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Editorial

THE memoirs of two distinguished Sappers, whose names will always be associated with arguably one of the greatest military engineering enterprises ever, that of the construction of the Mulberry Harbours, are included in this issue: those of Brigadier Walter and Colonel Sir Alan Harris. Coincidentally, a book review of "A Harbour Goes to War" is also included that relates yet another, perhaps less well known, part of the story of the construction of the major components of the Mulberry before their transportation to the beaches of Normandy.

Another common thread in this *Journal* is that of Kitchener, whose name appears in no less than three articles and reviews. *It May Have Seemed A Good Idea At The Time* is a well-researched article about the Boer War statues which were brought back from South Africa by Lord Kitchener and displayed for a short time in Brompton Barracks. Two of the figures were used as models for the impressive Boer War silver centre-piece commissioned by the officers of the Corps in commemoration of the war. *In Proud Memory* describes a tour of the battlefields in South Africa and the Sapper war graves and memorials there, many of which have been sadly neglected and are now in a poor state of repair. It would be nice to think that the Corps, perhaps through contacts with our Alliance partners, the South African Corps of Engineers, might be able to do something about it one day. To complete the Kitchener theme, a review of a recently published biography of him appears in the Book Reviews section.

A Corps operations and exercises update is now being published regularly in *The Sapper* magazine. It is clear that although the intensity of activity might vary year by year, the variety and challenge appear to remain undiminished. *Belize – The Opportunity of a Lifetime* makes a good case for the benefits of training in a challenging environment but the exercise it describes also gives young Sappers an unforgettable experience of other people and their culture which can only but help to make them more rounded and balanced individuals.

The Balkans and Sierra Leone remain at the forefront of the Corps' operational focus and *Where Next – A Year in the Life of a Specialist Team* gives an insight into the continuing engineer activity in both of these places after the initial warfighting phase of operations ended. The transition from military combat/construction engineering in theatres of operation to the involvement of the UK civil engineering industry has not been as well coordinated as it could be. This problem was aired in the recent joint professional meeting between the Institution of Civil Engineers and the Institution of Royal Engineers under the title *Engineers in Future Conflict*, based on recent experience in the Balkans in particular. A transcript of the presentation will appear in the next *RE Journal*.

The Institution is currently involved in sponsoring three new books, in addition to Volume XII of the "History of the Corps of Royal Engineers". The first, "One More River to Cross", the story of British military bridging, written by Colonel J H Joiner and jointly sponsored by the Institution, Mabey & Johnson Ltd, Williams Fairey Engineering Ltd and Vickers Defence Systems, has recently been published by Pen & Sword and is on sale at £25 through the Corps Enterprises Shop. A review of it will appear in the next *RE Journal*. A second book, "The Portraits, Paintings and Silver of the RE HQ Mess", an in-house production for limited distribution, initially to major units and headquarters later this year, is an update of a similar book published in 1963 and includes over 200 colour-plate photographs of the Corps' major paintings and silver centre-pieces. It is also proposed to produce a CD of the book for sale. Lastly, an ambitious project, to produce a "Corps' Heritage" book which will be an illustrated history of the Corps' achievements and treasures, is underway with a projected publication date of 2003. We owe a debt of gratitude to Colonel G W A Napier for his work as the project officer for both the heritage book and Volume XII of the "History of the Corps of Royal Engineers".

The Institution has progressed well in the past five years under the direction and guidance of our President, Lieutenant General Sir Anthony Pigott CBE, who is to be congratulated on his appointment to KCB in the recent Queen's Birthday Honours List.

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Belize – The Opportunity of a Lifetime

MAJOR T R URCH MBE MA CENG MICE MIMGT

Major Tyrone Urch was commissioned into the Corps in 1984. Since then, a varied and extremely enjoyable few years has seen him serve in Germany, the United Kingdom, Belize, Hong Kong and Bosnia-Herzegovina. After chartered engineer training and attendance on the inaugural Joint Services Command and Staff College course at Bracknell, he completed two "sweaty" years at Headquarters Land Command as the SO2 G3 Organization and Deployment (Operations). Major Urch is now enjoying two halcyon years as the officer commanding 20 Field Squadron and has recently returned from Belize on Exercise Sailfish.

INTRODUCTION

TWELVE months ago I was flying a desk in Headquarters Land Command Organization and Deployment (Operations) continually wondering if I was going to get home that night and musing at how far away squadron command seemed. Now that I am here at last, it is abundantly clear to me that this is the very best period in my Army career. For those of you who have already commanded your squadrons, please bear with me and skip a few lines. For those who are about to command, stand by for something really special and for those of you that may think sub-unit command is some way off, or who may be at a cross-roads in your careers, hang in there, because the rewards are great.

This article is written on reflection after nearly four months away on a major overseas training exercise in Belize and discusses the deployment, execution, sustainment and recovery of Exercise *Sailfish* from January to May 2001. The article aims to highlight some of the engineering and leadership challenges of the tour in order to draw together some lessons which I feel have benefited the squadron and me enormously. This is not an article full of technical jargon, although there is a smattering for those so inclined, rather it is a collection of experiences that many may be able to relate to.

BACKGROUND

THE Corps of Royal Engineers has been sending squadrons to Belize for several years. In 1995, these deployments were formalized to become an annual training exercise called *Sailfish* run between February and May. The aim of these exercises is twofold[1]:

- To provide an opportunity for exercising squadrons to practise deploying to, and operating in, a theatre with a sub-tropical climate.
- To assist the British High Commission in supporting the Belize Government with projects that are designed to enhance the culture and quality of life in Belize.

The prolific rise in operational deployments over recent years (eg Bosnia, Macedonia, Kosovo, East Timor and Sierra Leone) has reinforced the requirement to keep our artisan and military trades as current as possible. Exercise *Sailfish* is a rare opportunity for Sapper squadrons to practise expeditionary skills without the added pressure of being deployed on operations and is, therefore, highly valued by the Corps.

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[1] BHC, "Royal Engineers Training in Belize: Exercise *SAILFISH*", *Britain in Belize*, Issue No 9, Sep 00, P 6.

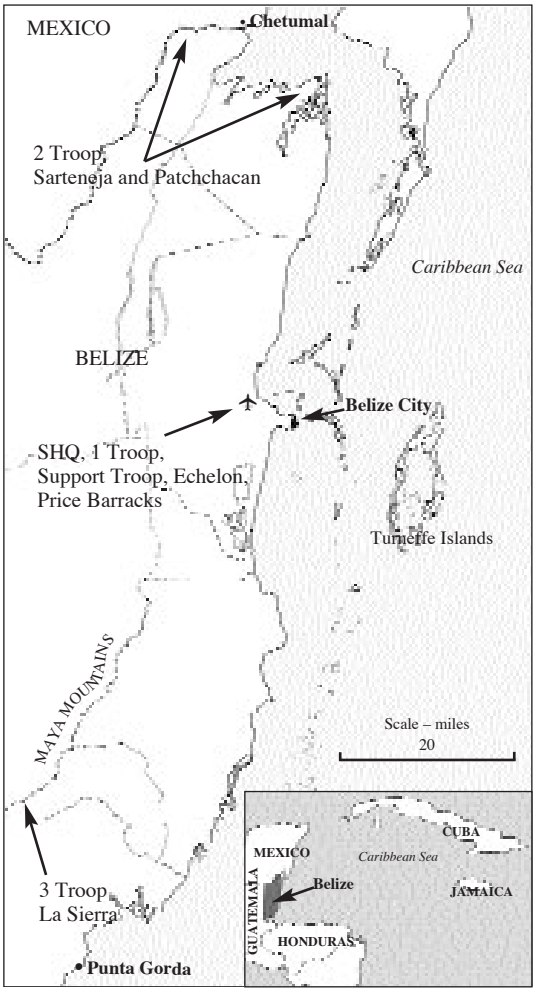
BELIZE

BELIZE lies on the eastern coastline of Central America, bordered on the north by Mexico, on the west and south by Guatemala and on the east by the Caribbean Sea. It is separated by sea from its other neighbour to the southeast, Honduras *(see map right)*. Formerly British Honduras, but an independent nation since 1981, Belize is now a member of the British Commonwealth of Nations. The country is approximately the size of Wales, with a mainland some 180 miles long and 68 miles wide. It has over 200 cays (islands) offshore, located inside the second longest coral reef in the world.

EXERCISE SAILFISH 2001

EXERCISE *Sailfish* 2001 was the sixth in the series of annual RE special-to-arm squadron exercises. 20 Field Squadron (140 all ranks) deployed to three widely dispersed locations during the period 24 January to 10 May 2001 to carry out construction projects in support of the Ministry of Defence and the Belize Government. Squadron HQ and echelon were based at Price Barracks (formerly Airport Camp) some 12 miles west of Belize City. Whilst now run by the Belize Defence Force, Price Barracks is the home of the British Army Training Support Unit Belize[2]. In outline, the task sites, each offering significant construction, leadership and health & safety (H&S) challenges, were as follows:

- **1 Troop.** Collocated with SHQ in Price Barracks, 1 Troop was responsible for the civil, mechanical and electrical fit-out (referred to as Phase 2d) of the south wing of the 25 Flight Army Air Corps hangar[3]. The client for this project was Training Support Command (LAND), (TSC(L)). Materials cost £82,000.
- **2 Troop.** Located in the very north of Belize near the Mexican border, 2 Troop was tasked with new construction and refurbishment works at the Sarteneja and Patchchacan Primary Schools. The client for both schools was the Belize Government, with the Department for International Development and the British High Commission providing £26,000 to cover the cost of materials.
- **3 Troop.** Hidden in the southern Maya Mountains near the Guatemalan border, 3 Troop undertook Phase 4 commissioning work at the Jungle Research Station at La Sierra. This ambitious project was sponsored by the Belize Government's Department of Archaeology with almost all the funds (material costs: £277,000) being raised by sponsorship through Cleveland State University, USA.



Map of Belize showing task locations.

A reconnaissance in December 2000 confirmed my worst fears regarding the time and space problems we were about to encounter. In particular the terrain, road conditions and distances

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[2] British Army Training Support Unit Belize's mission is to advise, provide logistic/administrative support and to assist units exercising in Belize in order to enable them to achieve their training objectives.

[3] 25 Flight Army Air Corps' primary role is that of casualty evacuation support to British Forces. Policy changes have dictated that multi-engined aircraft are to be used in future instead of Gazelles, thus the requirement for larger hangar facilities.

involved would make command and control extremely difficult. For instance, a round trip to all three squadron sites was a journey of approximately 950km and this was to have serious implications for the sustainability of troops on site. My point is – whilst Belize has an enormous amount to offer Sappers from a construction and project management viewpoint, it is the holistic environment that makes it such an outstanding training area. The climate, terrain, duration, communication and resource challenges facing young officers and non-commissioned officers make Exercise *Sailfish* one of the most demanding overseas training exercises on LAND's schedule. The benefits of superb adventurous training opportunities, the chance to practise jungle survival and the added bonus of a period of rest and recuperation (R&R) in the Caribbean also makes it one of the most sought after!

UK Construction H&S Legislation

All Exercise *Sailfish* deployments must comply with UK H&S legislation, most notably the Construction (Design and Management) Regulations 1994[4]. In addition to the Project Sponsor, who was the SO2 Engineer (Training/Projects) at HQ LAND, the following Exercise *Sailfish* appointments were relevant under the above regulations:

- The clients: the Belize government and TSC(L).
- Planning supervisor (PSup): CO 62 CRE (Works).
- The designer or military design authority (MDA): 523 STRE (Works).
- The principal contractor or military construction force: 20 Field Squadron.

Mission and Objectives

One of the most satisfying aspects of Exercise *Sailfish* was the freedom of manoeuvre I had to define the squadron's mission, decide what projects were suitable and then to put together an order of battle (ORBAT) to achieve the mission. A tour in Belize also attracts an abundance of volunteers to fill those difficult trades (eg medics, electricians, surveyors and draughtsmen) that all squadron commanders seek for exercises and operations. The mission, written without the aid of a Staff College "pink" was:

20 Field Squadron is to:

- Deploy, sustain and recover without major incident.
- Conduct special-to-arm trade training in a challenging environment.
- Develop individual leadership qualities in all ranks.
- Foster squadron esprit de corps.

in order to further improve military standards at individual, troop and squadron level.

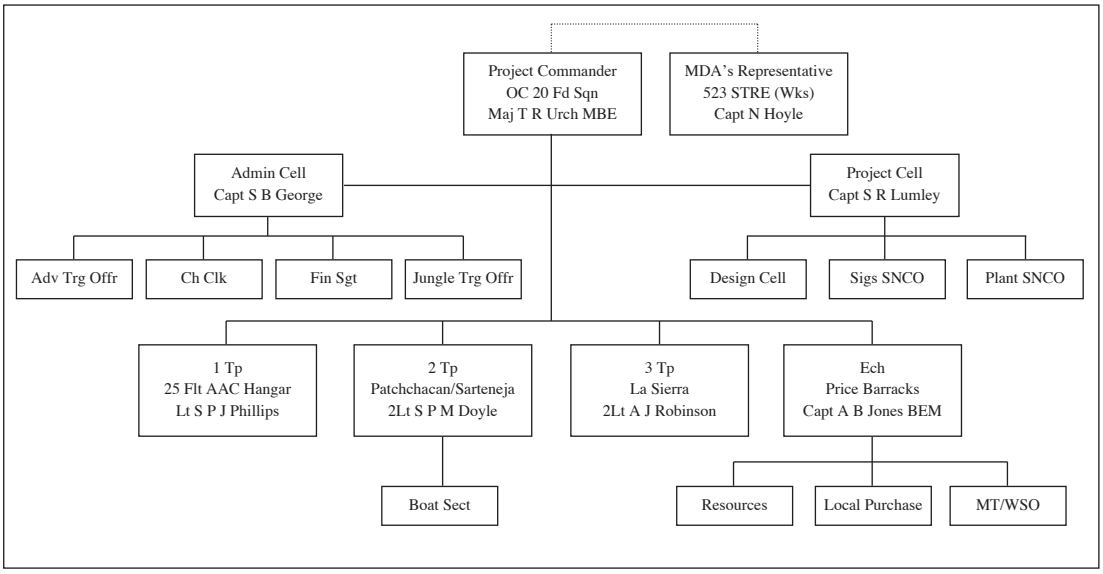
To achieve this, one should clearly not be over prescriptive, and so a series of exercise objectives seemed to be the best way of articulating one's intent. Following the final reconnaissance, my exercise objectives were confirmed as:

- Test squadron headquarters in the planning and execution of a sub-unit overseas deployment.
- Manage and account for £500,000's worth of resources purchased in the UK, USA and Belize.
- Develop officer, non-commissioned officers and sapper leadership qualities in austere conditions.
- Put in place a mechanism to implement all reasonably practicable H&S measures.
- Practise civil, electrical and mechanical construction techniques in tropical conditions to the standards defined by the MDA.
- Set up comprehensive site management techniques.
- Deploy into the jungle for 72 hours as part of an individual survival package.
- Conduct a challenging adventurous training package.
- Enhance individual understanding of other countries' culture through an organized R&R package.

Orbat

Very rarely do you deploy anywhere in the world, either on operations or on exercise, with everything you want; Exercise *Sailfish* was no exception. Having spent two years in G3 O&D at HQ LAND, however, I was painfully aware of the significant impact that supplying individual reinforcements was having on the Corps and the Army in general. I knew that asking for augmentation was neither feasible nor relevant for an overseas training exercise. That said, my request for "volunteers" from the regular and territorial units of the Corps, provided me with more than enough quality soldiers to fill my 140 funded places and leave behind a robust rear party to ensure we had something to return to after four

[4] The Construction Design and Management Regulations apply to all demolition work and construction tasks that last for more than 30 days, have more than five people on site at any one time or involve more than 500 person-days of work.



Exercise *Sailfish* organization.

months away. Based on critical capability gaps in my squadron, I selected a total of 28 individuals to deploy with 20 Field Squadron. I am not naïve enough to think that all commanders are so fortunate, but clearly a 3½-month tour in Belize is professionally rewarding and also "retention positive." For information, the 20 Field Squadron *Sailfish* organization is above.

Being a chartered engineer and squadron commander, I have been following closely the heated discussions[5] about whether field squadrons should deploy with or without specialist engineers under command. In Belize, my squadron had both and I would argue that it makes little difference to project success. What is critical, however, is that everyone works together as a team to reach a common goal (ie the mission). Achieving this is based on stakeholder professionalism, humility and mutual respect; something I learned working as a Sub Agent on Balfour Beatty's Heathrow Express Rail Link project in 1995 when the New Engineer Contract was being developed[6]. I am glad to say the symbiotic relationship between my squadron, the MWF, MES (Works) and all attached clerks of works was nothing but a success. That said, troop and section commanders must be allowed to conduct basic field engineering designs (eg non-equipment bridges in the jungle) from first principles. The Field Army must not lose sight of this essential requirement; MWF will not always be there and nor should they insist on being so.

PHASES

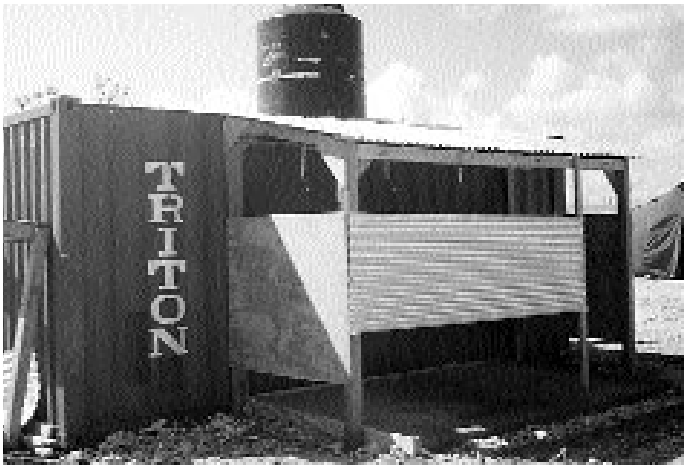
LEANING heavily on my experience of writing deployment orders whilst at HQ LAND G3 O&D, my directive detailed five clear but overlapping phases:

- **Preparation**. Pre-deployment preparation for the exercise was complex, drawn out and I don't mind admitting, quite stressful at times. In many ways, the preparations for Belize were more complicated and frustrating than when I deployed to the Balkans on operations. In addition to the extensive G4 demands of a tropical climate, an inordinate amount of staff effort was required to develop the works programmes, write the project reports and purchase £380,000-worth of resources from the UK, USA and Belize[7]. I commend to everyone HQ LAND Engineer Division's excellent advice on reducing logistic drag on overseas training exercises[8]. The

[5] *The Royal Engineers Journal*, Vol 114 No 3 (Dec 00), Vol 114 No 2 (Aug 00), Vol 113 No 2 (Aug 99).

[6] Maj T R Urch RE, "Is the grass really greener over there?", *The Royal Engineers Journal*, Volume 111 No 2 (Aug 97).

[7] Some of the long lead items (eg generators for La Sierra) had a 5-month lead time.



Showers at Sarteneja built using Sierra Leone designs.

H&S demands of a construction tour should also not be under-estimated. In particular, the legal remit for the PSup to approve the project H&S plan and for the omnipresent MDA's representative to authorize all method statements, focuses one's mind on implementing safe systems of work on site. Finally, it is recommended that the works reports be completed by the author (in my case the operations officer) and the troop commanders at MWF. By doing so, everyone becomes a "shareholder" in the plan and is therefore directly involved from the outset.

- **Mounting**. The opportunity to fly "civ-air" due to the RAF being fully committed, was a welcome bonus until we realized it meant an eight-hour coach journey from Cancun in Mexico to Belize City. The method of MOD funding also meant that manifests submitted in advance were very difficult and expensive to change. Dare I say it, but a VC 10 into Belize International Airport would have been more flexible.
- **Reception, staging, onward-movement and integration (RSOI)**[9]. Whilst quite a mouthful, RSOI accurately describes the advance party's function at the beginning of the tour. With less than ten days in theatre to create conditions for success, those on the advance party were always going to be working to capacity. Most impressive, was the construction of a tented camp on an austere site at Sarteneja near the Mexican border. Admittedly this was only for a troop but within six days, five men had constructed accommodation, dining facilities, cesspit latrines, separate urinals, showers and washing areas. Ironically, it was the lessons learned on operations in Sierra Leone (Operations *Palliser* and *Basilica*) that were so beneficial on exercise in Belize as opposed to vice versa.
- **Execution and sustainment**. Within the parameters laid down by HQ TSC(L) and HQ LAND Engineer Division, this exercise was scheduled to last twelve working weeks. This allowed for approximately ten days of administration at the beginning and end of the tour as well as three days of jungle survival techniques, four days adventurous training, followed by a well earned seven days R&R. Project progress is discussed in more detail later.
- **Recovery**. In my experience recovery from operations and exercises is generally smoother than deployment; Exercise *Sailfish* was no exception. The tried and tested formula of working in barracks for a week or so once back in the UK prior to departing on leave paid dividends for the squadron.

25 Flight AAC Hangar (Phase 2d)

Phase 2d of the Price Barracks hangar project, required the internal fit-out and decoration of the south wing, to accommodate the REME technical support element of 25 Flt AAC. Tasks included the construction of 93m^2 of blockwork walling and 90m^2 of drywall partitioning, the laying of 104m^2 of floor tiling, decoration throughout, installation of toilets, air conditioning, lighting, power outlets and a complete fire protection system.

In accordance with the Construction Design and Management Regulations, 62 CRE (Wks) was the nominated designer, although all interaction between contractor and designer was done through the assistant project manager (APM) who represented the MDA and PSup on all design and H&S issues respectively. Although not under command, the APM was an integral member of the 20 Field Squadron team and proved a force multiplier in completing the project. He was responsible for advising me on all construction issues, authorizing variation orders affecting design changes, writing site instructions to clarify drawings and for approving temporary works necessary for construction.

Construction of the 25 Flt AAC hangar com-

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[8] HQ EinC(A), "overseas training exercise – Reducing Logistic Drag", *Sapper Telegraph*, Issue No 13, Jan 01, P 6.

[9] Army Field Manual, Volume 1 (Combined Arms Operations), Pt 6, Combat Service Support, Sect 3.

menced in 1998 and will cost approximately £1M to complete. Unlike the other troop sites it is built to stringent UK construction industry regulations and would need no additional modification if it were built in Netheravon. Technically the most challenging project and my main effort, the fit-out of Phase 2d proved to be an excellent test of the command team's project management techniques and the tradesmen's skills. With every RE artisan trade represented, this project proved to be an excellent opportunity for sappers to improve or perfect their skills. Trades such as air-conditioning and refrigeration fitter, and builder and structural finisher, which under normal circumstances in barracks are not utilized very often, were instrumental in the successful commissioning of the project. One dilemma worthy of note, was the argument about whether to sub-contract work out or not. On occasions, despite being advised to bring in specialists, I insisted our own tradesmen complete the task. In the majority of instances this worked to our advantage, although there was the odd occasion when MES (Works) assisted by lending us one of their very competent locally-employed civilians for demonstrations and in-house training.

Shaded assembly area nears completion.

Sarteneja and Patchchacan Primary Schools

Sarteneja is located on the north Belizean coast approximately 21km east of Corozal, across the Bahia Chetumal (Mexico) inlet. Access by road can be tortuous and the drive from the nearest large town, Orange Walk, takes approximately 1½ hours along dirt tracks. The Sarteneja Primary School is coeducational with approximately 130 children. The requirement was to rebuild an ablutions block, construct a shaded assembly shelter (known locally as an attap), erect a perimeter fence, level and prepare a sports area and refurbish the unsafe electrical wiring throughout the entire school.

With a section detached to Patchchacan, the pressure to complete three separate tasks at Sarteneja was considerable. The isolation of the site in the extreme north of the country combined with the frustrations of dealing with local suppliers and contractors (the Belize factor) meant that success was never a certainty[10]. As with most projects undertaken on behalf of the local community, Sarteneja proved challenging and hugely rewarding, even though the tradesmen took time to reach their optimum output in terms of quality and work rate. That said, it did not take as long as I had expected, and the benefits of conducting focused pre-deployment trade training at the RSME were very apparent. I found the instructors at RSME to be extremely helpful and flexible. Given clear guidance as to the scope of works on the forthcoming overseas training exercise, they put together a very useful two-week package. Much of the responsibility for the success of this training, however, lies with the squadron. Before conducting the training, the exercising unit must ensure that it has possession of the MWF design reports so that tradesmen can practise on the "specific" rather than the "general". For example, the carpenters and joiners constructed identical roof trusses to the ones that were to be fabricated on site and used only those tools that would be available in theatre. For some

[10] One example (of many) that sticks in my mind was the case of ordering 8 inch diameter telegraph poles to be used as columns for the assembly area roof. On arrival, they were indeed 8 inches at one end but unfortunately they tapered outwards to an alarming 12 inches at the other end. This required an additional two days of industrial whittling by the carpenters and joiners.

The Princess Royal opened the school on 18 April 2001.

tradesmen (eg electricians) this was a crucial period in order to cover subjects such as 110v 60Hz supply, which had not been given particular emphasis on trade courses. No amount of predeployment training in the UK, however, can prepare you for the problems of laying concrete in 38°C or of managing an active site with 130 small, inquisitive members of the general public in the immediate vicinity.

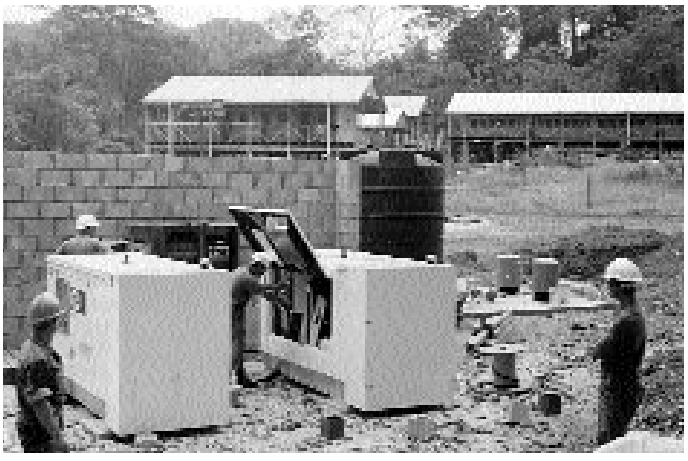
Patchchacan is located approximately six miles west of Corozal and about a two hour drive away from the Troop Headquarters in Sarteneja. The school is overcrowded and additional classroom space was deemed essential. The requirement was to complete a partially constructed extension to the single-storey classroom block, refurbish a detached classroom and overhaul the School's entire electrical system.

This superb site proved to be a microcosm of the squadron's activity in Belize. Despite being only a section task, the project required some nine different RE military engineer trades to complete the work satisfactorily. The section, having increased their work rate to complete the project two weeks earlier than planned, was rewarded for their efforts when Her Royal Highness The Princess Royal opened the school on 18 April 2001.

La Sierra Jungle Research Station

THE jungle areas of Belize have many sites of archaeological and geological importance. The La Sierra Jungle Research Station is being built to allow multi-discipline parties of scientists to live and carry out detailed scientific studies in the jungle. Construction of the research station has been planned to feature in *Sailfish* exercises over five years. The scope of works for Phase 4 included water supply, power generation and distribution, ablution block commissioning, walkway construction, installation of a domestic hot water system and a fit-out of the laboratory block.

The La Sierra project is an outstanding opportunity to test all RE tradesmen in an environment that encourages initiative and demands the highest standards of military leadership. Situated on the fringe of the Maya Mountains and only accessible in the rainy season by helicopter, this awe-inspiring site proved to be an exceptionally challenging task. Having front-loaded the advance party with plant operators and gained authority to ship additional heavy equipment to Belize (eg grader, self-loading dump truck and medium wheeled tractor), my support troop looked poised to achieve their mission. This involved the construction of two culverts and the upgrade of the access logging track along its 8km-length prior to the arrival of the main body. Receiving over 180 inches (4.5m) of rain per year, however, the Medina Bank jungle track was in no mood to comply



Installing the power generation and distribution system at La Sierra.

with my aspirations. After six days of torrential rain, the access track turned to an impassable quagmire, leaving men and equipment stranded along its length. With no materiel able to be transported along the track, the following couple of weeks passed in a blur of frustration and remedial works. At D+11, I extracted the majority of the troop (less medical and security personnel) from site to reduce the administrative drag. Although there was no shortage of water, the resupply of rations and fuel proved problematic because the only means of getting to site was by helicopter or along the track on foot (a round trip of some six hours carrying a heavily loaded bergan). With physical and mental fatigue setting in by D+14, I made the executive decision to extract entirely, allowing 3 Troop to undertake other tasks in support of MES (Works) and British Army Training Support Unit Belize, prior to their R&R.

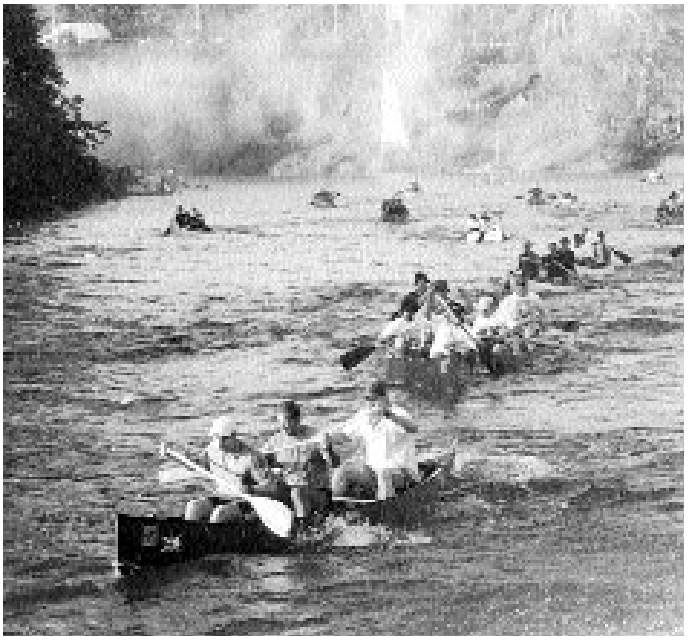
Two sappers getting to grips with construction in the jungle.

