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Contents

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BAOR Institution Meeting, November 1980

COLONEL J H EDWARDS B Sc

The Author has spent a great deal of his career with the Queen's Gurkha Engineers. Having commanded the Regiment from 73–75, he was sent as CI Tactics Wing RSME and rehabilitated as a European soldier. After a short tour as DA Kathmandu, he assumed his present appointment, CRE 2 Armoured Division, in September 1979.

THE idea of Institution Meetings in BAOR was launched in 1978, and the first one took place in March 1979. The object, as I understand it, is that Meetings should be held about twice a year, to offer Institution members in BAOR something equivalent to the Joint Professional Meetings in UK, but associated with the main Sapper function in BAOR, that is combat engineering.

My first experience of these Meetings was one held in Hameln in May 1980. It consisted of an audience composed exclusively of serving Sapper Officers, listening to a lecture by a scientist from an R & D Establishment, and then asking him questions. It was very interesting, but appeared to me to be more in the nature of an Officers' Training Day than an Institution Meeting. This illustrates one of the problems of arranging these meetings in BAOR; it is difficult to attract people other than serving Sapper Officers, and if there are no outsiders present, the Meetings become indistinguishable from other gatherings of Sapper Officers which take place periodically. The other problem is to find suitable combat engineer subjects, bearing in mind that in order to attract outsiders they must have some direct relevance to civil engineering practice.

The responsibility for arranging these Meetings rotates around the various Sapper groupings in BAOR, and my mind was concentrated wonderfully at the Hameln Meeting, knowing that it fell to me to organise the next one in November. I was immediately faced with the two problems I have already described; how to attract people other than serving Sapper Officers, and what to discuss.

Within the Military Engineering Committee (MEC) and the TA, there is a large group of professional engineers, whose collective expertise covers any subject that we are likely to discuss, and who (and this is the point), are entitled to travel and subsistence at public expense. The MEC, and within the TA the Engineer and Railway Staff Corps (E & RSC) and the Pool of Specialists, are specifically estab-

Colonel JH Edwards B Sc

lished to give technical advice, but the TA Regiments, Squadrons and Specialist Teams also contain a wealth of engineering experience.

I planned therefore to invite members of the MEC and TA to attend the Meeting, using their military status for travel and subsistence, but metaphorically to shed their uniforms at the Meeting, and give us the benefit of their professional experience. Then came the moratorium on defence spending. I wonder if people outside the Army realise how savagely the Government's attempts to keep spending within cash limits have affected training. One of the most obvious effects, in the early stages anyway, has been the restrictions on fuel for vehicles, leading to the cancellation of many exercises, and confining the majority of training to barracks. But the economies go much deeper than this, touching every facet of military life, and the idea of large numbers of TA Officers travelling to BAOR and staying in hotels, in order to attend an Institution Meeting, did not even bear thinking about. From the ruin of my plans, I secured the promise of three official journeys from UK to BAOR, and in addition no less than six people made their own way.

The other source of outside expertise is guests. As the subject to be discussed was closely associated with tactics, we invited an assortment of Cavalry, Gunner and Infantry Officers. We had two German guests; the geologist attached to 1st German Corps, and an Officer from a nearby Pionierkommando Battalion. Finally, we tried to track down British engineers, with suitable experience, working in W Germany. Unexpectedly it was an EEC agreement that was largely responsible for our lack of success in this area. Because the movement of labour within EEC countries is in theory unrestricted, British Missions in EEC countries no longer maintain lists of British nationals resident there. The only way of finding such people is by personal contact, or unofficially through the Consuls-General, making use of their personal contacts.

Eighty-six people attended the Meeting. Serving Sapper Officers numbered 64 from BAOR, and 6 from UK. There was one member of the MEC, one from the E & RSC and one from the TA Pool of Specialists. From other Arms, there were 2 Armoured Corps, 2 Gunner and 3 Infantry Officers. Three retired Sapper Officers and a guest from British Industry (all from UK) were present, and the two German guests to whom I have already referred.

The second problem that I have mentioned is the selection of a subject for discussion. The number of combat engineer topics that have a direct relation to civil engineering is fairly limited, and as I was fourth in line to organise a Meeting, the other three CsRE had creamed off the best subjects! Finally "Digging in the Combat Zone" was proposed with considerable misgivings, because although there is no doubt of its importance, it is not the most exciting subject in the world. So to some extent by default, because nobody could think of anything else, this became the subject for the Meeting that was held on 27 November 1980 at Roberts Barracks, Osnabruck.

Digging may be a dull subject, but within the Combat Zone it presents problems that we cannot entirely solve. As with so many other engineer aspects of all arms training, it is easy not to practise it properly in training, for such excellent reasons as avoiding damage and maintaining exercise momentum, and as a result the digging problem is not universally understood. The object of the Meeting was to improve peoples' understanding of the problem, and to look for the direction from which solutions might come. The meeting started with two presentations: first Lieut Colonel Fawcus, CO of 25 Engineer Regiment, defined the problem. He did so by using Rudyard Kipling's six honest serving men, risking the Muse's displeasure by taking them out of order. "Why" was illustrated by an excellent piece of training film showing the effects of artillery on men and equipment, realistically and colourfully. The majority of those present knew the ground on which digging is likely to take place pretty well, but an aerial film showing "Where" served to focus everyone's attention, and to confirm that we have three types of ground with which to contend; plains and valleys containing agricultural land which present no digging problem

Photo 1. The Hartz Mountains

until the water table is reached; small but significant hill features, mostly tree covered, and composed of rock varying from hard crystalline limestone to relatively soft sandstone, with a thin soil cover, much of it too steep to be dug using mechanical equipment; large hill features also composed of rock of various types. "When" is a matter of how long we have to complete the task, rather than the precise time at which the work must be done, and the time available is of course very short, which is largely why we have a problem. "What" is a difficult question to answer, as requirements depend on the ground, particular commanders' concepts of operations, how

Photo 2. Gun position, with gun in place

Baor Institution Meeting Nov 1980 1,2

much other Arms can do for themselves, and many other factors. However a set of figures was produced showing the sort of number of holes of various sizes that a Division might require in one defensive position, to accommodate its Infantry in weapon slits, its tanks in scrapes, its guns and support weapons in pits, together with a realistic number of alternative positions for mobile weapon systems. No one will ever agree about figures such as these, and indeed they are bound to vary from formation to formation, but it may be of interest to quote the total figure of over 75,000 cubic metres of earth to be excavated for field defence in 48 hours. As Mr Pirie of Sir Robert McAlpine Ltd and the MEC said, "What a wonderful contract"! The sort of length of anti-tank ditch that might have to be dug for a Division in the same period equates to 1·2km of the Mitteland Canal. "Who" is obvious, and "How" was left to the next speaker Colonel Hill, Col GS from the RSME.

Colonel Hill started by complaining that I had set him up to be blamed for any shortcomings in our digging ability, but then, assisted by another Officer from RSME and one from HQ E-in-C, proceeded to persuade us most convincingly that we are really very well equipped. He and his team described the techniques and equipment we have in service now, and are expecting in the immediate future, both for excavating field defences and for anti-tank ditching. The Meeting was then thrown open, and after a slow start some useful discussion took place.

I do not intend to describe the discussion in detail, but below are listed the main points that emerged:

(1) There are three quite distinct problems; infantry fire positions; larger holes such as tank scrapes, and gun and support weapon pits; anti-tank ditching.

(2) On the agricultural land in the plains and valleys, where plant is easily deployed and functions efficiently, there is no difficulty in digging slit trenches by hand. Indeed in these circumstances the Infantry probably prefer to dig them by hand to simplify camouflaging. The problem is in the hills, mostly tree covered, which are composed of rock, making hand digging difficult and sometimes impossible. Where the rock is not too hard, back-acters mounted on light tractors and light mobile diggers are useful, but may be seriously inhibited by the gradient or the density of the trees.

Photo 3. Back-acter mounted on Light Wheeled Tractor

Baor Institution Meeting Nov 1980 3

Where the rock is hard the only answers are explosive digging or mechanical hand tools, two areas in which our present range of equipment is far from perfect. The old-fashioned concept of going upwards in the form of sangars when you cannot go down into trenches may be valid against an insurgent force armed with small arms and mortars, but has no relevance in the context of Warsaw Pact Artillery.

(3) We are well equipped to dig the bigger holes with our Combat Engineer Tractors and a range of commercial plant. In the plains and valleys digging is easy, but plant is necessary because of the quantity of earth that must be moved, for instance in digging a gun pit. Many of the gun and support weapon pits are by their nature in the valleys, and the problem with these is largely of control and priorities. In peacetime it is difficult to practise digging the big holes required on the rocky hills for command posts, communications centres and tank scrapes, but generally speaking we believe that our heavy equipment meets the requirement.

(4) It is only when we consider anti-tank ditching that civil engineering principles begin to apply, in particular that the bigger the machine is, the more efficient it will be. The Muir Hill Earthmill would go a long way to meeting our requirement, but otherwise what we call heavy plant is small by civil engineering standards. Nevertheless we can do a good deal with our present equipment whether *ab initio*, or in the form of improving existing ditches and other minor terrain features.

(5) There may be merit in excavating some positions in advance. The suggestion is not that a Maginot Line should be constructed, with its implications of fixed defences and lack of security, but that in areas where digging is very difficult, positions should be dug now to meet the sort of tactical situations that could occur. Having been dug, each position would be carefully recorded to ensure that it could be found again, and then back filled with loose material.

None of these points is new, nor are they of themselves very significant. The value of the Meeting was that an important and partially unsolved problem, which does not always receive the attention it deserves, was aired, and that military and civil engineers came together to discuss it, and in the process learned something about one another. From the equipment point of view, perhaps it is worth repeating the clear indication that our explosive digging systems and mechanical hand tools are inadequate, and that we need the Muir Hill Earthmill.

In summary, perhaps I may offer the benefit of my experience to those who have to organise future Meetings. I believe it is essential to have people other than serving

Photo 4. Combat Engineer Tractor

Photo 5. Muir-Hill Earthmill

Sapper Officers present, and that the best sources are the MEC and the TA, particularly the Specialist Pool and E & RSC, because they are entitled to official travel and subsistence. British engineers working in W Germany are best discovered by liaison with the Consuls-General, particularly those in Hamburg, Hanover and Dusseldorf. We should also consider inviting guests from amongst our Allies, not only the Germans as we did on this occasion, but also the Americans. Contact with the latter should be easy as the new US Liaison Officer at HQ NORTHAG is Lieut Colonel (LTC) Prior, one time US Exchange Officer at RSME. Finding new combat engineer subjects to discuss, to which civil engineering practice has a direct relevance, will become more and more difficult, and it may be necessary to widen the field to include civil engineering subjects which are only of general interest to combat engineers.

So far these Meetings have been based on Engineer Regiments, which makes the administration easy and extremely efficient; whenever possible this should continue. Publicity within engineer circles in BAOR is easy, but it is surprisingly difficult to ensure that every Sapper or ex-Sapper not serving in a Corps appointment is covered. As for Institution members living in UK, or elsewhere for that matter, we only approached those we thought might want to come. In retrospect, we made a mistake in not putting a notice in the *Pickaxe*, and this should be done in future. The timing of Meetings is another problem, associated as they have been so far with a dinner. If you have them after dinner, you run the risk of undue levity, ill-mannered inattention or worse! If you have them immediately before dinner, it is a long stretch for the people who come straight from their day's work, possibly including a long journey, without a chance to bath and change. For various reasons, not all connected with the Meeting, we went for the UK pattern of starting the Meeting in the late afternoon. This allowed time for everyone to go away and change before dinner, and although this requires more administrative effort, it is not difficult to arrange within a Regiment.

Finally, I would like to thank those who helped in different ways to arrange the Meeting. I am very grateful to various TA HQs, and to HQ E-in-C for helping to attract MEC and TA Officers, and must apologise to those whose efforts were nullified by the moratorium. My thanks are due to those who made presentations and took part in the discussions and to Lieut Colonel Fawcus and his Regiment for administering the affair at a time that was anything but convenient for them. Lastly, may I thank all those who took the trouble to attend.

Baor Institution Meeting Nov 1980 5

7th Field Squadron RE in World War II

MAJOR JOHN CHARTRES TD

John Chartres, now 59, is Chief Northern Correspondent of The Times. *He enlisted in 208 Fd Coy RE (TA) in April 1939 and was mobilised on 30 August 1939. He was posted as a Driver to 7 Fd Sqn on its formation in the autumn of 1940. He served in the Sqn for the rest of the war as Driver, MT NCO and Signals NCO. At one stage he was reported as a deserter after escaping from a Transit Camp at Tripoli to rejoin his Sqn near the Mareth Line.*

In 1950 he rejoined the TA as a signaller/Rear Observer in a Light Aircraft Unit, 663 Air Observation Post Sqn RA (TA)/R Aux AF.

He was commissioned into the Duke of Lancaster's Own Yeomanry (TA) in 1954, promoted to Maj two years later and retired in 1966 as Regtl 2IC. He has retained an interest in military affairs and has frequently written about them in The Times. *He was the paper's principal Staff Correspondent in NI between 1968 and early 1972. His first book "*Helicopter Rescue*" was published recently. He is one of the few awarded TD and the "Other Ranks" TA LSGCM.*

INTRODUCTION

By Major E Tait MBE, RE, present OC 7 Field Squadron RE

THE following record of the distinguished part played in the Northern African and Italian Campaigns of the Second World War by 7 Field Squadron has been written by John Chartres who is Chief Northern Correspondent for *The Times* newspaper. Mr Chartres served as a Sapper and Junior NCO in the Squadron from its formation in 1940 until its temporary disbandment in 1945 and has stayed in close touch with ex-members of the Squadron by means of the Eighth Army Veterans Association.

Mr Chartres' account has the vivid effect of a diary. His sharpness of memory, in turn, evokes the boredom of troopship life, the uncertainty and fear while under fire, the sense of loss on the death of comrades all mingled with the humour, even comedy, which is the soldier's lot.

There are other military observations here too. It is almost unbelievable nowadays to learn that in 1941 the Squadron possessed no radio communications. And the value of rehearsals is once again borne out in no less an operation than the breaching of the El Alamein minefields.

The present day Squadron takes its history from the former 7 Field Company which served in France, Egypt, Italy and Greece but that fact is relatively unimportant in this context. No attempt has been made to adapt the author's style to suit current military abbreviations thus giving a more authentic flavour to the piece. When I suggested to Mr Chartres that this presentation of his account might be improved by the odd photograph, he replied that he and his fellows had lost their kit so often during the War that no photographs had survived!

