 years at Chattenden. Since the Aden Campaign, the squadron has occupied four "homes" including Invicta Park, Kingshill Camp at Hoo, Kitchener Barracks, and Malta Lines at Chattenden.

69 Gurkha Field Squadron has moved to Invicta Park, Maidstone, and is now under command of 36 Engineer Regiment.

The Planned End. By 1997, Brompton Barracks and its environs should be relatively free from major works services, and will have become a compact, efficient organization for the training of future members of the Corps of Royal Engineers.

Minley

Minley Manor. At Minley Manor, where the HQ of what was 11 Engineer Group (or even the Training Brigade after they moved from Queen's Avenue!) used to be, the changes to the building as a mess have been significant, and it is now used solely as an officers' mess

The existing ground floor of the main building has not been greatly altered, except that the area once occupied by Central Volunteer HQ RE (including the small lecture theatre) has been changed into mess office accommodation.

The first floor has undergone a complete transformation. Above the dining room, the rooms which were offices have been opened out to form a large, comfortable anteroom and bar, with access from the old chapel; for those who knew it, such an entrance would have resulted in a drop of about 10ft! However, the builders have inserted a mezzanine floor to the chapel with a staircase; the windows have been reopened, and the result is most pleasing. Living-in members can retreat to a small dining room below when larger functions are being held. The new anteroom can be used as a bright and cheerful dining or conference room, ideal for more secluded VIP or working lunches and the like.

The original dining room, anteroom and bar have not been altered, but visitors, both male and female, are warned that they should take care to enter the appropriate "cloakroom" by noting the conventional visible signs – there have been changes!

A new officers' accommodation block has also been constructed in the walled garden, and remedial work is being undertaken to the external fabric of the Manor.

Gibraltar Barracks, Minley. Gibraltar Barracks now houses HQ Engineer in Chief, in a new building named "Cloutman Block", after Major B M Cloutman VC.

The barracks includes the Battlefield Engineering Wing (mainly formed from Field Engineer Wing at Chattenden), and Signals Wing (renamed Communications Training Wing) in its new block to be named "The Burgoyne Building", and the Apprentice Training Wing which moved partly to Brompton and partly to Gibraltar Barracks on the closure of Chepstow.

Memoirs

MAJOR GENERAL R W T BRITTEN CB MC

Born 28 February 1922, died 11 July 1995, aged 73.

MAJOR General "Bob" Britten, was awarded an MC in May 1945 during the Burma campaign.

"During the period between Feb 16 and May 15 1945," the citation recorded: "this officer has carried out several engineering reconnaissances under hazardous conditions, returning from each with detailed information of the utmost importance.

"In particular, on March 18 at Mandalay he entered Mandalay Fort, when it was still held by the enemy, by crawling through a disused sewer half-full of sewage, then under the moat, then along an open drain which was only 12 inches deep (and immediately under the eye of sentries on the fort wall), then under a second sewer under the fort walls, finally emerging from the sewer inside the fort.

"In spite of intense physical discomfort from long immersion in water, he completed his reconnaissance without being detected by the enemy, returning with vital information about the fort.

"During the whole reconnaissance he was in extreme danger. He showed outstanding coolness and courage in all his work, and by his example set a high standard for all ranks to follow."

When Britten had entered the first sewer his subahdar (Indian Army officer) held the end of a tape he had attached to himself to find his way back, but the tape broke when he was negotiating the second sewer and the subahdar reported back that he had been discovered and killed.

That evening, as his fellow officers were sitting in their mess gloomily pondering his death, he suddenly walked in, having found his way back without the tape to guide him.

Britten's reconnaissance was invaluable because the ancient fort, manned by fanatical Japanese, had already beaten off six attacks by the British, who had used rafts, scaling ladders, high-explosive shells and even 2000lb bombs dropped from aircraft to bounce off the waters of the moat and breach the walls.

The fort was surrounded by 20ft-high crenellated walls and backed by earth embankments 70ft wide at the base. The moat was more than 200ft wide and filled with lotus, which hampered any movement through its waters.

Robert Wallace Tudor Britten was educated at Wellington and spent a year at Trinity College, Cambridge. After a spell with 141 Officer Cadet Training Unit he was commissioned in 1941 into the Royal Engineers. He sailed for India in November with 200 other RE officers and was posted to the Madras Sappers and Miners, in which his father and godfather had both served.

After training in Bangalore he joined 65 (QVO Madras) Field Company on its formation, and remained with it for three years. In late 1944, 65 Company moved to Burma as part of 19 India Division and – as their second-in-command and Mechanical Transport Officer – Britten had the dubious privilege of riding a motorcycle some 2000 miles from Bombay to Imphal.

Despite the difficult terrain – jungle, deep valleys and numerous rivers – the Sappers managed to build roads, bridges and fortifications, and to conduct assaults, with speed and efficiency.

After the capture of Mandalay, Britten was given command of 65 Company; he retained the post until the middle of 1945, when the company was halfway up the Toungoo-Mawchi Road.

Major General R W Britten CB Mc (296)

He returned to Britain as SO2 RE (Operations and Training) to the Chief Engineer, Northern Command, at York. He moved to Ripon in 1946, and the next year to BAOR as OC 21 Field Park Squadron. After postings to 23 Field Engineer Regiment and 5 Field Squadron he studied at the Staff College, Camberley. Upon graduation he became GSO2 (Camouflage and Deception), then DAAG in AG4, both at the War Office.

In 1953 Britten was appointed British Liaison Officer to the US Corps of Engineers at Fort Belvoir, and in 1956 returned to Britain to command 50 Field Squadron at Maidstone. He took part of the unit to help with building work on Christmas Island on the staff of the Chief Engineer.

From 1958 to 1960 he was GSO2 RE to the Engineer in Chief, and then went to the Joint Services Staff College, Latimer, as a student, returning in 1965 as a member of the Directing Staff.

In 1967 Britten became Chief Engineer, Western Command, and commanded 30 Engineer Brigade (TAVR). After attending the Imperial Defence College in 1969, he became Director of Equipment Management to the Ministry of Defence in 1970. The next year he became Deputy Quartermaster General. He was also chairman of the Defence Supply Committee. His final appointment was GOC, West Midland District, from 1973 to 1976. He was Colonel Commandant, RE, from 1977 to 1982, and from 1978 to 1983 was chairman of the Royal Engineers Association.

After retiring from the Army, Britten was consultant to Lucas Electric from 1976 and Defence Marketing Manager (London) for Rolls Royce Motors from 1978. In 1982 he became Defence Consultant to the Taylor Woodrow Group, and in the same year chairman of IR Management Limited (Defence and Security Equipment).

That year he also became chairman and Chief Designer for Coordination Limited, a small bridging company he founded which built bridges with beautifully cut mahogany blocks and handrails. Their 20ft spans could take a farm tractor and a loaded trailer.