After four weeks of drying out and a sustained period of work by Support Troop, the track was finally made passable in early April. 3 Troop redeployed in high spirits after the successful completion of some excellent section tasks around the Belize City area and a well-earned period of R&R. With nearly 40 days lost, a review of the works programme showed that, with some resource levelling and ORBAT adjustments, it might be possible to achieve 75 per cent of the initial scope of works. In fact, over 90 per cent of the Priority 1 tasks were completed giving the client a habitable and functional (albeit not complete) research station.

JUNGLE SURVIVAL TRAINING

IRRESPECTIVE of the fact that jungle training is not an integral part of Exercise *Sailfish*, Belize offers one of the best jungle environments available to the British Army. To deploy and not make use of the outstanding facilities would be a flawed command decision. Accepting the fact that there is no time or funding to conduct jungle "warfare" training, a three-day period of jungle "survival" proved immensely popular, retention positive and of excellent military value. Having invested considerable time in training our own jungle warfare instructors, they were utilized to the full when called upon to develop a challenging and innovative survival package which

The completed Scarlet Macaw enclosure at Belize Zoo.



The start of the La Ruta Maya canoe race (180 miles).

included practical lessons in tracking, patrolling, shelter construction, trapping, and food and water acquisition and preparation.

Adventurous Training

WHILST military training is clearly the priority, there is no getting away from the fact that there are the most fantastic adventurous training opportunities in Belize. Whether you trek, sail, windsurf, dive, swim or fish, the country has everything for the beginner and professional. Most memorable was the squadron's participation in the four-day 180-mile La Ruta Maya international canoe race from San Ignacio to Belize City.

Belize Zoo

LONG recognized as a phenomenal conservation achievement, the Belize Zoo originally opened in 1983 after an ambitious wildlife film (Path of the Raingods) left Sharon Matola, the film's production assistant, with a collection of semi-tame animals no longer able to fend for themselves in the wild. Sharon is now the Zoo's Director and has been pivotal in marketing this excellent facility, even to the extent of securing Harrison Ford as a patron. For locals and visitors alike, this means the chance to see native animals of Belize at close quarters, housed in spacious enclosures which closely resemble their natural habitat. In keeping with previous *Sailfish* exercises, the Zoo has provided 20 Field Squadron with a great deal of satisfying and rewarding work. Construction tasks have included the rebuild of the foul smelling White Lipped Peccary (wild pigs) enclosure, the extension of the Macaw cage and the refurbishment of the crocodile enclosure.

The Mayan Culture

IN addition to the abundance of natural attractions, Belize boasts a wealth of archaeological remains. Rising mysteriously out of the forests are the ruins of the ancient cities of the Mayas, the civilisation that dominated the region from around 2000 BC until the arrival of the Spanish. Traces of this astonishing culture can be found all over the country, although only the famous Altun Ha temples have been as extensively restored as the great Mayan cities in Mexico's Yucatán peninsula.

Summary

IT would be frivolous of me to try to summarize the last four months in Belize, other than to say it has been the opportunity of a lifetime. Exercise *Sailfish* is more than just quality trade training; it represents a chance for a squadron to deploy overseas together as an integral team without the pressures of being on an operation. It develops leadership and project management skills, H&S awareness and teamwork in an extremely challenging environment. Probably best of all, bearing in mind the retention problems all commanders face today, it is extremely good fun!

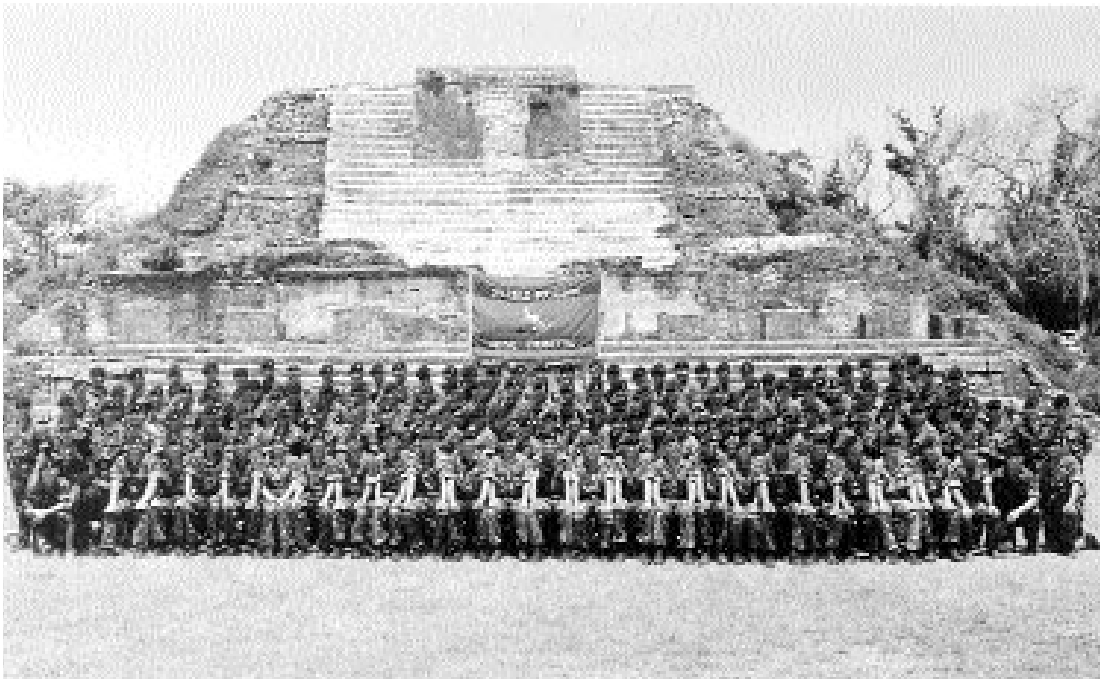
Lessons Learned

THE 20 Field Squadron key lessons learned are as follows:

- **Professional Engineer Training**. Qualifying as a chartered engineer and being selected for squadron command are not mutually exclusive. In fact, being

seconded to the civilian construction industry for 18 months prior to an overseas training exercise is outstanding pre-deployment training for an officer commanding or second in command.

- **Sub-Contracting**. Just because a sapper does not cover a particular skill on his trade course, this is no reason for not trying to master a new discipline. Only sub-contract out if absolutely necessary.
- **Preparations**. Clearly the earlier you can start your preparations the better. Due to the heavy reliance on resources for most overseas training exercises, it is absolutely essential that the squadron G4 team establish an early rapport with the Engineer Resources Management Cell.
- **Works Reports**. The works reports should be completed by both the author and the troop commanders whilst working at MWF. By doing so, everyone becomes a "shareholder" in the plan and is therefore directly involved from the outset. This period must include time to conduct detailed stores take-off checks to reduce problems once deployed.
- **Focused Trade Training**. Ensure any refresher pre-deployment trade training at the RSME is specific to what the squadron is undertaking in theatre. Concentrate on the "specific" and not the "general".
- **Specialist Training**. All troop commanders and field troop senior non-commissioned officers should attend the Site Safety Supervisor's course and conduct some project management training prior to deployment.
- **Specialist Engineers**. There is no requirement for STsRE to deploy "under command" of the squadron. Their utility is reduced if they do not stay within a specialized chain of command thus enabling the project commander to be properly advised and the tasks independently monitored. That said, junior commanders must be given the freedom of action to practise engineering design (eg non-equipment bridges) by themselves within an endorsed safe system of work.
- **Pre-Advance Party**. The establishment of a Resources Cell (resources junior non-commissioned officers and clerk of works) in theatre before the arrival of the advance party, ensured the recce teams and G4 Department were able to capitalize on the short time available prior to the arrival of the squadron.
- **Resources**. The majority of problems once deployed revolved around resources. These must be checked at every stage of the project. This process starts by ensuring that the design report take-off sheets have been correctly extracted from the drawings and ends with the tradesman on site confirming the materials that he has been given are of the correct quantity, quality and specification.
- **Rear party**. Do not leave yourself exposed back in barracks. Ensure a robust rear party remains to deal with any welfare problems and also to manage the onerous equipment care responsibilities.



20 Field Squadron in front of a Mayan temple at Altun Ha.

The New Corps Painting

"Entry into Kosovo"

The Chief Royal Engineer, Lieutenant General Sir Scott Grant KCB,
together with the artist, Mr Johnny Jonas,
unveiled the latest Corps painting entitled
"Entry into Kosovo" at the Corps Guest Night held on 15 March 2001.

The scene depicts NATO forces with Royal Engineers very much in the van
entering Kosovo up the Kačanik Defile on 12 June 1999.

An unframed print (the first 200 signed and numbered by the artist) is on sale in the Corps Enterprises Shop at a cost of £10.50. Ring: ATN 94461 (BT 01634 82) 2316 or 01634 814138 or email: corpsenterprises@btclick.com. Write to: Mr D B Moffett, RE Corps Enterprises Shop, Brompton Barracks, Chatham, Kent, ME4 4UG.

Royal Engineers and Their Role in the Founding of the Australian Nation and the Corps of Royal Australian Engineers

MAJOR D WREN RAE

Introduction

You may be forgiven if you don't know what is so important about the year 2001. Aside from having the longest, wettest winter in UK history and the imminent demise of the touring Lions and the English cricket team what else could be so significant as to make me write another article for this fine *Journal?* 2001 is the 100th birthday of the Australian nation, the Australian Army and the 99th birthday of the Corps of Royal Australian Engineers. A very big year by any reckoning!

Having updated your calendar I think it's timely to illustrate some of the history behind this fundamental piece of Australia's past, an area lost in the pace of life for many latter day engineers. Dust off your own Corps History[1] and you will find that the officers and soldiers of the Royal Engineers have just cause to celebrate alongside their antipodean counterparts. Good enough reason I felt to extend this article beyond just being a celebration of Australian nationalism; it is more a commemoration of outstanding success despite "the tyranny of distance".[2]

I couldn't possibly do credit to the full extent of RE involvement in early Australia. However, I will try to outline why I think your Corps involvement was so important. This allows me to briefly look at each colony in Australia and select keynote activities that involved RE officers and men, up to and including mobilization for WW1.

Early Royal Engineer Experiences

To say that the MOD dealt Captain Arthur Phillip[3] RN a bad hand is an understatement. He was appointed the first governor of New South Wales in 1786, was tasked to establish a colony there and had to do it without engineer support "and so did his successors for nearly forty years".[4] Phillip faced tremendous odds as he moved off to occupy the hinterland that is now Sydney. The most basic of services, water and shelter, were in limited supply and yet he was expected to start this enormous project without Royal Engineers, Royal Sappers and Miners or Royal Staff Corps assistance.[5] Nonetheless, to land on a foreign shore and lay claim to it for the British Empire was unquestionably a career highlight.

Phillip's colonial staff set about securing both skilled labour and suitable officers to supervise their work. The former were present in large numbers amongst the convicts[6] and the latter were found by co-opting military officers (gunners and marines) into supervisory "engineer and artillery"[7] positions; arguably a sound decision given the technical link between gunner and sapper graduates at Woolwich.[8] Phillip's first "engineer" appointee was Lieutenant Dawes, RM who was so good that he was "permitted to continue in the settlement, if he should be inclined so to do, and for his services in that capacity it is intended that he shall be placed on the same footing in point of emolument as officers of the corps

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1 Porter W. 1977. *The History of the Corps of Royal Engineers*. Vol 2 in particular.
2 Blainey G. 1930. *A Tyranny of Distance*, Melbourne, MacMillan Press 1968. Geoffrey Blainey, the eminent Australian historian discusses how distance shaped our history through colonisation, penal settlement etc.
3 Landed at Sydney in 1787.
4 McNicholl. R. Major General, 1977, *The Royal Australian Engineers* – 1835 to 1902. Vol 1.
5 To be fair the Royal Engineers numbered only 80 officers at that stage – scant few to vanquish the entire world for the British Empire!
6 Some, like the renowned architect Francis Greenway, were to leave lasting memories of the period.
7 McNicholl, ibid. p.1.
8 I know mathematics does not maketh the engineer. However, trigonometry and surveying must have been very handy skills for a young colonial officer.

of engineers of a similar rank".[9] Phillip and Dawes soon fell out and the latter went home shortly after his appointment was formalized.

The colony expanded slowly reflecting the serious lack of professional engineering supervision. All of the earliest colonial governors, up to and including Governor Darling (arrival 1826), made very pointed demands to London for military engineer support. Each received varying negative responses,[10] which subsequently delayed the completion of vital tasks like the opening up of tracks into the interior. Darling did however bring with him several civil engineers from the Royal Staff Corps (Captain Dumaresq *et al*) and they made steady progress in coordinating the works activities under the Public Works and Roads and Bridges departments respectively. Dumaresq actually stood himself down as the colonial engineer because he felt unqualified to manage the complex and frustrating tasks set before him.

Darling's successor, Bourke, continued to pester London and finally managed to convince the British Treasury that the colony was wealthy enough, by 1834, to pay the wages of a Royal Engineers officer if one were to be sent to NSW. That is how Captain George Barney came to land at Sydney on 11 December 1835, accompanied by his wife and three children.

Meanwhile, the other colonies were just as active as NSW albeit restricted by the same factors in regard to nation-building, and the lack of a formal engineering organization. Tasmania secured the services of Captain Roger Kelsall RE and he landed at Hobart a day earlier than Barney. Kelsall was expected to take control "in a country where everything is new – where everything is to be done and where there is a mass of laborers of the most depraved habits to be controlled".[11] The Victorian colonial government threw every effort into surveying saleable land and building essential gold-rush services such as ports and railways. Established (without convicts) to provide living room for genuine immigrants, South Australia faced a future with limited military involvement, greatly hampering progress with works tasks. Queensland also developed with little initial military support and this reduced the ability of the colonial staff to plan for expansion out of the Brisbane area. Finally, Western Australia saw the introduction in 1837 of a two-man Royal Sappers and Miners survey team to support the opening up of areas around Perth. This team was highly regarded and paved the way for the involvement of subsequent engineer survey teams across the entire country.

The early to mid-1800s were a watershed for RE involvement in Australia. There had been many individual and unit deployments to the various colonies, much of it uncoordinated by today's standards but nonetheless important in terms of building up the new colonies from scratch. Military engineers had quickly become an intrinsic part of colonial government activities and this in turn allowed each administration to pursue even wider development plans, some bold and innovative, others poorly considered and unrealistic in scale.

VERSATILITY

AUSTRALIA is a big country! In the mid-1800s it must have seemed even bigger when it took a week to travel between Sydney and Melbourne, a trip today that can be managed in a few hours by car. To this vast expanse came many different engineer personnel whose experiences in exotic postings like the West Indies and India prepared them well for the rigours of colonial life. Many were accompanied by their families and these hardy folk were the vanguard for early British immigration, shaping the social make-up of their new land. Moreover, the professional manner in which RE personnel went about their respective duties was to play an important part in shaping the future Australian nation and its emerging defence force.

Versatility, as described by Professor Brancher in his thought-provoking *Journal* article[12], was a major reason why RE officers and their men did so well in Australia. While Professor Brancher

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[9] McNicholl, ibid. p.1.

[10] McNicholl, ibid. The War Department stated in July 1825 that the Commander in Chief was unable to meet colonial demands. A study into RE Manning had shown an overworked group of officers.

[11] ibid, p.23. Comment by the Lieutenant Governor of Tasmania on what he expected from his engineer officer.

[12] Brancher, Professor D, p.5. "Engineering Versatility and The Corporate Culture" in *The RE Journal*, April 2001, Vol 115 No 1.

leaves Australia off his list of RE successes I am certain he wouldn't mind if I put it there now. There are many examples of RE staff becoming deeply involved in colonial life, both at work and in a social sense, many employed as engineers, administrators, judges and surveyors within their particular domains. Some, like Lieutenants Charles Pasley[13] and Andrew Clarke, became involved in politics serving for a while as members of the Victorian parliament. Captain Edward Ward was an accomplished cricketer, making the NSW team "despite an amazing batting stance" and a suspicious left-arm action.[14] Of special note were the 100 men of the 20th Field Company[15] Royal Sappers and Miners who landed in Fremantle in 1851, with families, on board the *Anna Robertson*. They were sent in response to appeals by the Western Australian colonial government for engineer support to develop what became the biggest colonial area. Lieutenant's Crossman, Du Cane, Wray and their sappers were employed on some of the most impressive engineering tasks of the time including the construction and operation of Fremantle Jail [RE Journal, Aug 98, pp118-121] and the very grand Fremantle Barracks. The company was finally released from their tour in 1862, having spent 11 years heavily involved in colonial life. They were highly praised for their craftsmanship and engineering prowess, if not for the settling of bar bills across Perth. Interestingly, of the original company members only 25 left Australia, the majority taking their discharge in Western Australia due to the lure of sizeable land grants.

Given the "tyranny of distance" and its impact on pre-digital era communications, it is arguable that the colonial CsRE employed a fair amount of latitude in their dealings with RE teams; a genuine mission command opportunity for those fortunate enough to command these often isolated task sites. The variety and scale of work undertaken by RE personnel was quite astounding. As previously mentioned it was seemingly normal for a RE officer to fill both military and civilian posts in early colonial life. This trend continued well into the late 1800s, an indication of just how entrenched these men were in their new country. RE units found themselves employed on tasks as diverse as the building and operation of colonial mints, the surveying of untouched bush, the creation of coastal fortifications and the provision of internal security support to suppress gold field uprisings in southern Australia. Many tasks were poorly completed but not always for a lack of military supervision or expertize. In the main colonial governments had become experts in that blight on military operations, political dithering over the allocation of resources.

In just over 50 years RE personnel played an important role in the development and operation of countless defence, infrastructure and administrative systems. This could be ascribed to the versatility of formally trained RE staff and lack of a structured military force to replace them; the latter issue almost resolved as various volunteer engineer forces emerged. This was a period in which Whitehall and certain colonial staff began to lobby for Australia to provide more for itself, certainly in terms of defence and the associated engineer works and field engineer capabilities.

The First Australian Sappers

THE professional manner and technical excellence of today's Australian sapper was undeniably nurtured by the involvement of RE personnel in the years leading up to the federation[16] and WW1. British military involvement in Australia had waxed and waned over the years but nonetheless remained as a bulwark to security uncertainties forming up over the horizon. This was equally true for the infantry, cavalry, artillery and engineers as it was for the colonial naval forces.

Several factors contributed to the demand for volunteer colonial forces. Firstly, it seems that the British government felt it should reduce its commitments to its most distant outpost given Australia's steady development by the mid-1800s. Secondly, the Crimean and New Zealand Maori wars focused attention on the lack of reserve military capability should Australian-based British troops be deployed offshore. Finally, various colonial government and Whitehall-initiated reports recognized the need for an independent volunteer militia, if only to

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[13] Porter, ibid. pp. Pasley was the son of the first Commandant of the RSME.
[14] McNicholl, ibid, p.19. A good man I expect.
[15] ibid, p.107. I can hear the cheers of the 20 Sqn old and bolds now.
[16] 1 January 1901 – the date on which Australia became a Commonwealth of states.

Sir Peter Scratchley.

man the increasing number of fortifications across the country. These reports mention differing force structures but most recommended that a volunteer force be formed as soon as practicable.

The first real moves to form a volunteer engineer force took place during the mid to late 1800s, due in the main to fresh guidance from London that the permanent RE staff would eventually have to leave Australia. Captain Peter Scratchley RE was closely associated with the raising of the first colonial engineer unit in Melbourne in 1860. This Corps of Volunteer Engineers was raised in the Duke of Rothesay Hotel[17] and was to "consist of civil engineers, architects, surveyors, their assistants, and mechanics connected with the above professions exclusively".[18] These early sappers appeared more interested in the cut and thrust of military life and less in a vocation as professional military engineers. In fairness the guidance of the day did require the display of drill, smart uniforms and public parades as mandatory engineer training.[19] While keen and well-intentioned many volunteers lacked the basics in engineer training accorded to their RE counterparts and it is largely due to the involvement of various RE staff that these disparate colonial forces had any real success at all.

Melbourne grew quickly and demands for fortifications to guard its wealthy gold-rush port were given added weight when Russia and Britain went to war against each other in the Crimea.[20] Scratchley set about making sure that his engineers were trained with "commendable zeal … military books were purchased; lectures were frequently delivered in orderly rooms, the subject matter and mode of delivery of which were admirable".[21] The general public viewed their new force with some pride, spending a great deal of time watching the various RE NCOs and sappers deliver instruction on subjects like pontoon bridging and defence works.

Sydney raised a force for similar security and development reasons as Victoria and initially recruited soldiers to fill 40 engineer positions in early 1871. Several ex-RE soldiers joined at this stage, vital recruits in terms of experience and technical know-how.

By late 1876 Sir William Jervois and Lieutenant Colonel Scratchley had started a review of the defences of NSW, Victoria, Tasmania and Queensland.[22] Their findings were to shape the medium to long-term roles allocated to the emerging sapper organizations. Their recommendations included the need for a single

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[17] An excellent place in which to raise an engineer corps!

[18] McNicholl, ibid. It followed a very democratic set of operational rules that included membership fees, the selection of officers and uniform regulations.

[19] These early groups attracted some notable personages, judges, doctors *et al*.

[20] The Heads at the entrance to Port Phillip bay are still "guarded" by two very well preserved forts – Fort Nepean in the east and Fort Queenscliff in the west; the latter home to the Army Command and Staff College until late 2000.

[21] McNicholl, ibid, pp50-51. Scratchley spent a great deal of time and personal money on this endeavour. He was such an advocate of the Australian sapper that he remained involved in engineer business for over 20 years.

[22] Scratchley became defence adviser to no less than 5 colonial governments – ideally positioning him to comment on subsequent work on federation.

national defence adviser and recommended that the volunteer forces should be replaced by militia units on half pay so as to provide for a better educated, far more committed soldier. The impact of the Jervois/Scratchley report was felt right across the nation. The colonial forces reorganized and refocused their efforts to adopt recommendations aimed at providing more effective, almost federated, defence outcomes. This early move toward a national defence force undoubtedly caused a great deal of anxiety amongst some colonial staff who believed that they were losing control over their future. Additional stressors were added by the onset of a serious economic recession in the late 1800s, the deployment of a force (albeit small in engineer terms) to the Sudan and South Africa, a continuing reluctance by some colonial ministers to properly support their own forces[23] and the re-emergence of Anglo/Russian security concerns.

Not all of this early work proved frustrating or ineffectual. In NSW for instance restructuring moved quickly to reallocate forces to accommodate the Jervois report findings. This included a clearer approach to training and operation of the submarine mining units and the introduction of signalling; all reflective of a time when Russia was poised to invade Sydney, at least in the mind of the colonial government. Other accomplishments included the construction of the "first" School of Military Engineering (albeit Sydney based), opened at Victoria Barracks[24] on 24 July 1880 by the ubiquitous Colonel Scratchley, continuing his remarkable relationship with Australia and its embryonic engineer corps.[25]

The contribution by several first-rate RE officers during the tumultuous days of the Australian volunteer force was undoubtedly a major reason for the peace of mind politicians felt when Australia finally stood to its own Army. Characters like Scratchley and Jervois had the foresight to recognize that whatever the direction the colonies were heading in with defence in the late 1800s they would be best served following a common or federated defence plan. Wasted resources, lagging political support and the perceived increase in the Russian threat all lent themselves to change; change for the better once federation became a reality. Moreover, it is clear that while all this was happening about them the RE NCOs and sappers kept at their work and provided their charges with those core engineer skills that would be essential in any new force.

Federation

It is relatively easy to see that defence was one of the most pressing reasons for pushing ahead with federation. Jervois and Scratchley had promoted the merits of "seeking uniformity of organization and armament".[26] This had started to happen, certainly across the eastern colonies, by the late 1800s where there was a routine integration of units for exercises. Furthermore, Major General James Bevan Edwards (late RE) had, in a report on colonial defence issues to the 1st Imperial Conference held in 1887,[27] recommended that the colonies "adopt a mixed brigade of standard formation" and that the colonial forces be "federated" under one inspector general. He also recommended "a common defence act, uniform armaments" and various other prerequisites for a national force.[28]

The federation process almost became unhinged by political squabbling over issues like common rail widths and the sharing of commonwealth taxes. Personal differences between various politicians and the intercolonial parties also added to these difficulties. Consequently, the integration of colonial forces moved at a snail's pace and only succeeded in amalgamating the artillery, although for a while even that was opposed by the authorities in London.[29] However, it was not all doom and gloom and the federation process was propelled along under the

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[23] McNicholl, ibid. Scratchley noted rather tersely that Victoria had only partially implemented their findings due to a mix of funding cuts and political indecision.

[24] Now HQ Land Command Australia – located across the road from the Sydney Cricket Ground!

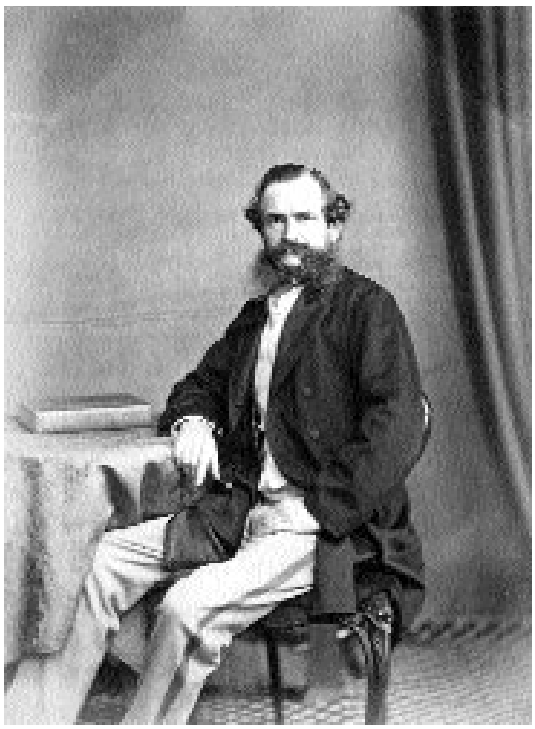
[25] Scratchley died in 1885 from malaria contracted while serving as the Special Commissioner to the Protected Territory in New Guinea.

[26] McNicholl, ibid, pp164-165.

[27] Met to discuss the deployment forward to Australia of British naval assets – this hinged on a sound land defence plan hence the review into what was by then an inefficient system of colonial forces.

[28] McNicholl, ibid.

[29] Royal Australian Artillery has their birthday on 1 September 1899.



Sir William Jervois.

steadying influence of Lieutenant General Clarke (late RE), the very same gentlemen who earlier served as a Victorian minister. It was during a posting as UK Inspector General of Fortifications that two of Clark's subordinates, Henry Schaw RE and James Bevan Edwards RE were drawn to his doctrine for an Australian defence force. Clarke was also subsequently instrumental in helping the bill pass through the British parliament that federated the colonies. An intriguing period in which we see just how involved some RE officers were, not only with the establishment of a federated defence force but also with the important issue of federation itself.

On 1 January 1901 the colonies became Australian states, but even then there was still a massive amount of work to be done. Colonial military forces moved under control of the Commonwealth on 1 March 1901, although several states retained close hold over their forces until mid-1901 by which time the supporting administrative processes were established within the new Department of Defence. The Australian Corps of Engineers came into being on 1 July 1902; made up of "... a permanent nucleus, consisting of Fortress Engineers and Permanent Submarine Miners, which shall be allocated as required to the various states; Militia and Partially-paid Engineer Companies, including Field Engineers, Submarine Miners, Electricians and Field Telegraphists".[30]

McNicholl successfully encapsulates the history of the pre-federation engineer force as follows: "The foundation of the Corps of Royal Australian Engineers took place some 42 years after the earliest volunteer efforts. The several corps, which amalgamated, had suffered from political indifference, from patronage or neglect, had struggled against a lack of understanding about the role of the sapper and the growing importance of engineering in war. Colonial engineers had experienced hardship but, so far, no danger; except as individuals they had not been in action, or had to work under fire. Their testing time was to come". [31]

A Troubled 1914 to 18 War Period

Despite the tremendous efforts taken to regulate Australia's military forces, the six colonial bodies differed in almost every aspect: "establishments varied, equipment was not uniform, conditions of service were different. Some colonial forces were more efficient than others, better trained, and better paid. All had one thing in common: each army, irrespective of its size or efficiency, was jealous of its traditions built up over forty years or more. The merging of these forces was a delicate operation".[32]

Major General Sir Edward Hutton assumed command of the Commonwealth Military Forces in early 1902 and immediately set his staff to work on a major reorganization. The new force was to be "administered by six state-based military districts, continuing the close ties between the identity of local units and the states in which they are raised, a tradition which lives on in the Army Reserve today".[33] Hutton's efforts were

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[30] McNicholl, ibid, pp167-168.
[31] ibid. p.170.
[32] McNicholl, R. Maj.Gen, 1979, pp1-2, *The Royal Australian Engineers – 1902 to 1919*. Vol. 2.
[33] Fry, G. 2001, *The Australian Army in Profile*, Directorate of Public Affairs – Army, Imprint, Queensland.

hampered quite early on by that familiar barrier to smooth organizational change, government budgetary cuts, and these affected early engineer recruitment and training.

For nearly a decade Hutton's staff tackled the building of a structured force, helping put into place the legislation required to run a modern army and founding the institutions so crucial to the development of an army's character. In 1911 the Royal Military College, Duntroon, took in its first four-year class,[34] and a school cadet scheme started which trained 12 to 18-year olds. The military also introduced a Citizens Military Force the forerunner to today's Army Reserve.

It was during this period that important cultural aspects of the new engineer corps emerged. Sappers were kitted out according to their enlistment category. The permanent force wore scarlet tunics and blue trousers in full dress, and blue jacket and trousers for undress occasions. A khaki summer uniform was also issued. Headdress consisted of a white helmet with a spike and white puggaree. Militia sappers wore a similar uniform except for variations in headdress. Officers wore a mess kit of scarlet jacket, blue waistcoat, and blue trousers with scarlet stripe, all very similar to RE officers. The King approved the title Royal Australian Engineers in late 1907 capping off what had been a bit of roller coaster ride for members of the corps since federation.[35]

A 1908 parliamentary report highlighted the current state of the engineer force. There were 125 permanent engineers with an additional 44 needed to man new defence light units. The militia was 821 strong, supplying engineers for service with light horse and infantry brigades, fortification tasks, submarine companies and telegraphic duties. In the years since federation a grand total of £5000 had been spent on equipping sapper units with a variety of equipment including "double tool carts, four trestle wagons, one cable cart and one limbered general service wagon".[36]

Perhaps the most defining period for the pre-WW1 Australian Army was the visit by Lord Kitchener in 1909. Kitchener and his principal staff officer Colonel Kirkpatrick (late RE), toured Australia to report on defence matters. Kitchener had already accepted the passing of a defence bill that instigated universal liability for service in the military, and he quickly proposed a system to bring about compulsory military service. He saw a force of about 80,000, greatly increasing the demand for engineers.