* * * *

7th Field Squadron RE in World War II Major John Chartres TD

FORMATION AND TRAINING

The Second World War 7th Field Squadron RE was formed in September 1940 at Holmbury St Mary, near Dorking, as a "second line" to the 1st Field Squadron, the only pre-war Regular Sapper unit to bear the title "Field Squadron", and as part of the RE element of 1st Armoured Division, then re-organising after the Dunkirk evacuation.

Drafts to the Squadron, which was formed from scratch by Territorials, Militiamen, and some of the first Army Class Conscript Soldiers, came from the RE Training Depots at Ripon, Colchester, Elgin, and Aldershot. A small stiffening of Regular Senior NCOs was provided by the 1st Field and 1st Field Park Squadrons.

The Squadron's first home was a commandeered country house called "Feldemore" situated on the wooded slopes of this charming part of Surrey, and the first Sapper task was the building of huts in the grounds for its members to live in.

The first OC was a Major Scott, who died tragically from polio almost before anyone had got to know him. He was succeeded by Major H H C Withers DSO. The first Officers included the bearers of a number of names still well known; among them Lieutenant Dennis Lennon who was responsible for the interior design of RMS *Queen Elizabeth II*, Lieutenant R E Costain who has headed the famous building firm of the same name, and 2nd Lieutenant J L Alexander, now Sir Lindsay Alexander the shipping magnate and former chairman of the Liverpool Port Employers' Association. Lieutenant H J H Gatford commanded 3 Troop. He was, apart from the OC, the only Regular Officer and he eventually retired from the Corps as a Colonel.

The hard winter of 1940–41 was spent on shaking down as a Squadron and taking part in anti-invasion preparations and exercises between Surrey and the South coast. It was an austere period, enlivened occasionally by air raids from bombers which had "something left" after attacking London, and whose crews somehow seemed to know that there was a concentration of troops in those Surrey woods. At the same time a remarkably happy atmosphere built up in the Squadron, helped considerably by the friendliness of the local villagers. This atmosphere was to stand the test of a good many trials to come.

In the Spring of 1941 the Squadron moved out of Holmbury St Mary, first to Pangbourne on the Thames for wet-bridging, then to Melksham in Wiltshire, where really hard training, with a considerable emphasis on physical fitness, was undertaken until embarkation for the Middle East in early September.

LIFE ON BOARD

The Squadron embarked at Liverpool on the 20,000-ton former Cunard cruising liner *Franconia*. It was while waiting to sail from Gladstone Dock, as part of Convoy WS 12, that the worst single-occasion casualties of the whole war were suffered. In a tragic accident a civilian armourer who was fusing an experimental anti-aircraft rocket device encountered a premature explosion which ignited a full case of rockets. Missiles about the size of hand grenades were scattered over the decks of the troopship, at the time crowded with members of the Squadron doing PT. Three NCOs and Soldiers were killed and several others seriously wounded.

After this bad start the rest of the long, long voyage to Suez was boring but uneventful apart from the encountering of a full gale in mid-Atlantic. Altogether the Squadron was at sea for more than three months, under grossly overcrowded conditions, the ship being shared with a Battalion of the King's Royal Rifles and several Royal Artillery and RAF units. The generally happy atmosphere of the Squadron stood its first test however and internal tensions never rose much above a few harsh words when someone's feet descended into somebody else's porridge as he swung out of a hammock over a mess table.

Nevertheless the extraordinary hospitality shown to all during four days precious shore leave in Durban probably came just in time to stave off really serious stres-

ses—by then tempers were becoming strained over such matters as the queues at the wash basins during the fresh water rationing period.

Franconia also had what was euphemistically called a Troops Canteen, consisting of a single hatchway through which mugs of tea, apples, and occasionally bars of chocolate were dispensed. The queue for this formed shortly after those for the wash basins had dispersed and Sapper George Stevens of 3 Troop 7 FSRE should really have qualified for a place in the Guinness Book of Records as he spent almost the entire voyage in it. "Stevie" was one of those soldiers every unit needs—not very keen on bulling-up kit and apt to be clumsy on ceremonial occasions but possessed of a heart of gold and infinite patience. The arrangement was that a group of about twenty of us "covered" Stevie's duties, provided him with the wherewithal to purchase what goodies he fancied, and left him surrounded with our tea mugs in the queue while we promenaded the decks or sat on our lifejackets eternally contemplating the sea. Word would go round "Stevie's nearly there"—we would pound down to meet him at the critical moment, and back to the end of the queue he would go again.

The Squadron disembarked with considerable relief at Suez in early December 1941 and moved into a tented camp at Amirya, near Alexandria, to prepare for desert operations.

Operations 1941–42

At this time Auchinleck's advance towards Tripoli was moving fast and 1st Armoured Division was ordered forward before it had completed more than a week or two of somewhat haphazard desert training. For the best part of a month 7th Field Squadron rolled Westwards across open desert, mounted on the 15-cwt Ford V-8 and Morris 6-wheel "CDFs" it had brought out from Britain together with a new fleet of Canadian Ford and Chevrolet 3-tonners. Armour was limited to one Daimler "Dingo" Scout Car per Troop and a smattering of White armoured trucks.

Christmas 1941 was spent in austere fashion near the Egyptian-Libyan frontier wire with two small cans of beer per man as the only "comfort", and was in position facing the German and Italian Armies on the notorious El Agheila Line in mid-January.

Shortly before the Squadron's first action, 3 Troop had its first casualty when a Section 15-cwt commanded by Corporal Lauderdale struck a Tellermine. The Corporal was severely wounded and in spite of being tended all night by his Second-in-Command, Lance Corporal Lester Sidwell, later lost a leg.

On the morning of 21 January 1942 the Squadron was in open leaguer, a few miles to the East of Eighth Army's forward positions, with part of 2 Troop carrying out an advanced reconnaissance task. At about midday heavy Stuka raids were mounted on the area and elements of 1st Armoured Division Support Group started moving Eastwards through the leaguer. Information was sparse but it became clear that Rommel had made an unexpected attack, later described as a "reconnaissance in force". The Squadron withdrew down the Wadi Faregh without losses apart from the capture of some of 2 Troop's recce party including 2nd Lieutenant Hughes, the Troop 2IC. The Squadron vehicles were however badly scattered by successive Stuka raids and shellfire and it was late evening before organisation was restored—at that time NO wireless communications were provided in Sapper Field Squadrons or Companies, and such control as was possible had to be exercised by flag signals or personal contact.

The first fatal battle casualties occurred next morning when Messerschmidt 110 fighter-bombers carried out a series of attacks on the Squadron leaguer at El Hassieat aerodrome. Those killed were Sapper Ted Spender (hit by a cannon shell while trying to recover a 3-tonner which had been damaged by aircraft machine gun fire the night before) and Sapper Godsell who was hit by bomb splinters while trying to take cover during an air attack. Both were members of 3 Troop's MT Section.

The Eighth Army's subsequent withdrawal to the Gazala Line was a trying time for the Squadron. This period was for ever after known as "The Flap"—there were few specific Sapper tasks to carry out and the problem was one of survival as Stukas, Me

110s and tanks constantly harried the vast columns of soft vehicles spread out over the desert in open formation.

A fairly typical incident of this time involved Lance Corporal "Sylvo" Baron and the writer. We had somehow attached ourselves and our 3-ton Ford to a "Jock column" of various arms and were spending the night in close leaguer. Sylvo was on sentry-go while I was sleeping. He woke me by placing his mouth to my ear and whispering: "A column of Jerry tanks has pulled up about 300 yards away. We're to get in our trucks, keep very quiet, and all start up and go like hell as soon as the Column Commander starts his engine." We did, and got away with it. I remember my two main worries were firstly whether my faithful Ford V-8 engine would start first time as it usually did, and secondly how I was going to get the clutch up smoothly while both my legs were shivering from sheer terror.

Back at Gazala a major Sapper task faced the Squadron. Together with 1st Field Squadron and other RE units we were responsible for laying a massive minefield to stretch deep into the desert from the coast and provide a defence line against Rommel's next attack. This task, which took about two months, had its perils, notably the arming of crudely made Egyptian mines (one had to poke a nitro-glycerine ampule down a roughly welded tube with a sort of wooden meat-skewer) and coping with the regular afternoon visits of a flight of Messerschmidt 109s, whose pilots we almost came to recognise by sight. It was during this period that Lance Corporal Harry Littlejohn (now a retired Glasgow business executive) established his claim to have brought down a 109 with a 3-ton truck! Corporal Littlejohn was guiding a column of RASC 3-tonners, all loaded with mines, through the fields which had already been laid. He was standing on the running board of the leading vehicle with a wary eye cocked for the afternoon visitation and saw the end-on silhouette of a 109, with its sights obviously lined up on him. He shouted to the driver and both took headers away from the vehicle into patches of scrub. From half a mile away I witnessed what happened next—a vast explosion as some three tons of TNT went up, a second Me 109 flying straight into the smoke and flame, to totter away and crash in the distance. Of the 3-tonner nothing bigger than a six-inch piece of wheel was found. Corporal Littlejohn and the driver suffered grazed knees.

In April 1942 the Squadron returned to the Delta for a particularly joyous period of leave in Cairo, re-equipment and re-organisation. 1 and 2 Troops departed for the relative fleshpots of Syria and Palestine, 3 Troop was given Independent status under the command of Captain Gatford, and returned to the desert with 22nd Armoured Brigade for the disastrous battles on the Gazala Line around "Knightsbridge".

3 Troop's role at this time was the dramatic one of "tank-busting". It had been found that German recovery crews had been doing excellent work in earlier tank battles by removing damaged vehicles at night and getting many of them back into action by next morning. The new Sapper role was to roam the battlefield and give an absolute *coup-de-grace* to knocked-out tanks by placing a charge (usually a full tin of ammonal) in the hull and splitting it open. The Troop was also given the task of night leaguer raiding. Unfortunately I have little record of what successes were achieved by the Troop in these roles for towards the end of the fighting around the Knightsbridge Box all the members of the forward Sections, including the OC, Captain Gatford, and the 2IC Lieutenant Alexander, were captured while operating in support of an Indian Brigade. Two Sappers later escaped during an RAF raid on their POW convoy and the two Officers escaped after the Italian capitulation. As an MT NCO at Troop Headquarters I did learn however, during visits forward, that numerous German tanks were finally destroyed on the Knightsbridge battlefield and marked with the letter "E" in white paint and that several successful night leaguer raids were accomplished.

After the German breakthrough and Eighth Army's withdrawal to the Alamein Line, the remnants of 3 Troop went back to the Canal Zone, were reinforced by drafts recently arrived from Britain and further stiffened by NCOs transferred from the 2nd and 3rd (Cheshire) Field Squadrons. 1 and 2 Troop returned from their

sojourn to the North and 7th Field Squadron was reformed at Ismailia ready for the Alamein offensive.

El Alamein

The night of 23 October 1942 was of course a major episode in the whole history of the Corps, and 7th Field Squadron played a vital part in the initial assault on the Alamein minefields.

Each Troop of the Squadron was allocated to one of three tracks, *Sun*, *Moon*, and *Star*, in the Northern sector where the real punch was to go through. A Corps Field Company was also deployed in the same fashion. 7th Squadron was ordered to open up the first and third belts of mines, the Corps Field Company the second, in leapfrog fashion. Under the command of Major Ronald Gerrard (later awarded the DSO) the Squadron had trained in meticulous detail for the task with every move rehearsed time and again in a rear area near Alexandria.

The stories of that night are, of course, legion but possibly the best way to describe some of the work the Sappers did would be to recount in some detail the part my own Section played—I was at that time the 3-ton truck driver for the leading Section of 1 Troop, operating on *Sun Track*.

The whole of Eighth Army was at this stage keyed up to a most tremendous pitch. Whatever critics of Field Marshal Montgomery may have said later there is not the slightest doubt that he was a master at the art of building morale. As ordinary Soldiers we had at that point a most extraordinary feeling of confidence in the outcome. As one who "did" Henry V for his School Certificate, I have always felt that the atmosphere had something akin to that of Agincourt.

People often ask me—and I frequently ask myself—what my feelings were on finding myself taking part in the assault on the Alamein minefields. Being a person of normally nervous disposition I have only been able to conclude that:

(a) Eighth Army had a secret hoard of LSD which it had been putting in our tea.

(b) That there was so much noise going on that one couldn't distinguish the "comers" from the "goers" and that one therefore gave up worrying.

(c) That (more seriously) those imponderables called morale and discipline were working to the ultimate.

The truth probably lies in a combination of the two last factors.

To return to 1 Troop 7 FSRE's part in the affair. We moved forward immediately after the opening of the historic barrage in the wake of the Infantry of 51st Highland Division, the skirl of bagpipes occasionally breaking through the total volume of noise to create a particularly weird effect. We were in a close column, mainly of 3-tonners, the only armoured vehicles being the Troop 2ICs Daimler Dingo and one White Scout Car (the latter really a very lightly armoured wheeled personnel carrier, the front end of which looked like the later, still familiar International Half-track).

The approach drive to the edge of the first minefield was dramatic to say the least. The route seemed to pass through the middle of the main gun concentration and the barrage was in full swing. I imagine there must have been some "arrivals" from the other side as well but I cannot remember noticing them in the total volume of noise. Later one began to detect the difference between the relatively slow mushrooming glow of an enemy shell explosion and the quick flash from a "friendly" gun muzzle and this sometimes became disturbing. Once ahead of the gun positions we were mainly guided by lines of Bofors tracer being fired over our heads on compass bearings—a new method of guiding troops advancing in the dark in a setpiece attack. The predominant noise of guns firing at close quarters was substituted by the soft whistle of shells overhead, most of them happily appearing to be going in the same direction as ourselves.

On arrival at the edge of the first minefield belt we drivers "had it cushy" for an hour or so. I recall our own Troop MT NCO, Lance Corporal Dave Cox, having things very well organised for us, guiding us alongside a group of slit trenches which had been dug by someone else. (In a much later action in Italy Corporal Cox lost a leg

after being wounded by shellfire.) The Sappers in my Section dismounted, and after making quite sure how I could drive our faithful Canadian 3-tonner out without descending into a slit trench, I recall that I shared with the Army Commander the distinction of actually sleeping at Alamein during the night of 23 October—some sort of display of confidence perhaps assisted by a fairly generous rum ration. When I was awoken an hour or so later I learned from the Section that the mine clearing in the first belt had gone through without incident. "Just like the last rehearsal, only a bit noisier" someone said.

We remounted and moved on Westwards. Things appeared to start going wrong when we had passed through the Corps Field Company's gap in the second belt and thought we were still a few hundred yards short of the third belt of mines. A series of explosions occurred in front of us as we drove slowly on through the hummocky desert, our truck at this stage being about sixth or seventh in line. We passed the White Scout Car with a front wheel blown off and two of the crew, Sergeant "Ginger" Steele and Driver Jock McLachlan standing dazed with their hands to their ears. I think I saw five trucks in the Troop line blow up. We saw the Troop Leader (Lieutenant Nicholls) dismounted and waving us on and in our Section we obtained the impression that only one vehicle was still moving ahead of us, the Daimler Dingo with the Troop 2IC, 2nd Lieutenant "Hoot" Gibson, and his driver still going strong.