Bob Britten had an exceptional range of interests and capabilities, though he was an engineer at heart. He was interested in anything unusual or mysterious – such as crop circles – although he preserved a healthy scepticism. For most of his life he was, as he put it, "happier with the teachings of Buddhism than with any other faith."

He was a keen fisherman, preferring to stalk the trout streams to catching salmon.

Like many Sappers, he had learnt dowsing, and he was a vice-president of the British Society of Dowsing. He could find water easily, but had no success with minerals.

Britten was tall, with dark wavy hair, and when interested (which was often) he would raise one eyebrow quizzically. His strong sense of humour often enlivened proceedings of the Society of Dowsers.

He married, in 1947, Jane Davies; they had a son and a daughter.

MAJOR GENERAL MICHAEL SEXTON CB OBE

DIRECTOR OF MILITARY SURVEY AND CHIEF OF THE GEOGRAPHIC SECTION OF THE GENERAL STAFF, 1977-80, DIED ON JUNE 19 AGED 71. HE WAS BORN ON JULY 15 1923.

MIKE Sexton's career in Military Survey took him to the four corners of the globe: the Yukon, the North West Territories and the prairie provinces in Canada; all areas of British military interest in the Middle and Far East; the Nato regions; and, more mundanely, the shires of the United Kingdom.

In the early 1970s he was Geographic Officer to the US General Andrew Goodpaster, the Supreme Allied Commander, Europe. He then served as Deputy Director and then Director of Survey in the Ministry of Defence as well as being the Chief of the Geographic Section of the General Staff until 1980, when he retired.

Professional surveyors are often neat, accurate and painstaking individuals, who can sometimes be over-serious. Sexton was an exception: particular in his work and appearance, but never dull. He was an enthusiastic games player, who enjoyed life to the full and had the lightness of touch to appeal to colleagues and subordinates alike.

Educated at Wanstead County High School and Birmingham University, Francis Michael Sexton joined the Army in 1942. He was commissioned a year later in India and saw service in Assam

and Burma with 5th/16th Punjab Regiments and with the Royal Bombay Sappers and Miners.

In 1946, the year before Indian Independence, he returned home and joined the survey branch of the Royal Engineers with whom he worked in Egypt and Cyprus until 1953.

Seconded to the Canadian Department of Mines and Resources, he worked on surveys in the Yukon, the North West Territories and the prairie provinces until 1956. He then alternated between posts in Ordnance Survey and Military Survey.

In 1977 he was promoted major-general as Director of Survey in executive control of some 1200 technicians engaged in the production of maps, charts and other survey data for civilian as well as military use. He gave crucial evidence before the Serpell Committee on Ordnance Survey which led to the total civilianization of the department and the withdrawal of his last eight military officers.

After his retirement in 1980, he pursued an academic and administrative life as Fellow and Bursar of St Peter's College, Oxford, steering the college through a period of expansion and development from 1981 to 1986.

He also became a member of the Lord Chancellor's panel of independent inspectors in 1980, and was able to devote himself full-time to various inquiries from 1986 onwards until his final retirement in 1993.

In 1947 he married Naomi (Nid) Middleton. She and their daughter and son survive him.

COLONEL K H OSBORNE DSO OBE MC TD

Born 29 November 1914, died 21 January 1995, aged 80.

COLONEL Kenneth Osborne had a particularly distinguished career as a wartime Sapper, followed by an equally distinguished career in civilian life. A prewar TA officer, he joined 50th Division RE on mobilization, serving with them in the BEF and being awarded a MC in 1940 when a temporary Captain. He then went to the Middle East with 50 Div, in command of a field company, and in July 1943 shortly after the Allied landings in Sicily, took over as CRE 5th Division, at very short notice, and when still only 28 years old. He held this appointment most ably until the end of the war, by which time the Division had reached Lubeck in north Germany.

Relaxed and unshakeable, he is remembered by those of us who served with him in 5 Div RE particularly for the confidence that he instilled in all ranks. He was a firm leader, albeit usually operating with a very loose rein so that one did one's best for him. He was always well to the fore and had the knack of turning up when most needed. His professionalism as an engineer and wide knowledge of RE fieldwork, and the high regard with which he was held at Divisional HQ, also by brigade commanders and commanders of other arms, enabled his sappers to be used to the greatest effect in the support they were able to give to the Division throughout its many and varied campaigns.

Immediately after Sicily, 5 Division took part in the landings in the toe of Italy. Here the pace of advance was dictated to a great extent by our ability to overcome skilful German demolitions, and Colonel Osborne's resourcefulness and control were tested to the full. He made good use of

Colonel K H Osborne DSO OBE MC TD (298)

Gunner Air OP planes by flying well ahead of our advance to spot likely coming engineer tasks. His leadership at this time earned him the DSO.

The qualities mentioned above were much in evidence throughout the rest of our time in Italy, notably on the Garigliano and at Anzio.

5 Division was one of two divisions leading the X Corps assault across the River Garigliano on the night of 17 January 1944. Despite heavy opposition, 5 Division sappers, with 213 Field Company attached, constructed and operated one class 40 Bailey raft and four other rafts of different types. A folding boat bridge was completed the following night, and on the 20th, a Bailey pontoon bridge was completed in daylight. Although regularly damaged by enemy shelling, this equipment continued to be operated for several weeks.

Early in March the Division was moved urgently to Anzio, where after a month of bitter and ferocious fighting there existed a stalemate of mutual exhaustion. No movement was possible on the perimeter of the beachhead in daylight, and sapper tasks were reminiscent of those of the 1914-18 War, helping the forward battalions improve their positions, and laying and lifting mines. Some of the sappers' time was occupied building a stop line, known as the "Blenk Line", in case the forward troops should be overrun. It was to be manned by the Div RE, a battery of antitank guns and a company of the Cheshires, and commanded by Ken Osborne. Fortunately the Blenk Line was not tested before the breakout from the beachhead occurred on 23 May!

When 5 Division moved to NW Europe towards the end of the War, it was typical of Ken that, having read in *The Illustrated London News* about new RE equipment which we had never seen, he quickly organized a bridging camp to give us an opportunity to handle such equipment before the Division was deployed.

After the War he was asked to defer demobilization in order to take over command of 14 AGRE as a full colonel, and to supervise the erection of two bridges over the Rhine, one at Wesel, the other at Cologne. The bridges had been designed by Major Ralph Freeman, and starting in October 1945 were built in a race against time to beat the ice, working 24 hours a day, seven days a week and using searchlights to produce artificial moonlight. Ken Osborne was eventually directing 10,000 men, including German civilian contractors. At Wesel, "Montgomery Bridge", thought to have been the biggest, though not the longest Bailey bridge in the world, was completed by 12 Corps Troops in February 1946 and was still in use in the late 1950s. At Cologne "Patton Bridge", completed in May 1946, remained in use until the late 1960s. Both bridges played a significant role in the economic reconstruction of war-torn western Europe. For this work Ken Osborne was appointed OBE.