Kirkpatrick was subsequently invited back by the Australian government to put Kitchener's plan into motion. On his return in 1910 the now Major General Kirkpatrick submitted a damning report on the engineer force. He criticized what he felt was a lack of understanding by field engineers about their tactical employment.[37] Kirkpatrick felt that while they were technically proficient, sappers were not pursuing the right line of tactical thought, often failing to employ engineer officers in the "van guard or rear guard as might be the case in war".[38] Kirkpatrick was also concerned about the absence of engineer involvement in the state and federal works services. He believed that the force was missing out on crucial peacetime exposure to subjects like project management and contracting, experience he believed would be critical if war broke out. While he seemingly managed to get the tactical shortfalls resolved he had no such success with the latter works issues.[39] In a subsequent report Kirkpatrick once again criticized the new engineer corps for its lack of impetus in learning field engineer skills. He believed that this might only be fixed if the corps' young officers received their basic training at Chatham or Aldershot.[40]

General Sir Ian Hamilton added to the seemingly endless scrutiny of the engineer force in a

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[34] The 1st Class at the Royal Military College, Duntroon graduated early to deploy with the 1st Australian Imperial Force to Gallipoli.

[35] McNicholl, ibid. In several references to accoutrements, etc.

[36] ibid, p.9.

[37] ibid, pp7-16.

[38] ibid, A familiar problem even then!

[39] Kirkpatrick was one of many RE officers working in Australia at the time. The first Director of Military Arts at Duntroon (head military academic) was Lt Col Gwynn. Other RE officers served in a variety of works, signalling and instructional related posts.

[40] ibid, pp14-15.

report published on the eve of World War 1.[41] He believed that great strides had been made toward tactical and technical proficiency, but made a few crucial recommendations that saw permanent units hand over submarine mining to the Navy and coastal defence duties to the Citizens Military Force. This was meant to free up regular force sappers to become expert field engineers and to instruct the Citizens Military Force as required; arguably a very smart move given the reliance on field engineering during the campaigns of WW1.

Australia mobilized for war on 2 August 1914 and Britain accepted its offer of an expeditionary force on 6 August, so things moved quickly indeed. It was decided to raise a completely separate force to the Australian Army. It was felt that the units of the Citizens Military Force contained too many trainees and would have to be completely reorganized to meet the deployed force structure requirements. Instead, the government took the easier option and raised the 1st Australian Imperial Force[42] for service overseas, keeping the Citizens Military Force for duties within Australia. This unusual demarcation line was to create a great deal of angst for the force in subsequent years as the impact of casualties, from the Western Front in particular, greatly raised the demand for reinforcements. A vexing issue considering the war's devastating toll on a relatively small adult male population.

The Australian Imperial Force engineer component was increased from a peacetime establishment of two field companies per division to three so that each formation would have its own integral engineer support.[43] Unusually, the light horse formation was left without engineer support. Engineer signallers provided formation and divisional level communications. Numerous RE officers and men were to serve in the 1st Australian Imperial Force, filling obvious gaps in the command and technical expertise of the early Australian volunteers. As the war move progressed, Australian engineers assumed key appointments and by the war's end the majority of Commanders RE were Australian.

A Very Big Debt Indeed!

In my introductory remarks I promised to show just what it was that the Royal Engineers did that was so important for Australia. While I lacked the space to discuss every activity in detail, and some might say that there is a Victorian or NSW bias to my writing, I hope you now appreciate just how significant Royal Engineers involvement was in an emerging Australian nation. Characters like Scratchley, Clarke and their RE NCOs and sappers not only provided necessary engineer support, but in some cases also took the lead in dragging Australia toward nationhood. The Australian Army and its sappers owe their existence to a succession of very accomplished individuals and units from the Corps of Royal Engineers who selflessly contributed to the development of the Australia we live in today.

UBIQUE.

[The author wrote an article entitled *Combat Engineering On A Wing and A Prayer – Post-Tsunami Relief Operations in Papua New Guinea* in the August 2000 issue of the Journal.]

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[41] ibid, pp15-16.

[42] An infantry division of three infantry brigades, divisional troops and a light horse brigade.

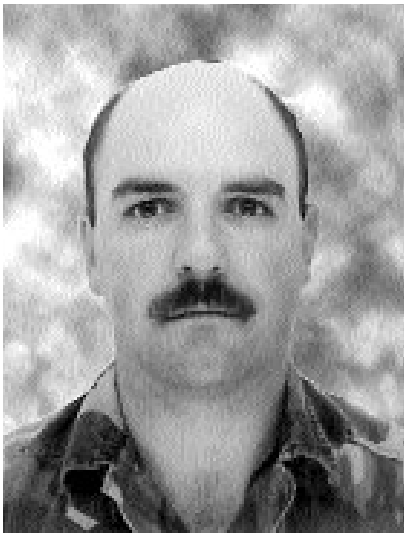
[43] McNicholl, ibid. Luckily the senior planner Major General Bridges (first Commandant of the Royal Military College, Duntroon) was an early advocate of combined arms groupings.

50 Years On

THE editor of the *Journal* would be pleased to receive articles from anyone who took part in tasks and employments during 1952 and 1953.
Accounts of later events are also welcome as they can be kept for publication in the appropriate issue.

Where Next – A Year in the Life of a Specialist Team

MAJOR R J ABBOTT BSc CEng EURING MICE



Major Dick Abbott was commissioned into the Corps in 1983 having decided at the end of his degree never to touch civil engineering again. His first tours were as a troop commander in 9 Parachute Squadron and the Junior Leaders Regiment before becoming squadron second in command of 34 Field Squadron. His interest in engineering was rekindled when he was posted to a technical staff post at the Joint Air Trials Establishment before moving to become the operations officer at Maidstone and then the Operations/Training Major at the new 78 Engineer Regiment (Volunteers). Turning down Staff College due to the lure of eighteen fantastic months as a civvie in Australia, he completed the Professional Engineer Training Civil course in 1996. Returning to the Army Training Regiment, Bassingbourn, he set up two new training companies before being hijacked to spend his last six months as regimental second in command. He is posted to the Ministry of Defence in August 2001 to become the Staff Officer 2 dealing with infrastructure in Directorate Equipment Capability (combat service support).

I took command of 519 Specialist Team (Works) (STRE (Wks)) in June 1999 itching, after 2½ static years at the Army Training Regiment Bassingbourn, to go on operations again; well, I certainly went to the right place! My team deployed on Operation *Agricola* 3 in Kosovo from February to August 2000 and then, at the end of October, on Operation *Palliser/Silkman* in Sierra Leone until the end of January 2001. We spent six weeks in Kenya on Exercise *Oak* and *Crabapple* design recces early this year before preparing for operations again – with half-teams deploying to Sierra Leone and Bosnia by the end of July.

There is a perception that those on the "technical" side spend all day taking photographs of generators and bridges for their albums. While this is undoubtedly true and a very important part of our job, there is more! I don't believe that many in the Corps fully understand what we do as STsRE, and part of the problem may stem from the fact that much of our work on operations is carried out by contractors.Taking the chartered engineers course late, and with OC STRE being my first technical posting, I was also in the dark, but now, having as much recent STRE operational experience as anyone, I have a good idea of what we do.

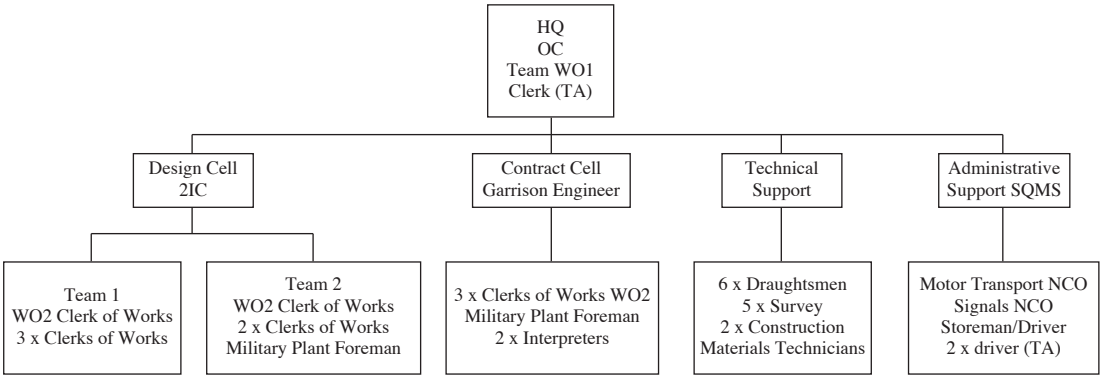
My aim in this article is to try and pass on a better understanding of specialist teams by outlining my teams' activities in Kosovo and Sierra Leone, and to set out my thoughts on a few key issues.

Kosovo

When 519 STRE (Wks) deployed to Kosovo it was under command of CO 62 CRE (Wks), Lt Col David McIlroy, who commanded all specialist engineers in theatre and was double hatted as the SO1 J4 Infrastructure in the brigade headquarters. The STRE lived alongside 32 Engineer Group in the engineer camp and was reinforced by 32's technical manpower. This gave me one of the largest STRE (Wks) commands for some time – peaking at 37 personnel. I was the only team member not dedicated to the STRE, being double-hatted as both OC STRE and, from the end of March 2000, the SO2 J4 Infrastructure. The STRE had two major roles: design of new works and the letting and supervising of work's contracts.

We took over as cold weather was breaking and the occupation of temporary field accommodation (TFA) was imminent. It was a fascinating time; late enough to miss the intense pressure of the move into Kosovo, the initial rationalization of a myriad of occupied sites and the preparation by the military construction force (MCF) of the

519 STRE (Wks) – Operation Agricola 3 (peak manning)



TFA bases but early enough in the operation to get a feel for the initial phases, experience both improved tented camp and TFA first hand and see the TFA process develop.

Tasks and Priorities

DESPITE a perception in some areas that TFA was the complete answer to the theatre's infrastructure needs, accommodation was "only" produced at eleven main sites; all other theatre requirements, including a further fifteen permanent bases, were not part of the TFA project.

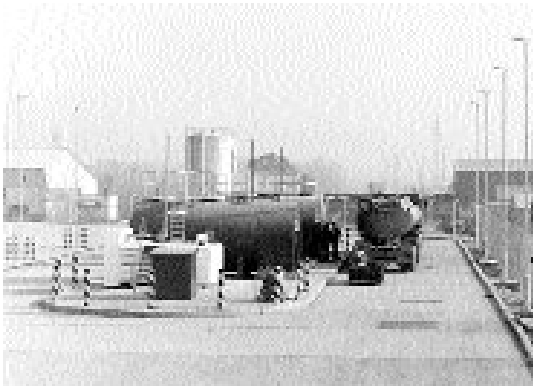
There was a host of other high priority projects: initially the theatre ammunition compound, various observation posts, fuel and lubricant compounds, bridge repair works, upgrades (electrical systems, ablutions, kitchens, water supplies and fire safety works) at non-TFA sites and new communications systems. It was enough to keep a full STRE busy for two years, let alone over our first couple of months. Prioritization was, as always, vital. Some of the tasks were operationally urgent, to meet the commander's immediate requirement, while others were urgent longer-term infrastructure tasks of more importance to PJHQ, which was planning ahead for the logistical requirements for the next winter.

While the potential for conflict of priorities existed, pragmatism on all sides made this less likely with CO 62 CRE and CO 32 Engineer Group agreeing the overall rough priority and myself doing the fine tuning. With the majority of our work being J4 Infrastructure tasks completed by contract, our command by a CO CRE (Wks) was the most appropriate arrangement and gave us the ability to harness external expertise, in particular from Military Works Force, Military Works Force (Volunteers), the Engineer and Logistic Staff Corps (Volunteers) and Defence Estates. An early example was the outsourcing of the design and project management of the very large theatre ammunition compound project to Defence Estates.

Design

I was lucky to have experienced personnel in my design cell, run by my 2IC, Capt Lee Craddock, and to be able to start with a warrant officer class 2 in charge of each design team, acting as mentors to the newer clerks of work who were on a very steep learning curve. A roughly prioritized statement of requirement was passed to the STRE by J4 Infrastructure. My 2IC and team warrant officer undertook the initial recce to ensure that what was being requested was appropriate and achievable. For the more complex tasks we included a concept design stage in order to save precious design, survey and draughting time by getting it right first time. The final design report was kept as simple as possible with only a short letter covering the important design documents: the drawings, stores lists, specifications and initial health and safety plans.

Fundamental decisions are required for every design: what design regulations, formal approvals and scalings apply, and what design life is appropriate and who is going to carry out the work. Much of this should be directed to theatre by



The completed BRITFOR fuel and lubrication compound in Pristina.

PJHQ in a skeleton infrastructure development plan but the lack of a PJHQ J4 Infrastructure staff officer meant this did not occur in our time. Works for UK forces do have to meet UK regulations wherever this is possible. This does not mean slavishly applying UK criteria, eg we determined local design wind speeds and snow loadings from local structural engineers. UK regulations are particularly severe in comparison with most second/third world countries with respect to electrical, mechanical and environmental conditions though it is recognized that it is not our place to change the entire local infrastructure. When we designed a new camp the outflow from the sewage system had to meet UK regulations and be correctly treated but when we refurbished an existing ablution system we did not have to improve the whole outfall system.

Difficulties arose because of the lack of medium-term expeditionary infrastructure regulations and/or risk-taking procedures. This was particularly noticeable when designing the ammunition compounds and processing building where, to get formal approval, full UK peacetime regulations had to be met even though they were only planned to be in operation for five years. This project also highlighted the change in requirement as a theatre starts to mature: the quick and simple initial requirement grew and kept becoming larger and more complex as time moved on.

We are keen to design for the long-term (recognizing that we often stay longer than at first expected) but will only get financial approval where our designs give the best value for money over the PJHQ stated theatre design life: five years from the move into Kosovo. While cost is a major factor in selecting the best option it is not the only one. Speed and ease of construction and the practicalities and potential operational disruption of future maintenance must also be taken into account.

Designs were not completed in a vacuum and we used best practice and aimed for commonality between theatres; the experience and overview of G4 Military Engineering Services and Military Works Force (and now SO1 J4 Infrastructure at PJHQ) playing a key part in this. We were keen to save time by using or modifying existing designs from other theatres where this was practical. As well as raiding the archives at Military Works Force, members of my team completed familiarization recces in Bosnia and Northern Ireland, bringing back existing designs and drawings. Designs for the MCF took longer than those to be completed by contract due to the need for detail (such as stores lists) which a contractor would be expected to complete, but made possible fast track and incremental projects and allowed interaction between the designers and construction force during the design.

Quality control in design was maintained as far as possible to meet the standards that are used at Chilwell, with designs and calculations being checked within each design team, then by the 2IC and team warrant officer and finally by myself. While we tried to be as thorough as possible, time was always against us and we could rarely give designs the same detailed check as a rear-based design team under less pressure.

Contracts

With a small MCF (down to just 31 Armoured Squadron and 45 Field Support Squadron with a plant troop) the construction 32 Engineer Group could undertake was limited. Consequently, most of our infrastructure designs were completed by civilian contractors. Though initially small, the contract cell grew as more designs were completed and stacked up for completion by contractors. At the end of the tour half my clerks of work were employed full-time running contracts. An obvious difficulty in using local companies is the language barrier and we had to translate contract and design documentation.

The contract cell was run by my garrison engineer, Capt Keith Robinson, who was granted contractual authority from Defence Estates for works up to £50,000. He was limited to letting

discrete lump-sum contracts so could not let enabling contracts for routine maintenance; this wasted time and manpower (until this was resolved by Defence Estates) letting individual contracts for each minor repair. While routine works required a four to six week competitive tender period, we could complete urgent operational works by single tender and could turn these round within a week where it was vital, as long as we had a suitable contractor.

One problem with using contractors on operations is to find sufficient numbers that can produce the quality of work required; difficult in the aftermath of conflict. One way to find out if a contractor is any good is to try him out by starting small and reinforcing success. We placed adverts in both the local and international press and Defence Estates sourced potential contractors in the UK. It was not economic for UK firms to bid for the majority of tasks and so we were reliant on local firms and a small number of international contractors operating with very limited management set-ups. The only way UK firms could have competed would have been for us to prepare a number of discrete small tasks and let them as one overarching project. However, the need for rapid completion of each task meant that this method could not be used in our time.

A technical limitation to using local contractors was their inability to properly install, test and commission electrical and mechanical services; they simply did not have the skill or knowledge. Military electricians were already fully tasked so we had to use civilian electricians from the UK, which led to delays. We also sought local companies to act as designers (either working directly for the STRE or within a design and build contract) in order to try and speed up the design process. A couple of Macedonian design firms were interested, but they did not have knowledge of our regulations and we were not confident they could meet our requirements.

A factor which should never be overlooked is the civil military coordination aspects of using local contractors. Spending money within the local economy is an excellent way to help it rejuvenate and the commander was keen to do this where feasible.

Resources

WITH Kosovo re-emerging from the conflict, common building materials were available but varied in quality and a material approval process was therefore used in contracts. We did not have our own resources specialist so relied entirely on 32 Engineer Groups' resources set up which was limited in size and busy. We only used the resources system if we knew the materiel quality was not available locally or was outrageously expensive. Invariably electrical and key mechanical materials had to be supplied from the UK. Designers have to maintain close liaison with the resources system and, in this respect, being collocated with the engineer group was a major advantage.

Health and Safety and Construction Design and Management

PRACTICAL health and safety in the design and on site was a high priority. Construction design and management regulations applied and I acted as the planning supervisor. Initial health and safety plans were issued with designs, and for local contractors we included a four-page set of basic and project-particular site safety rules. We took safety into account when awarding contracts – contractors who tried to flout safety requirements were not given further work. Standards improved steadily when contractors realized we actually meant what we said. A further burden on the clerk of works supervising contractors was the preparation of the health and safety file, including as-built drawings, as this was beyond the ability of all but the larger contractors. Safety was never a particular issue with the MCF as they had there own site safety supervisors.

Summary

WE had an outstanding tour in Kosovo. Our output was prolific with the design cell completing 67 designs, requiring 1245 drawings, and the contract cell playing a key part in improving the infrastructure, letting 72 contracts ranging from a DM250 dog compound repair to a DM2.5M fuel and lubricant compound and other work that would otherwise have probably taken another two regiments of engineers to complete.

Sierra Leone

WE were still in Kosovo when operations started in Sierra Leone and UK forces first deployed.

In September 2000, following the hostage crisis, the Joint Task Force HQ from PJHQ deployed without any integral engineer support.

CO 62 CRE undertook an initial recce in October 2000 to assess the engineering requirement in the form of an Infrastructure Development Plan and became the CO CRE/SO1 J4 Infrastructure (rear based). 519 STRE (Wks) (-) subsequently deployed to Freetown to cover the whole range of infrastructure support.

In November 2000 HQ 1 Armoured Brigade took over the role of Joint Task Force HQ and deployed with a UK national support element organization to cater for the enlarged role and increased troop numbers. It became clear that they would need infrastructure support on a longer-term basis.

Freetown Area Accommodation

MOST BRITFOR personnel lived in rented buildings in Freetown. These were inspected and remedial works for electrical rewiring, internal repairs, fire safety improvements, upgrades to ablutions, water supply and storage systems were designed/planned and let to local contract. To ease cramped conditions in the largest building, Jamil's Lodge, we subsequently leased and renovated the adjacent house, Green House. This had been completely gutted, with no wiring or plumbing remaining and required repairs to the roof. It was wired off to become one compound with Jamil's Lodge, which also provided the power and water. The water boards' pump was too worn out to force water up the mountainside to these two buildings so we ordered a new main pump, and water was delivered by bowser in the interim. Electrical inspections on the remaining smaller rented buildings required subsequent safety work to be carried out. The type of works and security implications meant this work was more suited to being completed by RE electricians than by contractors and a clerk of works (electrical) and two military electricians deployed in March 2001 on a surge basis for this work.

Freetown Area Working Facilities

THE Joint Task Force HQ was set up on a tented complex on a car park adjacent to the Sierra Leone Army Main HQ. It flooded in the wet season, had insufficient electric power and needed extra infrastructure to allow the installation of the Project Cleo communications system. A new concrete hardstanding with an integral earth mat was therefore constructed and the generator upgraded. The main administrative component of the national support element was installed in a nearby building but with the intent to collocate UK expertize with Sierra Leonean Army working areas where feasible. We also produced a small UK national support element area within the main Sierra Leonean Army workshops. The UK logistics rendezvous was set up on the quayside next to the *RFA Sir Percival*. This needed minor works to provide hard standing and cover for the ration storage site, provide a fuel point and offices (converted ISO) and provide power.

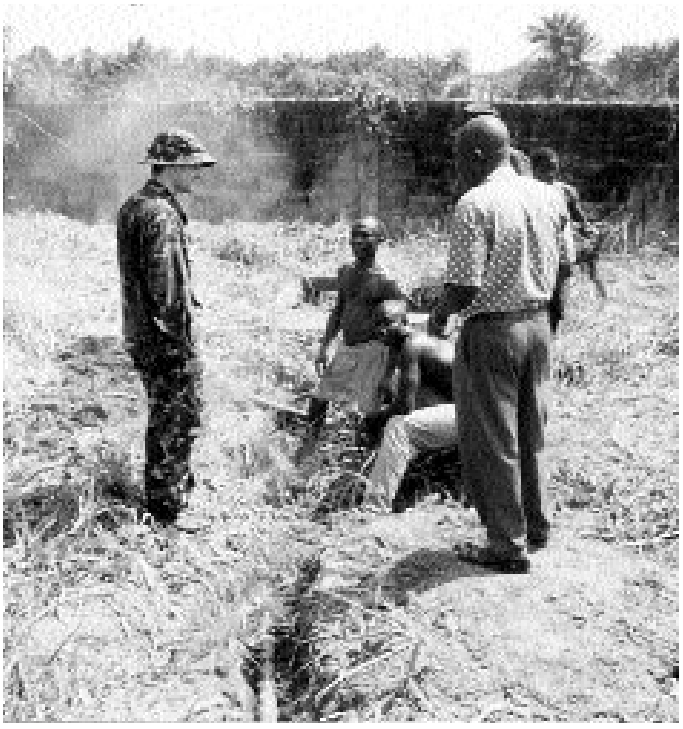
Role 3 medical cover (ie an operating theatre) was provided by the Indian United Nations hospital but they withdrew in late January 2001 with Jordan taking on the commitment. As cover during this handover, and in case the Jordanian hospital could not provide a satisfactory standard of medical care, 34 Field Hospital, with a containerized and tented medical Role 3 facility, was deployed from mid-January 2001. This was located at the logistic rendezvous in order to make best use of the royal auxiliary force facilities and as it was midway between the two main UK working areas – Freetown and the training camps. The simple layout and design was subsequently installed by a surge RE section from 5 Field Squadron and the integral field hospital RE tradesmen.

Training Camps

THE short term training team tented camp at Benguema had been put together as a temporary site and was now inadequate for the numbers it accommodated and not in a condition where it could reasonably be occupied through a wet season. Though the camp was maintained by a small RE detachment it did not have the expertize or resources to be able to complete the further improvements needed, so we designed and let these to contract. The improvements included a water storage and distribution system, an upgraded power supply, improved tented camp, food sanitation units, an ablution block with laundry and drying facilities, an associated septic tank and soakaway and an ammunition field storage compound. Where possible these were designed to become part of the medium-term requirement.

The medium-term, post-short term training team, infrastructure requirement at training camps was foreseen as accommodation and offices for 60 international military advisory and

training team personnel at Benguema Training Camp and 10 at Hastings Training Camp. We completed a very detailed concept design which was subsequently completed by a local design firm for our approval. The design firm had appeared to be reasonably competent but the majority of the electrical and mechanical design had to be completed by ourselves. The work is now being carried out by contract.



Supervising contractors repairing water pipelines at Newton Training Camp, Sierra Leone.

Provision of Utilities

MAINS electrical power was very limited, available only in parts of Freetown on a rationed basis and with widely fluctuating voltage. Units had deployed with green-fleet generators which proved unreliable and undersized as medium and long-term primary power sources. We therefore locally procured and installed commercial off-the-shelf generators (sized between 105 to 200kVA) for almost all sites with associated maintenance and repair contracts. While some generators were available immediately, most had to be ordered from the UK (six to eight-week lead times) as was the case with the associated switchgear and cabling.

Water, less bottled drinking water, was supplied to BRITFOR locations from a variety of sources. The water had been tested previously by 521 STRE (WD) and, though not potable, was of a reasonable basic quality. To minimize risk of disease through washing with and using non-potable water, the water system designs at the main accommodation locations incorporated small water treatment plants. Authority was also gained for a second environmental health team technician to deploy to conduct a testing regime in conjunction with the STRE for bacterial or chemical contamination.

Fuel was supplied through a local contract with National Petroleum which also provided two fuel dispensing storage and distribution ISO containers. Provision of this equipment would normally be a J4 Infrastructure responsibility and be procured through the Defence Clothing and Textiles Agency but the short-term nature of the deployment precluded this. The national petroleum ISO containers were inspected and, though not meeting medium-term environmental protection criteria, gave an environmental risk acceptable in the short term and were safe for use.

Use of Contractors

WITH the only MCF being the RE detachment at Benguema, our aim was to complete as much work as possible by contract or by direct labour. The deployment of surge RE assets to complete work was considered but not initially used as we believed there were sufficient suitable contractors and were trying to limit the numbers of troops deployed. As we learnt, the "Africa" factor applied to some contractors: their work rate was slow and they needed close supervision. As in Kosovo, we slowly began to find out which contractors were competent. Mechanical repairs were difficult to let as lump-sum contracts, as the extent of the remedial works was not clear, so we directly employed local tradesmen, hired on a daily basis and supervised by clerks of

work, to complete exploratory assessment and subsequent progressive repair work.

The inclusion of the Project CLEO system and a widening remit to cover international military advisory and training team accommodation meant that our original plan to allow routine maintenance and repair on the BRITFOR estate in Freetown to be completed by contract was no longer viable. A surge trade maintenance section was deployed to work directly under the STRE. The intention is for local directly employed tradesmen to work alongside RE tradesmen and to subsequently become the STRE maintenance team. Larger works will continue to be completed under contract.

Resources

We tried to limit the workload on the UK national support element by asking contractors to procure their own resources. This worked for common building materials but good quality electrical and mechanical components were not available and had to be obtained from the UK with a lead-time of four to six weeks. Most of these were ordered through the resources system though we let the Freetown accommodation rewiring contract with the contractor responsible for procuring the materials only after we had checked with his nominated UK supplier to ensure the correct specification and that he was an existing customer. This should have been practical and timely but went wrong when the supplier suddenly stopped his export business and the contractor could find no alternative. We then ordered through the Defence Clothing and Textiles Agency but had already lost four to five weeks.

Summary

Sierra Leone was a far smaller operation than Kosovo, on minimal manning and with short-term infrastructure problems being the main issue. The STRE had to complete the whole range of infrastructure support tasks with very limited MCF assistance, set-up systems and contractor base, at very short notice. With the lack of expeditionary infrastructure joint tactics, techniques and procedures, we relied on our recent experience from Kosovo as a model. With hindsight I would have requested more surge MCF assets earlier and reinforced the resources set-up.

Lessons Learnt

Use of Civil Contractors. The use of civil contractors on operations is essential in order not to overload military engineers and to minimize our own logistic requirement but the risks must be understood and catered for. The best way to minimize these risks is to use a combination of a partnership with a reliable UK contractor able to deploy early in an operation (but this costs money) and making best use of local contractors. The most able force will be one comprising both MCF and contractors.

Command Status. As the majority of the STRE tasks are infrastructure orientated, they should be commanded by the senior infrastructure engineer. Elements can be placed under tactical control of field units as required – as happened for checking bridges on the move into Kosovo. Where equal ranks are deployed (eg CO engineer regiment and CO CRE (Wks) or OC field squadron and OC STRE (Wks)) – though I may be swayed by the fact that I have no desire to be commanded by anybody if I can get away with it! – pragmatism can reign with the field force commander leading on J3 engineer issues and the specialist commander on J4 infrastructure issues. If there has to be an overall RE commander, then it should be the more experienced officer.

Professional Engineers. The professional engineer stream is a specialism. We tend to start the professional engineer training course as senior captains and are therefore relatively inexperienced, in this discipline, for our rank compared with contemporaries in mainstream combat engineering. Only after squadron command and experience in design, contracts and property management do we have sufficient experience to back up our technical training. This will probably not be until senior major or lieutenant colonel level and is why most J4 infrastructure recces are completed by a CO CRE (Wks). I am still learning, particularly on electrical and mechanical matters and property management.

The Importance of Resources. Resources are key to what we can achieve and there must be a close tie-up between STsRE and a theatres resources set-up; these must be sized and organized to allow for the procurement of resources for both the MCF and for STRE contractors. Sourcing of electrical and mechanical equipment for both will almost always have to be from the UK.

Need for Expeditionary Design Standards. We need a set of design standards or risk-taking procedures for expeditionary infrastructure which are mid-way between the current in-the-field and permanent peacetime requirement.

There is a balance to be struck between timely construction and the safety and environmental standards required for permanent works which requires adopting a risk-taking philosophy, as is the case with other operational matters.

Artisan Skills. Many of the tradesmen deployed with, or alongside, us were very rusty and lacked confidence, mainly stemming from lack of practise. If our sappers are to remain triple-hatted then we must ensure that every opportunity is taken to practise them in their artisan skills, particularly in the electrical and mechanical trades. Maximum use should be made of overseas training exercises.

The Long-Term Nature of Infrastructure. No matter how it is done, infrastructure works take a long time to design, procure and construct and a lot of effort and manpower to properly maintain. We must be careful not to raise expectations for timeliness and quality that are unlikely to be fulfilled. Some of us are too optimistic in our forecasts.

Civil Military Coordination Potential of STsRE. The potential that STsRE have in completing both civil military coordination work and in nation-rebuilding is massive. Apart from the early days in Kosovo, we are rarely involved in this due to a lack of time and resources. Our first priority is to support immediate operations and infrastructure tasks but it is a shame that we cannot realize our enormous potential in this area.