My Section Commander was Lance Corporal (later Captain) Arthur Barwell and it became clear to us that we were actually in the middle of a minefield and that the explosions we had been witnessing were not direct hits from shells but Tellermines going up under the wheels of our own Troop trucks. I have a very clear memory of Arthur Barwell hauling himself up from the left-hand seat of our truck through the observation hatch in the cab and saying: "It's all right for you, I've got to stay down here and drive this bloody thing". The discussion, I recall, remained good-humoured, however. Like all the Troop drivers I had enormous faith in the ability of those Canadian 3-tonners, reinforced by sandbags over every wheel-arch, to withstand a Tellermine explosion without injury to the occupants.

We next saw some shadowy figures running across our front 100 yards or so away, to be followed by stabs of flame from a light anti-tank gun very close to us indeed. We also saw Lieutenant "Hoot" Gibson's Dingo wheeling to the right and an explosion from a gun pit as he lobbed a well-aimed hand grenade straight into it. The remnants of the Troop vehicles then executed a sharp U-turn to the right. Somehow a Provost 3-tonner, loaded with MPs in smart white belts and red caps, and with mine-gap torches already lit, also managed to U-turn with its tailboard towards the enemy. Their arrangements had obviously been well-planned, not a glimmer of light could be seen from the *front* of the vehicle covered with two or three thicknesses of canvas canopy, but when it turned round it had all the appearance of an illuminated float in a carnival procession! Arthur Barwell and I watched fascinated as tracer rounds of every imaginable calibre spattered around it—and somehow missed. I distinctly remember that Arthur and I both laughed hilariously. In a mental check back I think that the Provost truck and ours must at one stage have been the leading vehicles of Eighth Army on the night of 23 October 1942. Not many others could have done U-turns in the last minefield and got away with it.

I am not sure how long it took but somehow the remaining half dozen vehicles of the Troop regained the home side of the minefield, re-deployed in the dark, and dismounted the Sappers to start the second clearance task. Somehow or other too, everyone seemed to have survived unscathed, even the occupants of the blown-up trucks.

This time there were no comforting slit-trenches for we "cushy" drivers so we stayed above ground and in fact set about recovering one of the 3-tonners which had had only one back wheel blown off fairly cleanly. A few of us jacked it up, put the spare on, and disconnected the bent rear propshaft. One of the Sections had by then finished its gapping task and we asked a detector team to "just sweep around a bit" before we moved it. The Sapper holding the detector waved it around the rear wheel,

picked up a high-pitched whistle and put his frame on top of a Teller about six inches from where the jack had been! Even that seemed to make some people laugh at the time, though perhaps the sound could be better described as nervous giggling.

Some rosy fingers of dawn were by now beginning to show and the mine clearance parties were coming back, tired, coated with dust but apparently intact and feeling a deep sense of pride.

The word went round that we were to pull back and everyone mounted the remaining vehicles for a rather perilous drive through Infantry digging themselves in. As we moved East with some valedictory 88 millimetre shells bursting around the column, one of those unbelievable incidents in a modern war occurred. A Regiment of Shermans—I think it was the Queen's Bays—was drawn up ready to advance through the gaps and break out. A Sergeant in the turret of the leading tank saw our rather battered little column approaching, whipped his beret off and called for "a cheer for the Sappers". It was an incredibly emotional moment driving down the line of tanks and being cheered at dawn on the morning of 24 October 1942. A moment in life which I will never forget, even though tragically, the enthusiasm may have been misplaced, because history records that there were even more minefields than had been suspected in front of those we had cleared and many tank crews were to perish in them.

During the remainder of the Battle of Alamein the Squadron carried out numerous Sapper tasks; widening existing gaps, pushing forward into further fields and even assisting in the particularly dismal task of removing booby traps from corpses, an enemy practice which was first manifested at this time. Most of this work was carried out under fire of some sort, yet casualties remained remarkably light. To the best of my knowledge fatal casualties were less than a dozen out of a strength of more than 300 throughout the whole battle.

One of the most distinguished actions was fought by elements of 3 Troop under Lieutenant Neil Graham which partook in the famous *Snipe* operation in which Lieut Colonel Victor Turner of the 2nd Battalion the Rifle Brigade won his Victoria Cross. This party of sixteen Sappers, including my still good friend Corporal "Sylvo" Baron went forward with the mixed force under Colonel Turner which was ordered to capture a patch of high ground near Kidney Ridge. The force found itself surrounded by enemy tanks, gave battle with its dug-in six-pounders, knocked out no fewer than thirty-seven and damaged twenty more. Major Gerrard was awarded the DSO at the end of the battle and numerous MCs and MMs were awarded to Officers, NCOs and Sappers. When he received the ribbon for his DSO a little later Major Gerrard called an informal parade, waved it in the air and told all ranks that it belonged to them all equally. Corporal Carpenter of 2 Troop was posthumously awarded the DCM for his part in knocking out a machine gun which was harrying his section.

My own personal recollections have to take an enforced break here as like most of the MT drivers I was a victim of the desert sores caused by flies breeding on the grazes and scratches inevitably incurred in the process of vehicle maintenance. Having reached the stage of having rather more bandages on my body than undamaged skin I was evacuated to the Delta after the breakthrough. However I learnt later that the Squadron had been in the van of the advance from Alamein to Tripoli and beyond, carrying out particularly important tasks during the clearance of Derna Pass, and constantly at work "de-lousing" and filling in the craters on the desert road which were blown as temporary obstacles by the retreating Afrika Corps.

One of the saddest tragedies in the Squadron's history occurred just before the capture of Tripoli, so long the ultimate goal of Eighth Army. Major Ronald Gerrard was watching tanks through a gap which had just been cleared in a local minefield when one of them struck a "stray" which had been missed. He took a step or two forward to tell the tank crew to stay in their only lightly damaged vehicle, but it was too late. Some of them jumped, landed in a nest of anti-personnel S-mines, and they and our deeply loved and admired Squadron Commander were killed.

TRIPOLI TO TUNISIA

After a short pause and rest in Tripoli the Squadron took part in the "Monty left hook" operation around the Southern flank of the Mareth Line into Tunisia. This was an exciting and highly successful episode of which my clearest personal memory was solemnly donning a tin hat while driving 3 Troop's explosives truck through a mine-gap which was being fighter-bombed. For some reason I and Lance Corporal Steve Dunning the Troop storeman, felt reasonably safe—after all we regularly brewed up in that truck at nights with a Primus stove on top of the ammonal boxes.

Numerous mine clearance tasks were undertaken during the long, flogging advance from Tripoli to Tunis, with casualties remaining light; though Sergeant Foster of 3 Troop was blinded by a mine and Lieutenant Gibbs severely wounded in the legs by shellfire while carrying out a reconnaissance. Lieutenant John Bishop, later to win two MCs and a Croix de Guerre, was also wounded by shellfire.

The Squadron was one of the Eighth Army units to make another vast "left hook"—deep into the Sahara and then North again to reinforce First Army units closing in on Tunis from the West. This operation had its lighter aspects. The whole idea, we gathered, was to outwit suspected spies on the First Army front by making ourselves look exactly like a First Army unit from the moment we emerged from the deep desert and started to move Eastwards through Tunisia. Gallons of dark green paint were provided to change the look of our faithful desert Fords and Chevs into some semblance of the vehicles which had been landed in *Operation Torch* near Algiers some months earlier. We were given briefings on how First Army troops bore themselves en route into battle—they behaved, we gathered, in a rather different way from us desert rats.

The big deception began to go agley when the green paint ran out some hours before we were due to move off on the long trek. Then, somehow, the message never quite got down to the Sapper Sections about "riding to attention" in vehicles wearing web equipment and steel helmets. We were left with the impression that it would have been a pretty poor spy who did not notice something odd about the mixed green and yellow painted columns of vehicles moving through places like Le Kef and other First Army Rear Areas with troops stripped to their brown waists, playing cards in the backs of the trucks, with ever-watchful eyes on their spring mattresses and hen-coops strapped to cabs and running boards. One of 7th Field Squadron's Section vehicles *must* have attracted some spy's attention, I feel sure, because of the presence of a very large, very tame, goose, who always sat at the card table in the back of the Chev with a watchful eye on the Section Corporal's hand. This goose, I do believe, was initially caught with a view to a rather good Christmas dinner for the Section, but Sappers being Sappers, he became a friend and a pet. I do not know of his eventual fate, but I suspect he was eventually let loose to the wild with good wishes and I like to think his progeny are still plying between the Arctic and warmer climes every turn of the season. I am absolutely convinced that nobody in that Section could have contemplated eating him, particularly since by then we were being treated to that new miracle of modern war—compo rations.

The final assault into Tunis and Bizerta, marking the end of the war in North Africa, took longer than most of us expected. The Afrika Corps put up a spirited resistance to the last, and many Sapper tasks had to be carried out—the inevitable clearance of local minefields during the long, slow advance, and the *laying* of protective minefields around Headquarters and gun positions against the predations of German Commando Troops who were carrying out night raids at this time.

One of the Squadron's more colourful episodes occurred during this period when a formation of American Fortresses chose our leaguer as a daylight target. Their aim was fortunately bad, so far as the high explosive was concerned, but a snowstorm of leaflets inviting 7th Field Squadron RE to surrender drifted between our vehicles as we lifted our heads. The most expressive comments came from the predominantly Cockney drivers of 3 Troop's MT section who suggested that they would spend the

rest of their military careers seeking out the aircrews of this particular unit of the United States Army Air Corps.

The Squadron was well forward when Tunis and Bizerta fell, and on the last night of the war in North Africa was in leaguer at the toe of Cap Bon where the Afrika Corps finally surrendered. Under the usual standard of Squadron organisation the leaguer was in the grounds of a noted Tunisian vineyard so that the advent of peace was suitably celebrated and the mass surrender of the Afrika Corps next morning only noted with passing interest.

Italy

At the conclusion of the North African war the Squadron spent a happy spell on the outskirts of Tunis, then a less happy one on the outskirts of Tripoli as temperatures began to rise in mid-summer, and was finally moved to billets near Boufarik, some 30 miles from Algiers, for the winter of 1943–44, while our political masters decided whether we should next take part in the Italian Campaign or return to UK to prepare for the invasion of Europe.

It was perhaps a mixed blessing that the decision came down in favour of the former. We spent that winter—billetted in another vineyard, naturally—readjusting our training to the idea of fighting in a close, verdant country, rather than a desert. For the first time, too, the Squadron was equipped with an adequate supply of radio sets down to Troop level and I found myself a new, and satisfying, job as a Regimental Signaller, RE.

The Squadron sailed from Algiers to Naples in February 1944 aboard the French liner *Champollion* (destroyed by fire on a peacetime voyage many years later). This time the sea trip was comparatively short and comfortable—the Squadron's living accommodation was even on an upper deck where it was possible to open portholes during the daytime.

The first few weeks in Italy were fairly miserable ones—the savage winter was still reigning in Southern Italy, the reception camp on the outskirts of Naples was a morass of mud and leaky bell tents, cholera was raging in Naples itself plus other medical horrors, rations were short, and the pathetic women and children begging around the camp were irresistible even when one only had half a bully sandwich to give them. After two preliminary moves to successively more comfortable quarters between Naples and the forward area at Cassino, the Squadron became operational again in the early Spring as an additional Sapper element of 6th Armoured Division for the final assault on the Cassino Line.

Monte Cassino

Before what is now known as the Fourth Battle of Cassino the Squadron performed a major preliminary task, clearing tracks and approaches to the main river line under cover of darkness. Most of this was done with the support of those remarkable French colonial troops, the Goums. Mine-lifting sections which went out individually at night returned with strange stories of keeping rendezvous with their escorts—one would reach a track junction and be quite certain that one's map-reading was right, but could see no sign whatsoever of the expected supporting Infantry. Then a rock would begin to wobble a little in the moonlight, rise slowly upwards and take on the form of a Goum soldier in long striped robes with a steel helmet perched on top, flask of cognac concealed underneath, (and always proffered), and all would be well.

These operations produced a generous allocation of Croix de Guerres for the Squadron—fourteen in all I believe—which were proudly sported, mainly by junior ranks, for the rest of the war. Right at the end of this phase, however, another tragedy struck 3 Troop when its popular and gallant Troop Sergeant, John Doughty, was totally blinded while lifting wooden Schumines urgently needed for training purposes. (Ex Sergeant Doughty now runs a large and successful sports and photographic business in Great Yarmouth and to meet him one would think that nothing untoward had ever happened to him).

There were no great regrets when it was learned that the Squadron would be

operating on a secondary assault through San Angelo instead of taking part in the attack on Cassino itself. Nevertheless the San Angelo battle was a sharp and bloody one, the Squadron's harbour areas and moving columns being under almost constant shellfire and bombing.

One of the more spectacular tasks was the building by 3 Troop of a Bailey over the Liri at the village of Fontana Liri as part of the outflanking movement. The day began calmly enough—Infantry had made an assault boat crossing the night before and although the area was littered with corpses, the wooded banks of the river looked peaceful and almost welcoming as Lieutenant Bishop of 3 Troop swam across to make his recce of the far bank. His swim was rudely interrupted by a Spitfire which opened up on him while making a low pass along the river and whose pilot was apparently not in possession of the latest facts. "Basher" Bishop completed his swim underwater unscathed apart from swallowing a fair amount of Liri while cursing the RAF.

After the bridging task had been under way for about an hour the Squadron had its first experience of the unnerving sound of a "Moaning Minnie" multi-barrelled mortar in action against them. The Nebelwerfer kept up its fire for several hours without causing damage except to the nerves until being put out of action by a Gunner Battery which answered a call for assistance put over 3 Troop's radio. The bridge was completed by mid-afternoon and 3 Troop withdrew with some relief. At dusk a Liaison Officer called at the Troop harbour to say that the bridge guard were worried because they could hear a steady ticking sound from what appeared to be a ruined cellar over which the home-side bank seats were situated. A time-bomb was the immediate speculation.

Sergeant Roy Squire was detailed to investigate with the writer as his driver-operator. The scene was menacing in the fading light—a deathly stillness all around and, most certainly, a steady tick, tick, coming from beneath a manhole. Sergeant Squire (who now runs a large entertainment establishment in Kent and with whom I am still in touch) took a length of rope, a largish swig of the Italian gin I kept in my Humber Scout Car for occasions like this, and disappeared down the manhole while I made very sure I was on net to Squadron HQ. After some eerie minutes (which felt like hours) the ticking sound was drowned by a splendid flow of earthy Sapper language reverberating through the cellar. Sergeant Squire emerged: "Tell them", he said, "It's a **** *** **** tap dripping. Where's that bloody gin?"