Following demobilization, Ken worked with the Anglo Iranian Oil Company in Abadan until its nationalization, when he returned to the UK to find that his military commitments were not quite over. In the mid-50s he was recalled from the Army Emergency Reserve to command a regiment on annual training at Ripon. He also joined the Blythe Sappers, becoming its Chairman for 1977.

Ken Osborne had trained as a quantity surveyor prior to the war, and this background, combined with his wartime experience, naturally led to a career in the construction industry when he returned from Iran. He first joined Costain in opencast mine projects in the northeast of England, where he came into contact with Scottish Land Development Corporation, a company specializing in the supply and hire of civil engineering plant. He later joined Scottish Land, eventually becoming managing director, and as well as expanding business in the UK, he also encouraged development overseas. Typical of this activity was a project in Africa where Scottish Land undertook the supply of dump trucks to transport copper ore from Zambia to the Indian Ocean, a project which also required the construction of maintenance workshops and the training of local staff to service the vehicles. The organizational and administrative skills that Ken had demonstrated so well during his Army service, were put to good use in ensuring the success of the project in Africa.

Scottish Land was acquired in 1967 by the Wiles Group, later the Hanson Group. Ken was appointed to the Hanson Board, and until his retirement in 1979, played a major role in expanding and developing the Group. With his creative and innovative approach, he exercised a great influence on the early progress of Hanson. He was a man with an enormous circle of friends and acquaintances both in business, the Arts and the medical world. He had a quite remarkable ability for "opening doors" which was invaluable to Hanson. More recently he devoted his time to charitable works, mainly associated with medical causes.

He leaves a widow, Rivka, who he married in 1983. He is also survived by two daughters from his previous marriage to Sheppey, who died in 1981.

NGD HBS CGT RTW WMLW

ANNE CAVENDISH
1920 – 1995

ANNE Cavendish died in Limassol on 24 February 1995 as the result of a heart attack following a fall.

She was a soldier's daughter. After Wellington College and Sandhurst, her father, Frederick George Cavendish, was commissioned into the Prince of Wales's Leinster Regiment. In World War One he served on the Western Front, in Macedonia, Egypt and northern Russia. He was wounded, was twice mentioned in despatches and received the DSO (and bar) and the MC. When the Leinsters were disbanded he joined the Highland Light Infantry. His life ended in a car accident in Cairo in 1936. David Niven, in his autobiography "The Moon's A Balloon" refers to Major Cavendish as his superior officer.

Anne was born in India in 1920. Her mother was the daughter of a Bengal planter and his Italian wife. Anne spent the last two years of World War Two in the Directorate of Military Survey, War Office and Air Ministry, as it was then called. She was re-engaged in 1950 as a permanent civil servant in the Directorate's Map Library. A map library in a survey directorate is not just a place where maps are stored and consulted, it is a centre of geographic intelligence.

In 1953 Anne was posted to the Survey Directorate of Middle East Land Forces at Fayid in the Canal Zone, where she ran the map library. Apart from one graduate assistant from the UK, staff consisted of local employees, including Maltese and Armenian; a few geography graduates doing their national service; various other soldiers engaged on miscellaneous duties, a few army wives, and colonels' daughters in despair at the shortage of subalterns. Somehow that assortment of beings was welded into a happy and productive entity.

Early in 1955, the move of the headquarters from Egypt to Cyprus began. Anne had the arduous task of keeping two sources of data, one in Cyprus and one in Fayid. The move was completed by the end of 1955 and Anne was to spend the next 21 years in Cyprus. The Suez crisis followed in 1956. Anne shared in the burden of those operations. Shortly afterwards the EOKA troubles began. That involved travelling by armed bus daily to and from HQ. Throughout this troublesome period, Anne performed superbly. Her method of management was to let her staff develop their latent potential, gaining experience through the exercise of their own talents. She always accepted responsibility for any shortcomings but transferred any praise to her staff. She became the mainstay of the Survey Directorate in Cyprus and an important source of geographical intelligence for the whole Middle East HQ.

Anne's mother, a gifted artist, joined her in Cyprus. They were both naturalists, and this interest resulted in a remarkable collection of drawings and paintings of the flora of the island. Anne being responsible for the captions. In addition, Anne found time to produce plays for the theatre at Curium over a period of many years. She herself played some important roles. With Maroula Zenonos MBE, Clerk to the SBA Court, she ensured the survival of the annual Shakespeare festival at Curium, this being a notable cultural event and a source of funds for the Cypriot charity devoted to diseases of the chest. She played a major part in arranging for the transfer of the Episkopi Theatre Club production of "Fiddler on the Roof" to the open-air theatre in Limassol where the audience numbered thousands. The proceeds were donated to local charities.

During the troubles of 1974, all British personnel, including Anne and her mother, were withdrawn

Ann Cavendish 1920-1995 (300)

into the SBAs. Such was Anne's standing with the Cypriot people that she was the first of the Crown servants to be allowed back into Limassol. From then on, her presence in Limassol was an important factor in re-establishing the good relations which had existed before those cataclysmic events. All who knew Anne were aware of how her integrity and generosity of spirit had won her the affection of British and Cypriots alike, but few were ever conscious of the effectiveness of her presence in healing the wounds which the troubles had inflicted.

In 1976, Anne was repatriated to the UK but although she devoted herself wholeheartedly to her new work, introducing some meritorious innovations, her heart was in Cyprus, and she returned there on her retirement in 1979. Before doing so, she managed to finish the compilation of a complete gazetteer of the geographical names of Cyprus, the first comprehensive gazetteer of the island.

For many years Anne had been engaged in the study of military history and had also acquired a great knowledge of the history of Cyprus. The year 1978 was the anniversary of Kitchener's survey of Cyprus. At the formal ceremonies to mark the occasion, which were attended by the President, Anne presented a scholarly paper she had written on Kitchener's survey.

Anne was extremely proud of her Associate Membership of the Institution of Royal Engineers. She contributed many articles to the *RE Journal*, one of which gained her a prize. In 1991, the Popular Bank of Cyprus published her edition of the *Cyprus Journal* written by Sir Garnet Wolseley in 1878 when he was High Commissioner and Commander-in-Chief. This work of hers, which has since been reprinted, earned a half-page review in *The Times Literary Supplement*. She sometimes remarked that in another life she would probably have been a military historian. In her last years she devoted much time to the history of the American West and aspects of that history like the Oregon Trail. There seemed to be no limit to the breadth and depth of her many interests, which included contemporary English literature, the theatre, military history, exploratory surveys and, of course, mapping.

It is a matter of regret that her services to her country were never recognized by an official award of any kind. Prominent Cypriots, who admired her so greatly, were at a loss to understand why that should be. To them she merited the highest honours. The packed church at her funeral was a testimony to their regard for her.