Conclusion

I HOPE I have given some idea of what STsRE do on operations – far more than just designing. We can complete a number of roles depending on our ORBAT and the size of the operation. These include design, project management, the letting and supervising of works contracts, property management, supervision of direct labour, inspections and minor remedial works, quality control and site supervision of MCF tasks and running the J4 Infrastructure desk. Of course we are only one cog in the overall engineer machine and we rely heavily on the rest of the Corps. We are part of the team.

It May Have Seemed A Good Idea At The Time

MAJOR G C JONES TD

The author first enlisted as a sapper with a Territorial Army field survey squadron whilst at Bristol University. He subsequently entered the Army as a National Serviceman, was commissioned in 1954 and served with Malayan engineer squadrons. On demobilization he was employed in the roadstone industry and joined the Royal Monmouthshire Royal Engineers (Militia) as a volunteer, eventually commanding 100 Field Squadron. Transferred to the Watchkeepers Pool, he served with Headquarters Royal Engineers 3 Armoured Division, and finally as a liaison officer with Headquarters 30 Engineer Brigade before retirement from Territorial Army service. Five years later he also retired from civilian employment.

Introduction

SOMETIME in the 1980s, searching for old postcards with a Royal Engineers theme, I purchased two cards with the caption "Boer Statue RE Chatham". My curiosity was aroused, and in correspondence with the then curator of the RE Museum, ascertained that the statues had been brought back from South Africa by Lord Kitchener, and presented to the Corps of Royal Engineers, but were returned to the Union in 1921, to be united in Pretoria with a statue of the late President Kruger.

Subsequently I purchased further cards showing the individual statues at Brompton Barracks, and cards showing statues in position to the side of the South African War Memorial. I was determined to learn more of the origins of the statues, how, and when, they came to England, and the reason for their eventual return.

Sammy Marks (1843-1920)

SAMUEL (Sammy) Marks, a Lithuanian Jew, moved to England when he was 16, and in 1868 at 25-years of age emigrated to Cape Colony. Once there, using borrowed capital, he started to peddle cheap jewellery before moving onto the Transvaal where he opened a mining store, prospered, and eventually became the most successful pioneering industrialist and agricultural entrepreneur in the fledgling Transvaal.

Marks arrival in the New Territories preceded the Uitlander invasion (foreign immigrants attracted by discovery of gold and diamonds), and in 1895 he donated the not insignificant sum of £10,000 to the City of Pretoria for the erection of a statue to honour President Kruger, then in his third term of office. As the donor he expressed a wish that the statue be erected to the west of the church in Church Square, Pretoria. In his generosity, he may perhaps have been accused of protecting and furthering his growing financial interests, by ingratiating himself with the political leadership. He however saw it as a genuine expression of thanks to his adopted country, for the opportunities it had given him. He had no aspirations towards political office, but held a genuine desire to see his adopted country flourish, and not become involved in either internal or external conflict.

The Executive Council approved the suggestion, and the appointment of an unknown (at that time) Dutch-born Anton van Wouw as the designer and sculptor for the work. When preparing for his commission, van Wouw produced a plaster model of his proposed design, showing the President on top of a square central column, and at the base,

four typical Boer figures separated by large wall panels, the whole monument positioned on top of an open plan stepped base.The design, as submitted, was subsequently amended, and when finally approved all the statues and panels were cast in bronze by Francisco Bruno in 1898 at his Rome workshop. The statuary was dispatched the following year to the port of Lourenco Marques (now Maputo, Mozambique, formerly Portuguese East Africa) but the panels remained in Rome. Meanwhile, the central stone column and base of Scottish granite, weighing some 200 tons, had been erected in Church Square ready to accept the bronze statues and panels. The whole structure had been given a more solid appearance, by reducing the height of the central column, and widening the platforms on which the now larger than life statues would rest. The original model had open plan steps to a podium, but these had been replaced by a more conventional combination of low masonry walls, and railings with wrought iron gates. And this is how things stood at the outbreak of the Great Boer War which interrupted the completion of the work. The statuary remained in Portuguese East Africa during hostilities.

The Spoils of War

Major General Lord Kitchener, as Commander in Chief, negotiated the Boer leaders on 31 May 1902, which brought an end to hostilities. Kitchener, with something of a reputation for acquiring treasures by purchase, gift and loot, persuaded Sammy Marks to present the four Boer statues and the panels to him. Marks, perhaps contemplating that as he had already gifted them, they were not his to give, reluctantly agreed and Kitchener arranged for their shipment back to England, and instructed they be delivered to Brompton Barracks, Chatham.

On 21 May 1902, having acquired the statues, he wrote to The Inspector General of Fortifications, Lt Gen Sir W G Nicholson, offering them to the Corps as a memorial to those "Sappers" who had died during the war, and suggesting that the memorial follow the Pretoria design, but without the lower walls and railings, and substituting the Kruger statue with a granite obelisk upon which the names of the fallen should be inscribed. The Inspector General, after consulting HRH The Duke of Cambridge, as the Colonel of the Corps, accepted Lord Kitchener's generous offer and formed a committee to progress the Kitchener proposal and request officer subscriptions equivalent to three days' pay to meet the costs of erection.

Meanwhile, the statues, having arrived at Chatham by train, were hauled from the station by "Steam Sapper"* to Brompton Barracks, and placed on temporary display, with two outside the Model room (centre of North Block) and the other pair on the other side of the square outside the then Guardroom (centre of South Block). The statues were not, as sometimes suggested, modelled on famous Boer leaders but were typical representations of those described in the next paragraph.

Two of the statues depict "voortrekkers", the original Afrikaners who left Cape Colony with their wagons and trekked northwards into the promised land and a new future, in old national costume and armed with an "ou sannah" (flint lock) rifle. The other two depict sentries and are described as "Boerbrandwagte" (an old term used to signify the positioning of sentinels, or outpost sentries, to the laager or camp in hostile country, who would raised the alarm when the laager was threatened.) All four unshaven figures, with broad brim hats, are depicted in various sitting stances. The sentinels look alert as befits their role; they are armed with a Martini rifle and carry a well-stocked bandoleer.

The four Bas relief panels (sculptured reliefs in which the projection from the surrounding surface is slight), drawn to represent significant episodes in the President's life, arrived from Rome and were placed in the Model Room.

Details of the proposed memorial were circulated in January 1903, with a questionnaire to 1620 Corps members, and of the 673 replies received, 80 per cent were in favour, or not averse to, the proposal for an obelisk with statues and Bas relief panels. The appointed committee felt that they should now relinquish their role in favour of a new committee which could be elected at the Corps' next Annual General Meeting. At that meeting in June 1903, the

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* "Steam Sapper" was the name given to a series of traction engines used in the barracks at that time. They were numbered in sequence eg Steam Sapper 1, Steam Sapper 2, and so on. Bogey wheels could be attached to these engines, when necessary, to allow them to run on a narrow gauge railway line laid from the local railway station into the barracks.

opponents of the proposed monument, many of whom were very senior and respected officers, by written submission, or active participation in the discussion, forcibly expressed the opinion that the Bas reliefs were not appropriate, and had great reservations about the use of the statues, in what was to be a memorial to British soldiers.

The 61 officers present, on the proposal of the chairman, nominated and voted for a new committee to progress the ultimate design and construction and were then balloted as to whether the Boer statues should be used. The result was a resounding victory for the NO vote. Lord Kitchener, who was now Commander in Chief India, was informed of the decision and asked to decide their future disposal. In reply he expressed his regret that the statues were not acceptable, but stated he was content for them to remain at Chatham until he eventually returned home to England.

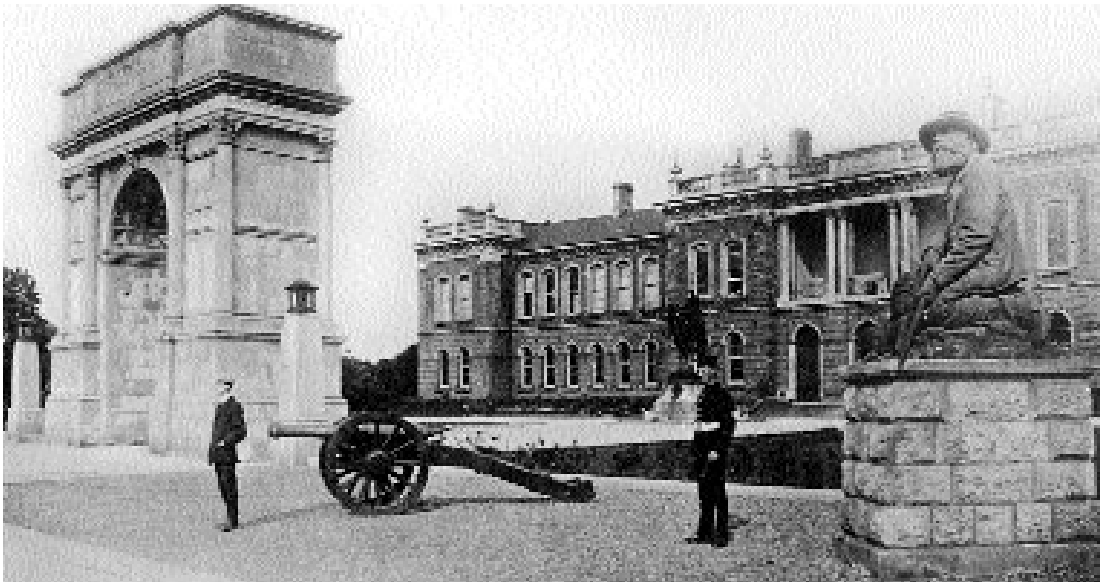
The South Africa Memorial Arch

THE elected committee under Lt Gen Sir R Grant, now entrusted with the task of recommending a suitable memorial, considered a number of alternative proposals and eventually selected a design by Mr lngress Bell, of a triumphant arch to commemorate all 396 members of the Corps, regular, militia and volunteers who died in the campaign.

Many officers still felt that the decision made at the AGM not to include the Kitchener gifts was contrary to the general wishes previously expressed at the first ballot. They showed their disapproval by withholding or even cancelling their earlier pledged subscriptions. Eventually the required funding was achieved and the contracts to build and erect were let. The final cost was about £2750, raised by subscription and donations.

The completed South African Arch, made of Portland stone, stands on Pasley Road, Brompton Barracks, Chatham at the entrance to the forecourt of the Royal Engineers lnstitute Building (now housing HQ RSME), directly across the road from the earlier Crimean Memorial Arch. To accommodate the new Arch, the original centre sections of ornate iron railing which provided the boundary to the Institution grounds were removed, and not incorporated in the replacement low stone walls and stone pillars built either side of the Arch.

In preparation for the display and unveiling of the Arch, a large temporary Square or "Place" was formed by positioning the Boer statues mounted on pedestals at the four re-entering angles of the "Place". Burmese guns were placed on the flanks of the new arch to complete the setting. King Edward VII, who had succeeded his uncle the Duke of Cambridge as Colonel in Chief of the Corps, unveiled the arch on 26 July 1905,



A pair of the Boer statues were positioned either side of the South Africa Arch.
The statue in view, circa 1908, depicts a Boerbrandwagte.

and planted an evergreen oak tree to commemorate his visit, which still blooms today.

The Boer statues may not initially have been on permanent display, but miniature copies of two of the Boer statues and two Sappers of the period were cast in silver, and used as the basal support for a large silver bowl,"The South Africa Bowl ", presented to the RE HQ Mess at Chatham by those officers who had served in the war. A replica in somewhat smaller scale was made for the mess at Aldershot.

The Boer statues are not visible on any postcards I have seen, showing the opening ceremony, or subsequently when the barracks returned to normality. All four statues however remained at Chatham, and date-posted cards circa 1908 show the statues were for the first time on display in Pasley Road positioned on square ashlar stone bases on the flanks of the arches. To the right of South Africa was Boerbrandwagte and on the left his partner, Voortrekker. On the opposite side of the road, against the railing surround the Crimean arch, were positioned the complementary pair, which did not receive the same attention from the photographers, and are rarely seen on postcards.

At some time circa 1910, it was decided to replace the two ashlar bases outside the lnstitute Building with curved face-dressed stone bases, and with the changeover the pairs of statues also exchanged places. Included in the upgrading was the positioning and first appearance of two of the bronze wall panels, between the pillars of the boundary wall directly to the rear of the statues.

Lord Kitchener had always coveted a country residence in England, and in 1911 he agreed the purchase of Broome Park and 500 acres of land near Canterbury for £14,000. Flaws in the title delayed completion, but later that year he secured possession. He renovated the interior of the house, and then proceeded to fill it with his accumulated treasures including two of the Boer statues, and the remaining two Bas relief panels.

KRUGER'S STATUE ARRIVES

THE self-exiled ex-President Kruger died in 1904 and the following year the granite base in Church Square was dismantled and placed in storage. The ever generous Sammy Marks then donated a typical victorian fountain to fill the void. The political climate was changing in South Africa. The new self-governing Union Parliament, first elected in 1909, moved in 1910 from Pretoria to

Voortrekker armed with ou sannah flintlock rifle, on display in Pasley Road. To the rear can be seen the bas relief panel showing the peace negotiations in O'Neill's cottage.

Boerbrandwagte (sentinel) with Martini rifle at the trail position, on a curved face pedestal on display in Pasley Road. To the rear can be seen the bas relief panel "Kruger's speech at Paadekraal."

Together at last. The statue with all attendant figures and panels in place, formally unveiled by General J B M Hertzog in Station Square, Pretoria, 10 October 1925.

Capetown. In 1912 the Kruger statue which had lain in storage at Lourenco Marques, was brought to Pretoria, but the location of the four Boer statues was then an unsolved mystery. Sammy Marks, who by now was an elected member of the Senate was either not consulted, or perhaps with a guilty conscience, he considered it prudent to remain silent. There were differing views as to where the Kruger statue and the plinth should be placed, but eventually agreement was reached on Princes Park as the site. It was unveiled on 24 May 1913 by General Schalk Burger, who as acting President, had succeeded Kruger when he went into exile.

The Great War

THE war then intervened, Lord Kitchener was appointed Secretary of State for War, later to be drowned at sea off Scapa Flow on 5 June 1916, when *HMS Hampshire* struck a mine on passage to Russia. On his death, the title and estate passed to his nephew Viscount Broome, who became the 2nd Lord Kitchener.

The Statues Are Located

THE four missing Boer figures were eventually traced to England, and initial requests for their return met with polite refusal, but after the war, with Kitchener now dead, wartime associations were invoked which allowed meaningful discussions to take place to secure their release. General Smuts requested that Lord Milner, formerly South African High Commissioner, who had returned to England and eventually became Secretary of State for the Colonies, use his influences to secure their release from both the Kitchener estate and the Royal Engineers.

The 2nd Lord Kitchener said that it was his family's wish that their two statues be returned as a means of cementing friendship between the two countries. The overwhelming consensus of RE officers consulted, agreed that their figures and the panels should be placed at the disposal of HM the King (as Colonel in Chief), with a view that they be returned to South Africa. His Majesty graciously approved the request, gave his consent for their return and requested that the Colonial Office arrange shipment. The formal announcement of their impending return was made by the Prince Arthur of Connaught, the son of the Duke of Connaught, as Governor General to the Union, on Sunday 30 January 1921.

United At Last

THE base and pedestal were removed from Princes Park, and re-erected not in Church Square

but in Station Square opposite the Main Railway Station. The lower walls and wrought iron railings were omitted in the transfer, and the result was an open-plan base, similar to that originally proposed by van Wouw in 1899. The completed statue, with the Boer figures and the Bas relief panels in place, was formally unveiled by General J B M Hertzog on 10 October 1925, a century after Kruger's birth.

The tale is not yet ended because in 1939, the Pretoria City Council authorized the transfer of the statue to Church Square. The war intervened, and the architects Gordon Leith and V S Rees-Poole, who had been commissioned to design the work, suspended their plans until hostilities ended. The statue with a new solid-looking base of ashlar stone, was formally unveiled by Dr Malan, Prime Minister of the Union of South Africa, on 10 October 1953.

At last, some 50 years on, Sammy Marks' wish had become a reality, with all the sculptured pieces located in position at the historic site he had suggested. When he made the original offer to fund the statue, to honour President Kruger, he could never have conceived that it would take 58 years to achieve finality, and in the interim be the cause of so much deceit, additional expense, deliberation and political controversy.

In Proud Memory

LIEUTENANT COLONEL M C McCABE BSc(Eng)
BRIGADIER A A WILSON OBE BSc(Eng) MIHT

Lieutenant Colonel Mike McCabe was raised in South Africa and England. He has served at regimental duty in Germany, the United Kingdom, Cyprus and the Gulf. Various staff appointments have taken him to the Ministry of Defence (three times, once as a pleasure), Headquarters 2 Armoured Division, Bosnia, the Netherlands and Italy. On Operation Granby he served as second in command of 21 Engineer Regiment. He was also "the first of the few" to command 77 Engineer Regiment (Volunteers).

Brigadier Alasdair Wilson is Director of the Joint Operations Centre at the Joint Force Command Headquarters in Naples. Accompanied by Lieutenant Colonel Mike McCabe, now at Joint Headquarters Centre (Heidelberg), he represented the Corps at the centenary commemorations of the battle of Spion Kop in January 2000. The opportunity was taken to visit some other battlefield sites of interest to Royal Engineers in South Africa and this article tries to capture the essence of these memorial sites, some of which are sadly deteriorating rapidly

Introduction

In Autumn 1999 Mike McCabe drew the attention of RHQ RE to the 23/24 January 2000 centenary commemorations of the battle of Spion Kop and the desirability of the Corps' representation at this unique and poignant occasion. We had already planned to visit the Zulu and Boer War battlefield sites, so happily agreed the Regimental Colonel's request to represent the Corps. Funds for a suitable Corps wreath were quickly provided.

Mike, partly raised in Natal and familiar with the main sites, was the guide, and we drew on our combined reading of the gripping military history of these parts. The full story of every site visited cannot be told here, but we can at least try to explain why they are historically interesting – some especially so to Sappers. Many have, or had, some kind of memorial to the Royal Engineers who died there. We highlight the condition of some of these, which in a few conspicuous cases is very poor.

The second half of January is a good time to visit South Africa. The useful near coincidence of the 22 January Isandlwana and Rorke's Drift anniversaries and that of Spion Kop on 23-24 January, falls after the fifteenth on which most airlines reduce their ticket prices significantly. It is also not long after the 6 January Wagon Hill anniversary, so a good impression can be formed of contemporary weather, light and ground conditions. Of necessity this article assumes that readers have some elementary knowledge of the Zulu and Boer War campaigns.

The Dundee Area

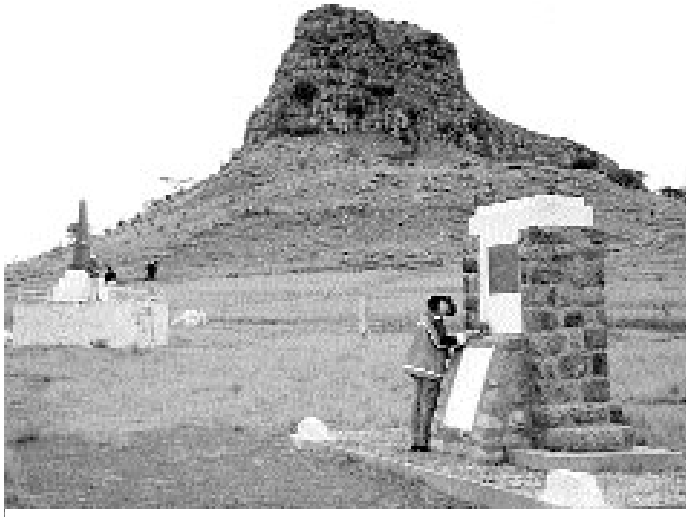
Dundee is a good centre for visiting the best known Zulu War battlefields, and is also the site of the battle of Talana Hill, the opening engagement of the 1899 Boer War. A section of 23rd Field Company RE was in reserve at the battle. The nearby Talana Museum, combines very interesting exhibits depicting the local coal and glass industry with a strong military and cultural collection. A good series of displays on the nearby Zulu War battlefields includes the mangled brass helmet plate of one of the five Sapper junior ranks killed at Isandlwana; a remarkable find in the circumstances. The dramatic and epic battle of Isandlwana was a great Zulu victory, skilfully achieved at fairly high casualties to them. The Zulu minor chief Mehlokazulu kaSihayo, attacked with the inGobamakhosi Regiment on the left wing or horn of their army and was at the heart of the final fighting. In his account, reported in Edition X of the 1880 *RE Journal,* he says:

> "My opinion of the fight at Isandlwana is that if the English had stuck together more than they did, they would have beaten us. As it was they nearly did so, and I believe they owe their defeat to their being so much divided. We came across small parties and outnumbered them. When we attacked the camp I never thought we would have beaten the English; and we were all astonished at the way they fought."

Their line penetrated and outflanked, their rifle

ammunition expended, the remaining formed bodies of the 24th Foot and the ad hoc groups of minor units and colonial volunteers fought desperately to the end, while some others tried to flee. One of the final centres of resistance was heroically led by Lieutenant Colonel Anthony Durnford RE and Mehlokazulu describes the stirring last moments of some of this fighting as follows:

> "It was a long time before they were overcome – before we finished them. When we did get to them, they all died in one place all together. They commenced with their pistols, which they used as long as their ammunition lasted; and then they formed a line, shoulder to shoulder and back to back and fought with their knives[1]."



The general area of Colonel Anthony Durnford's last stand, near the saddle of Isandlwana on 22nd January 1879. There is no RE memorial at this world-famous battlefield. The other six Royal Engineers present were probably also killed near here in the last stages of desperate fighting. The poppy spray was placed by us to commemorate the RE dead.

Very sadly, although they are all commemorated in Rochester Cathedral[2], there is no RE Corps memorial at Isandlwana itself to Durnford and the other six Royal Engineers who died in the battle[3]. This should be corrected; and the sooner the better. Durnford is a heroic figure, albeit one criticized by some historians, and the Royal Engineers at Isandlwana will have died hard. The memorial windows to Durnford and MacDowel at nearby St Vincent's Memorial Church[4] also need restoration; their names being obscured in crude attempts to repair the stained glass. The

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[1] Some contemporary Zulu accounts use the term "knife" to cover swords, knives and bayonets. Mehlokazulu is always very exact in specifying exactly which he means, highlighting the very grim nature of these last actions.

[2] They are all named on the RE memorial panels above the North door of Rochester Cathedral. The Durnford memorial window there includes the excellent quote from 1 Maccabees IX, 10: "…God forbid that I should do this thing, and flee away from them: if our time be come, let us die manfully for our brethren, and let us not stain our honour". It would be a fitting inscription on any new RE memorial.

[3] These were:

Lt Col and Brevet Col A W (Anthony William) Durnford, Commanding No 2 Column.
Lt F H (Francis Hart) MacDowel RE, Detached from 7th Fd Coy to No 3 Column Staff, thence to Lord Chelmsford's Headquarters Staff.
9032 2nd Cpl N Mansfield, detached from the Mounted Section of 7th Fd Coy to No 2 Column Staff.
2nd Cpl Mansfield's death at the battle was not even acknowledged in RE Corps History.
Also, Lt J R M Chard's Detachment of 5th Fd Coy, comprising:

7100 Cpl W Gamble	13805 Spr J (John) McLaren
9312 Spr H (Harry) Cuthbert	12812 Spr M (Marshall) Wheatley

He was not a Royal Engineer, but we might also decently remember Conductor David Nolan Senior "Conductor of the RE Field Park" of the Army Commissariat and Transport Department. Research is needed but the Natal Native Pioneer Corps, an auxiliary "engineer" corps raised from Colonel Durnford's Colonial Engineer's Department, are also believed to have lost some men near Isandlwana.

[4] 22nd January is St Vincent's Day in the Church of England's calendar. The church was built in the early 1880s specifically to commemorate the battle. The local St Vincent's community is very poor. The church is slowly being restored, assisted by the Royal Regiment of Wales and others. Sadly some memorials have been mislaid, or lost entirely.

Brigadier Alasdair Wilson lays the Corps wreath on the British memorial at Spion Kop at the centenary commemorations.

Royal Artillery placed a memorial stone on the battlefield as recently as the 120th anniversary in January 1999, and surely we should do something to remember our dead at this remote but world famous site. Sadly, the Royal Engineer grave markers at the nearby British forward logistic base at Helpmekaar are either so decrepit as to be unreadable or they have simply vanished[5]. It was therefore a pleasure to see the excellent condition of the memorial obelisk at Rorke's Drift, which also commemorates some of 5th Field Company who died there of sickness[6].

We particularly enjoyed tracing the sites of the original ponts at the drift and the line of the old military road from Helpmekaar to Isandlwana. There are still traces of what might be the original wagon tracks of 1879. Climbing the Oskarberg above Rorke's Drift – which is much bigger than it looks – we were treated to a breathtaking view of Isandlwana, Rorke's Drift itself and the area of the Fugitives' Drift. From here, anyone with binoculars could have watched the closing stages of the Isandlwana battle unfold nine miles away across the river. The day we visited, the Buffalo River was in full pelt providing a startling indication of its probable condition on the day of the Isandlwana battle.

LADYSMITH

WE then visited the battlefields of Ladysmith and the Tugela river line, tracing many of the original bridging and crossing sites used. On a side visit from Colenso to the nearby Chieveley military cemetery we found the only RE Grave there, that of 29013 Sapper P Wood of 37th Field Company who died in April 1900, and were able to place a small Royal British Legion wooden cross of remembrance. After a visit to Ladysmith itself, with its excellent Siege Museum, we found the graves of Lt Digby-Jones VC, his brother officer 2Lt Denniss, and other Sappers in Ladysmith Town Cemetery (mostly from 'A' Pontoon Troop). It is still possible to trace the Wagon Hill action in detail and to find the rock on which Digby-Jones's body was found. There is a good RE memorial pyramid on the hill itself, but sadly the other 23rd Field Company graves at the nearby Wagon Hill Cemetery[7] are conspicuously dilapidated and poorly commemorated. Other regiments have developed their graves there with solid memorials, but somehow no comparable Corps

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[5] These were:

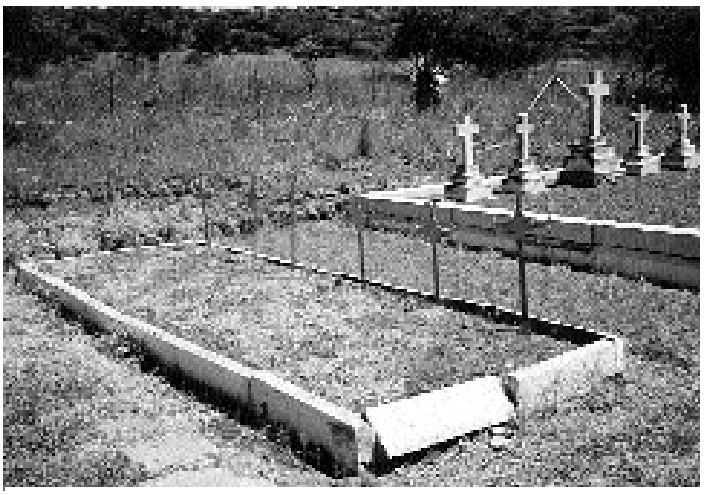
Sapper H (Henry) Thompson	Died 28 February 1879
Driver W Beckett	Died 28 February 1879
Driver F (Frederick) Mandy	Died 6 March 1879

[6] They are incorrectly shown as "Pte…..…RE" on the rear face of the obelisk, but were:

14491 Sapper F W (William) Russell	Died 27 February 1879
14141 Sapper G Betts	Died 20 February 1879

[7] The graves of Sergeant G Jackson, Corporal E Hunt, Lance Corporal H Bailey; Sappers W Bland, W Simmonds and T Cox, all of 23rd Field Company.

effort has been made and it is now almost impossible to read the names of the Royal Engineer dead on the surviving grave markers. The nearby, but quite hard to find, Intombe Cemetery also contains many Royal Engineer graves, mostly of Sappers who died of wounds and sickness. The original wooden grave markers have long gone but many Sappers are commemorated on the central memorial pillar. We were very impressed by the regimental memorial panels that are so beautifully kept in All Saints Church in Ladysmith, and these are well worth a special visit. The Corps panel records the names of 58 Royal Engineers who died in the siege or were killed in the fighting to break in and lift it. 23rd Field Company lost three of its subalterns killed in action.



The dilapidated graves of the men of 23rd Field Company, killed in the action at Wagon Hill on 6 January 1900, at the nearby Wagon Hill Cemetery. These are conspicuously less well-found than the graves of every other unit whose dead also lie there.

Spion Kop

On the centenary day itself we joined a large party of local people to climb Spion Kop along the historical route to the summit used by the British brigade. They did it at night, most not having slept for 36 hours, but we climbed in broad daylight guided by a troop of armed game wardens. You cannot do this independently; it passes through a fenced nature reserve. At the top, we had a guided tour and then gathered for the commemoration ceremony itself. This was a moving experience, well attended by descendants of many of those who had taken part in the battle. We all first stood and remembered together by the memorial obelisk at the centre of the British position and at the western end of the awesome trench graves. After a short address wreaths were laid; including the Corps wreath by Alasdair Wilson.

Representatives of the former Boer Kommandos also laid wreaths here for the first time ever; itself a very fine and graceful gesture. We were the only serving members of the British Army present; the sole "Regimental" wreath on that Centenary day being placed by a retired Lancashire Fusilier. The assembly then moved quietly to the nearby Boer Memorial where descendants and families laid their wreaths in a simple but impressive ceremony of great dignity. Brigadier Jim Parker, the retired former British Defence Attache in the Pretoria High Commission, laid a commemorative wreath "on behalf of British regiments" as he had done at the British memorial. It was a very sombre occasion, and a deep sense of family loss was clearly still felt by many of those present. The end of the ceremonies coincided with a manifestation of Cirrostratus nebulosus directly above us. This shows itself as a curious circular rainbow inside the cloud layers with the sun at its centre.