On to the Rubicon

After the breakthrough at Cassino and Anzio, elements of the Squadron were in the van of the rapid advance North to Florence. The days took on an almost constant pattern. Troop Leaders, 21Cs, or Troop Sergeants would ride in the Humber Scout Cars with the leading tanks of the 6th Armoured Division until they were halted by one of the succession of obstacles left by the retreating enemy—usually a blown and cratered bridge, with approaches well sown with anti-tank and anti-personnel mines. Situation reports and requirements for manpower and stores were then sent back by radio (the 22 Set was the normal equipment in the Humbers) and within an hour or so the Sapper task would commence. More often than not this amounted to rapid mine clearance followed by the bulldozing of a diversion track, around the obstacle, passable for tanks. Sometimes the rapid launching of a small Bailey was needed too. Some of the tasks had to be carried out under harassing shell or mortar fire.

The 6th Armoured Division route took the Squadron through some of the loveliest and most historic parts of Italy. Assisi, Terni, Perugia, the shores of Lake Trasimeno, rolled under the wheels and the fall of Rome went almost unnoticed as we by-passed the city to the East.

What stuck in the memory far more than the scenery, however, was the abundance of new potatoes and corn-on-the-cob in the fields which brought vehicle cooking to supreme gastronomic heights, and also the abundance of liberated vino which made the Italian campaign a much jollier affair for us than any desert war. ("I think you

ought to keep room to stow just a *few* hand grenades" said Lieutenant John Bishop one morning when surveying the arrangements I had made for our joint comfort inside our Humber.)

When the advance reached Arezzo to the South of Florence we were pulled out for a rest and rolled back to the Naples area for leave at Salerno and a refit. My personal memory was that the biggest strain of the advance North from Cassino was lack of sleep—perhaps that applied particularly to the crews of the recce vehicles who were literally on the go, either driving, or on radio watch, from first light to last, and sometimes through the night as well.

It had, however, been a light period for casualties but all ranks were deeply saddened by the death of Major Harris, the Squadron Commander who had taken over from Major Gerrard. He was killed when his jeep struck a stray mine entering a harbour area. He was succeeded by Major Brabourne. That colourful character Lieutenant Bishop was wounded for the second time when his scout car, (which I should have been driving but for one of those queer twists of fate), hit a mine on a night recce. His driver, George Pye was badly wounded in the legs. How we Sappers-Drivers HATED the thoughtless men who had allowed the Humber Scout Car without belly armour to be sent to Sapper units with an absolute certainty of the driver losing his legs if he hit a Tellermine. They were wounded again when the half-track ambulance evacuating them hit another mine. Lieutenant Bishop returned to the Squadron again later and I believe Driver Pye survived minus one leg.

After the Salerno leave and another spell of re-equipment, (the Squadron at this stage received its first-ever tracked armoured vehicles in the shape of International Half-tracks), 7 FSRE moved up on the Adriatic front to support its original Division, the 1st Armoured. Sadly, the unlucky 1st Armoured Division ran into more trouble. The task was a break-out through the Gothic Line and after a difficult assault operation the tanks ran into a second, and unsuspected, line of anti-tank gun defences with heavy casualties.

The Sapper tasks for the Squadron consisted of the usual variety of track preparation and mine-lifting, plus a number of small bridge-building operations. The second winter of the Italian campaign was however, beginning to close in and after the advance had reached the line of the River Rubicon it became clear that another stalemate was in sight. 7 FSRE was temporarily taken out of front-line operations and put to work keeping open the mountain route across the Appenines from Florence to Rimini.

Corps Troops

The prospect of a period of "steady" engineering without the accompaniment of enemy fire was not unwelcome. One of the classic remarks of the war occurred on the night that news came through that we were now "Corps Troops" and almost simultaneously a salvo of long range shells crunched into the ground a few hundred yards from 3 Troop's harbour on a hillside. "Will somebody tell that bloody stupid Jerry gunner that he can't do this any more—we're Corps Troops", said Driver Fred Hunter.

However temporary peace did descend and until early December the Squadron was engaged on snow clearing, road repairing and the maintenance of bridges on the dramatic road that weaves through the mountains between the two cities. Close friendships were made in many of the Troop locations scattered along the route in mountain-top villages. The Italian people of the region seemed very different characters from those encountered in the warmer and softer areas of the South. Most members of the Squadron have sharply-etched memories of those weeks, mainly centred on little parties around log fires with roast chestnuts and rough red vino presented by the hosts, odd tins of bully and "M & V" (Meat and Vegetables) contributed by the guests for later consumption by rather nice people who were living on a breadline through no fault of their own.

This relatively unwarlike episode was short-lived however. In early December, as the Appenine winter weather began to close in, word was passed around that 7 FSRE

was to move South to Viterbo to be converted into an element of an Assault Engineer Regiment for the final attack on the Po Valley and the Alps.

NORTH TO THE PO DELTA

Amidst some fairly caustic comments about the apparent inability of anyone else in the Corps of Royal Engineers to fight wars, the Squadron left its comfortable billets in the mountains and moved into a vast abandoned Italian barracks area at Viterbo to be equipped with, and to learn to handle, a weird variety of special tanks and supporting armoured vehicles.

The Assault Engineer Brigade was formed from the 1st, 2nd, 3rd and 7th Field Squadrons, plus two Field Park Squadrons RE and two Royal Armoured Corps Regiments. The Sapper Squadrons took over the manning of Churchill ARK (Bridgelayer) tanks, Churchill AVREs and Shermandozers, the RAC units remaining responsible for the Crocodile Flamethrowers and Flails. A good deal of inter-Squadron posting was carried out but the bulk of 7 Squadron found themselves in a new unit known first as "J" Squadron, later as 637 Assault Engineer Squadron.

Most of the remainder of winter was spent on tank driving and wireless operator training—RE Drivers who had previously handled nothing much bigger than 3-tonners and light armoured cars seemed to take naturally to Churchills and Shermans and the average conversion course took only three weeks. The RAC Training Depot at Rieti also converted Sappers and Drivers into competent Radio Operators in another three weeks flat.

Happily the forbidding-sounding assault operation across the River Po Delta turned out to be an almost bloodless affair as far as the former 7 FSRE was concerned. By April of 1945 there was little fight left in the German Army in Italy, the actual crossing of the Po was achieved by conventional bridging methods and the Squadron, (acting in support of 2nd New Zealand Division), had an almost unopposed advance to the outskirts of Venice.

While harboured in a village square between Venice and Padua I was taking the first-light check call on the Squadron rear link set to Brigade on a fine May morning and was advised by the operator on the control set to "re-net to Baker Baker Charlie immediately". I picked up a Forces Broadcasting Station in time to hear that resistance had ended in Northern Italy. The word was passed around and the most extraordinary selection of bottles hoarded for that very moment appeared from inside tank and truck toolboxes to be drained dry before breakfast in 7th Field Squadron's own peace celebration.

The Sapper elements in the Brigade were pulled back to concentrate in the Padua area, local leave camps were set up in Venice and on the Italian lakes, and some fairly luscious fruits of victory were consumed throughout the rest of the summer by all ranks. A little work was organised to prevent complete boredom until home leave and repatriation came round, but in general it was a case of enjoying the fleshpots and the sunshine which most of us felt we had earned.

HOME AGAIN

In early September the *Python* (codeword for repatriation to the UK) date came up for all the original members of the Squadron who had sailed aboard the *Franconia* four years earlier. The journey home was somewhat quicker—aboard a wing of Lancasters non-stop from Bari to an RAF station in Norfolk in about eight hours. The morning after landing we entrained for the RE Depot in Halifax, leave warrants were issued, and we were told we would be sent fresh orders through the post.

Although I believe the Squadron remained in existence in Italy for some time after this, "7th Field" really came to an end as those of us who had embarked in the *Franconia* and lasted the course, climbed aboard separate trains at Leeds Central Station one night in September 1945. We were all dispersed to units and depots in various parts of the country after our disembarkation leave and sadly, somehow, a great unit of the British Army seemed to disintegrate without a word being said.

However, a few of us (most of whom have been mentioned by name in this account) have kept in touch if only by exchange of Christmas cards for thirty-five years and occasionally we meet. The Seventh Field Squadron of 1940–45 was not only a lucky unit, with incredibly few casualties for the operations undertaken, but it was also a happy one.

* * * *

Windmill

LIEUT COLONEL J M GUYON MA

THERE has been a mill at Over near Cambridge for a thousand years. It stands on the fifty-foot contour where it gets enough wind to grind the corn on a hundred days a year; the Dutch do better, with two hundred. The Cambridge Group of the Soil Association arranged a visit with the miller, and we all prayed for wind on the day.

The present mill was built in 1916, ceased working and was left derelict in 1929, reconditioned by the present miller John Wilson partly as a hobby, and has been grinding corn again for the past six years or so as a commercial venture. His "bread and butter" comes from a wholefood dealer in Cambridge who sends him compost-grown wheat fairly steadily. He also sells from the mill and we brought a half hundredweight sack home with us. The author has been the family baker for the past three years; his bread is tough and chewy; but it has a taste, is satisfying, and costs half as much as the bought variety. Having the equipment, he turns out a dozen two-pound loaves in a batch in three hours, and then need not bake again for about six weeks. Recipe and details on request!

Over mill has the usual conical stone built tower with a revolving cap carrying the wind axle and sails at the top. It was designed for four sails, but only one pair have been reconditioned so far. The wind axle is inclined at about 10 degrees to the horizon to enable the sails to clear the sloping side of the tower, and drive a revolving central shaft serving all three floors of the mill through a bevel gearing (just like a car back axle, only more so). A small wind wheel at the back of the cap, set at right angles to the plane of the main sails, drives the whole cap round—through reduction gearing—to keep the main sails facing always into the wind. The cap is supported by a circular flat metal track all round the top of the stone tower on which run flanged metal wheels—double under the wind axle where the weight of the sails comes.

On the top floor just below the cap are storage hoppers for the grain awaiting grinding, which is lifted by wind-powered elevators. On the next floor down is a cunning cylindrical cleaner which tumbles the grain into an axial chute, but leaves behind the thistles, straw, mud, rats, mice and nails which would cause the miller to be prosecuted if found in the flour. From the cleaner the grain is ducted into clean storage bins and is ready for grinding if the moisture content is right; if you can bite into it, it is about right; if it breaks your teeth, it is too dry!

The next floor down is the milling floor, containing two pairs of millstones. The upper stone, which is driven round by a belt from the central vertical power shaft, came in one piece from a quarry in Derbyshire. The nether stone, which is stationary, is reconstituted stone from France, set in plaster of paris and held together by a metal tyre. The grain is fed to the hollow centre of the upper stone through an oscillating chute which ensures a steady even flow. Grooves cut in the upper stone force the grain slowly away from the centre towards the periphery of the wheel as the grinding proceeds, and it drops off the outer edge as flour and falls through a chute to the floor below (the ground floor).

Having followed the grain all the way down, we went outside. The brake was on when we came, to save us being put through the exposed machinery, but off when we came out. Seen from below, the huge revolving sails were very impressive, sweeping

out a circle about sixty feet in diameter (about twenty metres). Each sail has a beautifully curved aerofoil section, something between an aircraft wing and the foresail of a yacht. Since the tip is travelling much faster than the root as the sail revolves about its axle, it is nearly flat at the tip but has a pronounced twist at the root; so the short stubby and strong leading edge is spiralled in one direction as one looks up the sail towards the axle, whilst the longer and weaker trailing edge is spiralled in the opposite direction. The whole surface of the sail is covered by controllable wooden slats which are closed in a light breeze but fully feathered in a storm. With four sails, twelve horsepower is delivered to the power shaft in a reasonable wind.

Main memory—the delicious smell of newly milled flour.

Windmill

To Sleep Perchance To Scream

MAJOR P J BAMBURY RE

The Author was commissioned from Sandhurst in 1963. He served as Troop Commander and Intelligence Officer in 32 Armoured Engineer Regiment. He was 2IC (and briefly OC) of 37 Field Squadron in 1970–71 and went with 23 Engineer Regiment to Northern Ireland in 1972 as Press Officer. He Commanded 57 Training Squadron in 1974–75. He served on the Joint Intelligence Staff in Cyprus as a GSO3 and DAA & QMG Osnabruck Garrison in 1978–79 after leaving Staff College. He is now Commanding 73 Independent Field Squadron.

THE phone was ringing downstairs. As always I wished I had remembered to plug it in next to the bed. Rebelliously I thought well why should I and followed this up with a strong argument protecting Renate from being woken in the middle of the night. I found myself awake. I had a foot in each slipper and, taking care to avoid bumping into the corner of the bed, made my way into the dimness of the corridor.

Despite my hurry I was aware that the children were sleeping soundly and noted that I had some tucking-in to do when I came upstairs again.

Not quite breathless, I picked up the phone expecting to hear the untimely but always welcome sound of my father-in-law's voice checking that all was well with us. It was half past one in the morning. Early on Saturday. Two days into my Christmas leave.

"Hello." I always tried to make it friendly but anonymous.

"Hello," the voice was familiar, "Sir?"

"Yes. Who's that?"

"Corporal James, Sir. Duty NCO. We're on a call out Sir."

"What on a Friday night this near Christmas!?"

"Yes Sir!"

A cock-up I thought. Three possibilities. The real thing, an over zealous senior officer or a cock-up. It must be a cock-up.

"Corporal James I'd like you to get the duty officer out . . . who is the duty officer?"

"Q Grimmond Sir." A steady number Q Grimmond.

"Good. Get him to give . . ." I was interrupted.

"Sir, this is Q Grimmond. There's a bit of confusion going on but I've checked and we're definitely on a call out. I think you'd better come in as quick as you can. I'll send your Rover to your house as soon as we can track your driver down."

"Don't bother Q, I'll come in the car. Bit strange this. Calling us at the weekend. Isn't it?"

"Yes Sir." He paused and I sensed somehow a disturbing note of tension before he said "Sir, I think there may be something serious about this."

"I'll be in in about twenty minutes Q."

I put the phone down and my thoughts were racing. How many had already gone home for Christmas? How many had gone away for the weekend? Did we have enough drivers?

Major PJ Bambury RE

I found that my thoughts were entirely conditioned towards ticking off boxes on an imaginary check proforma headed: *UNIT EMERGENCY CALL OUT PROCEDURES*. I moved slowly up the stairs and looked out of the landing window. It was dark and still outside. More lights than usual were on around the other Quarters but there were no screaming Landrovers or 4-tonners acting as signatory to the authentication of the call I had just received. It probably was a cock-up after all. I wished I was convinced.