She had many superb qualities, principal among them being boundless generosity, absolute loyalty to those superior or inferior in rank, and total dedication to the tasks she undertook. Money, when it came to her, was a means of distributing pleasure and happiness to friends. Her selflessness was such that she neither sought nor expected praise. Any words of commendation were either deflected in the direction of her staff or gently brushed aside. Her innate sense of fun endeared her to all. Somebody remarked that in many ways she appeared to come from a bygone age. Whatsoever that past age may have been, it endowed her with qualities which were wholly admirable. All of us who knew her will miss her for those qualities and shall continue to ask if we shall ever see the like of them again. She is survived by a sister in Cyprus.

HAGL

DPSW wrote to say that he knew Anne very well as she was on his staff when he was AD Survey Near East and Gulf on the staff of British Forces Near East in Cyprus from 1967 to 1970. "Anne was truly indispensable. I spent a great deal of my time travelling and while I had an Air Survey Liaison Section under me with a major in command, they too were nearly always away on detachment with the RAF. Anne therefore had to carry the whole load of the Directorate and deal with the HQ staff as well as doing her most important job. She was highly respected by everyone from the Commander in Chief down.

I recall clearly the time when illness kept me away from the office for several weeks. Anne took on the full responsibilities of the Directorate. I may say she was quite capable of being AD Survey in Cyprus."

COLONEL R F PARKER MBE

Born 12 December 1918, died 31 March 1995, aged 76.

COLONEL Robin Flint Parker was educated at Bedford School, the Shop and, after commissioning into the Corps in 1938, at St John's College, Cambridge. He served throughout the Second World War, ending up in Italy as a squadron commander. After the war he attended the Staff College and was then posted to British Troops, Austria. In the early 1950s, a posting to the Canal Zone as OC 3 Field Squadron, was followed by a staff appointment posting to Cyprus in 1955. Appointed MBE for his services in Cyprus, he then took over command of 4 Training Regiment in Aldershot in 1959 and, on promotion to colonel in 1962, commanded a TA group in Southern Command. His last appointment was to the MOD from which he retired with a "golden bowler".

Unlike others who parade their virtues before men, he was unassuming and reticent about himself. This belied a man who was extremely proficient at anything to which he turned his hand both at work and play. Quite unflappable, he was a quiet but firm leader who instilled confidence in others and never let them down. Throughout his life he retained an impish and unquenchable sense of humour and fun. In his younger days he excelled at boxing, and became captain of boxing at the Shop and represented Cambridge University. But for injury he would probably have got a Blue but he did have the satisfaction of seeing his eldest son get a boxing Blue albeit at Oxford. Later in his career he took up skiing and golf, in both of which he performed well.

On his retirement from the Corps he studied for a teaching diploma at St Luke's College, Exeter and in 1971 was appointed Bursar and Clerk to the Governors of Exeter School. He was held in great respect and affection by all members of the staff, from groundsman to headmaster. On his second retirement in 1982, and in recognition of his enormous contribution to the school, he was elected a governor – a rare and singular honour. In his retirement he was also Governor of Ravenswood Preparatory School, Honorary Secretary of the Exmoor Society, Treasurer of the Devon Branch of SSAFA and Treasurer of the Tiverton Branch of the Citizens Advice Bureau.

Above all his family was important to him, his wife Sheila, his three sons, Jeremy, Nigel and Nicholas, their wives, ten grandchildren and one great granddaughter. His home in Devon was a happy retreat, so often full with visiting family and friends and the succession of beautifully mannered labradors which Robin trained himself.

PVH AJIP CStAW JRMW

Col R F Parker MBE (p302)

LIEUTENANT COLONEL R E YOUNG DSO DFC BSc

Born 2 August 1915, died 18 April 1995, aged 79 years.

RALPH (better known as George) Young was educated at George Watson's College, Edinburgh, where he graduated with first class honours in civil engineering in 1935 at the age of 19.

Commissioned into the Royal Engineers in 1936, the outbreak of World War Two found him in Hong Kong and in 1940, because of the shortage of pilots, he volunteered for service with the RAF in the Army cooperation squadrons, then equipped with Lysanders.

George was one of five sappers who volunteered (the others were Tony Davis, AE J M Perkins, Basil Clapin and Gil Cole) all of whom miraculously survived the secondment. On completion of his training, the need for fighter pilots took priority over Army cooperation, so George continued his war as both a fighter and bomber pilot, with distinction. He flew numerous types of aircraft on a variety of missions with many different squadrons, surviving 52 operations in Lancaster bombers as part of Air Vice Marshall Donald Bennett's Bomber Command Path Finder Force.

Shot down and wounded by a German night fighter while on a bombing mission to Berlin on 28 January 1944, his Lancaster bomber exploded killing four of his crew. George was saved by the seat type parachute which he always insisted on wearing, and he and two other surviving crew members were taken prisoners of war.

Being wounded by shrapnel in the back of the neck and knees, George spent a short time in hospital before being put in *Stalag Luft III* (arriving just after the "big breakout") where he remained until the end of the war.

He was awarded the Path Finder Force badge in July 1943, the DFC in October 1943 and the DSO in March 1944. He flew a total of 1462 hours with the RAF.

After his release in 1945, he served in Transport Command with the RAF in Palestine.

When he returned to the Corps after the War, his hope had been to go to Staff College, but he was told by a certain senior officer "the trouble with you, George, is that you missed the war," and from a sapper's point of view that was true. However he made up for this by serving with the Sappers in Benghazi, Palestine, Egypt and Cyprus, and completing a period as CRE (Highlands) and Chief Instructor E&M School Chatham, before finally retiring in 1970.

Leaving the RAF with the rank of wing commander to be a major RE, it is a measure of the man that he made this very considerable change in his circumstances with exemplary dignity, and immediately became a very respected and popular officer with all ranks. His unique brand of humour was of particular appeal.

Dick Bettison remembers their first meeting when George arrived at 8 TBRE, Lochmaben – "What transport do I have?" (Reply) "A Willis Jeep, Sir". His reaction was a pause, a scratch of the head, a wry look and then – "You know, Bettison, life has its quirks. Yesterday I had a fast North American One Place Pursuit Ship, today I have a bloody Jeep." Just before leaving the RAF he had delivered a Mustang to RAF Leuchars.

During the severe winter of 1947, George played a very important part cooperating with local authorities and coordinating the tremendous job of snow clearing. He did so much for local farmers in the Solway area that he was welcome wherever he went. Leaving for Chatham in the spring of 1948, those who owned shotguns gave him a *feu de joie* send off which pleased him greatly, and of which he spoke for many years.

He ran the RE Flying Club for some time, and flew many hours with the Corps for pleasure,

Lt Col R E Young DSO p303

entering a King's Cup Air Race in 1950 with Colonel "Jumbo" Thomas, a former Chief Engineer HQ Scotland. He flew until the age of 74 when health reasons prevented him from continuing.