We also met Mrs Sheila Henderson and Doctor John Vincent, who have both done so much over many years to prosper the Rorke's Drift Appeal in its collaborative redevelopment of the community and the historical site there. The excellent craft

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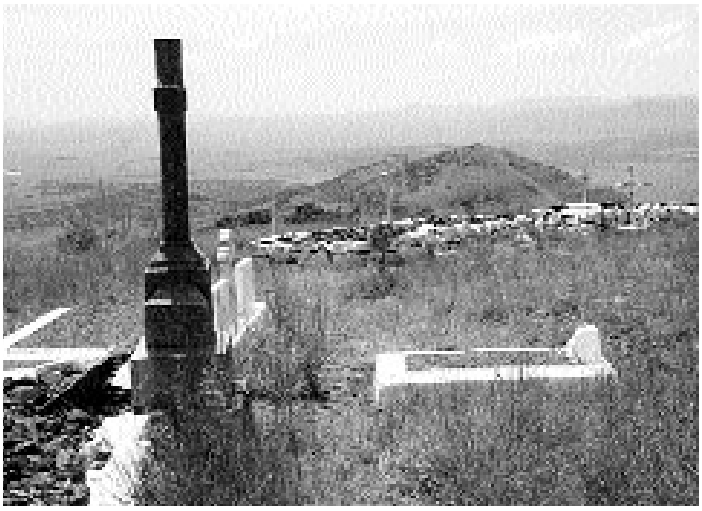
[8] Scholastic Acorn was the British Army project that built a high quality community hall at Rorke's Drift village. Planned and executed under the inspired leadership of Lt Col Andy Harris RE, whilst commanding Southampton UOTC, its construction was supported by the Corps, many local voluntary bodies, the RRW and others. It was an excellent example of the scope for good construction projects in that part of the world and is much appreciated by the Zulu community, for whom the appearance of British soldiers had, historically, only meant hardship and danger.



A brave man remembered – the memorial cross to Maj H H Massy, OC 17th Field Company (foreground left). He is buried in the former firing trench dug by his men and converted, with others, to mass graves after the battle. The Boers were able to bring fire onto the right flank of this part of the line from the Twin Peaks feature, seen in the middle distance beyond the summit rim.

shop, the well designed visitors' centre and museum, and the highly successful Project Scholastic Acorn[8] are just a few examples of achievements brought about or strongly supported by their efforts and influence, and that of their many colleagues and helpers.

As the group dispersed, we met descendants of Deneys Reitz and M "Tottie" Krige, whose grandfathers both took part in the battle. Krige had been shot through both lungs and was found on his way up the north slopes of Spion Kop by Reitz, who did not expect him to survive, a story simply and impressively told in Reitz's marvellous book "Commando". Referring to the closeness of the opposing battle positions, he provides the vivid description:

> "The English troops lay so near that one could have tossed a biscuit amongst them, and whilst the losses which they were causing us were only too evident, we on our side did not know that we were inflicting even greater damage upon them. Our own casualties lay hideously among us, but theirs were screened from view behind the breastwork, so that the comfort of knowing that we were giving worse than we received was denied us".

This breastwork was hastily dug by members of 17th Field Company RE under their OC, Major H H Massy. They were placed near the middle of the straggling brigade order of march and so arrived unhelpfully late in the tactical circumstances. Despite the company piling its first line scale of a thousand sandbags at the bottom of the approach route as planned, no brigade or regimental officer remembered to tell the infantrymen to take one each as they passed. At the top the Brigade Commander, Major General Woodgate, called on the engineers to lay out a trench system on the summit along the line where his men had already halted. Royal Engineer officers laid down guide tapes, and Sappers began hacking at the hard earth and boulders with their picks and shovels, having only their section scaling of these with them. The infantry just had very small, light entrenching tools. Some helped the Sappers, but many just rested. After three hours of frantic digging a broad, shallow trench had been established but only where conditions favoured it. In most places the top soil was very thin, and the front of the trenchline consisted of barely two feet of earth and whatever rocks could be dug out or dragged into place. In the mist and darkness the brigade had unknowingly placed itself on the wrong crest line, the actual crest being near the plateau's edge some two hundred yards further forward. Much of the line was easily approached in dead ground, or could be covered by Boer rifle fire from the right and the further ridges. As sunlight burned off the mist, the British predicament became obvious and all available Boer fire was quickly concentrated against them. A new line was then hurriedly extended onto the actual crest. Although many riflemen had clear shots at the forward edge and flanks of the British position, the real damage was done by the Boer gunners who simply had to drop their rounds inside the easily identified rim of the mountain top to inflict deadly casualties on those crowded there. The grim battle fought on the skyline was neither correctly read nor properly supported or coordinated by the overall commander, Sir Redvers Buller, until it was too late to achieve proper exploitation of the

initial British success. Buller could easily see the action taking place. His subordinate Sir Charles Warren, late RE, could not. After a miserable and gruelling day of heavy casualties and tactical stalemate on this "acre of death" the only effective British commander on the spot ordered a withdrawal at night leaving just the dead and wounded of both sides in possession of the mountain. Without realising it, the British had actually worn down the Boers but then left the summit to them.

All of the dead of 17th Field Company RE are commemorated on the main British memorial obelisk[9] and most of them are buried in the trench grave there, having literally dug their own grave hours beforehand. Two separate memorial stones have been raised over gallant Major Massy. 2435 Sapper W Piller died later of wounds on 3 February 1900 and is buried in his own marked grave at the remote Spearman's Hill cemetery, probably carried there by Indian stretcher bearers under the leadership of Mohandas K Ghandi (later the Mahatma), then a Durban barrister. 17th Field Company RE had a distinguished history in later operations and both world wars, and was the first ever mechanised field company. How sad it is that their number could not have been brought back into the Corps, as one of our reformed new squadrons, in this centenary year.

The Corps wreath at the Spion Kop memorial obelisk, the day after the centenary commemoration. The hot, dry winds of the summit have already begun to desiccate the flowers. Where possible, a small wooden cross of the type shown – with today's RE cap badge – was placed on each RE grave or memorial found during our travels. This style of cap badge, with Queen Victoria's cypher, was first introduced for deployment to the 1899-1902 Boer War.

Bloemfontein and the Kimberley Area

In Bloemfontein there are many fine but deteriorating individual Sapper memorials in the Garden of Remembrance in the President Brand Cemetery near The Queen's Fort. Most of these deaths occurred in the later stages of the war and many were caused by the "enteric fever" that plagued Lord Roberts's field force as it swept through the Cape Province and Orange Free State. They generally took water from unclean sources to fill the very few water carts they had been allowed in an effort to reduce the baggage trains. Part of 7th Field Company RE did great work during the siege of Kimberley and there are many Sapper graves in the large Kimberley cemeteries, but they take a bit of finding and some are quite dilapidated despite obviously recent and active local conservation efforts. In the Kimberley area we had interesting side visits to the battlefields of the Modder River and Magersfontein. A 300-strong RE unit, drawn from three field companies, fought as infantry at the Modder River battle. The Modder River bridge also has a splendid and massive, intact example of a RE-built blockhouse.

In the centre of Pretoria it was interesting to see the statue of President Kruger in Church Square. At its base there are four larger than life

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[9] These are: Major Massy and Sappers Elliot, Potter, Piller and Shoobridge. Many others, including the Section Officer were badly wounded. Major Massy was killed while trying to rally the forward line of infantry in support of Lt Col Thorneycroft.

bronze statues of fighting Boers – one at each corner. These had been taken as war prizes on the authority of Lord Kitchener, then presented to the Corps, and once considered to become part of a much more elaborate Corps Boer War Memorial. After many adventures, they were returned to South Africa. [see *It May Have Seemed A Good Idea At The Time* by Maj G C Jones TD in this *Journal*]. Two of them were used as models for that grand old piece of Corps silver, the Boer War centrepiece.

Lasting Impressions

It was a pleasure and an unforgettable experience to be able to represent the Corps at the Spion Kop centenary. That said, each of the many sites visited was in itself stirring in some way and this was particularly so at Isandlwana, Rorke's Drift and Wagon Hill, which are still remarkably well-preserved. Visitors with even a little knowledge of these battles can guide themselves around using the many good books available. Some of the more remote sites require specialist knowledge if they are to be found quickly, or at all. Sadly, as already mentioned, many of the Sapper graves and memorials are in bad order, or at risk of further damage or decay. The Corps should try to improve matters. Though we did not visit them on this trip, there are very interesting Zulu War sites at the Tugela mouth connected with 2nd Field Company RE, and later 30th Field Company RE, who deployed the new "Blood Pontoon" there. 2nd Field Company RE fought with enterprise and courage at the battle of Inyezane, and then endured the Eshowe siege. The remote grave of Warren Wynne, their OC, in its spectacular setting near Fort Pearson is especially poignant – in his diligence he effectively worked himself to death. 5th Field Company RE was in reserve in the square at Ulundi and was then brought into the firing line as reinforcement against a Zulu rush. A serjeant and ten men of 7th Field Company RE, under the command of Major Moysey, directed the preparation of the tactically decisive field works at Khambula and then fought in the hard battle that followed[10].

There are many other sites of Sapper interest which need to be more clearly marked and more prominently commemorated, and the Corps really ought to take greater pride and care in ensuring that respectable memorials are maintained at the most important of them. In the new strategy for the RE Museum, it has been suggested that the Corps might develop its place in the already highly competitive battlefield or historical tour market. It seems to us that a tour to these RE historical sites in South Africa could constitute a very good pilot scheme. But, that is quite another story. The authors will gladly advise anybody who might be contemplating a visit.

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[10]Major Moysey (originally seconded as a Captain from 7th Field Company to Colonel Wood for special staff duties) was not present at the battle itself; being on detached duty that day.

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Have Rapier Will Travel

BRIGADIER J H HOOPER OBE DL

YOU too can be a high sheriff. The qualifications are minimal. To paraphrase the clerk to the privy council, for consideration for the appointment of high sheriff the candidate has to have played a prominent part in the life of the county, be seen to represent the county as a whole, own property within the county (a pup tent is not considered to be suitable) and not be over 70 years of age when assuming the appointment. There are a few excluded categories such as members of parliament, Welsh Assembly members or members of the European Parliament, special commissioners of income tax, officers of the armed forces on full pay, clergymen and barristers or solicitors in practice and similar small fry, otherwise the field is wide open. Oh sorry, the candidate should be of "unblemished reputation in the county and should remain so up to and including the time their names may be pricked by Her Majesty". It makes it difficult but not impossible for former 9 Squadron personnel to be considered but you can always try a county where the squadron has never served as I did and got away with it. Of course, it says nothing about how you carry on after your name has been pricked. As my very first OC (in 9 Squadron funnily enough) said on learning of my impending appointment, "I never thought of you as an Establishment figure". Such a wise and sensible man.

The office of high sheriff is the oldest continuous secular office under the crown. It is, of course, older as a continuous office than the crown (remember Cromwell?) Naturally, like everything else it is not what it used to be. Many of the powers which were once vested in the high sheriff have been given to the lords lieutenant, high court judges, magistrates, local authorities and, perish the thought, the Inland Revenue. However, it can still be fun even if you cannot go around giving the local peasantry a hard time. The appointment is restricted to one year only as it, apparently, was at one time a fruitful source of income via a spot of sleaze and corruption. The opportunities are sadly diminished these days; notice that members of parliament are excluded. But as I say, things are not what they used to be and nothing attractive came my way.

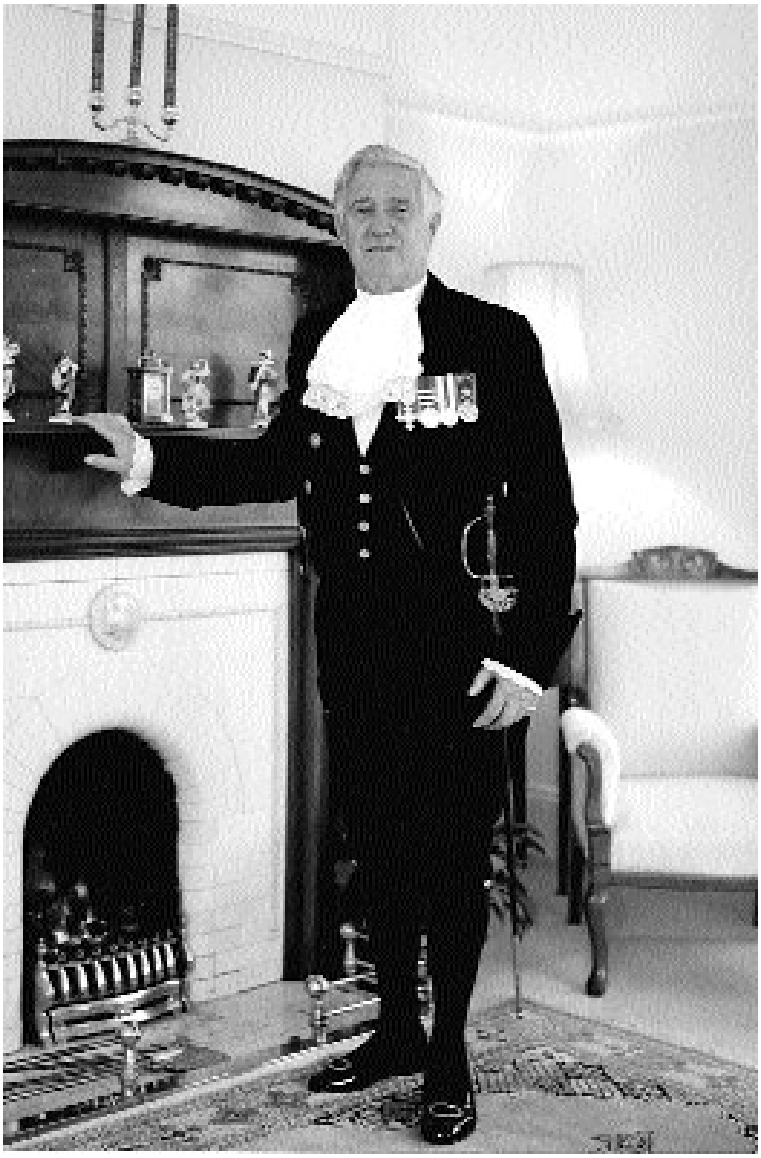
The high sheriff was, from the time of the instigation of the office in Saxon times, the first in precedence in the county until 1908 when an Order in Council gave the lord lieutenant the prime office under the crown. (These Johnnies come lately get everywhere, with due deference to my fellow Sapper, Colonel John Timmins, see *RE Journal* December 1990.) Although lords lieutenant came into being in 1547 for military duties the high sheriff was, and remains, the sovereign's representative for all matters relating to the judiciary and the maintenance of law and order. So apart from being in attendance when the sovereign visits the county the high sheriff is really concerned with legal matters which in turn requires him (or indeed her, as my predecessor was the very first lady high sheriff in Gwent and a very good high sheriff she was too):

- to ensure the well being and protection of Her Majesty's high court judges when in the county (hence the rapier!) and to attend them in court,
- to execute high court writs and orders (the under sheriff whom you appoint deals with these, thank goodness),
- to act as returning officer in parliamentary elections,
- to proclaim the accession of a new sovereign,
- to maintain the loyalty of subjects to the crown.

It does sound a little worrying at first but, working on the tried and tested principle of "If he (or, indeed, she) can do it I'm damned sure I can" (which has got me through a few initially daunting situations), when I was approached and asked if I would take the job on I said I would ... if ...

The first question I asked of the person who put me up for the job was "How much?" I have to say the response to that question was conservative to say the least ... but then I've always liked a party! I took advice from a school chum of mine who was also a high sheriff of Gwent. He said it can vary, in Gwent anyway, from one chap who spent £500 to another who admitted to £39,000. If you are seriously unlucky and get caught for one of the more expensive bailiwicks, it can be a lot more than that.

Having committed oneself to being a high sheriff, in due course, one slides into the comforting



High Sheriff of Gwent 2000/2001.

limbo of being a "high Sheriff in Nomination" for a few years.

Eventually the great day came when my name was "pricked" by Her Majesty. Even *The Times* took note of this! A pretty smart piece of paper arrived a few days later informing me that I was required to "take the Custody and Charge of the said County (Gwent, actually, which does not exist anymore except for the purpose of the lieutenancy and the shrievalty!) and duly to perform the duties of High Sheriff thereof during HER MAJESTY'S PLEASURE, whereof you are duly to answer according to law". This all looked a bit serious. Worse was to come. I had to declare before a legal officer. (In some cases a high court judge, or in my case a long standing friend who is a justice of the peace.)

The declaration is written in incredibly difficult 18th Century English and despite intensive coaching by my son (a Cambridge graduate in history) I suspect I cocked it up. I then had to nominate my under sheriff (he does the tricky bits on high court writs etc) and a sheriff's officer both of whom had to be sworn in. You have to watch this very carefully! You are responsible if the under sheriff legs it with umpteen million pounds due to the court (or who ever) so check his premiums for professional indemnity insurance very carefully. You would also have to be very brave (or stupid) to appoint someone other than the chap who has been doing the job for years. After the ceremony we got at the champagne and had a jolly nice lunch in the Castle in Monmouth, courtesy of the CO R Mon RE(M) (whose RHQ it happens to be).

The legal aspect of the appointment brings one into regular contact with the police, prison service and probationary workers. In Gwent, one of my extremely able predecessors raised a very large sum of money to create the Gwent Police Shrievalty Trust that provides money for police initiatives which benefit the local community but which could not be otherwise funded. Some excellent schemes have been started to keep

young people away from drugs, to steer young tearaways away from stealing cars and to provide meeting places for young people to keep them from congregating on street corners and being a nuisance. The trust also, amongst many other things, provides money to fit new locks to houses which have been burgled!

But, in general one is expected to try to do a bit of good in the bailiwick. Naturally one gets asked to all sorts of functions: mayor making, Scout events, Red Cross events, and so on. I tried to get to any event which was concerned with helping youngsters to get a decent start in life so Scouts, St John, the Army Cadet Force, Boys' Brigade and so on got a fair bit of attention from me. You do spend a lot of time in church though! The mayors all have civic services as do the various youth organizations but the hymns are all ones which the youngsters and I enjoyed so it was no hardship. However, I averaged over two events a week up to Christmas and things hotted up a bit as I headed for the finish in late March.

As High Sheriff one is expected to entertain the great and the good of the bailiwick but as my wife and I have always done a fair amount of entertaining this was no particular hardship. Entertaining the judges to dinner and being entertained in return by them was always great fun. I have long considered judges to be the best after-dinner speakers and I can assure you that they produce vastly entertaining anecdotes at dinner! (Well, at least the ones we were lucky enough to meet did.) Members of the local constabulary were also great value and I must say were a most dedicated and efficient lot with whom it was a pleasure to work. Some of the civic leaders and local politicians were not such fun and far too many of them could talk about nothing except politics and their re-election prospects. Are mayoral and council chairman chains magnetic? They seem to attract each other. But, as always, there were some whose dedication to serving their fellow men was exemplary and whose friendship I will value for years to come.

There is no silly democracy, thank goodness, about the post of high sheriff and one of the perks is nominating a person to be high sheriff in four years time. I have nominated the high sheriff for Gwent for 2004 and provided he keeps his nose clean and Her Majesty approves and pricks his name, in due course he will be high sheriff. I like the system. But can you believe it ... the High Sheriff of Gwent in 2003 will be the chap who was my troop officer in 9 Squadron in Cyprus in 1956. Wonders never cease. Of course, he will have to keep his nose clean, which could be a problem. So if you served in 9 Squadron and want to be a high sheriff I suggest you move to Gwent sharpish. Oh, and by the way, my velvet jacket, knickers and nylons are fit for nothing except a museum so you'll have to get your own. The shoes are size eight by the way. Going cheap!

The Royal School of Military Engineering Public Private Partnership Project

LIEUTENANT COLONEL J M GUNNS MBE BSc

Lieutenant Colonel Jon Gunns joined the Royal School of Military Engineering Public Private Partnership Project Team on a six month posting after 2½ years commanding 101 (City of London) Engineer Regiment (Explosive Ordnance Disposal) (Volunteers). Although retaining a hazy recollection of his days at Sandhurst and on the Royal Engineers Young Officers' course, he is unable to remember any teaching that adequately prepared him for the rigours of staffing a public private partnership project.

Introduction

For the last five years the Royal School of Military Engineering (RSME) has been undergoing studies to involve the private sector in running the School. Three bidders have now made proposals to partner the Army in providing investment and services for the RSME and these bids are now being assessed. We are approaching the last lap of a very long race that has involved dedicated work by many people and will affect many more in future years.

This article outlines the background to the project, explains the current situation and speculates on the future. It was written in late April and it is possible that some of the future speculated on here will have become the past by the time you read it.

Historical Background

In the early 1990s it was realized that there could be benefits in involving the private sector in the provision of public services. General options for private sector involvement in public services included compulsory competitive tendering, market testing, competing for quality (CFQ) partnering and private finance initiative. Potential for private sector involvement within the Army Individual Training Organization included improvements in the delivery and management of training and support functions, capital investment in estate, infrastructure and equipment and exploitation of irreducible spare capacity.

The Army Individual Training Organization initiated a number of CFQ projects, two of which involved the RSME: the Combat Engineer School was to be included in a joint Minley/Sandhurst CFQ programme with a separate project at Chatham. Traditional CFQ projects effectively represented manpower substitution. Posts within the RSME were assessed as core or non-core on an individual basis. Contractors would then be invited to bid to replace all the non-core posts in the scope of the CFQ project by private sector individuals. While this approach would have led to benefits to the RSME, there would have been little effect on the organization, working practices or infrastructure of the School.

By 1997, it was recognized that many projects across the Army Individual Training Organization were focussing too closely on short term arrangements. The revised strategy of Strategic Private Sector Involvement (S-PSI)

offered the opportunity for private sector involvement to be more closely aligned with long-term strategic objectives and aspirations. The S-PSI strategy was launched at an Open Day at Sandhurst on 23 July 1997. The longer term benefits of a wider RSME programme were identified, although it was recognized that a change at this stage would lead to a delay in implementing the project, and the Combat Engineer School was withdrawn from the joint Minley/Sandhurst programme. A single overarching RSME S-PSI project was publicized at an informal Industry Open Day at Chatham on 18 September. Eighty-one delegates from 54 companies attended the Open Day, taking the opportunity to learn more about the RSME's work and to see at first hand the breadth of potential business opportunities. The Open Day was followed by a considerable number of follow-up visits from companies interested in the project.

The Autumn of 1997 and Spring of 1998 were spent in preparing an outline business case for the project. The scope of the project was influenced further by the introduction of resource accounts budgeting with its associated focus on driving down the costs, or disposing, of assets owned by the Army. This led to the adoption of a significantly different approach to preparation of the outline business case ultimately leading to an agreed project scope *(see table lower right)*.

In the middle of 1998, S-PSI underwent a name change. It had become increasingly apparent that S-PSI and the Government's Public Private Partnership (PPP) philosophies were the same and it was decided to avoid confusion by adopting PPP terminology. (The Army Individual Training Organization had also changed its name by this stage, becoming the Army Training and Recruiting Agency). PPP differs from other initiatives in that the private sector is required to invest in, manage and operate the capital assets necessary to deliver a service. The main requirement for any PPP project is normally capital investment linked to the provision of a service. PPP projects involve partnering between the authority and the private sector, based upon mutual trust and shared objectives, rather than short term adversarial relationships. Projects generally result in long term contracts and have several perceived benefits including:

- Additional capital investment.
- Greater flexibility in project planning.
- Improved quality of services through having a wider range of potential providers competing across a wider range of outputs, improving skills and applying the latest commercial techniques.
- Rationalization and greater utilization of assets and services.
- Optimum transfer of risk to the party best able to manage it.
- Generation of third party revenue through selling services to a wider market.

Brief History of the Project

Year	Event
1996	Separate CFQ projects being run for Minley/Sandhurst and Chatham.
1997	Army Individual Training Organization/Army Training and Recruiting Agency adopts S-PSI strategy Extant RSME CFQs stopped and overarching RSME S-PSI project publicised.
1998	Outline RSME business case prepared, amended to reflect requirements of newly created National Asset Register and released. S-PSI renamed PPP.
1999	RSME PPP project launch. Prequalification contest run with nine responses. Long list of six consortia invited to develop outline proposals.
2000	Invitation to negotiate issued to short list of three consortia. All three consortia respond to invitation to negotiate.
2001	Evaluation and selection process ongoing.

Scope of the Project

The outline business case included the following elements of RSME as suitable for transfer to the private sector:

Civil engineering, artisan and trade training.
Electrical and mechanical engineering training.
Watermanship training on tidal waters.
Crane operator and specialist driver training.
Course scheduling.
Estate management.
Transport and movement.
Stores and accounting.
Equipment support.
Reprographics and graphic design.
Post.
Domestic services.
IT support.

It was accepted at the time that this list was issued that it represents a starting position from which to enter into negotiations with industry.

General Phases of a PPP Project	
Phase	**Activities**
Identification	Identification of potential PPP opportunity.
Planning	Appoint Project Team. Prepare outline management plan. Identify general outputs required. Consider fall-back position.
Decision	Decision to proceed with project. Inform trade unions.
Procurement/ Competition	Issue Official Journal of the European Community notice. Prepare SOR and PSC. Prepare prequalification questionnaire. Seek outline proposals. Shortlist bidders. Issue invitation to negotiate including SOR. Discuss requirements with bidders including site visit. Receive proposals. Clarify and evaluate proposals.
Decision	Select preferred bidder or extend competition into a further round.
Procurement/ Negotiation	Negotiate final contract details with preferred bidder. Award contract.
Contract Management	Manage contract.

In Spring 1999, the Minister for the Armed Forces gave approval for the RSME PPP project to be launched. Advertisements were submitted to the *Official Journal of the European Community* and other journals. Concurrently, subject matter experts at the RSME began drafting the statement of requirement and work started on defining the public sector comparator.

The statement of requirement is based on outputs required, in order to give bidders the maximum opportunity for innovation in meeting the requirement. The RSME project differs from other projects in its complexity with consortia being invited to take on a wide range of responsibilities. More than 150 individual outputs are identified in the RSME statement of requirement, ranging from training delivery, estate management, vehicle and plant procurement and management, to provision of afternoon tea and a batting service in the Officers' Mess.

The public sector comparator is a fully costed statement of how the RSME would meet the requirements set out in the statement of requirement in the absence of a PPP solution. It is an important document as it fulfils two functions:

- It acts as a benchmark against which private sector bids are compared to determine whether they would deliver better value for money.
- It provides a fall-back position which could be implemented in the event that the PPP process fails to identify an acceptable private sector partner.

A further Open Day for industry was held on 10 May 1999 as the lead-in to a prequalification process run between May and June. One hundred and fifty-five delegates attended the Open Day and nine responses to the prequalification questionnaire were received. A "long list" of six consortia were then invited to develop outline proposals for the future delivery of services required at the RSME and, on 30 March 2000, Minister Armed Forces endorsed the selection of a "short list" of three bidders to proceed into the next phase of the competition: Carillion Defence Training, Holdfast Training Services and Vosper AMEC Defence Services.

Current Situation

An Invitation to Negotiate was issued to the three remaining bidders on 7 July 2000. Responses were received in December and in January 2001, the three bidders made formal presentations on their proposals.

Bidder responses are now being scrutinized by technical, financial and commercial evaluation teams. Technical evaluation teams have been examining the nine key areas of the proposals: contract management, asset management, command information systems, training, equipment support, stores and resources, accommodation, motor transport and recreation. Manpower for these teams has been found from within the RSME with many key staff spending three days a week on formal evaluations. Financial, commercial and legal evaluations have been undertaken by professional consultants working on behalf of the RSME.

Technical evaluation teams score each of the bidders' proposals against the statement of requirement. These scores are then modified using a weighting system to ensure that the major requirements are given more importance than less critical ones. One of the procedures adopted in the evaluation process has been the introduction of a clarification process. Where evaluators are not fully clear on what a bidder is

offering, or where further detail is required, a formal question is raised and passed to the bidder to answer. The size of the bidder's response depends on the complexity of the issue raised. In some cases the issue can be answered in a single page. Other issues require longer responses, typically three to eight pages long with exceptional issues running to more than 100 pages. A deadline of midnight 15 May was set for bidders to respond to clarification issues. All bidders managed to meet this deadline and a total of 1,420 responses were received – 277 of them in the hectic 48 hours immediately preceding the midnight deadline. The last responses were dispatched with less than an hour to spare. Use of the clarification process has enabled evaluation teams to gain a better understanding and to assess proposals more accurately, often leading to an increase in bidder scores.

The scale of the evaluation process is difficult to grasp without seeing it. Some measure can be gained from the fact that 36 military technical evaluators, drawn from the RSME, supported by 54 technical experts when required, have been diverted from their core employment for three full days a week for the last four months with a further two months at least in prospect. So far this represents over 1,500 man days at a capitation cost in excess of £400,000.

It is anticipated that the evaluation process will be complete by early summer.

Next Steps – The Future

HAVING completed the evaluation process, the bids will be formally compared and a decision made on the next steps. There are three possible outcomes:

- If one bidder is clearly better than the others, both technically and in price, that consortium could be selected as the preferred bidder and detailed negotiation will start with the aim of agreeing a contract.
- If some key issues remain unresolved or none of the bids is satisfactory, it may be necessary to adopt a further competitive stage to refine bids. It is possible that only two of the three bidders will be invited to continue in this stage of competition.
- If none of the bids are considered acceptable or affordable, the competition might end and the decision be taken to pursue the public route identified in the public sector comparator.