I tucked the children in on my way back to the bedroom.

Careful not to waken Renate, I put a table lamp on, found my combat kit, washed my face and started to dress.

"Are the Russians coming?" I knew she was smiling a sleepy smile and went over to the bedside.

"We're on some sort of a call out. Go back to sleep darling."

"They can't call you out on a Saturday morning can they?"

"I think it must be some sort of a cock-up. Go back to sleep." I knew my voice had betrayed me.

"Darling?" She was squeezing my hand hard against the pillow and despite the darkness, I knew that she was awake and that her eyes were wide with anxiety.

"I'm sure it must be a nonsense." I said. "Let me get my kit together darling. I've got to go in to camp, cock-up or not."

"Shall I make you some coffee?" This at least was back to the usual form for these practices in the middle of the night. "No. Go back to sleep. I'll be back in an hour or so."

I finished dressing. I couldn't stop myself looking at everyday objects and wondering if I would ever see them again. I wondered if I'd ever wear my dressing gown again or look into the mirror over the washbasin. As soon as I was ready I looked back at Renate and I knew she was looking at me. She sat up in bed.

"Are we still going to go to Hanover?"

"Yes I'm sure we will. I'll be back soon . . . or I'll ring."

I kissed her lightly and wondered as I did whether that was an adequate parting gesture from a chap who might well be going to the front.

It must be a cock-up.

I bundled my kit into the back of the car and strapped myself in. As I switched on the ignition the radio came to life and I cursed for not having thought to switch a radio on in the house.

". . . has said that negotiations are likely to last well into the morning. Well folks stay tuned to this frequency where we'll give you all the latest news as it happens and music for weekenders too." The familiar sounds of sugar coated saxophones blended into the last few words and took over.

I turned out into the main road and accelerated towards barracks. Two Landrovers travelling fast in the opposite direction were sufficient proof for me that mine was not the only Squadron practising its call out procedures.

The barracks was a total contrast to the married Quarters. Lights were blazing everywhere and threw into silhouette the seeming hundreds of figures that were running in all directions.

I pulled into my parking space and ran into the Squadron lines. There was no shortage of activity or noise. A queue of soldiers was slowly winding its way into the armoury.

"Sir!" I turned. It was Q Grimmond.

"Ah Q! Well done! What the hell is going on? What did you mean by serious on the telephone?"

His face showed nothing of fear or uncertainty but in his eyes I could see both and I suppressed an icy shiver from running the full length of my back.

"Can we go into your office Sir?"

Once inside my office Q Grimmond almost exploded.

"Sir this is ridiculous! I've got the whole Squadron running around coming in in the

middle of the night because that's what it says in my orders. But I honestly do not know if it's real or practice or a cock-up or what!" He looked out of the window. "And if I don't know I'm quite sure that those poor little sods out there don't know either."

"Just wait a minute Q." I picked up the telephone and dialled the Brigade Major's number.

"Johnny, Philip. Sorry to bother you at what must be a busy moment but there's a bit of confusion at the moment." He stopped me from going any further. He'd answered this question several times already.

"Philip. It's OpO 3 of 79 page 5 paragraph 11. That's for real. Get your boys moving and let me know when you're ready to roll. The Commander wants you permanently available to come to the phone or radio and you are to be here at 0530 if you're not called earlier. OK?"

"Yes. Thanks Johnny. OK. We'll get to it. Thanks." I put the phone down. It wasn't a cock-up. It wasn't an over-zealous senior commander. This was the real thing. I had never felt more unreal in my life.

"Is the 2IC in Q?" I tried to look competent.

"No Sir. He set off for the Harz yesterday evening with the AO. We've been trying to find a contact number for them."

"Is the Chief Clerk in?" I didn't wait for an answer but yelled "CHIEF!" I heard a comforting acknowledgement as the Chief let me know he was on his way.

"Who is in Q?"

"I'll go and check Sir. Just as you arrived there were a few more cars coming in. Corporal James will have the list. It is serious isn't it Sir?" He was grave.

"I'm afraid it looks that way Q. I'd be grateful for that list." He turned and left the office. He and the Chief Clerk grunted at each other as they passed in my doorway.

"Chief, it's a wee bit awkward. No 2IC and we need to get into the safe."

Without replying the Chief Clerk put a file on my desk with OpO 3 of 79 stencilled on the cover. "Thank you Chief. How did you know?"

"I guessed Sir," he said. He grinned. I grinned back. I felt better.

"Had any other guesses Chief?"

"No Sir. I think the 2IC's fiancée will know where he is Sir."

"Yes, but don't ring her until a reasonable hour."

"Right Sir."

"Good. Thank you Chief. Can you get some coffee rustled up and see if you can find the Sergeant Major, the Troop Commanders and the QM. I need to see them five minutes ago."

"Right Sir." He left the office at impressive speed. I glanced out of the window and was shocked to discover that I was being watched through it at close range. My observer was Mrs Peecher, wife of one of the plant operators. I smiled at her and went to open the window. She turned and ran across the square.

There was a tap on the door and it was opened by the Sergeant Major.

"Morning Sir. Any chance of you telling us all what's going on? There's a rumour that the Russians have invaded somewhere or other." It was always good to have the Sergeant Major close at hand. Never more so than now.

"I'm very glad to see you Sergeant Major. I haven't a clue what's going on but I'm trying to find out. Where are the Troop Commanders?"

The phone rang before he could answer. "Hello." It was Renate. "Darling I'm up to my ears in things to do. Can it wait?" I stopped. She was sobbing and I could hear the two boys crying near her. She told me that an explosion had taken away parts of two houses on the other side of the street. Anne was dead. Little Nigel had half his leg missing. There was no ambulance available. There was nobody to help.

"Darling. I'm very sorry. You must do what you can to help. See if you can round up the other girls. Stay indoors if you can! I'll get someone to come somehow. I'll ring you back soon. I'm sorry darling. Goodbye darling."

Dear God please save us all. I really meant it.

The Sergeant Major was looking at me. He knew I had been shocked by whatever I had just heard. He wanted something to do, something to help.

"Shall I go and see what the state of the plant and MT is Sir?"

"Yes. Yes please Sergeant Major. I'll also want an accurate picture of how the call-in is going and an estimate of when our first packets will be loaded up and ready to go.'

"Right Sir."

"Oh . . . and I saw Mrs Peecher through the window. Find Corporal Peecher and tell him to get her home."

"Right Sir." He left the office.

I sat looking at the familiar surroundings of my desk and the few pictures hanging on the walls. For some reason I thought of my dressing gown and wondered once more if I would ever wear it again. A picture of Renate and the children standing in a Belfast slum street with the fronts of the houses torn off flashed grotesquely through my mind. Amazingly even then I could pick out tiny details of toys broken or privacy invaded in the micro-seconds of my imagination. The phone rang and I picked it up as on any working day: "OC", my office image was answering. "Philip. Thank goodness I've caught you. This is Bernard Playfair. Look, one of my pick-up vehicles has just phoned in to say that the Bistebeck bridge has been got at. Demolished. It's gone! Can you get someone out there to start fixing it? That bridge is on our route out of town. I'll tell Brigade. Alright?"

Lieut Colonel Bernard Playfair was one of the COs. A little old fashioned perhaps but always friendly and helpful.

"Colonel I can't start despatching people and equipment all over the place at this stage of the game. Could you just get your man to give as much detail as he can to the Brigade Staff. They must decide how the problem is solved."

"Whatever you say old boy. I should have thought that's wasting time though really. After all that's what you Sappers are here for."

I thought of the Bistebeck bridge. An old masonry arch on a narrowish stretch of winding road over the canal and river. I had nothing but my imagination which I could use to replace it. "If I can spare an NCO I'll get one down there as soon as I can."

"Good man. Soon show Ivan a bit of the old Staff training! Eh! Bye Philip."

It was like something out of *The Two Ronnies.* "Bye Colonel."

Things were building up. God help us. The office door opened slightly and I could see part of John Callon's face.

"Come in, come in John. Who have you got with you?" John Callon, a promising Troop Commander. He saluted as he came into the office followed by his recce Sergeant and Staff Sergeants, Hall and Wilson. They all saluted and we exchanged almost natural good-mornings.

"How's the plant, Staff?" This to Staff Sergeant Hall.

"The plant's alright Sir but I'm short of three operators. Four if you don't count me."

"I do. Are the machines all fit?"

"Well. One of the Terexs is still waiting for back loading after the fire last month but I don't count that. Two of the light wheeled tractors ought to have about another three hours work on them to finish off a modification but they're both battleworthy. The crane's OK. The digger's OK but ought to have a new set of teeth. Yes. Other than that there's no problem. Oh. The tippers are all off the road except one. Spares."

"Off the road?"

"Well, they're not runners Sir."

"Right Staff. I want your machines ready to roll in two hours. They don't have to be roadworthy but they've got to be ready to work. That includes the tippers. Get hold of Q Grimmond and get weaving."

"Sir, is there . . ." I cut him short.

"That's all I want Staff. Now get it done." I think I managed to stop my voice trembling.

God save us all.

"I want to know when you're ready Staff."

"Right Sir." But he was already half way down the corridor.

"Now, Sergeant Kay. Just hang on John. Sorry about this. I'm going to pinch your recce Sergeant. Sergeant Kay are you loaded up yet?"

"Yes Sir. My driver's just finishing off."

"Good. As soon as you're ready I want you on the net and off to the Bistebeck bridge. It's been blown up. I want a report on the damage."

"Right Sir. It's all right to be on the air then Sir?"

"Oh no, damn it! You'll have to use the telephone. Keep in touch and move fast!" Sergeant Kay left.

"Now then John. Where are Howard and Barry? Staff where's Mr Handley?"

"I don't know Sir." Staff Sergeant Wilson was a taciturn man but he exuded confidence somehow. "He'll be along soon enough."

"Well," I said "tell me the state of things in the Troops."

It was worse than I thought. Much, much worse. By the time they had finished I had a terrifying feeling of total inadequacy harnessed to the problems caused by the weekend and Christmas.

There seemed to be an endless list of ghastly and unfair coincidences. Large numbers of Sappers and NCOs had been allowed to slip away for a long weekend on the grounds that they were to be denied leave over Christmas. A 21st birthday party for a Lance Corporal in 2 Troop was at its peak in the Squadron Club when the call-out message had first hit the Squadron. (Like a teleprinter, my brain printed out for me the definition of drunkenness extracted from the Manual of Military Law). Equipment had been loaned to other units to help with their training. Repairs to pumps or boats could not be finished in a few hours but would need either spares or days. Staff Sergeant Wilson finished: ". . . the majority of those who are here are the new arrivals of the last two months. To cap it all, Sir, we haven't had the chance of any concentrated NBC training for months. The men are really windy about that. Do you reckon we should be wearing our noddy suits already?"

It was almost a relief that the phone rang at that moment just as the door opened. The QM, Harry Filler, walked in as I picked up the phone. It was the Brigadier. I was soothed by his air of authority and uncluttered calm.

"Everything coming on all right Philip?"

"Yes Sir, no real problems." That was a conditioned answer if ever there was one. I was like a lemming. Why couldn't I tell him that the world was falling apart around me. I tried. "The Bistebeck bridge is down Sir. I'm going to send a recce team to have a look. I've had a frightful call from home too Sir. It sounds like there's been a bomb in the Quarters. We really need someone to keep the girls from panicking Sir."

"Yes. The Military Police are already looking after that and things are quite calm down there now. Now Philip I want you to get your Bistebeck recce to come straight here and report in person to the BM. I want you here at 0330. Can you manage that?" I looked at my watch. It was 0255.

"Yes Sir."

"Good. When do you reckon the Squadron will be ready to go?"

"Oh. I think we could move in about an hour Sir but we wouldn't have everybody here. The weekend and Christmas are not helping the call-out system." I could hear the words echoing around the Courts Martial Centre already.

"No. Of course. See you in about half an hour then."

He was still there.

"Sir. Are you able to say what is going on. Anything that I can pass on to the soldiers?"

"Sorry Philip. I doubt if I know more than you do. The invasion that we all dreaded started at last light, the Americans have reacted more strongly than we expected. We

may well be at war by tomorrow. I can give you a few more details when I see you."

What invasion was he talking about? I read *The Times* each day, listened to the news. Why didn't I know what was going on?

I put the phone down. Say half an hour, less ten minutes travelling time and five minutes for the unforeseen. I must leave in fifteen minutes.

Harry Filler was waiting patiently.

"Harry. Sorry. What bad tidings do you bring?"

"If that's really what you want, plenty. It's going to take much longer than expected to get our ammunition trucks back and ready to go because of the traffic. I can't put a figure on it. Just much longer. Some bastard's spiked our fuel pods and they'll need draining and flushing before they're any good. We have water and we have rations. I've changed cannisters for over a hundred respirators and here's one for you together with a nice new NBC suit." He dumped these last into my In-Tray. "There's a lot of young kids out there who need to know what's going on Philip, and the sooner the better."

"I don't bloody well know what's going on." I felt the frustration starting to bubble. "You're right. Sorry. Staff go and ask the Sergeant Major to get all those who are here paraded outside the MT now would you please."

"Right Sir." He left.

Barry Handley and Howard Beamish appeared at the door. They were both in dinner jackets. They both looked very unhappy.

"Barry, Howard, what kept you? We've all been at war for nearly two hours. Come along and listen to what I tell the few who are here and then go and turn yourselves into soldiers and start looking after your Troops."

I stood up as the Chief Clerk appeared with a cup of coffee.

"Sorry Chief. If you can find a flask and throw it in my Rover I'll be grateful."

The Sergeant Major was still rounding up stragglers when I appeared outside the MT office.

"Where's Corporal Letts Sergeant Major?"

"Not seen Sir. We can easily fix you another driver."

"No, I'll drive myself. The others have more than enough to do."

I was horrified at the small number paraded ready to listen to what I had to tell them. I had always enjoyed the opportunities to talk to the whole Squadron but felt only dismay this time. I noticed how they were all for once giving me one hundred per cent of their attention. My memory flashed back and caught phrases I had uttered on previous occasions when I had wanted every man to grasp his soldierly purpose in some aspect of his training. Those phrases were now justified. My dismay was my own complete lack of information for them.

I decided to be honest. I told them I was on my way to receive orders which I was sure would include details of the present situation. I told them to use every precious minute to prepare themselves and their equipment. I gave them assurances that their families would receive properly coordinated instructions and that they would be carefully looked after. I hoped they would all laugh as I left them saying that, no matter what, it could never be worse than *Exercise Sunrise*. Only some of them laughed.