On retirement he moved to Scotland and took a great interest in the local TA unit, 104 (City of Edinburgh) Field Squadron RE (V), attending many parades and functions, and was delighted when invited to take the salute at one of the Armistice parades.

Always a great raconteur, he was a man of iron principles with a razor sharp intellect plus a wicked sense of humour, all of which never left him. He mellowed wonderfully into old age and was much loved and appreciated by all who knew him.

DNS

LIEUTENANT COLONEL "DICK" STAFFORD MC

Born 18 July 1921, died 28 May 1995, aged 73.

LIEUTENANT Colonel "Dick" Stafford, was awarded the MC for gallantry during the Rhine Crossing in March 1945.

The Rhine at this point was between 400 and 500yds wide and liable to increase to 1000 at high water. The average speed of the current was 3½ knots, and the crossing therefore required the organization of an inland amphibious operation.

Stafford was with 617 Assault Squadron, which had to build raft ferries to carry the heavy tanks of 8 Armoured Brigade over and return with information. He was in charge of the squadron reconnaissance party, and had the task of reconnoitring the far bank of the river for landing sites.

On 23 March Stafford lay low with his troop at Honnopel while a massive barrage of fire raged close overhead. At 11pm he crossed on a "Buffalo" amphibious vehicle with the 1st Battalion, Black Watch, but was put ashore on a heavily mined beach well downstream of the proposed landing sites.

Stafford discovered that the first wave of infantry had encountered a minefield on the beach and several men had been killed, others wounded. He decided that the safest way to proceed upstream was to wade in the river itself. But this proved more difficult than expected, because of the weight and bulk of the equipment they were carrying, and the problems of negotiating the groynes protruding into the river and creating sandbanks.

Throughout the operation they were subject to well-aimed mortar and sniper fire. Stafford became concerned when he noticed one sniper following his progress with extraordinary accuracy in the dark and realized that every time he stooped forward to prod for mines or cross a groyne a hand torch on his belt switched on, flashing a vivid green light.

They found two further minefields. As Stafford's radio had been rendered useless by immersion in the water, he persuaded a "Buffalo" operator to pass on a message for him (although this entailed an unauthorized switch of frequency).

The selection of a landing site was further complicated by the presence of stranded amphibious duplex drive tanks but eventually Stafford found a suitable area, wading up to his neck in the icy

Lt Col Dick Stafford MC (p304)

water in the process. The first Allied heavy tank then landed at the point he had identified.

Although their troubles were by no means over, the sappers, working 12-hour shifts, managed to strengthen and expand the landing site so that more tanks and self-propelled guns could come ashore. Stafford's initiative, persistence and stamina had made a vital difference at a juncture when delay would have been disastrous.

Richard Howard Stafford, a descendant of the Staffords and Howards who figure prominently in mediaeval and early modern history, was educated at Malvern before being commissioned into the Royal Engineers in 1941.

He was then posted to assault engineers, the units equipped with specially adapted tanks and other devices designed for assaults over beaches, antitank ditches, and through enemy strongpoints.

In April 1945, the month after the Rhine Crossing, Stafford took part in the liberation of Arnhem, with his troop of AVRE (Assault Vehicles Royal Engineers) firing petards and Besas in the burning streets.

At the end of hostilities in Europe he returned to Britain to prepare for the Far Eastern campaign, but plans were changed when the Japanese surrendered in August 1945. He subsequently became regimental adjutant and then squadron commander.

His overseas postings included BAOR, the British Military Mission in Athens, and an appointment as adviser to the Australian Army in Sydney, where he played a major role in reshaping the Australian engineer squadron.

He next went to the Royal Military College of Science at Shrivenham and then to the Staff College, Camberley. On graduation he was appointed GSO2 in the War Office, and afterwards had a stint as chief instructor at the RE Training Regiment at Cove, Hants.

Immediately before the independence of Ghana in 1957, Stafford was seconded to that country's army and undertook engineering works, for which he was mentioned in despatches.

He then had a further posting to BAOR, before commanding TA regiments in the north of England, based at Gateshead. His final posting was as GSO1 in the South-East Asia Treaty Organization in Bangkok.

On retirement from the Army, Stafford was recruited by Richard Costain Ltd, for which during the next two decades he built up one of the country's leading safety programmes.

He became chairman of the Construction Industries' Health and Safety Committee, and when work on the Channel Tunnel was started he was drawn in to supervise safety arrangements, first for Costain and then for all the construction teams. After relinquishing full time employment he was retained as a consultant until the engineering work was near to completion.

Dick Stafford was a keen all-round sportsman, in youth a talented cricketer, later a competent sailor, skier and golfer. He had a remarkable ability to make friends in all walks of life.

He married, in 1947, Vivien Scott; they had two daughters.

Some of his friends who knew him well, wrote in to say that they thought the above obituary was excellent, but that they would like to add the following postscript:

"Many of us will hold memories of Dick.
As a subordinate reliable, loyal but no yes-man.
As a superior a kindly and encouraging mentor.
As a colleague steadfast and cheerful.
As a friend trusty and unchanging.
Above all an officer, a gentleman and a gentle man."

PJMP REW PL DJL JDB EJS AHW

COLONEL K BOYES TD DL

Born 17 October 1926, died 25 April 1995, aged 68.

COLONEL Ken Boyes was educated at Kings College Tynemouth, and Manchester University. Commissioned into the Bengal Sappers and Miners in 1945, he served in India until 1947, and, on completion of national service, joined the Territorial Army in Hull where he was, at the time, working for East Riding County Council.

Numerous changes of jobs in the 1950s resulted in Ken serving in a number of different TA units in Wales and Scotland before assuming command of the Northamptonshire Yeomanry in 1961. Ken took a year's sabbatical in 1962, while his civilian work took him to Pakistan, but he resumed his TA career on his return to live in West Yorkshire, taking over command of 127 Engineer Regiment until its disbandment in 1967 as a result of the reorganization of the TA. Having commanded his regiment he transferred to the reserve.

Moving to Newcastle in 1968, in 1969 Ken was delighted to be offered the chance to resume an active role in the TA when he was appointed Deputy Commander of 29 Engineer Brigade. Serving in that appointment for just over two years, he again transferred to the reserve.

Another career change saw Ken move to Leicestershire in 1974 and appointment as Managing Director of the Murphy Group. Despite heavy work commitments, he found time to serve on the Leicestershire Committees of the TAVRA and the Army Benevolent Fund and was the Leicester area coordinator for the Duke of Edinburgh's Commonwealth Veterans Appeal.

Appointed Deputy Lieutenant of Leicestershire in 1989, he served as President and Chairman of Rutland District Scouts and on the committee of the Order of St John.

Ken had a great interest in skiing and golf and was delighted in 1994 to be appointed Captain of the veterans at his local club.

All through his life Ken had the great gift of making friends, it is a tribute to his popularity that over 200 friends assembled for his funeral service. He married, in 1951, Jean Kenyon, and is survived by his wife, his son, Mark, and daughter, Kate.