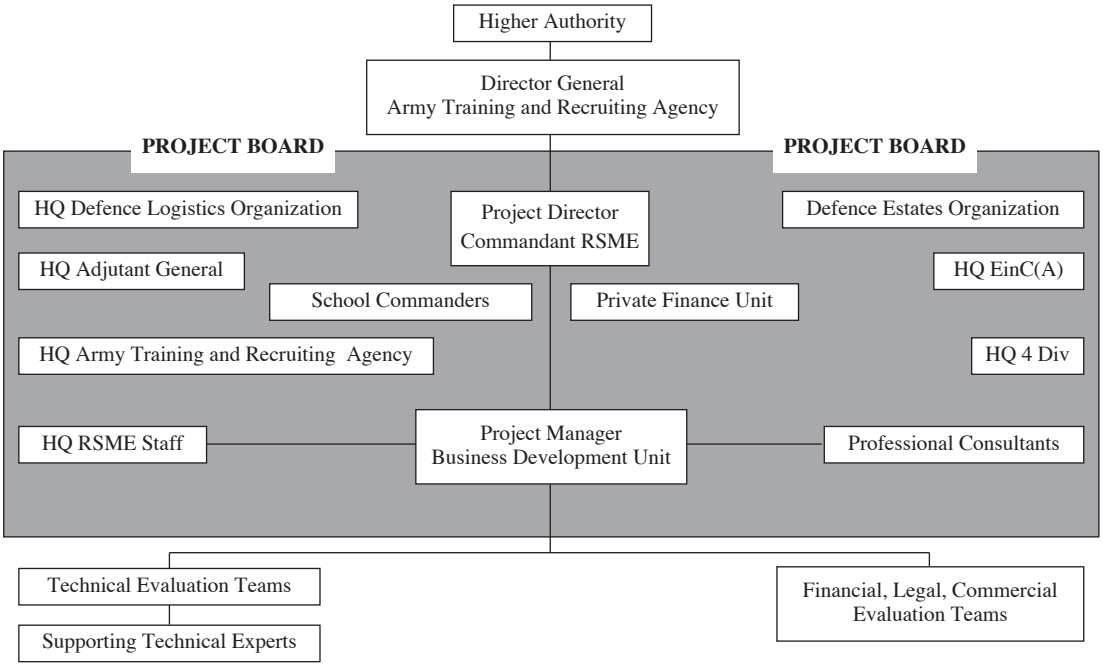
Project Management

THE Commandant of the RSME is the Project Director. He is supported by a project manager who,

Headquarters RSME.
The future home for a joint military/civilian training organization?

Bomb disposal training, like combat engineer training, is outside the scope of the project. However, the future partner will provide course support and administrative functions.

Project Management Structure



with a small staff in the Business Development Unit, co-ordinates the day to day running of the project. Technical evaluation teams meet with staff from the Business Development Unit weekly to update the situation and co-ordinate activity. The Project Director holds fortnightly meetings with RSME principal staff, Business Development Unit staff and the two School commanders.

The Project Director also chairs Project Board meetings approximately three times a year. The Project Board comprises key staff from RSME with outside participation from stakeholders in HQ Defence Logistics Organization, HQ Adjutant General, HQ Army Training and Recruiting Agency, the MOD Private Finance Unit, the Defence Estates Organization, HQ 4 Division, HQ Engineer in Chief (Army), professional consultants and other agencies.

The outline management structure is shown above. The neat lines on this chart are misleading as, in reality, the structure is flat and matrix, verging at times on the chaotic! As an example, the commanders of the Combat and Construction Engineer Schools appear at several levels within the structure; they both lead a technical evaluation team, attend the Project Director's fortnightly meetings and are full members of the Project Board.

During the evaluation phase, "Chinese walls" have been deliberately constructed to separate the technical and financial evaluation teams. This was a necessary result of the procurement process to prevent technical evaluators from subconsciously considering financial issues. As the evaluation progresses, a series of meetings between technical and financial teams have been arranged to ensure that the financial impact of technical submissions have been considered.

The project timetable has been affected by many outside influences, some of which have been previously mentioned. It is apparent that seemingly minor events can have unduly large impacts on the project and can send the projected end date scuttling away to the right like a startled mouse. Great care is taken to manage and co-ordinate the individual processes in order to keep the project on track and a rigorous approach has been adopted to screening requests for extensions of time or the introduction of new procedures.

PERSONNEL

GIVEN that some 495 civilian staff will transfer to the eventual preferred bidder, great care has been taken to inform and cater for the interests of existing RSME staff.

Plant training is currently included in the scope of the project. The future partner may find innovative methods of providing this training, offering efficiencies against current practice.

Routine issues are widely reported in an internal newsletter and the Commandant updates staff at bi-annual briefings. Key events are publicized as they occur, either by newsletter or by one-off briefings. All staff had the chance to meet the three remaining bidders at a formal briefing and question and answer session.

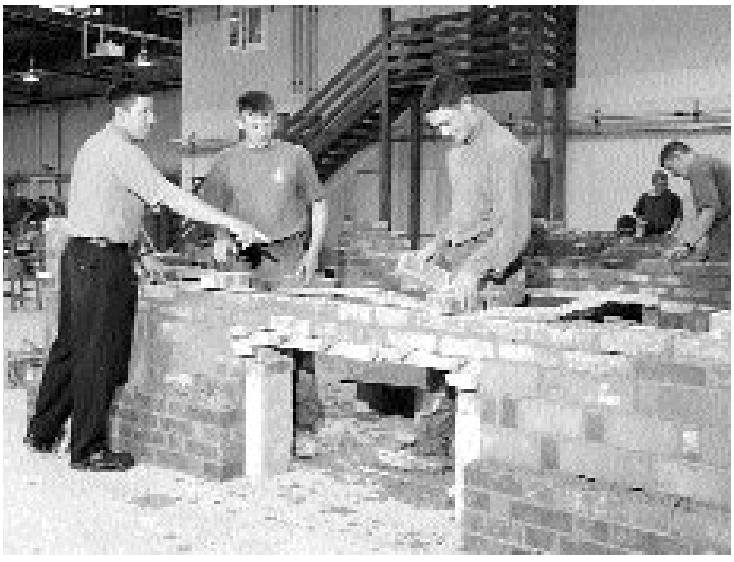
Inevitably, despite this effort, there are concerns amongst the workforce and rumours about the bidders' proposals circulate frequently. Damping down speculation is hampered by the need to restrict release of commercially sensitive information. However, the chain of command has taken pains to allay concerns whenever they arise.

The terms and conditions of those RSME civilian staff who will transfer are protected by the Transfer of Undertaking (Protection of Employment) Regulations and this has been a key area of discussion with the bidders.

Some 200 military posts may also be disestablished as functions are passed to the successful bidder. Given that there will be a long lead-in period as the bidder recruits replacement staff, military staff surpluses will be managed effectively through the normal posting system.

CONCLUSION

THE successful bidder for this project could be the RSME's strategic partner for the next 30 years. There is no reason to suppose that future years will see fewer surprises than the past and decisions made now will have a significant impact on the RSME and the wider Corps. The robust management of this process will ensure that a reliable, flexible and resilient structure is established to meet the demands of the future.



Artisan training is included in the scope of the project and responsibility for scheduling, running and supporting these courses may pass to the RSME's private sector partner.

Journal Awards

The Budget, Investments, Membership, Scholarship, Memorial and Publications Committee announces the following awards for
articles of special merit published in the December 2000 issue:

INFRASTRUCTURE OPERATIONS IN SIERRA LEONE
by Major M P Walton-Knight – £100
MYTHS OF AND INSIGHTS INTO TEMPORARY FIELD ACCOMMODATION
by Lieutenant Colonel C M Cockerill – £75
IN NO DISORDER – RIGHT DRESS
by Launching Nose – £50
A COLLABORATION OF MULTIDISCIPLINARY SCIENTIFIC RESEARCH AND BRITISH MILITARY TRAINING IN SABAH
by Captain M H W Workman – £50
INFRASTRUCTURE FOR FUEL
by Major S P W Boyd – £50

and annual awards for 2000 were agreed as follows:

Montgomerie Prize
for the best article on a professional subject (£90 or set of Corps History):
Lieutenant Colonel C M Cockerill for
MYTHS OF AND INSIGHTS INTO TEMPORARY FIELD ACCOMMODATION

Arthur ffolliott Garrett Prize
for the best contribution on the technical aspects of logistic engineering (£120):
Major M A P J Sullivan for
OPERATIONAL EXPEDITIONARY INFRASTRUCTURE WORKS, THE AIR SUPPORT WAY

Best Junior Officer Prize
for the best article by an officer of the rank of captain or below (£60):
Second Lieutenant J C K Jones for
GUCCI JOBS AND GREEN KIT

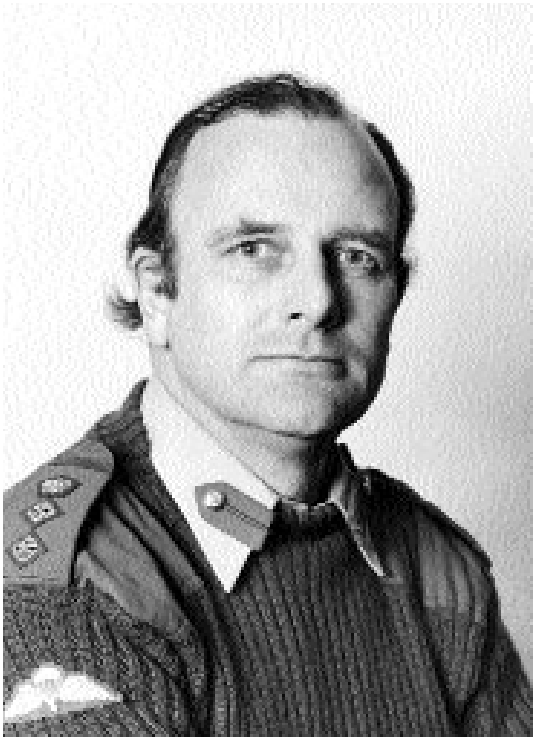
Best Article Of The Year prize (£120):
Major M P Walton-Knight for
INFRASTRUCTURE OPERATIONS IN SIERRA LEONE

and awards for articles of special merit published in the April 2001 issue:

ENGINEERING VERSATILITY AND THE CORPORATE CULTURE
by Professor David Brancher – £100
BLACK ADDER'S WAR – NOT WHAT IT SEEMS
by Lieutenant Colonel M W Whitchurch MBE – £75
"ON A GREEN HILL FAR AWAY ..." THE GRAND PIANO EXPEDITION 2000
by Captain J Masters MBE – £50
THE FIRST STEPS TOWARDS THE DEMILITARIZATION OF NORTHERN IRELAND
by Lieutenant J E Fossey – £50
MEMORIES OF KOREA, 50 YEARS AGO
by Major General A E Younger DSO OBE – £50

Memoirs

BRIGADIER W M R ADDISON
Born 16 June 1935, died 27 September 2000, aged 65.



BRIGADIER Michael Addison's army career had four overlapping strands in all of which he made particular marks: as an airborne sapper, in Northern Ireland fighting terrorism, as Commandant of the Apprentices College at Chepstow and in Canada in several roles. He then went on to exercise his talents with unusual success in the field of hospital and academic administration.

Educated at Loretto and Edinburgh University where he obtained a BSc in Pure Science (psychology, physiology and biochemistry), he was commissioned into the Corps in 1959 as a lieutenant. He relished two spells with 9 Independent Parachute Squadron. As a troop commander in the early 1960s he undertook a number of off-beat tasks: he led a small team to the Gilbert and Ellis Islands in 1962 to blast passages through coral reefs, making access for fishing craft both easier and safer; with the UN in Cyprus in 1964 he was special LO to the Turkish Cypriot Vice President, Dr Kutchuk. Later while in Singapore as GSO 3 to the Commando Brigade he fixed himself an attachment to 1/10 Gurkhas during the Borneo confrontation in order to get nearer the action. He was very much a soldier's soldier, leading from the front, tough, firm and fair. Many of his soldiers kept in touch over the years and have paid tributes.

He was back with 9 Squadron as OC (1972 to 1973). A successful *Water Leap* project, starting his close ties with the Canadian forces, was followed by a Northern Ireland tour. "During the course of the tour Mike brought about a complete change to the military infrastructure of Belfast. He forced COs and company commanders alike to consider the positioning of their OPs from a tactical point of view, dragging them off to the surrounding streets and vantage points so that they considered each site from a sniper's perspective. Early in the tour he discovered that the standard high-density concrete block had a better stopping power than a sandbag. It was also cheaper. He then came up with designs for armour plated sliding embrasures that provided further protection for the sentry." He also contributed much to the professional approach being developed at Chatham to the new responsibility for Search.

Later, as CRE Northern Ireland (1976 to 1978), Mike Addison adopted the same rigorous approach pushing through the design and construction of fortified OPs in South Armagh even perhaps in the face of the doubts of the staff of HQNI.

This tour was followed by a Defence Fellowship at St Antony's College, Oxford, where he was able to exercise his sharp intellect, and where he was highly thought of by colleagues. His MLitt thesis on *Violent Politics: Strategies of Internal Conflict*, was developed into a book after a further year as a visiting fellow of St Antony's after retirement and completed just before his death. Its recent acceptance for publication in the St Antony's Macmillan series will be a fitting legacy.

Now followed the tour as Commandant at Chepstow. Here Mike's ability to draw the best out of young people was used to the full. He felt passionately about the long-term benefits that the apprentice and junior leader units provided not just for the Army but also, as he saw it, for the nation. Though no longer serving when the decision to close these units was being considered, he made his views known to as wide an audience as possible.

It was an inspired choice of the Military Secretary then to appoint Mike as Military Adviser in Ottawa. As well as his 9 Squadron experience in Canada he had spent two years (1974 to 1976) on the Directing Staff of the Canadian Forces Staff College in Toronto. Now, as his former High Commissioner, Sir Derek Day, was to put it: "Within a short time he had become a valued colleague … By the time we left in 1987, Mike had taken over as Defence Adviser on promotion to brigadier.

"Mike fitted Canada like a glove. He liked Canadians and his knowledge of and affection for their country won him their admiration and respect. He and his family threw themselves wholeheartedly into Canadian life, in particular all outdoor pursuits, both summer and winter. His range of contacts, both professional and personal was prodigious.

"Within the High Commission, Mike was a fully integrated member of the team. There was never any suggestion of a divide between the military staff and the rest. He was the source of sound advice, and not only on defence issues, for he took a lively and informed interest on all aspects of Canadian life and politics well beyond his defence brief. As High Commissioner, I knew that I could always call on Mike's loyal and uncomplaining support; he was someone who would never let you down."

Two more civilian colleagues now bear witness to Mike's success in his second career. Mr Julian Britton, an eminent consultant surgeon at the Churchill Hospital writes: "Michael Addison became the General Manager of the Churchill Hospital after he left the Army in January 1989. He was immediately at home in his new environment … Michael had exactly the right skills for running an institution concerned with people whether they were consultants, patients, privates or colonels. For the next four and a half years the Churchill Hospital, which was built as a temporary hospital by the American Army in 1942, made great progress. … Michael was able to talk easily to everyone and he was very effective at running an organization. He is remembered with gratitude and affection in Oxford."

He then (1992) joined the Department of Clinical Medicine at Oxford University to take the post of Head of Administration. Professor John Bell, Nuffield Professor of Clinical Medicine writes: "The Departmental administration was in disarray and the University central administration unchanged since the 14th century. Michael took on the task of sorting out the department's affairs and providing some clarity about resource flow within the University. This all occurred at a time of dramatic expansion in the Department with large new grants being awarded, new staff recruited and new buildings being built. Under Michael's supervision all this occurred with remarkable efficiency; other units in the University chose to join the Department because of the user-friendly administrative structure he put into place. The Department grew to be the largest of its kind in Europe.

"Michael was successful at everything he undertook whilst he was with us, but he was unable to change the University's approach to accounting and resource allocation. He rapidly came to know more about the University's financial affairs than they did and fought a long hard battle to persuade them that they needed to have a transparent method for distributing income. He wrote a now famous commentary on the University's financial affairs in the Oxford Magazine in which he coined the term 'Bird's Nest Budgeting' and discovered that £20 million could not be accounted for in the University accounts! Regrettably he retired before these issues could be resolved but he was happy to see an evolution in management of the University occur in the next few years. Most would agree that this change emanated from the exposure he provided about the old regime."

For all these professional attributes Mike is as much remembered for his personal qualities. In any job he undertook he identified completely with those lucky enough to work for him and was always vigilant on their behalf. He was highly active in outdoor sports, skiing, sailing, windsurfing and walking. In his partnership with Lesley, whom he married in 1964, he created a huge and disparate social circle to which was added the warm and supportive community in their new home in the West Highlands in which he and

Lesley finally enjoyed his few years' retirement. Generous and hospitable – Mike's curries were legendary – he was a stimulating and loyal friend and his cruelly early death from cancer has been deeply felt. However, as he himself put it, "…better to die on your feet than to live on your knees."

His wife, Lesley, and three sons, Hugh, Patrick and Dominic, survive him. He lived long enough to enjoy his first grandchild born to his eldest son and daughter-in-law, the daughter of another sapper Colonel Miff Tuck.

RAO JLB DD FMKT DHGC JRAM JB JFHB

MAJOR D A GOOD

Born 18 April 1922, died 22 November 2000, aged 78.

DONALD Good will be specially remembered by the generation of Sapper officers and NCOs who served in the 1970s and early 1980s for the thousands of posting orders that he signed for junior ranks during his time at the RE Manning and Record Office and for the insight with which he managed young soldiers' careers, matching their needs to those of the Corps. They may be unaware of the wide experience of regimental life and particularly of actual warfare that lay behind his work.

Donald Arthur Good was born in Bermuda, the son of a naval officer, and went to school at St Edwards, Oxford, and later, after enlistment in 1940 and six months' service in the ranks, to Birmingham University. He was commissioned into the Corps in November 1941. In 1943 he went to India and was posted to 506 Field Company RE. Before long the unit was in Burma as part of the famed 2nd Division Engineers confronting the Japanese advance to Kohima in the spring of 1944. The Company was usually in support of 6 Brigade.

Of his work during the historic and heroic defence of that garrison, his company commander was later to write "Don was the only officer from our company to stay during nights in the garrison. He was much admired for his conduct there by his own sappers and by the infantry he was supporting". He was recommended for an MC and was later Mentioned in Despatches. Later in the year he was badly wounded going to the rescue of another injured officer. Writing to his father shortly after this incident his company commander commented "His only 'trouble', is that he is only happy when he is leading the Div! I've often tried to get him to be a shade more careful, but it doesn't seem to be much use. With a bit of luck he will be now". Donald used to relate how his time in hospital was improved when Vera Lynn came to sing there and sat on his bed.

The modesty and wry humour with which Donald viewed his own experiences can be seen in the contributions he made to the *Journal* (Sep 84, letters; Aug 89 and Aug 97). His story of how he, as the leading RE recce officer, inadvertently caused the entire Corps to deploy to battle stations, when he took a pot shot with a .303 at a perching jungle fowl while on the move is particularly hilarious.

He was in Japan for a short time immediately after the war with the occupation force and became OC 21 Field Park Company (from 2nd Division) in the British and Indian Division which included 5 Brigade with 5 Field Company RE. In 1947 he went to Hong Kong where he was Adjutant of 24 Engineer Regiment at Castle Peak in the New Territories. By now very experienced in the ways of the world, he inducted a stream of young officers into peacetime regimental duty. The Mess was in a run-down old Romney; Donald was a dab hand at Canasta, then all the rage and, as senior bachelor, both an encouraging and restraining influence on the subalterns' weekend sallies to downtown Hong Kong.

Donald's first posting back in the UK was to Gateshead, as Adjutant of 103 Field Engineer Regiment (TA). In 1952 he then took up what he always regarded as his most fortunate appointment, as an instructor at Mons Officer Cadet School. He broke his leg there playing hockey and while recuperating fell in love with his physiotherapist. He and Betty were married in 1954.

After a brief tour in London, there followed a succession of postings round the world: Malaya, in the Engineer Training Centre at Kluang as Chief Instructor (1956); Belgium and Germany to 40 Advanced Engineer Stores Regiment (1959); back to Hong Kong as SO2 RE (1962); briefly back to UK at Woolwich and then to Australia as an exchange officer with the Royal Australian Engineers (1967). It was then back to Germany in 1970, this time to Rheindahlen at Headquarters BAOR.

In 1973 Donald Good embarked upon his final posting before retirement, as SO2 RE at the RE Manning and Records Office in Brighton. He and his family settled in Worthing and in 1976 Donald took up the appointment as a retired officer in which he became so influential, until finally retiring when REMRO moved to Glasgow in 1985.

While at REMRO Donald became an active member of the REA, becoming branch president in 1976 and he also took over as treasurer in 1991. He steered the branch through various upheavals during his 24 years' service to the members and they were deeply appreciative. For ten years Donald also undertook another voluntary job, as treasurer for Methold House, a local Day Centre for the elderly. This required daily attendance to collect the takings and deliver them to the bank.

Perhaps his most apt epitaph is that recorded by his REA branch when he was tragically killed in a road accident: "So ended the life of a gallant gentleman and family friend. All who knew him were that much poorer at his going".

He is survived by Betty and their son and daughter.

DSME IGLP GWAN GWP-J

COLONEL R T WELD

Born 5 February 1911,
died 14 December 2000, aged 89.

ROBIN Trench Weld was educated at Wellingborough School, Northampton and the RMA Woolwich. He was commissioned in 1931 and spent two years at Cambridge University reading civil engineering. After a brief spell with 7 Field Company in Colchester, he joined 33 (Fortress) Company at Queenstown near Cork.

In 1936 this Irish idyll was succeeded by a posting to Ceylon (now Sri Lanka) where Robin was Garrison Engineer, Colombo. Amongst other things he was tasked with the siting of naval guns for the defence of Trincomalee Harbour. After much jungle bashing suitable locations were selected, but as the secondary jungle was cleared prepared concrete bases revealed themselves; evidence of a previous conflict some 25 years earlier.

The declaration of war on 3 September 1939, although not unexpected in Ceylon, seemed a long way away and that afternoon, Robin remembered, tennis continued and tea was taken as usual. In 1940 he returned with his family to the United Kingdom aboard the Bibby Line troopship *Staffordshire* via the Cape, the mid-Atlantic and the North of Scotland to avoid the U-boat threat.

After brief attachments to the training machine at Clitheroe and Newark, Robin's war included service in Italy with the 5th Division, and in Palestine from where he despatched mouth-watering parcels of dried fruits to enhance the austere wartime rations back in England. His final experience of the war, much to his astonishment, was to be temporarily in charge of half a million German prisoners of war in Lübeck.

In 1946 Robin began his association with the Military Experimental Engineering Establishment (MEXE) at Christchurch to work with Sir Donald Bailey as MTO 2 EBE. However in 1949 the hardships of early post-war Britain were to be left behind when he was posted with his family to Bermuda as DCRE; an island of sun, sea, sand and picnics on the RASC launch as remembered by his two sons then aged 10 and 4.

After a brief tour as CRE Wales, Robin returned to MEXE in 1952 as TSO 1 in the acting rank of lieutenant colonel. In 1955 he was posted to Shropshire from where he was CRE North Wales, based in Shrewsbury, with duty trips to Snowdonia and other beautiful spots in the area. After a brief time as CRE Western Command he returned south to Taunton as Chief Engineer South West District in the rank of colonel covering Somerset, Devon and Cornwall.

Robin retired in 1960 when Works Services ceased to be a peacetime RE responsibility. For the next ten years, apart from a short spell teaching mathematics at Bournemouth Technical College, he returned to MEXE as a technical RO. At that time the Vietnam War was in full swing and Indonesian confrontation with Malaysia was brewing. Both theatres highlighted the need for highly portable light bridging equipment less cumbersome than Extra Widened Bailey Bridge and Light Assault Floating Bridge, perhaps more akin to the old Folding Boat Equipment. Classification of the equipment should be sufficient to carry the soon to be introduced Scorpion armoured car at Class 16. A lighter option, the Lalbahadur raft, designed by 68 Gurkha Independent Field Squadron then at Tidworth, was evaluated at MEXE. This was an assault boat-based raft with wooden ramps but could only take ¼-ton vehicles. Robin's answer to the requirement was the Class16 Airportable

Bridge (APB). It could be transported by landrover and trailer, was airportable and airdroppable. It was operable as a dry gap bridge placed by helicopter if necessary, a pontoon bridge and a raft. Robin attended the troop trials of the APB by 11 Independent Field Squadron in Malaysia in 1967. Some of these trials were attended by a sapper officer seconded to the Malaysian Engineers, Captain Stephen Weld, who on one occasion organized a helicopter to collect Robin from the golf course in front of the CRE's quarter. He was thrilled by this first trip in a helicopter.

Robin continued at MEXE for some years in an advisory role with the Bridging for the 80s team before retiring properly to the New Forest area. He had a splendidly dry sense of humour. Although a qualified civil engineer he was a combat engineer at heart with a gift for finding the simplest solution to a difficult problem.

He is survived by Pat after 66 years of married life, two sons Stephen and Tom and by four grandchildren.

SCEW

PROFESSOR COLONEL SIR ALAN HARRIS CBE

Born 8 July 1916, died 26 December 2000, aged 84.

ALAN Harris was one of Britain's leading and most innovative civil engineers for most of the second half of the Twentieth Century and for almost sixty years he had the greatest regard and affection for the Corps of Royal Engineers. He contributed a great deal to the Corps in its widest sense.

After school in Islington Alan started work, aged 16, as a junior for Hendon Borough Council, gaining a degree in three years by studying five nights a week at Northampton Engineering College, now City University. He was called-up into the Army in 1940, and with his talents and training was obviously destined to become a Royal Engineer.

By the time of the Allied invasion in Normandy in 1944 he was a captain in 933 Port Construction and Repair Company, RE, and he landed in France, ahead of his Company, on D+2, at Port-en-Bessin as soon as that village had been liberated by 47 Royal Marine Commando. He was the officer in charge of the advance party of his Company, which was charged with turning the small French fishing village of Port-en-Bessin into the single port handling all the petrol for the whole Allied Army.

The disastrous storms at the end of June 1944 destroyed the American Mulberry Harbour and damaged the British one, and a few days later the major port of Cherbourg was captured and found to be so heavily demolished that it was not going to play the crucial role that had been planned for it in the invasion. It was therefore decided that the one remaining Mulberry Harbour must be made to last throughout the coming winter and serve the whole of the Liberation Army.

So in July 1944 Alan was moved from his Company to Mulberry as the officer in charge of diving; part of the reinforcement to ensure that the one remaining harbour survived and kept working. The diving team's task was to clear the sea bed for the incoming caissons for the harbour, disposing of unexploded bombs and mines, whether German or Allied, inspecting the various underwater structures for damage, and clearing the harbour and immediate approaches of drowned tanks, sunken craft, and bits broken off the harbour in the storm.

He commanded a very tough bunch of men; seven Royal Engineers' diving crews, three crews from the Royal Navy, and one from the Royal Marines. Also included were two civilian divers from Portsmouth Dockyard who, it is said, were not meant to be there but had come over with the first parts of the Harbour and were determined not to miss the rest of the venture. The team all worked for months from a small fleet of fishing boats from Port-en-Bessin and Courseulles, manned by their French skippers and crews.

Alan was immensely proud to have taken part in Mulberry, which was a unique event in military history. For his contribution to the operation he was awarded the Croix de Guerre by the French government.

When able to leave Mulberry, he continued his progress through North West Europe and

towards the end of the war went on to help erect a high level bridge over the Rhine at Xanten.

He received a Mention in Despatches, and was demobilized in 1946 to return to civil engineering.

He went immediately to Paris where Eugène Freyssinet was setting the pace in the new technology of prestressed concrete at La Société Technique pour l'Utilisation de la Précontrainte, using his demob pay to work as a volunteer.

For almost three years he absorbed this new approach to concrete construction and was later taken onto the staff and gained design and site experience, the latter on occasion exploiting his diving skills.

In 1949 he returned to Britain to become managing director of Prestressed Concrete, Freyssinet's licensee in the UK. With the use of steel restricted by post-war shortages, the economy of prestressed concrete found a ready market and he was to design bridges, reservoirs, jetties and buildings. In 1955 he went into private practice with his brother and James Sutherland to establish Harris and Sutherland, a leading firm of consultants. Initially exploiting their experience in prestressed concrete, their firm worked on projects such as aircraft hangers, notably at Heathrow and Gatwick. However, the firm went on to establish a reputation for buildings and infrastructure, with offices across the UK and in Australia, Hong Kong and Singapore. He remained senior partner until 1981.

That fellow feeling and interest in the Royal Engineers that sprang from his wartime experience brought him election in 1957 into the Blythe Sappers. This Society; whose purpose is to foster good comradeship amongst serving and retired Royal Engineers, to promote the Esprit de Corps of the Sappers and raise money for RE benevolence and other good causes; allowed Alan to renew his links with the Corps and he embraced the aims and the spirit of the society to such an extent that he was elected Chairman in 1985 and was a member of the governing Council until his death. He did much good work for the Society, and was a highly valued member of Council. He was also an active supporter of the RE Museum and gave unstinting help and advice to the Director in the early days of its development on the Ravelin site.

In 1963 he was invited to become a member of that unique and most distinguished military unit then called the Engineer and Railway Staff Corps. Its members are chosen from industry for their expertise, to give advice to the Regular Royal Engineers when it is needed. They get no pay or allowances and in fact are actually required to subscribe to belong. They also have provided for very many years the chief critic for the young budding professional engineer officers presenting their final learned paper at the RSME. Whoever put Alan's name forward to be a member of the Staff Corps had got it exactly right! It was an ideal vehicle for his talents: he was a marvellous mentor, a brilliant and ingenious engineer, a wise counsellor, a great stimulus and he had an abiding interest in the young engineer.

He became a major in the Staff Corps in 1963, was promoted lieutenant colonel in 1970 and was made a colonel in 1973. He was a member of their governing Council of Colonels for eight years.

For the last ten years of his working career he held a chair at Imperial College; was a member of the old PSA Board; was a Trustee of the Imperial War Museum from 1983 to 1990; President of the Institution of Structural Engineers from 1978–1979 and received their Gold Medal in 1984. He was made CBE in 1968, received the French *Ordre du Mérite* in 1975 and his knighthood in 1980.

Alan was a keen sailor and many will remember his concrete yacht, which was often seen at Upnor.

At his memorial service at Westminster Cathedral, Major General Gus Sinclair said that for him, his personal debt to Alan Harris was immense. "He gave wise advice and encouragement many many times, was ever a good companion and always made him see the funny side of life."

GBS

BRIGADIER L J HARRIS CBE

Born 19 December 1910, died 24 January 2001, aged 90.

LEWIS Harris was an influential and visionary surveyor, a distinguished cartographer who participated in the planning that led to the decision to move the School of Military Survey to Hermitage. Later, with the Americans with whom he had established a close wartime liaison, he was involved with development of the Global Positioning System.

Lewis (Lew) John Harris was brought up in Wales and went to school at Christ College, Brecon. He excelled there both academically and as a sportsman. Unsurprisingly rugby, at which he eventually played for the Army and was a reserve for Wales, became an important part of his life; he became secretary of the Army Rugby Union and later its chairman and honorary vice president. But he was also an active cricketer being a member of a number of clubs such as Free Foresters and I Zingari, and a hockey player. In his capacity as captain of Corps cricket during the immediate post-war years he did a great deal to recreate the Corps side and revive the Sapper/Gunner match at Lords. Sadly the Lords venue for this match was not to last in spite of his efforts.