As I passed the Sergeant Major and the Officers I told them I'd be back in about an hour and would want to see things ready.

I drew my pistol from the Armoury before getting into my Landrover and driving out of camp. Once on the main road heading out of town I settled quickly to the automation of driving along a familiar route. I tried to gather my thoughts as I drove to the rendezvous.

I felt sick. Half the Squadron was scattered to the four corners of Europe. It would take long enough to get them back even if we knew where they all were. Vehicles, machines and kit were not there or not working. Bombs and panic around the Quarters. Impossible jobs to be done . . . I thought of the veteran from Korea who had told us "If you find yourself in a minefield, the first thing to do is sit down and

have a fag." This was some minefield. Nowhere to sit and no cigarettes.

God help us.

When I saw the group of men in the road ahead I was surprised to be not surprised. It was as if I almost expected them. They were heavily armed and one of them waved me down with a torch. I could make out no distinguishing marks on their clothing which was neither uniform nor civilian dress.

I had my pistol in my hand as I leapt out of the Landrover but I fell straight into a giant of a man who picked me up as easily as I pick up my younger son. He simply held me in the crook of his left arm while his gigantic fist wrapped around my right wrist closing off the blood supply to my hand and the weapon it was now pointing in a futile vertical gesture.

There was no talking and no shouting. I saw that there were more than a dozen men who were all looking at me in the arms of their Goliath. Their eyes betrayed no scrap of compassion or emotion. They simply looked.

I brought my leg up with such force that I thought my knee-cap would disintegrate. Goliath dropped his hold and his scream was distorted as my pistol-butt tore into the side of his nose and down towards his teeth.

As I was grabbed from behind one of the men shouted a warning. Two sets of vehicle lights were coming down the road.

I started to fight violently.

"Darling! . . . Darling! . . . Wake up . . . the phone!"

I came to bathed in sweat to feel Renate shaking me gently awake. "The phone's ringing downstairs."

It was father-in-law wanting to know if all was well with us. All was indeed very well.

A few days later I mentioned my nightmare to a friend. "You should write it down" he said "we need something like that to remind people that it's all worth doing right."

"I thought about that" said I "but I don't think people are really interested."

Presentations to the Royal Geographical Society

LIEUT COLONEL D N HALL RE

THERE have been 150 years close association between the Royal Engineers and the Royal Geographical Society, the body that has fathered exploration and the advancement of geographical knowledge during that time. To mark the Society's 150th Birthday the Chief Royal Engineer, General Sir David Willison, presented to the Royal Geographical Society a magnificent garden seat, and also a flight of wooden steps to be used especially over the period of the celebrations of the Society's birthday. Both were made in the Workshops of the Royal School of Military Engineering to standards of which the Corps can justifiably be proud. It was significant that the presentation was made in the Society's House before a Joint Meeting of the Royal Geographical Society, the Institution of Royal Engineers, the Photogrammetric Society, and the Land Surveyors Division of the Royal Institution of Chartered Surveyors, when Mr A G Atkinson read a paper entitled *Vivian Thompson: Not only an Officer of the Royal Engineers.*

The Royal Geographical Society was founded in 1830 and granted Royal Charter to promote as its object: "The Advancement of Geographical Science" and "The Improvement and Diffusion of Geographical Knowledge". The Royal Engineers have had close association since then through a common interest in the subject known in the past years as "military geography". This could include a wide variety of

Photo 1. Garden seat presented to the RGS to mark its 150th Birthday

aspects such as the canal systems of India, mapping in Palestine, or the trade routes of the Sennusi. Nowadays the close links are kept largely through military survey, and also a peculiar interest many members of the Corps have in modern exploration. That interest has been a continuing link with the Society since its foundation, a fact highlighted recently when a Joint Service Expedition was advised by an eminent academic geographer that their scientific work should be based on that of Captain H R Bandreth, Royal Engineers, whose paper was found to be in the *Journal of the Royal Geographical Society* as long ago as 1835. The bond is kept in many ways. The Keeper of the Map Room, now with the co-appointment of Deputy Director, has for many years been held by a retired Sapper Officer, now Brigadier G A Hardy. The Director of Military Survey normally serves on the Council of the Society as do other Officers, serving and retired, of the Corps.

The Royal Geographical Society is formed of some 7,000 Fellows and Members; and with its House, of Norman Shaw design, in Kensington Gore, it has a library containing over 100,000 books and periodicals, including a complete set of *The Royal Engineers Journal*. The Society's Map Room is the one part open to the public, and, comprising over 600,000 map sheets and 4,000 atlases, probably forms the largest private collection in Europe. Apart from maps presented and bought, the Society's Drawing Office aims to produce one map a year of its own origins.

Every year about eighty expeditions submit their plans to the Society for approval. Less than half can expect to receive that approval, and some of these are supported with a financial grant. The bare support is worth much to many expeditions, for it opens the doors to financial and material support from other organisations, both academic and commercial. The Society's Expeditions Office maintains a library of reports for use by future expeditions. It is of note that in the latest batch is one by Lieut Colonel J N Blashford-Snell, and one of the earliest is a "Bible" on desert exploration; the 1969 Report by Brigadier D A Barker-Wyatt.

Another way in which the Society meets its Charter is by running a number of Committees to encourage the improvement and diffusion of geographical knowledge. The Survey and Instruments Committee is chaired by an Officer of the Corps, the Society's Honorary Foreign Secretary, Lieut Colonel D N Hall, and has an ex-officio member, the Chief Instructor of the School of Military Survey. There is an Education Committee concerned mainly with geography for the young, and a

Research Committee for the more senior geographers, and one which makes its presence felt in such fields as the Parliamentary and Scientific Committee.

Finally, to encourage both British and foreign geographers to expand the boundaries of geographical knowledge, the Society presents a series of medals and awards each year, a fair proportion of which have always gone to Sapper Officers. The last Royal Medal presented to an officer of the Corps was awarded to Major General R L Brown as recently as 1978.

So on the 150th Anniversary of the Society it is appropriate then that the Corps should have made some material presentation to bear witness to future members of the Royal Engineers and the Royal Geographical Society of their long association, and it is relevant that it should have been made in the form which shows off so well one particular Sapper skill.

Reminiscences of Madras Sapper Muir Sahib

BRIGADIER R B MUIR CBE, B Sc, C Eng, FICE, MI Mech E, MIEE, FI Struct E, FI Prod E FBIM, FRSA

Brig Bob Muir entered the Corps in 1932 as a University Candidate from Glasgow University. Following a tour with a Fd Coy at Aldershot he was posted to QVO Madras S&M in 1936 with whom he served for ten years. After Staff College, Camberley in 1946 he became Chief of Staff HQ Hamburg District until 1949 when he was posted to the Armed Forces Staff College USA. A succession of Command and War Office appointments followed culminating in Chief Military Planner, Chief Engineer and concurrently Comd Army Task Force Group for the Christmas Island "H" Bomb tests in 1958. He then became Deputy to General Sir John Hackett, Comdt RMCS Shrivenham. He retired from the War Office at his own request as Brig Engr Plans in 1961 to become Director General and Chairman Executive Board the Scottish Industrial Estates Corporation (later to become the Scottish Development Agency in 1974) retiring in 1976.

(This article was written at the request of HQ Madras Engineer Group Bangalore, India for their Bicentenary Celebrations in 1980)

After thirty years in the Regular Army followed by fifteen years in top management in industry, I still consider one of my greatest privileges was to command two Field Companies of the Madras Sappers, 13 Fd Coy S&M at Mandalay in the late thirties and 15 Fd Coy S&M in an independent role in the Malayan Campaign, 1941/42 during World War II.

I recall vividly riding on to my first parade at Bangalore in 1936 and viewing the long lines of Sappers with the uniformity accentuated by their unique and attractive canister like head-dress. Having come from a Field Company in England where I had known all of my men and most of their families, I pondered with some trepidation how on earth I would be able to distinguish one from the other in my new command. Some weeks later I was reviewing a list of Sappers for selection to Lance Naik and

Brigadier RB Muir CBE B Sc C Eng

remarked to my Subedar "I cannot put a face to this one, Sahib." He replied "You know him Sahib, the dark one." Not only did I then immediately recollect the Sapper but more importantly realised with some satisfaction that I had succeeded in fully integrating into the Madras Sapper community.

Soon I was off to Mandalay with 13 Field Company commanded by Brian Calvert. Brian was later sent on the Long Staff College Course leaving me, to my delight, in command which I held as a Subaltern for eight months before returning to Corps HQ, Bangalore. The Company was much engaged in anti-riot duties along with the local police with whom we formed a close association, and at lighter moments played them at hockey and soccer. They were never our match at hockey—nor indeed were any of the other units of the Indian and British Armies stationed in Burma at the time (the first word of Tamil I learned was *morrow* which I put to advantage when wanting a pass on the hockey field!).

Periodically 13 Coy took part in military manoeuvres in the Shan States, on the high plateau between Northern Burma and China, carrying tents, ammunition and supplies on our pack mules. It is attractive open country with extensive lakes on which the boats are propelled by leg rowers. The local people had the most unusual but not unpleasant appearance of a combination of Mongolian features and bright rosy cheeks. As soon as we made camp the Sappers would build brick fireplaces inside the tents. My recollection of the Officers Mess at night with its charming open log fire was the dense cloud of smoke which always filled the top of the tent down to almost four feet from floor level with the consequence that you had to walk around doubled up in order to see anything! This phenomenon had nothing to do with any fault in the fireplace construction but was a manifestation of the extremely high altitude and the big drop in temperature at sunset. We also found time to undertake road bridge construction for the Burma Public Works Department and to build the first totalisator on Mandalay Race Course where I officiated as Chief Judge and Honorary Steward. These works were conducted on a strictly contractual basis much

Photo 1. Trophies for the Upper Burma Horse Show, Mandalay, December 1938. Lady Cochrane, wife of HE the Governor of Burma, officiated at the prize giving ceremony. The Show comprised twenty-seven events including registered polo ponies, hacks, Officers chargers, breed classes, open show jumping and handy hunter competitions.

Reminiscences Of Madras sapper Muir Sahib

Photo 2. Corps HQ Madras S&M Hockey Team 1939—the author is flanked by two senior Subedars.

to the financial benefit of our Company fund from which we disbursed grants to needy relatives of our Sappers and also subsidised the occasional "rich food" *tamasha*.

I still retain the inscribed silver cigarette case presented to me by the Race Club for running the Upper Burma Horse Show, in 1937 and 1938 where as always the Sappers' consummate skill was invaluable in constructing show jumping rings and building the handy hunter course. (Photo 1) From time to time I had requests from headmen to deal with man-eating tigers molesting their villages and having made the usual *bandobast* for setting up a prey, I would spent most of the night in the jungle, perched on a tree, awaiting the marauder. I was always fascinated that when the torch suddenly illuminated him, the tiger made no reaction whatever, but at the slightest noise such as scraping the torch against the gun barrel he would be off like a shot.

My Sappers could always be relied upon to undertake the most arduous jobs with competence and cheerfulness and their consistently high standard of behaviour was much to their credit. In England I had been accustomed to presiding daily at Orderly Room and now the frequency was about once a week, if that. The offences were trivial such as having a tunic button undone on parade. After my appropriate admonishment ("letting down the Company and your fellow Sappers") the unfortunate culprit would be marched away to freedom with tears streaming down his face and would never appear at my Orderly Room again.

On being posted to Corps HQ Bangalore in early 1939, (Photo 2), as the first Corps MT Officer, I organised a school for training lorry drivers and was given authority to examine drivers for heavy vehicle civilian driving licences which I personally issued. As part of their passing out examination the members of each course would drive in convoy to experience the acute hair pin bends in the climb up to Nandidrood. Once when eating my lunch sitting on a rock at the summit directly overlooking Tippu's Drop I was about to bite a sandwich when I received a sudden sharp blow on the face. My sandwich and dark glasses disappeared and looking skywards I caught a glimpse of them in the beak of a large eagle flying away after his attack.

In September 1939 I went to Singapore as Second in Command of 15 Field Company under Jimmy Godwin who later was posted back to India leaving me in command. It was a great thrill to be in charge of the first "Indianised" Madras Sapper Company with all of my Officers Indian including Raj Kumer Kochhar, a Troop Officer and later my Second in Command. He returned to India before the Japanese

invasion destined to reach the highest ranks in the Indian Army. Koch, sadly no longer with us, was a close personal friend and I had the great pleasure of meeting up with him again in England after the war. An outstanding athlete (a double blue at Cambridge University) and a fearless soldier Koch held the respect of all his associates and the affection of his Sappers. Being the only Field Engineer Company in Malaya at the time we were stretched to the utmost in undertaking anti-invasion projects along the border with Thailand and down the beaches of the Malayan peninsula to Singapore. With such a wide dispersion I was much assisted in keeping track with progress on our many works sites by piloting solo a Moth Minor aircraft based on Singapore Airport. Communications for defence systems were improved by building laterite roads through virgin jungle and a particularly interesting project was the construction of a Class 9 floating bridge spanning a 300 feet river gap with a 12 feet tidal range at Kota Tinggi in Central Johore. All of the timber required for transoms, road bearers, and abutment piles were felled by our Sappers in the adjoining jungle and sawn by them to the appropriate sections on the site. Chinese 20-ton *tongkans* were converted to floating piers and the iron fittings were fabricated locally on field forges operated by Sapper craftsmen. As the political situation deteriorated our tasks embraced laying extensive anti-tank and anti-personnel minefields, preparing road and rail bridges for demolition and constructing anti-assault boat floating booms across the estuaries of large rivers.

From the start of the Japanese invasion of North Malaya on 8 December 1941, 15 Field Company was engaged in effecting extensive delaying tactics, beginning on the Thai border and continuing down Malaya to include Singapore as the military situation worsened. The measures included the demolition of vital road and rail bridges, laying minefields and setting booby traps, and the implementation of scorched earth policy by immobilising abandoned railway stock, vehicles and boats and destroying equipment and materials of potential use to the invader. Sleep was a scarce commodity snatching it where we could and once I awoke to find myself driving my jeep at speed along a road, fortunately long and straight. In all 15 Field Company successfully executed over 200 major demolition projects throughout Malaya the timing of which had to be synchronised meticulously with troop withdrawals and it is much to the credit of the Madras Sappers that no failure or premature demolition occurred and we never lost a firing party—on many occasions we provided our own covering fire using machine guns, mortars and rifles. During the last weeks of the war 15 Company assumed an infantry role on Singapore Island and in repelling a Japanese attack on the final day we continued firing machine guns, rifles and even revolvers until our ammunition was completely expended. Throughout the hostilities the Madras Sappers conducted themselves in the highest tradition of their Corps, bearing more than their share of the anti-invasion effort, carrying out multifarious duties in complete defiance of an enemy who had absolute dominance of air and sea, and perhaps above all remaining steadfastly imperturbable under gun fire.