RMLB

CAPTAIN T G WADE

Born 3 September 1927, died 19 August 1995, aged 67.

THE yacht-racing fraternity in particular, and society in general, have lost a fine man. Although it was a great shock to his wife, Barbara, his family and friends, Terry died as he would have wished. He was racing his well-known Dragon, *Avalanche*, at the Royal Corinthian YC (where he was once commodore) when, having completed the first of two match races, he was preparing for the start of the second and he dropped dead at the helm after a massive heart attack.

Initially, Terry wanted to join the RAF, but his father insisted that he join the Sappers and in due course he converted to a regular commission. Unfortunately he had to resign his commission in 1956 to join his father's engineering company in the final years of the then Gold Coast. They all had to pack up and return to UK in 1961 and were

Col K Boyes TD DL (p306)

not allowed to bring any company or private assets, property or money out of Ghana. He had to start in business all over again.

Terry, an eternal Peter Pan, put 100 per cent effort into everything he did – work, golf, squash, sailing and family. Of course he intended – and loved – to win. In the early 50s I raced against him in Royal Naval Sailing Association dingies at Chatham and sailed once or twice with him in *Annasona*. It was, I think, in 1953 that I was his mate in *Annasona* in the Royal Ocean Racing Club North Sea Race. Two or three weeks previously he had broken his leg skiing and had a plaster from his foot to his groin. He was not going to let this put him off his race, so he cut a lorry wheel inner-tube, sealed one end and slid it over his foot and up the plaster, and completed the three-day race.

He first became known as a national championship man when racing a Hornet in the late 50s, but his international status was established in 1966 when he won the World Cup at the World Championships in Poland. He continued racing in international championships in his Soling in the 70s in the early days of that class, and would delight in beating the then Crown Prince Harald of Norway.

Terry then had several Dragons, all named *Avalanche*, racing them spectacularly and successfully for years. He really became the Dragon Class "father figure" and only recently, at the age of 67, was the highest placed British skipper in the Gold Cup.

He and Barbara married in 1949 and had four children.

JBH

Correspondence

MINOR CENTREPIECE OR TROPHY?

From: Major R L Smallman

Sir, – The photograph opposite shows a circular plinth of wood, 10ins in diameter, 12ins high, with an extraordinary concoction in metal (possibly silver plated) on top. There is a hollow ring, with irregular pierced holes on the inside, supported by the fish-tails of three sea horses. "Let there be light" is spelt out on the plinth in individual letters. One engraved plate states that it was presented by XXXXX, and another that it was won by yyyy. The whole (assuming that it is complete!) was found in the RE Headquarters Mess.

Would any reader who is able to shed any "light" on what it was, for what it was presented and when, please contact Major Leslie Smallman, RHQ Assistant Secretary on ATN 766 (BT (01634) 82) 2402, or write to: RHQ RE, Brompton Bks, Chatham, Kent, ME4 4UG.

WHERE 2?

From: Major D G Bowyer BA

Sir, – Major Strong's article *Where 2?* is to be welcomed as a stimulus for debate. May I be amongst the first to enter the fray by taking issue with at least some of his contentions?

Firstly, he suggests that skills needed only in war may be assigned to the TA. If this is correct then the implication is not just that much of the Corps can be relegated to reserve status, but also most of the Royal Armoured Corps, the Royal Artillery and a fair portion of the Infantry. Looking wider than our own service, Major

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Strong's contention might also be taken as argument for Tornados, Jaguars, Harriers and even nuclear submarines to be manned by part-time servicemen. No, skills needed only in wartime cannot all be assigned to the TA; the Regular Army must also maintain its war-fighting capability. For our own part, the maintenance of a wide range of capabilities with utility across the spectrum of conflict is our strength, and a vital guard against becoming the paramilitary branch of McAlpines – and thus prone to civilianization, contractorization and replacement by "high-readiness reserves."

Next, to the main thrust of Major Strong's article: that we should focus our staff careers on G4 Quartering. Whilst I would not wish to question the importance of this staff branch (after all if a staff branch is not important perhaps it should not exist), and I accept Major Strong's views on the scope for its expansion, nevertheless I find the remainder of the argument somewhat bizarre. Surely the way to have "a strong voice and influence at every level" is not by occupying G4 Quartering posts but by having a strong cadre of staff trained officers (psc and sq) capable of filling high grade appointments in all branches. And will we really encourage the brightest and the best into the Corps, with reduced opportunities to command, and the prospect of a staff career focused on G4 Quartering?

Having endured many tortuous lectures on modern management theory at Royal Military College of Science, I would not wish to be associated too closely with the views of management gurus, but surely one thing comes over loud and clear: in lean times survival and prosperity lie in diversification not specialization? Yours faithfully, – D G Bowyer.

From: Major J A R Strong

Sir, – I thank Major Bowyer for firing the first return shot. My line about skills needed only in war being able to be assigned to the TA was not intended to recommend this as a policy, but merely to reflect that this approach has been explored several times, despite the obvious counter arguments. Within the Corps we have examples from the past: movement light is a TA only skill and railway repair has all but disappeared from the regular Corps. My point was that responsibility for tasks of constant importance, throughout the spectrum from peace to war, gives better protection against cost cutting scrutiny.

In his main point Major Bowyer has got to the heart of the matter. Does the Corps gain influence by having individual staff officers spread across all branches? I believe that, while this enhances the general reputation of the Corps, it has only a marginal effect on the influence the Corps can exert. My argument is that we would be stronger by having a CRE of high rank in every headquarters, to speak authoritatively for the Corps. The absence of such a figurehead in the new Permanent Joint HQ, for example, must limit the Corps' ability to influence high level operational planning.

Rather than get too bogged down in the detail of my proposal, perhaps others have a vision of the future for comparison. We are rightly encouraged to stick to the party line in all arms company but I feel that we can afford to be introspective in the pages of the *Journal* so that we may learn from each others ideas. Yours, – A Strong.

UNITED NATIONS' INHUMANE WEAPONS CONVENTION, VIENNA

The following letter was prompted by Lieutenant Colonel Sage's article on antipersonnel mines, which appeared in the April issue of *The RE Journal,* page 42.

From: Ian Woodmansey, Oxfam UK and Ireland

Sir, – Between 25 September to 13 October I had the privilege of attending (as an observer) the review of the UNs' Inhumane Weapons Convention in Vienna. The purpose of the review was for governments to agree tighter controls on the use of antipersonnel mines (apmines).

The need for tighter controls has been highlighted by organizations such as Save the Children and Oxfam. With the end of the Cold War, and increased access to war zones by non-governmental organizations, it has become apparent that apmines are indiscriminately killing civilians in their tens of thousands. Children are frequently victims. Apmines are denying vast tracts of essential land to productive use. Roads, fields, paths, wells, schools, hospitals, and religious shrines are often mined, with catastrophic results for local populations. In the course of our work, Save the Children and Oxfam see these results in countries as diverse as Bosnia, Afghanistan, Angola, Cambodia and northern Iraq.