Commissioned in 1930 from the Shop, Lewis Harris completed his course including two years at Pembroke College, Cambridge, and in 1933 he joined 1 Field Squadron in Aldershot. They were still mounted on horses. Two years with the Training Battalion at Chatham then followed before he began his survey career by joining the team undertaking the geodetic triangulation of Jamaica, which he eventually took over as OC.

Returning to the UK on the outbreak of the Second World War, Harris went to France in command of the mobile echelon of 19 Army Field Survey Company, responsible for artillery and road and bridge classification surveys. He was Mentioned in Despatches for this work. Having escaped through Dunkirk, after a brief sojourn in Northern Ireland, he went to Edinburgh to raise and train 518 Field Survey Company. He was the only regular officer in the Company. He had a demanding task to train his officers, his 2IC being a colonial surveyor from New Zealand and his subalterns straight from university. To young officers he appeared to be a rather remote figure and a hard disciplinarian, but he soon moulded both officers and men into a fine team, which subsequently became known as the "Fighting 518". Surveys were carried out all over Scotland, including orientations for the early radar stations at anti-aircraft sites around Edinburgh and Glasgow. In due course, in 1942, the unit set off to join the First Army for the invasion of North Africa. In Tunisia one of the topographical sections was detached to an artillery unit of II US Corps, which had lost its survey element in the critical days following Rommel's counter-attack at Kasserine. Harris recalled how, while visiting his section, he found General Fredenhall, who was later replaced by General Patton, in the one lighted tent with his ADC "…a tense four hours … with periodic telephone messages arriving from General Alexander, who had become General Eisenhower's deputy about two days previously." Further association with the Americans was to follow with Harris' appointment as AD Survey in the fully integrated Allied Forces Headquarters, responsible for mapping for the invasions of Sicily and southern Italy, the Balkans area and Greece and, in due course for the invasion of southern France. For this event he

was detached to the US Seventh Army. He then went to the Far East as AD Survey ALFSEA, returning to the UK in 1946.

Work of a less operational kind now followed with successive appointments at the School of Military Survey (Chief Instructor), in the War Office (AD Survey 1) and the first of his attachments to Ordnance Survey. The Chief Instructor tour was particularly influential as it marked the point at which Survey in the Corps became a full career following a long (one-year) course. Harris wrote the course himself, designed not only for sapper officers but also for civilians and, later, overseas students.

Harris was then posted, on promotion, to GHQ MELF as Director of Survey dealing, among other matters, with geodetic and mapping operations in Iraq, Jordan, Cyprus and Kenya. The whole of the north of Iraq was mapped at 1/50,000 (as it happened the Chief of Staff of the Iraqi Army had been at the Shop with Lew Harris). The sappers had to wear civilian clothes.

In 1955 Lew Harris returned to Ordnance Survey and on promotion to brigadier, became Director of Map Production and Director of Field Surveys, the latter at Chessington. During this time he undertook the introduction of hill-shading to tourist maps. In 1961 he took up his final appointment in the Army, as Director of Military Survey at Feltham. It was a formative period not only because of the need to plan for the eventual withdrawal of overseas headquarters and the consequent reshaping of the structure of Military Survey; but also because of the accelerating technological changes then occurring. There was already a close liaison with the United States but it was during Harris' time as Director that a new branch was added to the Directorate for coordinating the joint UK-US satellite geodesy and field and geodetic survey programmes. Harris' personal rapport with the Americans together with their high regard for his professional abilities stood the project in good stead.

Lew Harris retired from the Army in 1965. He had been appointed MBE in 1943, OBE in 1949 and CBE in 1961 but perhaps the most apt accolade for such a fine and committed career was his appointment as Honorary Colonel of 135 Survey Regiment, which he held until 1967. His Fellowships of the Royal Institute of Chartered Surveyors, the Royal Geographical Society and the Royal Astronomical Society reflected the professional nature of his career. That was backed by several honorary posts: Honorary Foreign Secretary to the Royal Geographical Society (1964-67), Chairman of the Royal Society's National Committee for Cartography (1961-67) and a founding member of the International Cartographic Association of which he was Vice President from 1958 to 1961.

In 1967, Lew Harris moved to Canada where for five years he was a full-time consultant to the Federal Surveys and Mapping Branch of Canada later continuing until 1985 on a contract basis. Of this time Dr George Zarzycki, formerly Director of the Topographical Survey Division of the Department of Energy, Mines and Resources of Canada writes: "… My primary mandate was to introduce digital mapping, automated cartography and establish a digital topographic database for Canada. Brigadier Harris' pioneering and groundbreaking work at the department in the field was of immense value to me. I valued and enjoyed our many discussions about the basic concepts of digital databases, data banks, automated cartography, the roles of the provinces and the federal government in establishing a national digital topographic database for Canada and the influence of the information society on our mandate. Lew was an excellent person to bounce ideas off. His sharp intellect made every discussion, however controversial the subject matter may have been, very stimulating and fruitful. We all loved Lew Harris for his kindness, intellect and good humour." Another associate of the time, Professor James Linders, now of the University of Guelph, writes: "I worked with Lew on the Automated Cartography system in Ottawa for over ten years. He was truly a great friend and associate … he played a key role in the early development of automated cartography in Canada. … he was able to combine his wealth of experience in cartography with his interest in cartographic automation to create a team to explore the deployment of computer technology for mapping. The team was successful in developing one of the very first and most successful automated cartography systems in the world … Brigadier Harris will always be remembered for his enthusiasm and cautious insight to all who participated in this project."

Throughout his career Lew Harris had enjoyed a close relationship with America both professionally and socially. He continued this during his time in Canada and in 1975 he surprised and delighted his near relations by marrying Opal Nowicki of Knoxville Tennessee, the widow of a close survey friend since his days in North Africa. She survives him.

DJH HPC JK NJDP JL GZ MHC

TOM WOOLFENDEN MC TD

Born 26 April 1914, died 5 February 2001, aged 86.

TOM Woolfenden was one of the finest examples of those Territorial officers who served the country so well from the start of the Second World War, and whose maturity, determination and experience in the early fighting in the BEF contributed significantly to the quality of the force that eventually returned across the Channel on and after D Day.

He was born in Mottram, Lancashire, where his family were involved in the hat industry, but his father, after serving in the Great War, died in 1919, and Tom, an only child, was then brought up by his mother on her own. He went to Shrewsbury School and then served articles as a Chartered Surveyor at W H Robinson & Co in Manchester, qualifying as an ARICS in 1937.

As a member of 42nd Division Royal Engineers, at Seymour Grove, Manchester, he was mobilized in 1939 and went to France with the BEF in command of a section of 201 (East Lancashire) Field Company. When the Germans invaded Holland and Belgium, 42nd Division, as part of III Corps, were tasked with the preparation of a new stop line on the Scheldt. For his work in preparing the demolitions under fire and for his leadership in bringing his section safely back to Dunkirk, he was awarded the MC.

For the next year the Company was engaged on coastal defence work and anti-invasion exercises and training, mainly in East Anglia, and by December, owing to a shortage of officers, he took over command of the Company while still a lieutenant. He was promoted captain and Second-in-Command soon afterwards but continued in command for several months.

Later in 1941 the Company converted to a field squadron in the newly forming 42nd Armoured Division under Major General Dempsey and he supported two older regular officers neither of whom had any previous experience of mechanized warfare in Europe. After a period as Adjutant RE of the 42nd Armoured Division and then OC 149 Assault Park Squadron, Tom Woolfenden was appointed to command 222 Assault Squadron which had recently joined 42nd Division. He led this Squadron to Normandy in August 1944 when they did outstanding work at the liberation of Le Havre in September 1944. Later they fought at 's Hertogenbosch, in the Roermond triangle, the Reichswald forest, on the Rhine crossing and so onto the capture of Bremen in April 1945.

After the war Tom Woolfenden rejoined W H Robinson & Co to run their estate department, and set about converting it into a modern commercial management office, with conspicuous success. This, and the post-war building boom, brought him into close contact with the large London surveying practices, and the institutions, where his expertise and competence led to successful business relationships and won him many lifelong friends. He was appointed a Fellow of the RICS in 1950.

He became senior partner of the practice in 1968, a role he retained for the next 18 years, a period during which the reputation of the practice flourished. He had a close involvement with both the RICS and the Chartered Auctioneers Institute during his working life. He was Branch Chairman of the RICS in 1967. For many years he was a steward for the RICS benevolent fund, now renamed Lionheart, a cause close to his heart.

His many outside interests included being President of the Old Salopians Club, and

membership of the Select Society of Auctioneers, the 1924 Club and the Surveyors Association.

His childhood coloured his adult life, and showed in his personal thrift and his keenness for financial providence, both his own, and that of his professional partners, but his honesty and generosity were obvious to all who knew him. Latterly his enthusiasms, apart from his family, were golf and his roses.

He leaves Joan his wife, two children and four grandchildren.

REW

BRIGADIER A E M WALTER CBE

Born 7 January 1907, died 14 February 2001, aged 94.

IN February 1944 Brigadier Mervyn Walter was summoned from his post as Director of Transportation South East Asia Command to take up the appointment of Director Ports and Inland Water Transport Twenty-first Army Group, responsible for the planting and operation of the British artificial harbour at Arromanches, the discharge of stores, ammunition and vehicles from ships to all the Army Group beaches and the repair and operation of the small ports of Port-en-Bessin and Ouistreham including the clearance of the Ouistreham-Caen canal. He had, although he did not know it then, just under four months to bring his force together, weld them into a coherent whole and produce the triumph which is now widely recognized as the greatest military engineering feat in history.

Mervyn Walter was born at Taungoo, Burma, on 7 January 1907, the son of a British Indian Police officer seconded to the Burma Police. He was educated at Bedford Grammar School from where he went to the Shop and was commissioned into the Corps in 1926. During YO training he was a victim of the same accident in which Brigadier John Tutton narrowly escaped death (memoir *RE Journal* Dec 00). Both survived into their 90s. In Mervyn Walter's case the damaged was to his leg and the proposed amputation threatened to end his career. However, the surgeon who was about to operate decided on a last-minute reprieve and Walter woke from the anaesthetic to find his leg and his livelihood intact. Recovered, he went up to Trinity College, Cambridge, to read for the Mechanical Sciences Tripos, and graduated in 1930.

Walter then, uniquely, attended both the Long Transportation and Long Electrical and Mechanical (E&M) courses before being posted to Singapore in 1936 as an E&M officer. There he was engaged in the construction of power stations supporting the new Gillman Barracks, Alexandra Hospital and a large cold storage depot; also the two new 15-inch gun emplacements at Changi and Seletar; and other 9.2in and 6in guns elsewhere on the Island. He recorded, contrary to historical reporting, that these guns could indeed traverse 360 degrees and fire towards the mainland as well as seaward. However, the shells supplied were armour piercing – useful against battleships, useless for pounding the jungle.

He returned to England in 1939 and while at the War Office, was sent to Norway to carry out a clandestine reconnaissance across the railway network. Accompanied by an Arctic explorer who spoke Norwegian, they became aware of another party similarly engaged. They were of course, German. One of Mervyn Walter's tales of this episode illustrates his love of a good anecdote. Secrecy was absolutely vital during the visit to Scandinavia; two British naval officers had just been sentenced to five years in prison for spying on ports in neutral Sweden. When he reached Finland (then at war with Russia), Walter could announce his true identity as a British officer. When he did so, the Finnish officer said: "We have been expecting you. The Swedish police telephoned an hour ago to say that you were on your way to Finland." After the visit to Finland he then had the problem of getting back into Sweden without being discovered. By chance a Swedish general had been killed

fighting on the Finnish side against the Russians, so Walter joined the cortège taking his body across the land frontier between Tornio in Finland and Happaranda in Sweden.

Very soon he left his War Office desk for another assignment, this time to join Admiral Sir Bertram Ramsay's "Dynamo" Control Staff at Dover, masterminding the Dunkirk evacuation. Walter controlled the rail dispersion of the returning personnel and was made OBE for this work. His association with Ramsay was to be fruitfully renewed during the preparations for Mulberry.

In 1940 he went to Cairo as Deputy Assistant Director Transportation, completing a reconnaissance into Turkey similar to that he had accomplished in Norway. From Cairo he undertook a mission into China to buy rolling stock for the Western Desert Railway and to arrange for it to be railed to Kowloon and shipped, via Calcutta for regauging, to Suez. This trip included a Dakota flight over the "Hump" in the company of a number of Chinese fellow passengers. They had to make an emergency landing on Chungking airfield during a Japanese air-attack necessitating an undignified scramble from aircraft into dugout.

He returned to the UK in December 1941. On his first morning at home he opened an official envelope informing his wife of his death in the Crown Colony. He then had a brief posting as Deputy Director Transportation on the British Army Staff, Washington, where he was responsible for the procurement of locomotives and other transportation equipment for all theatres of war. He then joined Admiral Lord Louis Mountbatten's staff in Delhi whence came the call to return to England for the Mulberry assignment.

Mervyn Walter's own account of his Mulberry experience, published in the *RE Journal* of March 1986 remains a classic for its modesty and reflects the pride he experienced, and clearly passed on to his team, in having been entrusted with this awesome responsibility. Two important matters had to be settled from the start. He realized that success would be dependent on close cooperation with the Royal Navy and therefore that his own headquarters must be located alongside their command at Norfolk House rather than with the Twenty-first Army Group planning team at St Paul's School. He also had to wrest the reins of control of the Mulberry enterprise away from the War Office whose "baby" it had been for some two years. This was achieved, but only after protracted arguments that went as far as the Prime Minister.

As his force edged across the Channel on 6 June there were visible portents of disaster in the form of equipment that had broken loose from towing vessels. Many other hazards lay ahead not least the presence of German troops in Arromanches. Landing in a DUKW that happened alongside carrying two dead Americans, Walter then survived several brushes with the enemy while his team put together sufficient equipment to allow the first vehicles to land dryshod on D+4. Of all their difficulties to that point, nothing compared with those that assailed them with the storm on 19 June.

That Mulberry B survived was due partly to the excellent progress that had been made by the Royal Navy in positioning the breakwater of scuttled ships (Corncobs), but also to the utter determination and professional skills and seamanship of all hands of both services not to allow their precious charge to be battered to death. The final shape of Mulberry B resulted from the elements that had been saved from this, together with some that had been salvaged from the American Mulberry A, serving Omaha beach, which had to be abandoned. Its achievement remains underrated. The facts are that in the vital battle for Normandy up to the end of August 1944, 488,700 tons of supplies were unloaded, 40 per cent of the total British stores unloadings over the beaches. Mulberry remained in use until the Scheldt was cleared both of the enemy and their mines so enabling Antwerp to be used from 28 November 1944. It had been the essential assurance of success, in the words of a Combined Chiefs of Staff memorandum during the early planning "… so vital that it might be described as the crux of the whole operation."

After the task had nearly been accomplished and men were dispersing to other work, Walter sent them off with these words: "In future years … you will meet many men who will claim to have served at Mulberry B and built the harbour. You must say nothing, just let them talk and you will know that they boast in that way because they wish to have been with us. You will have the knowledge that it was you who were here and that against all the odds you built the harbour at Arromanches. Nothing and no-one can take this proud memory from you."

Walter was made CBE for this work and continued for the rest of the war to supervise the

work of Inland Water Transport in their operations along the Channel coast and was responsible for clearing the Rhine bridges and opening the river for navigation. He was Mentioned in Despatches in November 1947 and honoured by the Dutch and Belgian governments as a Commander of the Order of Orange Nassau and of Leopold II respectively.

At the end of the war Walter was seconded to the Control Commission for Germany becoming the British Member of the Central Rhine Commission. He took early retirement from the Army in 1947 to join the Ministry of Transport as an Inspector of Railways for the Ministry of Transport. Within a short time he started the International Inland Transport Branch at the Ministry of which he was Director until 1965. He continued with this work and the Control Commission to 1965. The four years he was Chairman of the United Kingdom Railway Advisory Service.

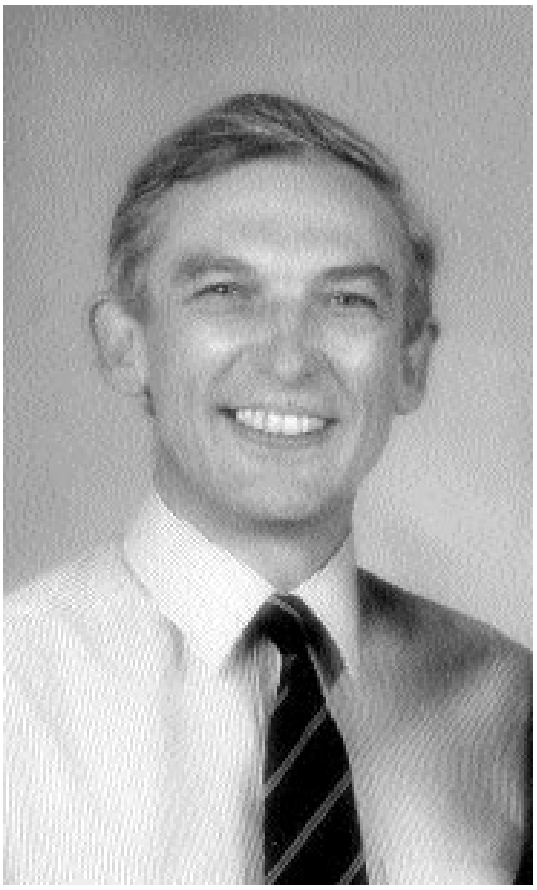
Mervyn Walter emigrated to Australia in 1998 to live with his eldest son, but returned once more to Arromanches, at the age of 93, to preside over the unveiling of the Mulberry Monument by Lady Soames on 6 June 2000. His ten-minute speech, spoken without notes and recorded on film was a masterpiece for someone of his age, and a fitting conclusion to a long and distinguished military and civil career.

His wife Adrienne Mary Hindley, died in 1991 and he is survived by two sons.

WMM GWAN RJW

MAJOR R L SMALLMAN

Born 31 December 1944, died 9 March 2001, aged 56.



LESLIE Smallman, who so tragically died of cancer in March, will be chiefly remembered by the officers of the Corps for his time as Secretary of the Headquarters Mess. "… he spanned the reign of three and a half chief royals …, double that number of engineers-in-chief; and many multiples of colonels commandant. He saw in and out nine distinguished commandants of this distinguished school. I suppose almost a thousand young officers, and those not so young, must have been commissioned into the Corps and hence passed through the mess during his tenure. And countless other officers, serving and retired, regular and TA, from the Corps, the wider army, our sister services and our civilian guests have found themselves at Chatham astride his custodianship of our mess." (ADP in his funeral address.)

Leslie's active career in the Corps followed the normal pattern of his time, split between BAOR and the UK. It started, on commissioning in 1966, with 36 Engineer Regiment in Maidstone from where he enjoyed the usual travel and opportunities of working outside the UK particularly in Bahrain building Twynham huts and in Canada on Exercise *Waterleap*. Other tours in the UK were a staff appointment in Headquarters EinC in the 1970s, command of 61 Field Support Squadron back at Maidstone and as second-in-command of 33 Engineer Regiment (EOD) at Chattenden, which included six months in the Falklands. The BAOR soldiering took him to Osnabrück as a troop commander in 23 Engineer Regiment and IO in 25 Engineer Regiment; to Iserlohn, as second-in-command 25 Field Squadron, and to Verden as SO2 RE in Headquarters 1st Armoured Division. He had two emergency tours in Northern Ireland.

This was a wide spread of experience of the regimental and staff side of the Corps from which he derived a life-long affection for its institutions and camaraderie that marked his time as Mess Secretary. He took over what was then a Civil Service appointment from Tom MacMillen in 1985. Within a few years the post was abolished but the new contract for the mess could not provide for the wide range of "Corps family" responsibilities that had traditionally accrued to the Mess Secretary. He then came on to the Corps payroll initially as "Assistant Corps Secretary" and subsequently back as Mess Secretary. Inevitably there were storms to be ridden in a job in which a plethora of "masters" had an interest. However, Leslie had a particular understanding of the role of the mess as the mess of the whole Corps and took great pains to help units, specially the smaller less well-endowed ones over matters such as loans of silver. One appreciative former CO wrote in recently "There was in Leslie a gentleness of spirit and a deep reserve of goodwill and good humour when it came to trying to help others." But as well as satisfying his mess customers Leslie doggedly pursued his mission to account and care for the Corps property. The resulting records he produced are a lasting legacy for which the Corps will be forever grateful.

Outside his work Leslie's abiding interest was music. He loved singing in choirs whenever the exigencies of service life allowed, including in

the Musicverein in Osnabrück and, in recent years, the Rochester Choral Society. He contributed to and helped organize numerous church choirs and amateur operatic and pantomime performances, in particular by producing and starring in several Gilbert and Sullivan productions, notably as a very "modern major-general". However, at the centre of it all was his devotion to his family. He married Ursula de Planta de Wildenberg in 1968. She survives him with their two sons Matthew and Jonathan. Matthew's recent selection for commissioning into the Corps was a matter of immense pride to Leslie.

ADP GWAN AC GEW MCMcC

COLONEL D C S DAVID MC

Born 16 April 1915, died 14 February 2001, aged 85.

COLONEL David (Dai) David was one of a small group of British sappers from the Indian Engineers who stayed on after Independence to help bring the new Corps' into existence in the armies of their respective nations, in his case Pakistan.

He went to school at King's College, Taunton, to the Shop in 1933 and thence to Chatham and King's College, Cambridge. He joined the Bengal Sappers and Miners in 1938 and embarked for Egypt as a member of 4 Field Company within a month of the outbreak of war. He took part in Wavell's early campaigns in 1940. The Company, of which David became Second-in-Command, was then moved to East Africa to join General Platt's force for the advance into Eritrea in January 1941. The company performed with particular distinction at Agordat in the lead up to the Keren battle and at Keren itself where David was wounded. He returned to India while the Company went back again to the Western Desert for Auchinleck's 1941 offensive.

Dai David was then appointed to raise and command 74 Field Company, for which his experience of war stood him in good stead. Four other companies of the Bengal Sappers had already gone to Burma but by May 1942 the withdrawal had been stabilized and this allowed time for the Company to undertake extensive training. This they undertook in Rawalpindi and the hills beyond. By September they were in the Arakan as part of 14th Indian Division, complete with mules, after a two-week journey by train across the whole of India. Initially they were on road-building tasks in the Cox's Bazaar area. However they then took part in the main offensive in December 1942 and had to overcome the many problems faced by units in a country where roads were almost non-existent and the principal communications were by water. By March 1943 14th Indian Division's offensive was exhausted and there began a difficult and hazardous rearguard action. In this, at one stage, 74 Field Company less one of its sections was expanded into "Daiforce" by the addition of two engineer companies and an infantry company to operate in the Mayu river area to complete a road for a relief force. This never materialized and Daiforce had to act as infantry defending the brigade perimeter and then ferrying the remnants back across the river when the Japanese attacks became overwhelming. 74 Field Company had again to participate in various infantry rearguard actions before it was finally withdrawn with the rest of 14th Indian Division.

After retraining, 74 Field Company returned to the Arakan in late 1943, still under Dai David's command and to operate with 5th Indian Division. They took part in the bitter fighting around the Ngakyedauk pass in February and March 1944 that eventually defeated the major Japanese thrust towards India. Dai David had, however, been posted to take command of 24 (Royal Bombay) Engineer Battalion early in February.

For his part in the operations in the Arakan, he was twice mentioned in despatches and awarded the MC.

At the end of the war David had a brief tour back in the UK in command of 618 Field Company and was engaged in the relief of

Guernsey, clearing defences and minefields, reopening the airfield and restoring services. He then returned to India as a staff officer at GHQ and once more went overseas on active service when a strike broke out in July 1946 in the Anglo-Iranian Oil Company's refineries at Abadan. This time he was Field Engineer with Force 401, a brigade-sized force but with a CRE, two field companies and a field park, which however was never required for action. He was recalled from this to attend the Staff College at Quetta in 1947. He then spent two years as a lieutenant colonel helping to form the new School of Military Engineering in Pakistan and acting as its Chief Instructor and returned to England in 1949.

A variety of desk jobs then followed, DCRE in South West London, GSO 2 SD2 in the War Office and Brigade Major of the Training Brigade in Aldershot. In November 1954 he took up command of the Fortress Engineer Regiment in Gibraltar and enjoyed the wide variety of tasks if offered including tunnelling and operation of the power stations.

David was back in the War Office in 1957, this time as a GSO1, Secretary to the Committee on Administration, looking into modern management techniques and their application to the Army. 1959 then became a significant year for him bringing both marriage and promotion. He and Sheena, a former WAAF, flew together to Malaya where he became Chief Engineer, in charge of Works Services based in Seremban. The job changed in 1960 to Commander Engineer Base Group Singapore where his command included the Base Workshop, Base Stores Depot, Port Operating and, Survey Squadrons and a field squadron. It was an enjoyable tour, which saw the birth of their eldest son. There was something of and "end of Empire atmosphere" about it, intensified by seeing Somerset Maugham at Raffles and by their return by troopship in 1961. RACT, who served with him at that time, writes "…there were few problems that he couldn't deal with. He seemed to me to be rather more thoughtful and academic than some of his contemporaries and this was combined with powers of communication and decision. He was a man of great integrity. Any signs of 'sharp practice' would be complete anathema to him."

David then took early retirement and, after a brief time with Astley and Pearce foreign exchange brokers, embarked on his second career, with the consulting engineers W S Atkins and Partners. With them he worked on many projects both in the UK and overseas over a period of sixteen years. Among these was a £230 million development for British Steel in Scunthorpe and later, as a member of the project team for a major steelworks in Algeria. The Director who was responsible for the project writes, "…again there was a great staff recruiting need which David organized but more important than that was the negotiation of the contract which was the largest consultancy contract that had been placed at that time. Negotiating took about six months and David and I were on it together and getting to know each other very well and being able to joke about it all. His contribution was vital and it was a great success and an important stage in the development of W S Atkins being very profitable and setting up the company for future expansion." Another tribute records, "I cannot think of a better friend and colleague through two major projects … His calm common sense and tenacity at work and his sense of fun and enthusiasm for life after work were marvellous."

In 1961 the family settled in Ottershaw where their second son was born. Dai became a great supporter of the local church as churchwarden and member of the Parish Church Council where he is remembered for his "knowledge, sage counsel and example." He was able to research and write a history for the 125th anniversary of the church.

His wife Sheena and their sons Tom and Rhys survive him.

MBA RACT JCJ MHSM

J R MUGGERIDGE MBE

Born 15 August 1909, died 30 March 2001, aged 91.

WHILST Jack Muggeridge was a fervent admirer and erstwhile supporter of his elder brother, the journalist and broadcaster Malcolm Muggeridge, he enjoyed a successful and long career in his own right as a civil engineer. Born in Croydon, he was the youngest son of Henry Thomas Muggeridge, later to become Labour MP for Romford, and his wife Annie. Jack started his career in civil engineering as engineering assistant to the County Borough of Croydon, and later to the Borough of Margate, and appointed senior assistant in Southgate, North London in 1936.

At the outbreak of the Second World War he initially joined the Civil Defence Service being in a reserved occupation within a local authority but was eventually able to secure his release and be commissioned into the Royal Engineers in 1942. After spending some time training officers in Bailey bridge construction, he was selected to work with Donald Bailey, superintendent and senior designer at the Experimental Bridging Establishment (EBE) in Christchurch. By the time of Captain Muggeridge's arrival in Christchurch, the first production bridges were already in service in Europe and the Far East and over 600 firms became involved in the mass production of bridge components and during the last three years of the war some 500,000 tonnes were manufactured, representing over 200 miles of bridging. Jack Muggeridge, already expert on Bailey bridge construction and launching techniques, became part of a small team of technical officers working closely with Donald Bailey involved in further developing and stretching the capabilities of the revolutionary bridging system, testing the strength of new materials and components and solving the practical problems fed back to EBE from experiences in the field.

After the war he resumed peacetime occupation as deputy borough engineer for the Borough of Southgate from 1946. In 1958 Jack left the UK to work as provincial engineer for the Ministry of Works in Northern Nigeria. He used his war service bridging experience to good effect carrying out many special bridging assignments in Nigeria, often replacing weak wooden bridges carried away by floods with Bailey bridges, or else providing temporary crossings during the demolition and replacement of inadequate road bridges. He was appointed MBE in 1969. On independence in 1971 Jack was appointed chief engineer to the new Kaduna Capital Development Board with the challenging task of helping to develop the new State capital, Sokoto. He was for many years a close advisor and friend to Dr Alhaji Shehu Shagari, the former president of Nigeria until deposed by the military coup in 1984.

Leaving Nigeria in 1980, and already well past the normal retirement age for overseas work, Jack later spent six months in Malaysia with OXFAM where he worked with the Malaysian Red Crescent Society supervising the maintenance and improvement of refugee camps set up there to care for the many thousands of Vietnamese boat people. He said that this particular period was "an unforgettable experience" and crystallized for him the desperate need for qualified engineers in such places, to provide the expertise in laying on basic services such as clean drinking water and sanitation.

Returning to the UK, he became secretary to the newly formed Register of Engineers for Disaster Relief (REDR), the charity aimed at overcoming the difficulties experienced by relief organizations such as OXFAM and Save the Children Fund in recruiting professional engineers to join disaster relief teams.

Further brief consultancy spells in Nigeria followed in 1982 and 1984 before he again returned to his REDR work. He finally retired in 1990 at the age of 81, still very fit and active. Jack spent his last years in Berkshire, visited regularly as a point of reference by many friends and associates of Malcolm. It had fallen to Jack to also care for Malcolm and Kitty during his brother and sister-in-law's final years in Robertsbridge. At a stage when Malcolm felt no longer able to leave the house, interviewers would turn up at Park Cottage with their outside broadcast equipment and record their sound bites under Jack's direction. After Malcolm's death in November 1990, Jack's small apartment in Reading held a number of significant and interesting photographs of his brother's life and times, along with a full collection of published works, and he became a vital point of reference in the preparation of biographies and articles on Malcolm. Jack would send many a letter to those who wrote and reflected on various aspects of his brother's often controversial career and any perceived slights, errors and omissions in their recollections were firmly "corrected" and, perhaps, more than occasionally sanitized.