On my way home from the Far East in November 1945 I stopped at Bangalore where it was arranged that I would return to Corps HQ after home leave, and this I was most anxious to do. During my leave I was persuaded to take up a Staff Appointment at War Office (incidentally under another Madras Sapper, Fitzgerald-Lombard) but this was on the strict understanding I could still return to India after six months if I wished. As it happened I then met the lady I subsequently married and understandably my ardour for the earliest return to Bangalore was somewhat dampened!

I still receive with much pleasure the odd letter from Indian Army associates. One recently was from a former batman of mine who later retired as a Jemadar. For the first time he disclosed that he had always been amazed at the speed with which I prepared for first parade at 0630hrs each morning. Unbeknown to me he had been taking timings and apparently the record for the time from when he woke me up until I was cantering off to parade on my charger, all shaved and ship shape, was seven minutes flat!

Digital Mapping—More Than Binary Graphics

CAPTAIN A R T WARDROP RE

The Author was commissioned from RMAS in 1969. He then served in 22 Engineer Regiment and 3 Training Regiment as a Troop Commander followed by a BAOR tour as IO of 26 Engineer Regiment. Following his completion of the Long Survey Course he was seconded to the Ordnance Survey where he is currently employed in the Development Branch with particular involvement with Large Scale Digital Mapping.

THE Ordnance Survey (OS), nearly two hundred years in existence, is probably the most famous cartographic production establishment in the world with a remit to provide and maintain a national archive of maps at three basic map scales. (Urban areas at 1:1250; Rural areas at 1:2500; Mountain and Moorland at 1:10 000). This provides Great Britain with the most comprehensive set of large scale maps (c 220,000) in the world, used directly or indirectly by the vast majority of the British population.

In 1968, with the rapid advances being made in computer processing, the OS looked to the future and decided that it should be possible to use the computer as a cartographic tool with advantages in the storage of the map data (and its update) and cheaper production techniques. It was quickly appreciated that the Digital Map (DM), as it came to be known, possessed distinct advantages over its conventional counterpart:

(1) The DM can be reproduced (displayed on a *Visual Display Unit* (VDU) or plotted) without the restraint of "paper copy" sheet edges.

(2) The scale of the map can be varied to the convenience of the user.

(3) The DM can be updated quickly and easily.

(4) The DM can be stored centrally and recalled/used by more than one user at once, thus preserving the quality of the data during repeated use and doing away with the need for holding more than one copy of the basic map.

Naturally, during the early days, computer storage and processing techniques were a fraction of the size and speed of those today. As a result, the development of the DM has been evolutionary.

The first OS aim was to capture a map, in digital form, with a view to using the resultant DM data to produce conventional chart copy maps. The production technique has been modified over the years and has resulted in a production flowline which works well.

The first problem is to transfer the graphic map data into digital map data. This is done by producing an enlarged photographic negative of the conventional chart copy map (1:750 for 1:1250 and 1:1500 for 1:2500) and mounting the negative on a digitising table. This table is a tablet incorporating a fine matrix of wires to which any

Captain ART Wardrop RE

Fig 1. A digital document and cursor

point on the map can be referenced with high accuracy. After the set up procedure, the digitising document is referenced to the table coordinates by pointings to the four corners of the document with the added benefit of removing any distortion that may have occurred in producing or storing the negative. Mounted alongside the digitising document is a list of 110 feature codes (the menu) relating to the types of topographic features on the map. The draughtsperson then identifies all the names on the map face, digitises their position and allocates each name a number. These numbers are then listed on a form and matched to the names for subsequent offline input to the computer. The next step involves identifying a particular feature type on the menu with a cursor and, by successive pointings, digitising the features relating to the menu item identified with a curve generation routine also available. Figure 1 shows data digitising and progress is marked on a diazo copy of the enlarged negative until eventually all the map data has been digitised. A check on the data is then instigated and involves plotting the data on a high speed pen plotter, which will reproduce the twenty hours digitising effort in about twenty minutes! Corrections to the data are then made (either on or off line) and another check plot produced. This edit loop is repeated until all the line, point and names data on the check plot mirror exactly the original document.

The vegetation and hachuring symbols are not digitised since they are difficult and expensive to produce on the computer. Instead they are stuck on the final positive which is produced from the digital data on an ultra high precision light spot plotter. At this stage, the final positive is exactly the same quality if not better than the original.

The relative ease with which DM data can be manipulated in a computer led to further experiments in the possible production of derived maps, ie a smaller scale map produced by amalgamating a contiguous block of large scale maps. The distinct advantage of deriving maps this way is that features can be plotted individually, thus for example, easily enabling water features to be produced in blue and contours in brown. The success of the experiments led to the successful production of a 1:10 000 scale map in 1974 and 1:25 000 scale map in 1979. The production technique for the 1:25 000 differs slightly from that of the 1:10 000 in that some of the features are

Digital Mapping more than binary graphics 1

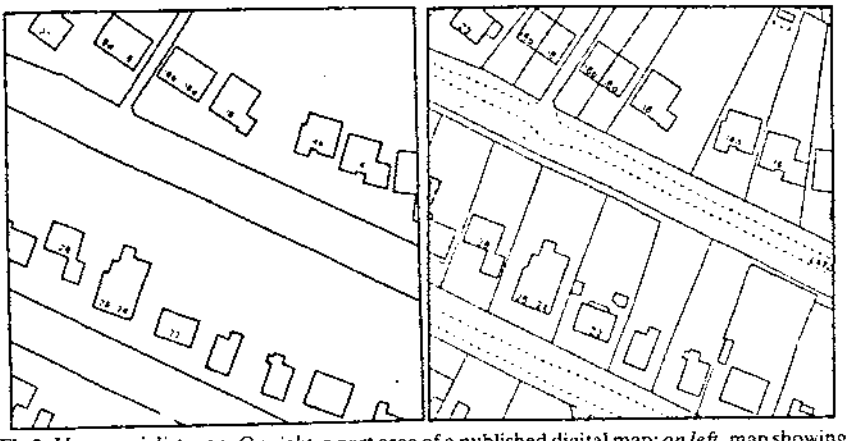

Fig 2. User specialist map. *On right*, a part area of a published digital map; *on left*, map showing road edges and buildings only

derived digital maps can be produced at a cost saving of about 20% over the conventional derived map.

Another main area in which the DM data may be used is in the production of "user specialist maps". This means that a user can purchase digital map data and with a computer and plotter produce a map showing selected features only, at a specified, suitable scale. This selected data can then be overlaid, within the computer, and a composite, selective feature map produced. Examples of user specialist maps are shown at Figures 2 and 3. Figure 2 shows, on the right, a part area of a published, digital map. On the left, produced from the same data, is the same map area showing road edges and buildings only. Figure 3 shows a composite map produced during a joint experiment with Southern Gas Board and gives road edges and Gas Plant Information only. Similar experiments have been conducted with the Post Office and Water Authorities and it can be seen that the resultant specialist maps are clearer and thus easier to use.

However, despite the advances made over the years "68–74", it became increasingly obvious that the structure of the DM data, held on disc or tape, (and incidentally about 300 digital maps will fit onto a standard 2400ft magnetic tape) was not easily managed by the new generation of computer based information systems such as LAMIS (Local Authorities Management Information System) by ICL. Basically, this is because the DM data is held in storage, in sequence, as digitised. Any real processing of the DM data should if possible work on features broken down into constituent parts such that subsequent processing involving "network" searches uses the line data stored as a network.

For example, a user might be interested in the data for a 100m square on a 1:1250 DM. The map consists of 25 × 100m squares and thus to be certain that all data for the single square is extracted, the data for all twenty-five squares has to be searched. The problem is compounded when the data required by the user lies on the join of four maps, in which case all the data for the four maps has to be searched. The overall result is unacceptably long search times which are inconvenient and expensive.

So, OS commissioned a UK Software House, PMA Consultants, based in Horley, Surrey, to produce a report on future DM data structures and their use. Two main conclusions were reached in this report:

(1) That the DM data should be restructured to make it convenient to manage in some form of database.

(2) That there be a family of user languages which, operating in conjunction with the Restructured DM Data (RD) would extract detailed data from the RD.

The OS accepted these recommendations, and in a project partly sponsored by the DOE, PMA Consultants have produced a software system which:

(1) Allows the DM data to be analysed and structured into a "links and nodes" format and held sequentially in 100m square units, Eastings within Northings (Bottom left to top right!). The links are sets of coordinate pairs defining lines between nodes, which are discreet intersection points. The programs used to do this analysis and ordering, comprise the Restructuring Software.

(2) Enables the user to "query" the RD and produce land parcels (ie Polygons) of various types and uses. This software is termed User Language (Land) and could be extended to cover other details eg Railway Parcels, Road Parcels, Buildings.

This software system is now undergoing detailed evaluation. Due to the complex and varied nature of the DM data, it has been proved through experience that most sheets which are processed through the User Language (Land) Software produce about 80% of the parcels that are required. To achieve 100% parcel formation, an inter-active edit software package has been developed. Figure 4 gives the sequence of published data through restructured data and the resultant land parcel formation.

Naturally, having the ability to produce this data, the OS hopes users will buy it and use it in their information systems! A joint project is presently in being with Dudley Metropolitan Borough who have an ICL LAMIS System. The borough area covers about 440 mixed 1:1250 and 1:2500 map sheets. These sheets have been digitised and by mid '82 will all have been restructured and parcels derived. The parcel data, which includes a parcel reference number, the parcel area, the boundary coordinates

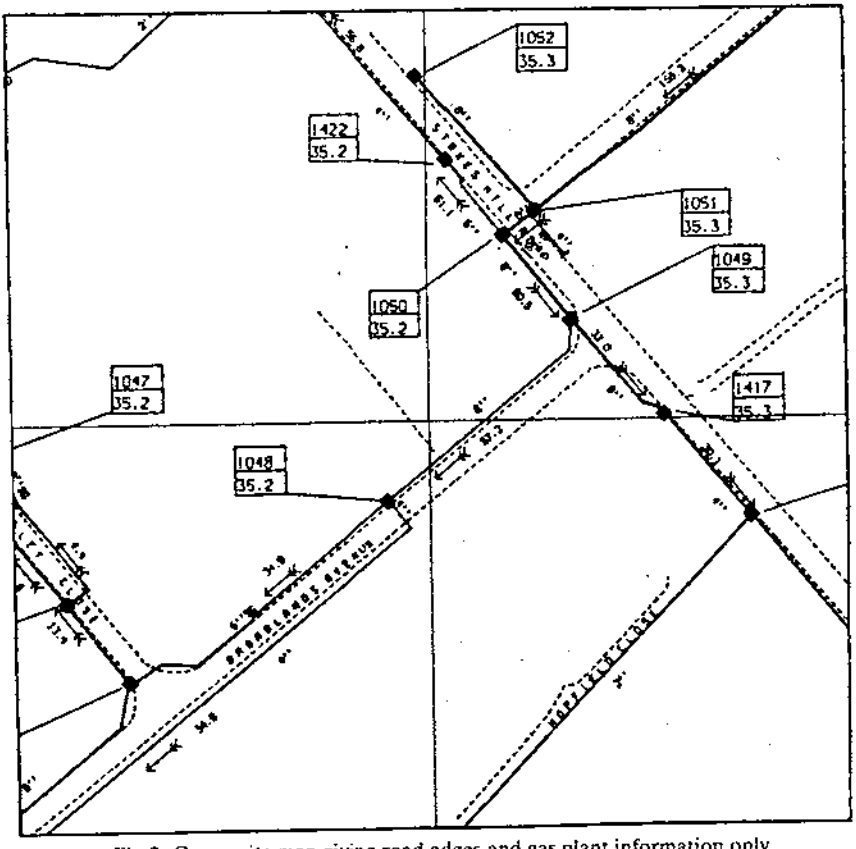

Fig 3. Composite map giving road edges and gas plant information only

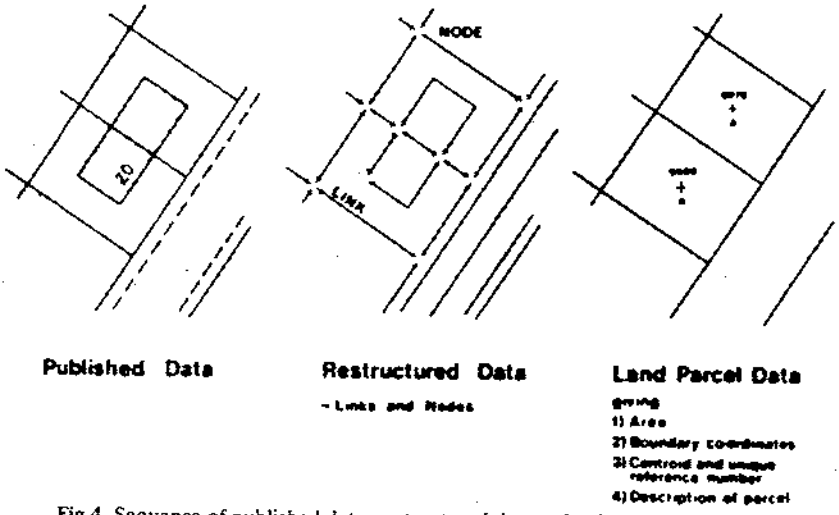

Fig 4. Sequence of published data, restructured data to land parcel formation

and its land use category, for all 440 sheets will then be supplied to Dudley, who will append further information, eg rateable values for properties, owners names etc through LAMIS. All this information will be held in the computer files and be easily and quickly accessed through the reference number. (This reference number enables all properties in the Dudley Area (or Great Britain) to be uniquely referenced through a seventeen digit identifier). All in all, the use of the data will allow a better, faster service for the user and his customer with resultant monetary savings.

But what of the future? The 1975 report inferred the eventual establishment of a national topographic database using the RD. However, experience has again shown that the original concept of a links and nodes format for the DM data needs to be enhanced and modified to give it more flexibility. The management, dissemination and updating of the database is an enormous problem in itself and much work is required before the final working system is approved.

On the data capture side, a prototype semi-automatic digitising system is already installed at the OS and undergoing evaluation trials. This system is based on the Laserscan Laboratories FASTRAK digitiser (a line following localised raster scanner) which will allow capture of the graphic data at about 4–5 times the rate for the draughtsperson on the digital table. The system allows corrections to be made on a screen. To effectively digitise the whole of the national archive of basic scales maps using digital tables would take about fifty years, whereas a production flowline including FASTRAKs could reduce this figure to a more realistic ten years. (It is doubtful if many potential users are planning for systems fifty years hence!) Future development might include direct output of RD (in the revised format) from FASTRAK with User Language Outputs available on an on request basis.