What can be done? The first step is to clear mines already in the ground to make land safe for

the return of civilians. Past victims need to receive support, often through the provision of prostheses and physiotherapy. However, these actions are hardly a satisfactory solution if new mines continue to be sown. In 1993, for every mine cleared by the UN, 20 new mines were laid somewhere in the world.

The core issue is that compared to their military utility, apmines have disproportionate effects on civilian populations. It is clear that decisions on apmine use cannot be formulated in a military vacuum. The basic tenets of humanitarian law dictate that there are limits to the means that soldiers may use to achieve their ends; there must be a balance between military needs and consequences to the civilian population. Recent studies have shown the impact of apmines on civilians to be extremely severe, and there is little evidence that the military advantage gained by their use is overwhelming.

Some governments gathered in Vienna argued that apmines are essential weapons, and any controls must take this into account. But there are senior ex-soldiers in the US, UK and France who argue that apmines are not essential, merely useful. These same men argue that apmines are disproportionate and uncontrollable, and should therefore be prohibited. A leader in the *Daily Telegraph* on 16 October 1995 challenged the MOD on its "essential weapon" argument, detecting "a whiff of Maginot line about it". The *Telegraph* asked: "When was this military doctrine on the indispensability of mines last thoroughly examined?"

Some governments also argued that apmines are acceptable if used responsibly. But in practice they are not. Today's conflicts tend to be vicious civil wars where atrocities are commonplace. Apmines have not been used responsibly in Afghanistan, or Bosnia, or Chechnya, or Cambodia, or Georgia, or Rwanda, or in other recent conflicts. So arguments about responsible use help to legitimize a weapon which is rarely used in this fashion. Even if minefields are marked and mapped, civilians will still be killed if that land is essential for their survival. I have seen farmers in Angola cultivating in known minefields; they had the choice of starving or working that land.

Unfortunately, experts gathered at Vienna were unable to reach a conclusion to their discussions. They will reconvene in January and then April 1996. Save the Children and Oxfam believe that it is time for a transparent discussion on the use and impact of apmines, bringing together experts from both military and humanitarian agencies. We are only too keen to talk. Once the whole picture has been examined, issues of military value can be put into context. We believe that, because of their disproportionate effect on civilians, it is necessary to establish an international norm stigmatizing the use of apmines. This position is supported by, among others, a growing number of states, the Secretary-General of the UN, UN Children's Fund, the European Parliament, the Organisation of African Unity, the International Committee of the Red Cross, and over 350 non-governmental organizations worldwide. We hope the UK will soon join this list, and push for an international ban. Yours sincerely, – Ian Woodmansey, Oxfam UK & Ireland and on behalf of Save the Children.

I THANKED MY STARS FOR THE PRISMATIC COMPASS!

From: Lieutenant G P Webb PEng

Sir, – Those who have travelled and trekked extensively in the hills of northern India, the Himalayas, and the hill states of Burma will know that in many regions, the areas between accurately surveyed land have been filled in by what might be called, "imaginative cartography."

I have a number of tales to tell about inaccurate map details, one especially tragic, but the present account concerns the cross-country march in Burma referred to in my letter in the *RE Journal*, December 1992.

At the time with the Madras Sappers and Miners, I had to take my platoon and a Service Corps column of mules under command, from our camp to a new location of the Brigade, given in a map reference.

Before setting out I calculated the compass reading from our camp to the Brigade location – the distance would have been 20 miles or so.

We at first followed the map, but this became increasingly difficult as the topography of the ground did not correspond with what was shown on the map. Finally I was forced to take compass readings to ascertain the direction, particularly when we would come to diverging ravines, which clearly were not shown on the map.

At this juncture, following a certain murmuring among the sappers, the jemadar and havildar came to me and said "Sahib, we think we are lost and should turn back." I said "No, we will rely on the compass reading and proceed." So we went on, my having to indicate direction by frequent compass readings.

Towards evening we approached a steep hillside, on the crest of which we could see activity – ours? Or the enemy? Coming nearer we noted the reassuring sights and sounds of a 14th Army unit – they were our troops!

With renewed vigour we scrambled up the trackless hillside, to find that indeed it was our Brigade on the hilltop. Brigade had reached the crest by a dirt road on the far side, whereas we had marched, as the crow flies, through forest, flood, and scrub.

I was never so relieved in my life to reach an appointed rendezvous, and thanked my stars for the prismatic compass! – Yours, Geoff Webb.

Reviews

SHOW ME THE WAY TO GO HOME
The Story of Medloc 1945-1955
MAGGIE HURST AND CHRIS ELLIOTT

Published by Medloc Enterprises Ltd, Obtainable from the RE Museum – Price £6.50 including postage and packing
ISBN 0 9525963 0X

MEDLOC or Mediterranean Lines of Communication was the system set up to bring servicemen and women home from Europe and the Middle East on leave and for demobilization after the Second World War and, later, to move national service personnel to and from their commands.

The main route ran from Villach in Austria to the Channel ports with subsidiary routes from Toulon and Milan.

At first RASC transport was used but once the Continental railway systems had been repaired, trains were used. In ten years the system carried over three million passengers.

Medloc is barely mentioned in the official histories so this very readable book fills a gap. The story is told through personal accounts from Movement Control staff and passengers.

It is a fascinating story and the book should appeal to anyone who travelled on the system.

JEN

PLUTO: PIPE-LINE UNDER THE OCEAN
The Definitive Story
ADRIAN SEARLE

Published by Shanklin Chine, 12 Pomona Road, Shanklin, Isle of Wight, PO37 6PF – Price £9.95
ISBN 0 9625876 0 2

ADRIAN Searle is a writer on historical subjects relating to the Isle of Wight and is the author of "Isle of Wight at War 1939-45", published by the Dovecote Press in 1989.

The author claims "PLUTO: Pipe-Line Under the Ocean" is the first comprehensive account of the operation in book form. The story is told in a readable style with a good selection of photographs drawn mainly from the Imperial War Museum. Technical details are relegated to appendices.

The book deals principally with the cross-Channel lines and their shore installations. It also covers their postwar history and there is a chapter on the continental network which extended from the coast into Germany.

Whilst the contribution of the oil industry and the Royal Navy is covered in some detail there is only passing reference to the work of the Royal Engineers.

An appendix lists the military units involved from which it is clear that the Corps made a substantial contribution. Yet only our responsibility for camouflage is mentioned in any detail. Nor does the Corps feature in long lists of references and acknowledgments.

Nonetheless it is a very readable book.

JEN

PILLBOXES ON THE WESTERN FRONT
PETER OLDHAM

Published by Pen and Sword Books Limited, 47 Church Street, Barnsley, South Yorkshire, S70 2AS – Price £18.95
ISBN 0-85052-418-0

THIS timely book has re-exposed a subject which has been neglected as a serious study in English language publications for some years.