In the past year in which he celebrated his 91st birthday with a trip on the London Eye, Jack took a keen civil engineer's interest in the problems surrounding the Millennium bridge, the design and execution of which he greatly admired. No doubt influenced by his long experience in Nigeria, he maintained that all bridges needed to have considerable natural movement and this feature should in his view have been exploited as an interesting attribute rather than a problem to eliminate.

Jack married Sylvia (née Jenkins) in 1943 and leaves four sons, one daughter, eleven grandchildren and a great-grandson.

SM

Correspondence

WHAT IS AN AVLB?

From: Colonel (retd) J H Joiner

Sir, – Ask any Sapper what is an AVLB and you will get one of two answers.

Some will say that it is an armoured vehicle that is capable of launching a tank bridge, typified by the Chieftain "AVLB" described in articles on Operation *Granby* as being modified with chain mail and front mounted MIMIC. Others will say that an AVLB is an Armoured Vehicle Launched Bridge, and of course they would be correct.

The term AVLB was officially introduced during development of the No 8 and No 9 Armoured Vehicle Launched Bridges, as being a more realistic name for a bridge launched from an armoured vehicle, usually a modified tank with the turret removed. Admittedly the name was not popular for the new bridges, which were widely referred to as the No 8 and No 9 Tank Bridges. Indeed our latest AVLBs are known universally as the Nos 10, 11 and 12 Tank Bridges.

Use of the term AVLB to describe the No 8 and No 9 Tank Bridges is perhaps, now, "water under the bridge", but one now reads that Vickers Defence Systems have a contract to develop the Titan AVLB based upon the Challenger 2 tank chassis. I am not sure what a Titan Armoured Vehicle Launched Bridge could be, other than one of our latest Tank Bridges. Is it not time to correct the matter and call the new vehicle the Titan Armoured Bridge Layer, or Titan ABL? Yours sincerely, Jim Joiner.

COLONIAL TOWNS

From: Dr John Parker,

Sir, – The letter from Ms Linda Brockett in the May 2001 edition of *The Sapper,* touches upon issues brought up at a meeting of the International Development Forum (IDF) at the Royal Town Planning Institute on 15 Nov 00. At the meeting Dr Robert Home, of the University of East London, spoke on "Colonial Cities: Urban Planning in the Third World". In the proceedings the role of army engineers in planning and building early colonial towns featured prominently. Among the audience of architects, civil engineers, surveyors and town planners (including Ms Brockett) there were several former sappers; this lead to a very lively and fascinating discussion.

Ms Brockett is from South Africa and she has conducted much of her research in her home country on the initial layouts of settlements in the early 19th century. Although many of the settlements were established by the British, and often carry the names of British towns and villages, they are very formal, regular, grid layouts, not at all like the more organic settlements of Great Britain. Ms Brockett's research, and that of Robert Home, show a common thread in that colonial towns were invariably laid out by sappers (albeit that many of the surveyors were by that time subsumed into the civil service). It is possible that the training of army engineers was responsible for the rationale behind the layout of these towns. I say army engineers because similar grid layouts are found in the USA and also in the former colonies of other countries (eg Dutch, German and French).

We at the IDF would be pleased to receive any information concerning town and highway planning, fortifications, site selection and survey methods, particularly during the 18th and 19th century wave of colonization in North America, Australasia, India and Africa.

Anyone who would like to attend, or give a talk at a future IDF meeting on the subject would be most welcome. We would also like to hear from anyone who has been involved in re-establishing the infrastructure of civic life and assisting with development after disasters and internal conflict.

Information on the activities of the IDF can be found on our website (under construction) www.idform.org.uk. Yours faithfully – John Parker, Chairman, International Development Forum.

MESS KIT

From: Major (retd) R I Radford MBE MA ACIS

I deplore the idea of the Corps adopting a different mess kit. The advantage to young and impecunious officers of sticking to the same pattern

are enormous. I have owned three mess jackets, the first belonged to my uncle, Brig Gen Frith, and sported Queen Victoria's buttons. This did not fit me so I passed it on to a brother officer. The second I purchased for £5 (to the Benevolent fund) from a senior officer with a proper field officers figure. This had Geo V buttons but was rather threadbare so I gave it to a subaltern when I had the opportunity, a few years later, to buy another in virtually mint condition from a friend who was retiring early. This had Geo VI buttons and had belonged to his bank manager who had served in the TA before the war. When we were given an allowance, in, I believe, 1960, to purchase mess kit, my wife got her first washing machine! Meanwhile I observed my friends in amalgamated regiments and corps spending fortunes on new jackets.

As for the boiled shirt; this was a Victorian fashion and should only be imposed on those officers who still wear them with their dinner jackets. I remain, Sir, Yours faithfully, Iain Radford.

Reviews

WARFARE IN THE SEVENTEENTH CENTURY

JOHN CHILDS

Cassell & Co, Wellington House, 125 Strand, London, WC2R 0BB. Hardback, 224 pages, illustrated. Price £20. ISBN 0 304 35289 6.

THIS is one of the series "Cassell's History of Warfare", lavishly illustrated and produced, presumably, for a mass readership. The author, Professor of Military History and Director of the Centre for Military History at the University of Leeds, admits that his task of reducing such a complex century of warfare down to 40,000 words required him to be selective. He also rightly states that the military story has to be within its social, political and economic context. He really had an impossible task. Despite an admirable economy of style there are just too many campaigns, switches of alliance, treaties, significant leaders, royal marriages, religious loyalties and national characteristics to be painted onto the vast geographical canvas stretching from Stockholm to Savoy and from Lisbon to Lithuania. So the narrative text is heavy going.

However, the nuggets are well worth searching out. Military engineering took centre stage in most of the campaigns and this continued into the following century. One can only marvel at the ingenuity and vision of the designers of these strongholds and the determination of their attackers. In the author's words "…it was Vauban's fortifications, rather than the genius of Marlborough, which produced the Peace of Utrecht…". Again "The keys to military success were thus the aptitude for siege warfare and skill in the design and location of fortresses". The section on this subject in the "Conduct of War" chapter is as neat a summary as any general reader would need. Other sections of this chapter are equally illuminating on strategy, supply and weaponry, although sketchy on the tactics of cavalry, infantry and artillery.

Britain is represented only by the Civil Wars (1642–1651), which earn less than 1,000 out of Professor Childs' ration of words, and the slight contribution to William of Orange's running fight with Louis XIV once William had, as he puts it "invaded" England in 1688 and become her king. The book therefore covers mainly the complicated Thirty Years War (1618–1648), the mid-century wars including the Austro-Turkish War and the Siege of Vienna, and the wars of Louis XIV (1667–1697). Small wonder that so many English soldiers, including many engineers, sought their professional experience on the continent

The illustrations are marvellous, using the best modern graphics techniques, so the book is a pleasure in itself and surprisingly good value for such quality. It performs useful functions in stimulating interest in its subject and as a handy reference for the period but anyone wanting to follow the campaigns or individual sieges would need to supplement their reading from elsewhere.

GWAN

A HARBOUR GOES TO WAR

JANE EVANS, ELIZABETH PALMER & ROY WALTER

Published by Brook House for the South Machars Historical Society. Contact: Jane Evans, Drumgarron, Penkiln Farm, Garlieston, Newton Stewart, Wigtownshire. Phone and fax 01988 600221. Price £19.95 plus p&p. ISBN 1 873547 307.

MOST sappers will know the story of the Mulberry Harbours through articles written in the *RE Journal*, talks given in recent years by several of the participants and the displays in the RE Museum and at Arromanches itself. In the excitement of the events from D Day onwards it is easy to forget what led up to the great climax on the Normandy beaches. The South Machars Historical Society have succeeded in filling in this wider story through a selection of the many personal accounts, variously epic, humorous, tragic and uplifting, that they collected in the interests of their local history. The result is an informative, lively and accurate account that makes the transition from one narrator to another almost seamless.

There are some imperfections in the quality of the reproduction of the photographs but taken as a whole the book is a valuable addition to the published information on the subject. It deals well with the problems of inter-service rivalry and the engineering and organizational challenge. The magnitude of the undertaking is unmistakable from the personal accounts. So too is the fact that the importance and scale of enterprise itself was big enough to overcome the difficulties, both technical and human, that could have threatened its progress.

GWAN

CHEMICAL AND BIOLOGICAL DEFENCE AT PORTON DOWN 1916-2000

G B CARTER

Published by The Stationery Office, PO Box 276, London, SW8 5DT. Softback, 184 pp – Price £16.99. ISBN 0-11-772933-7.

IT is a small tragedy, and I use the word after due consideration, that there has been so little authoritative material published down the years on the British effort in the fields of chemical and biological warfare, both offensive and defensive. Gradon Carter's historical study of the Porton establishments, described as a "replacement" for his 1992 account of the first 75 years, is therefore welcome. It is not a history, in that such a classification demands a level of objectivity which the book does not achieve; it is an official in-house product with the limitations which this implies.

Through no fault of the author, although it is much expanded as compared with its predecessor, it is still not comprehensive – there are substantial gaps in the record of the establishments, particularly in the between-wars period.

Ignorance – and fear of nameless horrors – has shaped attitudes towards "Porton" among the general public and even in governmental and service circles. As the author suggests, the military would be a lot happier if CBW (chemical and biological warfare) would just go away. Policy has not helped. Again: "public or even parliamentary curiosity about CBW was not encouraged in the United Kingdom". This policy has backfired; not for nothing does the author include a chapter entitled "Opprobrium".

Carter's approach is chronological with excursions into particular fields as appropriate. The book has more to say about organizations and personalities than technical matters, though the latter are not neglected. Much of the book will be of more interest to individuals who have at least some connection with the CB world, or to students of the more arcane areas of ministry organizations than to the general military reader, still less to the public. The progress of the establishments, from the experimental ground of 1916 to the present dual structure, the chemical and biological defence sector of DERA and the Centre for Applied Microbiology and Research under the Public Health Laboratory Service, has seen a bewildering series of name and management/reporting lines changes (it is illuminating to see how little the military figure in the tasking and oversight of the establishments). To have these set out in a comprehensible manner is a great service for researchers – as is the admirable bibliography, dealing more with CB matters generally than Porton itself.

In preparing this review I found myself veering between enthusiasm and suspicion. The historical and organizational material is valuable if in the latter case esoteric. The author is remarkably candid about the wartime offensive BW programme, the post-war large-scale free air BW simulant and agent trials, and the saga of Gruinard Island. At the same time the "Opprobrium" chapter already mentioned is written in that civil service defensive style which reads as though the author has more to hide than he is revealing. And there is a very unobjective glossing over of the failure of the then Chemical Defence Experimental Station to identify and recognize the military potential of fluorinated organophosphorus compounds during WWII. This failure would have had catastrophic effects had the Germans elected to employ their fully weaponized stocks of G-agents (surprise counts in CBW at least as much as in other aspects of war). In fact, as regards actual chemical agents, as opposed to delivery means and defensive equipment, the embarrassing fact is that Britain ended the Second World War with the same capability with which she had ended the First.

Sappers who feel any proprietorial interest in matters chemical will not find this greatly reinforced by the content. Although the Corps

played a leading role in the very early days, the official title from 1916 to 1929 was the Royal Engineers Experimental Station, and Sappers built the elegant (listed) HQ building, the latest mention of RE in the index is on page 8!

Perhaps the most valuable aspect of this book is to present a picture of the Porton establishments in which the mystery is played down and the human side emphasized. And the major change of emphasis on the use of the site, with the recent opening of the Porton Down Science Park, can only be expected to take the process of demystification further.

WMC

KITCHENER

JOHN POLLOCK

This combined edition first published in the UK 2001 by Constable and Company Ltd, 3 The Lanchesters, 162 Fulham Palace Road, London, W6 9ER. Price £20. ISBN 0 09 4803404.

THIS double volume incorporates "The Road to Omdurman", published in 1998, and reviewed in the December *Journal* of that year, and "Saviour of the Nation", covering the remainder of Kitchener's life. The current edition thus gives another opportunity to read about Kitchener's early life and concludes with the story of his greatest achievements and ultimate death in the middle of World War One.

Kitchener was commissioned into the Corps in 1871 and three years later he was in Palestine, and thus began his long association with the Middle East. No ordinary soldier, he studied Hebrew, was proficient in Arabic, as well as French, and had a keen interest in history and archaeology. He was responsible for the first comprehensive survey of both Palestine and Cyprus and is arguably the most famous surveyor the Corps has ever produced. His subsequent military career was unusual, even for a sapper: a British vice-consul in Turkey, second-in-command of the cavalry in the new Egyptian Army, governor-general of the Eastern Sudan, commander of the Egyptian Police Force and then, in 1892 sirdar of the Egyptian Army and the avenger of Gordon at the 1898 Battle of Omdurman. Soon after this he was off to South Africa as chief of staff to Lord Roberts, taking over as commander-in-chief in 1900.

John Pollock has had unprecedented access to the Kitchener Papers and the Royal Archives, as well as the extensive background information held by the Corps. This has enabled him to bring out all the many facets of Kitchener's character and add some much needed balance to what has been said in previous biographies. Painfully shy, disliking personal publicity, "K" was often misunderstood, but those who knew him well realized that under his somewhat brusque manner lay a very caring person with a deep Christian faith. As his portrait in the Chatham Mess brings out, he was a striking figure and this is emphasized in the famous World War One poster with the often parodied caption of "Your Country Needs You" and which adorns the cover of the dust-sheet of the present book.

Despite its rather misleading title about the road to Omdurman, Volume 1 takes Kitchener's career up to the Boer War where he was unjustly accused of causing unnecessary suffering to the Boer families when he concentrated them into camps where, sadly, epidemics broke out, leading to numerous deaths, not helped by overcrowding and their lack of hygiene. All this is well brought out in the first volume and the story continues in the second, covering the last sixteen years of his life. It opens with his arrival in India as commander-in-chief and his struggle to reform the Indian Army against the opposition of Lord Curzon, the viceroy. In those days before radio communications Kitchener was always eager to see things for himself and this was particularly so in India where he toured indefatigably. As a younger man, without being foolhardy, he always took the same risks as his men and, indeed, was badly wounded in the face at Suakin, in the Sudan.

Kitchener's superiors found him difficult to deal with it at times. He could be obstinate and was inclined to keep information to himself. Nevertheless, he earned their respect though they must have been suspicious of his friendship with Lady Salisbury, with whom he kept up a long correspondence knowing it would be passed on to her husband; and with his direct access to the Queen and, later to the King. But "K" could be capable of ruthless political intrigue, when it suited him, to achieve what he believed to be in the interest of the Empire. This was particularly so in the matter of "Dual Control" between the

viceroy's military member and himself as commander-in-chief, but the author does rather go on about it, talking about Kitchener being forced to work behind the viceroy's back. Really?!

Immensely popular with the British public, it seemed almost inevitable that "K" should be called upon to become secretary of state for war in 1914. He was hauled off the cross-channel boat at Dover, just as it was about to sail, on his way back to Egypt where he was His Majesty's representative. Alone amongst his cabinet colleagues, Kitchener had no illusions about the war and always predicted that it would last at least three years and that plans should be made accordingly. It was "K" who built up the Army, stressed the need for adequate logistic backing and set in train the strategy that led to ultimate victory. He was not happy though as a politician and he cannot have been easy to work with but it was surely unacceptable for Asquith, ostensibly "K"'s friend, to reorganize his department behind his back while he was on a visit to France. Kitchener, quite understandably, offered his resignation but appeals were made to his loyalty and patriotism and he withdrew it, but one does wonder what other plans the prime minister had in mind while "K" was on his planned visit to Russia in April 1916. Sadly that trip came to grief, *HMS Hampshire* was sunk by a mine and Kitchener was drowned.

John Pollock has written a fascinating and highly readable book. It is not just a "biography" but also a highly entertaining story about those times. He may not always have been quite as dispassionate about Kitchener as he might have been, but then he was trying to put the record straight so perhaps he can be excused. He certainly brings out "K's" character, his sympathetic and unexpectedly human side, his love of fine things, particularly porcelain where he was a most knowledgeable and avid collector. He was a man held in the highest esteem, inundated with honours and decorations, including the Order of Merit with which he was the first to be invested by the King. The whole country mourned his death. As Sir Frederick Milner wrote, a few days after his memorial service in St Paul's: "He will live in history amongst the greatest of Great Britain's sons, but it is well that the world should know that this straight, true, stern man had a heart as tender as his will was strong".

Kitchener was a truly great man, a true Sapper and this book is a worthy tribute, to him. Do read it.

GLC

RORKE'S DRIFT AND ISANDLWANA ZULU WAR

IAN KNIGHT AND IAN CASTLE

Published by Pen & Sword Books Ltd, FREEPOST, 47 Church Street, Barnsley, Yorkshire, S70 2AS. Price £9.95 each ISBNs 0 85052 655 8 and 0 85052 656 6.

THESE two excellent little books are the most recent products of the Battleground South Africa series. Though each stands firmly on its own merits they are best taken as a complementary pair and follow the sensible path of grouping the principal battlefield sites into a western group (Rorke's Drift, the Ntombe massacre, Hlobane, Khambula and the grisly fate of the Prince Imperial of France) and an eastern group (Isandlwana, the advance of the Coastal Column, the Eshowe Siege, Gingindlovu, Ulundi and the collapse of the old Zulu order). Each contains enough concise and skilfully compiled background to set the scene and capture the interest and imagination of the reader. The books work simultaneously at many levels; the handy A5 format serving the self-guided battlefield tourer well whilst also providing interest and stimulation to the armchair reader. They also suit those seeking an easily absorbed introduction to this fascinating, dramatic and tragic war. Sapper readers will find plenty of references to the achievements of the Corps and its units and to the bravery, enterprise and endurance of such heroic figures as John Chard VC at Rorke's Drift, Anthony Durnford at Isandlwana, and Warren Wynne at Nyezane and Eshowe. Durnford is treated with polished objectivity in the perceptive and well-balanced account of Isandlwana. Excellent extracts from eyewitness accounts enrich the narrative and give us vivid insights into the rigours and horrors of the fighting and the relentless destruction of the Zulu kingdom. Ian Knight is an eminent and prolific writer on 19th century colonial South Africa and the many Victorian military campaigns. With Ian Castle, another respected writer-historian, he also runs a leading Zulu War battlefield tour firm. Their combined expert knowledge of background and terrain shines through in these tautly edited, well illustrated, and cogently explained texts. If you have no other books on this war, just buy these. They

are superb.

MCMcC

LETTERS HOME

AITKEN LAWRIE

This book has been published on the internet and can be downloaded from www.instantbook-store.com under the heading "general". Further details from Aitken Lawrie on 01483 277 433 or email: aitkenlawrie@amserve.net.

REMEMBERING A DYING ART

SADLY the increasing use of emails and mobile phones is undercutting the once universal custom of writing letters to keep in touch with friends and relations around the world.

Surrey resident, Aitken Lawrie, has identified over 80 men and women in his family tree, who have served in the Royal Navy, Army or Royal Air Force since 1675, ten of them being killed in action. Now, after rummaging through dusty attics and cupboards, he has compiled a unique anthology of letters written by members of his family over the last 200 years. Starting with the Peninsular War, the letters cover every campaign in which the British Army has taken part. Many are from India, Africa and the Middle East, as well as Australia, China and Japan, with others from Brazil, Teheran and Iceland. Some of the most entertaining on a lighter note are from sisters and daughters, wives and mothers.

Although the book has a strong military flavour it includes interesting letters from Sir Hans Sloane whose bequest founded the British Museum, and Edward Fitz Gerald of Rubaiyat fame.

Several of the letters are sad. Two of the writers were later killed in action and two others never recovered their health. Some of them refer to broken romances, but there are also several happy endings. There are full explanatory notes with maps and illustrations.

The letters are arranged in eight chapters as follows:

Chapter 1. The Duncan Letters written by Captain John Duncan of the 95th rifles to his sister Jenny (who was Aitken's great, great grandmother) during the Peninsular War between 1808 and 1813. He took part in two strenuous campaigns before being killed at the battle of Tarbes in 1814.

Chapter 2. The Anderson Letters record the services of surgeon Lieutenant William Anderson, Royal Navy, who was taken prisoner by the French in 1810, and of Captain Robert Anderson of Hodson's Horse, who fought through the Indian Mutiny and was later tortured to death by the Chinese in Peking in 1860.

Chapter 3. The Macpherson Letters written from India by my great uncles Walter and John Macpherson who served in India between 1845 and 1869 in the 22nd and 65th Regiments respectively.

Chapter 4. The Macpherson Lawrie Letters start with my uncle's account of a voyage to Australia in 1882 with a cargo of marriageable girls, and later of the experiences of his son in the 8th Hussars and son-in-law in the Royal Artillery in WWI.

Chapter 5. The Walter Lawrie Letters from my father, who served in the Royal Engineers, describing a voyage to Jamaica in 1887, and later his experiences in the Boer War in South Africa.

Chapter 6. The Aitken Letters from my grandfather, who was in the RE TA, from his son and nephew, who served in the Middle East in WWI, and from other relations.

Chapter 7. The Aitken Lawrie Letters written to my mother and my wife from the NW Frontier of lndia and later from the Middle East, Jordan and Ghana.

Chapter 8. The Rex Lawrie letters from my brother, who served in the RAMC in North Africa and Italy during WWII, and later as Adviser to the Sultan of Brunei.

VCs OF THE FIRST WORLD WAR THE FINAL DAYS 1918

GERALD GLIDDON

Published by Sutton Publishing, Phoenix Mill, Thrupp, Stroud, GL5 2BU. Hardback, 218 pages, illustrated. Price £19.99. ISBN 0 7509 2485 3.

THIS is the tenth in a series "VCs of the First World War" which deals chronologically with the incidents that earned these men their immortal honour. This volume covers the final triumphant six weeks of the war. Six of the fifty-six VCs were won by sappers. Like its predecessors, this book is very handsomely produced and is written in a straightforward format.

Each individual has a chapter of some three to six pages of text giving the citation, a short background and an account of the action. In addition there is a portrait and a series of photographs illustrating such matters as the location of the event, map extracts and the grave or memorial where appropriate. Gerald Gliddon is an established author having written five other books in this series as well as a topographical history of the Somme.

His thorough research has produced much interesting personal detail and some illuminating and often poignant insights into each incident. Time and again one reads of one or more comrades-in-arms whose breathtaking courage was part and parcel of the action of a VC winner but which remained unrewarded. Those responsible for making the awards had indeed an almost impossible task.

The publishers are planning a final volume to sweep up the cases, such as in the "sideshow" campaigns, not covered elsewhere. They plan to include a cross-reference system to all 633 men who won the award. This will make a comprehensive and authoritative set, most desirable for those who seek a fuller treatment of this subject than is available elsewhere.

GWAN

THE LINES OF TORRES VEDRASE: A CORNERSTONE OF WELLINGTON'S STRATEGY IN THE PENINSULAR WAR 1809-1810

JOHN GREHAN

Spellmount Ltd, The Old Rectory, Staplehurst, Kent, TN12 OAZ.
Four maps, 16 illustrations, 226 pages.
Price £20.
ISBN 1 86227-080-5.

THIS book makes curious reading because one gradually comes to realize that, although wholly absorbing, it is not precisely living up to its title. One suspects that the author did, indeed, set out to discuss the Lines but at some point sheer fascination with the years 1809–11, overall, carried him away and, perhaps unwittingly, he slid into writing a general history of the period. Which is all very well except, torn between the two, some of the Lines material which readers might have expected is sacrificed and, at the other end of the spectrum, by omitting some necessary historical facts, the history aspect is also deprived and this ambivalence affects the balance of the book. As it is, one is left with an interesting, immensely readable work which will certainly benefit Peninsular War students and those new to the period for many years to come, but may faintly dissatisfy others.

For newcomers to the scene one must explain that its theme is the third French invasion of Portugal by an army commanded by Marshal André Massena of formidable fame, and his outwitting thereof by Wellington, whose defensive strategy was to leave the Frenchman both dumbfounded and beaten. With enemy numbers vastly superior, Wellington knew from the war's onset in 1808 that his own small army would always be disadvantaged unless strategy could ensure that it only gave battle in a position of his own choosing, when his communications and vital supply lines were secure and the troops' morale raised by confidence and training. But battles alone could never solely withstand this coming invasion, the aim of which would be the capture of Lisbon, and he needed to create obstacles of every sort in order to incommode and finally destroy the enemy. This policy naturally involved Portugal whose people and territory were once again to suffer. A small, proud country, thinly populated, its monarch in exile and a Government run by a Regency council unused to the responsibility – greatly magnified by the impending crisis – Portugal faced a desperate situation. And how brilliantly, but at a cost, Wellington succeeded is John Grehan's subject.

Peninsular War histories closely detailing individual operations demand much of both an author and readership. For a start Portuguese place names are unfamiliar – and sadly unpronounceable to only English speakers – while the actual warfare in the field is complex and taking place in a country unfamiliar to most. To hold the reader's attention takes skill and John Grehan handles his material well but words alone are too often insufficient and the maps lamentably fail him. Whole chapters, grippingly written, are rendered the poorer because the towns, villages, rivers, mountain ranges etc referred to are omitted and it becomes impossible to follow the military movements. One despairs! When will authors

and publishers learn?

JYP

THE FORGOTTEN ARMY'S BOX OF LIONS

C D JOHNSON

Soft back A5 format, illustrated, 101 pages, published by National Ex-Service Newspapers. lSBN 1 897666 78 0. Copies obtainable price £11 (incl p&p) from C D Johnson, Jays Cottage, Bussey Bridge, Bergh Apton, Norfolk, NR15 1DF. Tel: 01508 480257. email: johno@busseybridge.fsnet.co.uk

SEVERAL sappers took part in the magnificent action that forms the central story of this small book. Units mentioned include 58 Field and 864 Mechanical Equipment Companies RE, 517 Artisan Works, 652 Mechanical Excavating and 440 Quarrying Companies IE, 8th Sikh Engineer Battalion and the lndian Engineers Post Office 160. In April 1944 they found themauthor, whose father, George "Johno" Johnson of the Norfolk Regiment, was a company sergeant major in the reinforcement holding unit, has pieced together the story of "Lion Box" from information gleaned from war diaries and individuals from all over the world whom he contacted over a period of five years, including some Japanese sources. It tells how a large heterogeneous collection of administrative units spread over some thirteen miles of rough road were concentrated, their main warlike stores backloaded, and then how they were evacuated with infantry and armoured support after a gallant fight against the encircling Japanese forces.

Johno junior has performed a most valuable task for history. But more than that, he has told an inspiring and very human tale of how non-combatants from all sorts of units came together in their primary role as soldiers and achieved all that was expected of them and more against a determined and remorseless enemy.

GWAN

Explanation of Abbreviations Used in This Journal

2IC . . . . . .second in command
AAC . . . . . .Army Air Corps
AD . . . . . .assistant director
ADC . . . . . .aide-de-camp
Admin . . . . . .administration
ALFSEA . . . . . .Allied Land Forces, South-East Asia
BAOR . . . . . .British Army of the Rhine
BEF . . . . . .British Expeditionary Force
BRITFOR . . . . . .British Forces
Capt . . . . . .captain
Ch Clk . . . . . .chief clerk
civ-air . . . . . .civilian aircraft/airline
CO . . . . . .commanding officer
CRE . . . . . .commander RE
DCRE . . . . . .deputy commander RE
DG . . . . . .director general
Div . . . . . .division
DUKW . . . . . .D=1942/U=Utility/K=all wheel drive/W=twin wheeled vehicle (name given to a piece of amphibious engineer equipment)
Ech . . . . . .echelon
EinC(A) . . . . . .engineer in chief (Army)
Fd . . . . . .field
Fin . . . . . .finance
Flt . . . . . .flight
G3 . . . . . .operations and training
G4 . . . . . .material
GHQ . . . . . .general headquarters
GSO . . . . . .general staff officer
HQ . . . . . .headquarters
HRH . . . . . .His/Her Royal Highness
IO . . . . . .intelligence officer
ISO . . . . . .International Standards Organization
J4 . . . . . .Joint Forces Infrastructure(ie Army, Air Force and Navy) (Materiel)
LAND . . . . . .Land Command
LO . . . . . .liaison officer
Lt Gen . . . . . .lieutenant general
MELF . . . . . .Middle East Land Forces
MES (Wks) . . .Military Engineer Services (Works)
MOD . . . . . .Ministry of Defence
MP . . . . . .member of parliament
MT . . . . . .motor transport
MWF . . . . . .Military Works Force
NCO . . . . . .non-commissioned officer
NI . . . . . .Northern Ireland
No . . . . . .number
NSW . . . . . .New South Wales
NW . . . . . .North West
O&D . . . . . .operation and deployment
OC . . . . . .officer commanding
Offr . . . . . .officer
OP . . . . . .observation post/s
orbat . . . . . .order of battle
OXFAM . . . .Oxford Committee for Famine Relief
PJHQ . . . . . .Permanent Joint HQ
PSA . . . . . .Property Services Agency
RAF . . . . . .Royal Air Force
RAMC . . . . . .Royal Army Medical Corps
RASC . . . . . .Royal Army Service Corps
RE . . . . . .Royal Engineers
REA . . . . . .RE Association
REME . . . . . .Royal Electrical and Mechanical Engineers
REMRO . . . . . .RE Manning and Records Office
RFA . . . . . .Royal Fleet Auxiliary
RHQ . . . . . .regimental headquarters
RMA . . . . . .Royal Military Academy
RMonRE(M) . . . . . .Royal Monmouthshire RE (Militia)
RN . . . . . .Royal Navy
RO . . . . . .retired officer
RSME . . . . .Royal School of Military Engineering
SD . . . . . .staff duties
Sect . . . . . .section
Sigs . . . . . .signals
SNCO . . . . . .senior non-commissioned officer
SO . . . . . .staff officer
STRE . . . . . .Specialist Team RE
TA . . . . . .Territorial Army
Tp . . . . . .troop
tso . . . . . .technical staff officer
UK . . . . . .United Kingdom
UN . . . . . .United Nations
US . . . . . .United States
USA . . . . . .United States of America
WAAF . . . . . .Women's Auxiliary Air Force
WD . . . . . .water development
WW1/2/II . . . . . .World War One/Two/Two
YO . . . . . .young officer

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