Peter Oldham is a specialist in concrete technology with an interest in military matters. He has brought this background to bear in his thoughtful and well illustrated study of the design, construction and use of concrete pillboxes on the Western Front in the First World War. This has clearly

been a labour of love. He reminds us that in the First World War, the term "pillbox" became a generic name for any concrete shelter. This reflects the coverage of his book which includes not only buildings with firing loops and gun ports but field hospitals and kitchens, command and communication centres, observation posts and concrete adaptations to pre-existing civil buildings in the war zone.

Coverage is given to the respective building methods of the Germans and the British, to approaches to camouflage and many other facets, including some mention of coastal defences. There are some invaluable appendices which include drawings of pillbox types. The consideration of the performance of concrete under fire is of professional interest to the serving soldier as well as to the historian. The achievement of sometimes high quality concrete structures in a combat environment is described as well as how these structures fitted into their tactical and strategic context. Peter Oldham explains how the British did not take advantage of the use of concrete structures as a battlefield aid as seriously as did the Germans until the last 18 months of the war. Many British soldiers had cause to praise the German designers and builders for the quality and strength of their concrete work when they found themselves under artillery attack in captured positions. Some German concrete defences were built with British cement obtained from a third party!

The book is more than a history and analysis. It is also intended as a guide for the visitor to the existing pillboxes of the Western Front. However, its gazetteer could have been better ordered to achieve a more useful presentation. Location maps might also have been helpful. In the chapter on the evolution of the military use of concrete there is no mention of the later nineteenth century Chatham ring fortress. The latter had included the innovatory Twydall Redoubts with their casemated shelters. For more than 20 years before the First World War concrete shelters had been used in British coastal defence batteries. The multi-angled British pillbox is described and its influence on the design of pillboxes in Britain during the Second World War referred to. It would be interesting to work through a possible connection between this shape and the plan form of the blockhouses used in the South African War.

The book is a valuable contribution to published matter on this subject and is recommended reading for those interested in military engineering or the First World War more generally.

VTCS

Journal Awards

The Publication Committee announces the following awards for articles of special merit published in the August 1995 *Journal.*

A Mixture of Endurance, humour, and Gory Too, but This is War
by Sapper W G Hughes – **£100**

The Noble Sapper on the Box, Charles Robson RE
by Lee Stevenson Esq – **£50**

Engineer Operations in Support of Humanitarian Operations – Rwanda, Operation Gabriel August to November 1994
by Major I S James MBE – **£50**

A Sapper in Spain
Major A M O Miller – **£25**

BRITENGBAT in Bosnia – Operation Grapple 5
Captain T R Urch – **£25**

Abbreviations Used in This *Journal*

AD	Assistant Director
AG4	Adjutant General 4
AGRE	Army Group Royal Engineers
Amph	Amphibious
BAOR	British Army of the Rhine
BEF	British Expeditionary Force
Bty	Battery
Cdo	Commando
CO	Commanding Officer
Coy	Company
CRE	Commander, RE
CVHQ	Central Volunteer HQ
DAAG	Deputy Assistant Adjutant General
DUKW	D=1942/U=Utility/ K=All wheel drive/ W=twin wheeled vehicle
Engr	Engineer
EOD	Explosive Ordnance Disposal
EOKA	Ethniki Organosis Kyprion Agoniston (Greek-Cypriot terrorist group)
etc	et cetera
Fd	Field
ft	foot or feet
GOC	General Officer Commanding
GSO	General Staff Officer
HMA	Her Majesty's Ambassador
HMS	His/Her Majesty's Ship
hr/s	hour/s
HQ/s	Headquarter/s
ICI	Imperial Chemical Industries
IGDT	Inspector General Doctrine and Training
in/s	inch/s
km/s	kilometre/s
LAND	Land Command
LANDCENT	Land Central
lb	libra(e) (pound/s weight)
m	metre/s
MGB	medium girder bridge
MLC	military load class
mm	milimetre/s
MO	Medical Officer
MOD	Ministry of Defence
MVA	megavolt amperes
MWF	Military Works Force
NATO	North Atlantic Treaty Organization
NB	nota bene (note well)
NCO	Non Commissioned Officer
OC	Officer Commanding
OOTW	operations other than war
OP	Observation Post
orbat	order of battle
Pet	Petroleum
Pl	Platoon
psc	Staff College Course
Q	Quartermaster
"Q" staff	Quartermasters' staff
QM	Quartermaster
QMS	Quarter Master Serjeant
QVO	Queen Victoria's Own
RAF	Royal Air Force
RAOC	Royal Army Ordnance Corps
RASC	Royal Army Service Corps
RCT	Royal Corps of Transport
RE	Royal Engineers
Regt	regiment
REME	Royal Electrical and Mechanical Engineers
RHQ	Regimental HQ
RLC	Royal Logistic Corps
RNSA	Royal Naval Sailing Association
RQMS	Regimental Quarter Master Sergeant
R Signals	Royal Signals
RSM	Regimental Sergeant Major
RSME	Royal School of Military Engineering
SBA	Sovereign Base Area
Sjt	Serjeant
SNCO	Senior NCO
SO	Staff Officer
Sp	Support
sq	Staff Qualified
Sqn	Squadron
TA	Territorial Army
TAVR	Territorial and Army Volunteer Reserve
TAVRA	TA Volunteers Royal Artillery
TBRE	Training Battalion RE
Tp	Troop
Trg	Training
UK	United Kingdom
UN	United Nations
US	United States
V	volt/s
(V)	(Volunteer)
VE	victory in Europe
VIP	very important person
VJ	victory in Japan
Wksp	Workshop/s
WO1/2	Warrant Officer Class 1/2
YC	Yacht Club

Articles sent on computer disk for the Journal, Supplement or for the Sapper magazine

Quite a few articles are now arriving in our publications department filed on 3½ inch floppy disks and WE ARE VERY HAPPY about this.

However, some problems are being encountered because we use special publishing software here (not word processing packages), on Applemac system machines, not DOS.

To ease our burden could those intending to send information on disk, or who are aware of someone who intends to send a disk, take note of the following simple pleas:

- Type straight text only, ie no formatting other than a manual carriage return at the end of a paragraph, and only one carriage return between paragraphs, not two.
- Have all text left justified only, ie not justified or centred.
- No "Capital only" headings – all headings should be upper and lower case.

And last but most important!

- Save files as ASCII files and add the extension ".txt" after the file name ie BRIDGE.TXT.
  For Word Perfect, use the option "ASCII Delimited Text Only (DOS)".
  ASCII stands for "American National Standard Code for Information Interchange" and files saved as such can be picked up by any system. Adding .txt immediately after the file name helps the computer to identify the type of file it is dealing with.

We thank you in advance for your cooperation. and look forward to hearing from you soon.