The whole future of the OS is exciting and almost certainly unique and could give Great Britain a computer based national mapping archive that is the envy of the world.

* * * *

Queens' Bridge: The Old and the New

COLONEL K M ROBERTSON MA, C Eng, MICE

The author at the new bridge. Commissioned in 1937, he was in the Middle and Far East in World War II, serving in Tobruk and with the Chindits in Burma. He was Senior Instructor Bridging, at 140 OCTU RE until going to the Staff College, Camberley, in 1946. When Chief Instructor and for a time CO of The Engineer Training Centre Far East he was involved in operations against Malayan insurgents as well as training British, Malayan and Gurkha Sappers. In BAOR he designed and was in charge of building Queens' Bridge. From 1955–57 he was DAA & QMG at the SME. He retired in 1968, his final appointment being Col AQ HQ Northumbrian District in Catterick.

The five photographs illustrating this article are published by courtesy of Photo Profiel, Dutch Ministry of Transport and Public Works

Introduction

The first Queens' Bridge was a Bailey Bridge spanning the Dutch River Maas at Well; roughly midway between Venlo and Nijmegen. It was built in Standard-Widened construction; Quadruple/Single in the approach spans and Quadruple/Triple in the two navigation spans across the river. The length overall was 1385 feet, with a subsidiary span of 140 feet across a flood channel in one of the embanked approaches. The Bailey was built by 37 Corps Engineer Regiment, Royal Engineers, and A Company 112 Pontoneer Battalion, Dutch Engineers, during the period May–August 1954. The concrete piles and grillages on which the bridge rested, as well as the fenders and dolphins which protected it in the river, were built by The Rijkswaterstaat, The Public Works Department of The Netherlands.

The bridge was an Anglo-Dutch venture. The British required the bridge for military reasons, since, between Grave in the north and Roermond in the south, a distance of some sixty miles, there was at the time no bridge across the River Maas that could take Centurion tanks on their transporters; "Class 80 Cen" as the combination was classified for bridges. With a possible operational need in mind, the British were prepared to co-operate in building a suitable bridge as soon as it could be started. The Dutch for their part were pleased to have a bridge at Well for civil purposes. Hitherto there had only been a ferry at Well and traffic was growing rapidly. A military bridge would therefore fulfil the civil requirement until the Dutch had the time and money to build a permanent one.

In the beginning it was envisaged the Bailey would be required for twenty-five years. On 12 November 1980, twenty-six years afterwards, and remarkably close to their original programme, the Dutch with due ceremony opened their new permanent bridge.

The Bailey Bridge in Service

Over those long years the Bailey Bridge by all accounts gave good service. But for the Bailey, some say, the permanent one might never have been built. They claim that

Colonel KM Robertson MA C Eng MICE

Photo 1. The Old Bridge, opened 3 September 1954

the resulting volume of traffic justified beyond doubt the need for a permanent crossing and the twenty-five year forecast was a good one.

Limitations

The Bailey's main disadvantage was that it provided only a single lane for traffic. Consequently the whole length of the bridge had to be cleared of traffic from one direction before movement could start from the other. This tedious sequence was controlled by traffic lights operated manually from a cabin on top of one of the girders at mid-point over the river. One may see now that two Bailey Bridges instead of one might have been better. Once the overheads had been provided and the troops deployed, it would not have been all that more laborious or costly to build the two bridges. However, the Dutch say they were content with one and that the maintenance of two bridges would have over-taxed their resources.

Maintenance

As may be supposed, the maintenance over so many years of the one bridge that was built was onerous enough. Being in quadruple truss construction throughout, the bridge contained hundreds of bracing-frame bolts, transom clamps and sway-braces to be checked, tightened and kept in order. Panel pins also tended to work loose with the constant vibration and deflection of the bridge. Initially each panel-pin had been provided with a split-pin keeper. These however, soon rusted away and panel-pins became free to move.

The story goes that one day a panel-pin fell from the bridge on to a barge passing underneath. Slight damage was done but luckily no one was injured. The Master of the barge sent the panel-pin to the Minister for Highways and Public Works with a demand for compensation. This was paid and the panel-pin passed on down the line for suitable action to be taken. What happened then has not been related. However, when the Minister came to open the new bridge, the Rijkswaterstaat presented him with a memento after the ceremony: a shining panel-pin in silver, mounted upright on a handsome base!

To re-paint the whole bridge would have been an enormous undertaking, with its myriad small parts and the narrow spaces between trusses. The Dutch admit that they never did it completely. They also confess that in general they skimped all mainte-

Queens Bridge, the old and the new 1

nance. To them, the Bailey was only temporary and in that context twenty-five years was only a short period. For them, a permanent bridge in the future was the main objective and they kept their money for that. Meanwhile, the engineers who were locally responsible for the bridge were expected to get on as best they could. They proved to be good engineers. Rusty or worn-out parts were re-made by friends on the "old-boy" net. Material was scrounged and in general remedies were found by improvisation. Nevertheless, despite their efforts, the bridge in time deteriorated.

In August 1976 an inspection showed that the bridge had deteriorated considerably. It was therefore decided to close it to vehicles exceeding 3·5 tons in weight and to reinstitute the ferry for heavier transport. At the same time a firm decision was taken to build a new permanent bridge, planning for which had begun in 1971.

Modification

At some time during the life of the Bailey an intermediate support was introduced at the mid-point of each approach span. Ostensibly this was done because axle loads of heavy vehicles had been increasing. Contributory factors may have been the deep sag there is in single storey Bailey spans of maximum permitted length and the deflection that occurs when a heavy vehicle passes over. For military traffic these are accepted, but civilian drivers may have found them disturbing.

Frost

The approach spans of the Bailey had been built at a gradient of 1 in 30 and the whole bridge surfaced with a timber skin deck. Not foreseen at the time was the menace this would be in frosty weather. The Dutch deposited large quantities of salt at each end of the bridge for use when there was a risk of the approaches becoming treacherous frozen slides. Circular, concrete-lined pits to contain the stocks of salt became a permanent feature of the site. If the salt was necessary to prevent skidding, it could not have done much good to the steelwork, poorly clad as it was in paint.

Deck Rattle

Many Sappers will know the familiar rattle that comes from the deck of a Bailey when vehicles pass over it. When the bridge was built an attempt to reduce this rattle was made by spiking and bolting the timber skin deck through to timber runners, which in turn were firmly secured to the transoms below the roadway. This was only partially successful and the rattle regained more of its strength as the timbers wore with time. Disturbing as the noise was at first, it was eventually accepted as a unique feature of the neighbourhood. After twenty-six years it suddenly stopped—and people missed it.

The New Bridge

The new permanent bridge, all in concrete, is a very handsome and distinctive structure; well befitted for spanning a river as imposing as the River Maas.

The design in outline (see Figure 1)

From the embanked roadway on the western shore, seventeen approach spans run in a steady curve to the water's edge. On the eastern shore, the embanked roadway comes closer to the water and there are only three approach spans. Across the River

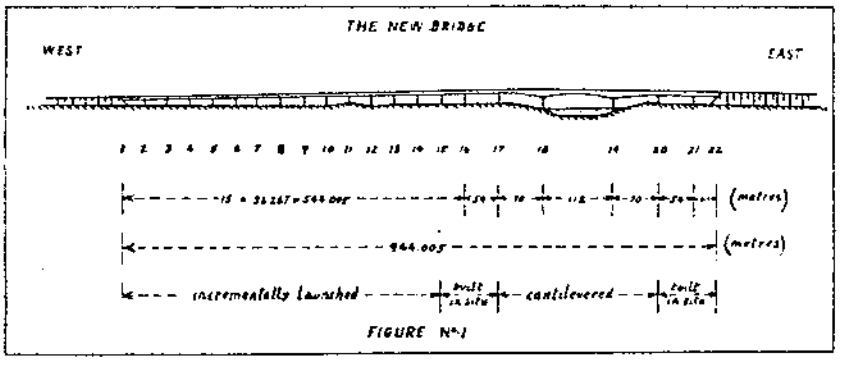

FIGURE No 1

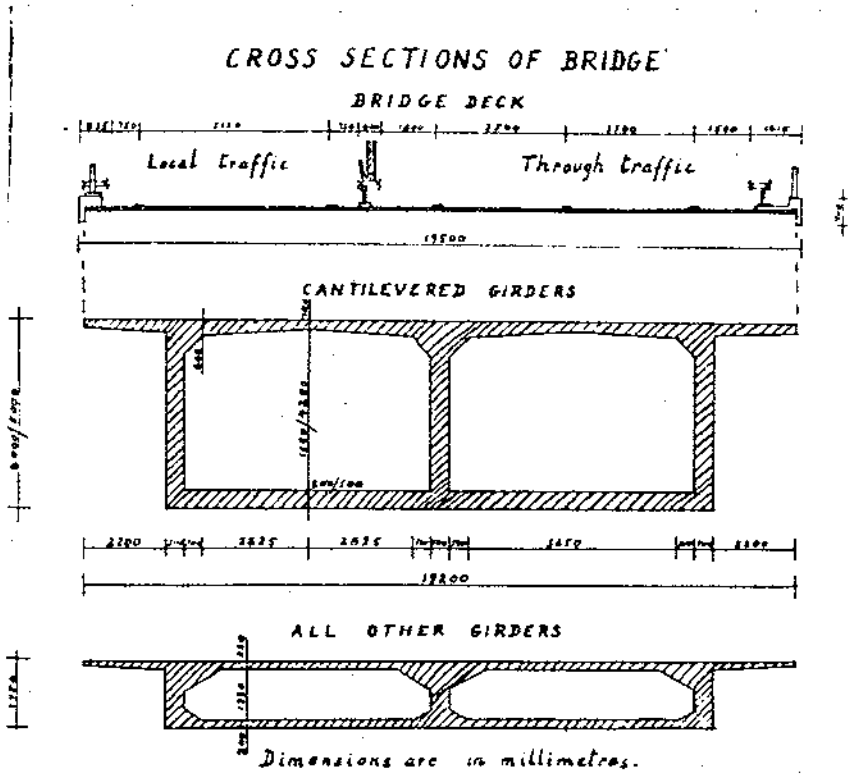

FIGURE No. 2.

Maas itself, one navigation span strides over in a single graceful arch. The overall length of the bridge and its abutments is 946 metres. (All is written in metric measure from here on!)

Twenty-two piers support the bridge. Each pier comprises three legs arranged in a single bent of plain and simple design.

The level of the river is of course always changing. Therefore the height of water and the height of the bridge are both related to a common datum known as NAP. The difference between those two heights at any particular time will of course give the clearance for shipping under the bridge when the height of water above NAP was measured. Generally, the clearance for shipping is some 5 metres to 6 metres when the river is high and 12 metres to 13 metres when it is low.

The overall width of the bridge is 19.5 metres. (see Figure 2) Side by side within this width are two separate roads; a main road for through-traffic and a secondary road for slow and local traffic. The two roads are separated from each other by an arrangement of crash barriers rising to a high fence which aims to prevent dazzle at night, since traffic on either side of the fence will be moving in opposite directions.

The main road is built as a dual carriageway, the secondary road is narrower and has a single one only. Along one side of the bridge is a narrow walkway from which inspections of the bridge may be made.

On the western shore all the piers are founded on prestressed concrete piles varying in length from 10 metres to 18 metres. On the eastern shore piled foundations for the piers are unnecessary. For each pier in the river a steel sheet-pile casing was driven. A pit was excavated inside each casing and into it concrete was poured to form the foundation for the pier above.

The spans of the bridge were designed as double-cell box girders. The approach spans are 1·75 metres deep while the depth of the navigation span varies from 5 metres at the haunches to 2 metres at the crown. The lengths of the various spans are shown in Figure 1.

Methods of construction

Three distinct methods of bridge construction were employed.

Firstly, the navigation span and the span on each side of it were built by the cantilever method. A "hammerhead" was constructed on each of the piers in the river, (piers 18 and 19). Temporary supports were placed under these "hammerheads" to preserve their balance while cantilevering of spans from them subsequently took place. Two travelling gantries were mounted on each "hammerhead" for supporting the formwork into which the inshore and offshore cantilevered spans were poured, section by section. Work inshore and offshore progressed with the aim of keeping the "hammerhead" in balance as much as possible. Finally, the two cantilevers forming the navigation span met over the middle of the river, while the two inshore cantilevered spans terminated at piers 17 and 20 respectively.

Secondly, the traditional method of building in-situ was adopted for the spans between piers 17 and 19 on the western shore and for the spans on the eastern shore between piers 20 and 22, (the abutment). Formwork supported on temporary trestles between the piers was erected.

Thirdly and of particular interest, the method of incremental launching was employed for the spans between the western abutment and pier 15. The launch was no simple one that took place in a straight line and a horizontal plane. Instead the bridge was boomed out in a curve of 1,000 metres radius and against an uphill gradient of 1%. A transverse slope of 3.5% was incorporated as well.

Each span of this part of the bridge is just over 36 metres in length. Temporary intermediate supports were erected between piers which reduced the unsupported length of any span to approximately 18 metres. The spans were then made in approximately 18 metre sections in a fabrication plant at the tail of the bridge. Each section comprised a top and a bottom half. The bottom half was constructed first and then moved forward 18 metres inside the fabrication plant for the top half to be

Photo 2. The New Bridge, opened 12 November 1980

Queens Bridge, the old and the new 2

added. Meanwhile construction of the bottom half of the next section commenced. This sequence continued throughout the whole operation.

A steel launching nose some 10 or 12 metres long was attached to the head of the bridge. It was removed towards the end of the launch when it neared pier 15. An extra trestle was positioned between piers 14 and 15 to support the head of the bridge for the final few metres of the launch.

For movement, steel-capped concrete blocks were placed on top of piers and supports. Special chrome steel sliding plates were inserted between these blocks and the underside of the bridge and enabled the bridge to be moved forward. A sliding arrangement was also mounted vertically at each pier to restrain any sideways drift by the bridge.

For launching, a special bracket was placed behind the last completed section of the bridge. Attached to the bracket were four steel cables, each comprising 12 × 12·9 millimetre strands, which ran to four hydraulic jacks powered by a 60hp diesel engine. The reaction from the jacks was taken by a massive concrete block bearing against the abutment. The jacks permitted a travel of 1·25 metres at a time. The whole system was capable of a launch of 18·2 metres in one go and this was planned to take place once a week.

Finally, a launching force attaining approximately 8,000 kilo-newtons was applied to complete the launch of a bridge which was by then over half a kilometre in length. The whole operation was surely a notable feat.

Launching bridges incrementally has of course been Sapper practice for many years. Only recently has that method gained popularity among civil engineers. The first Queens' Bridge was launched incrementally all the way. It is therefore apt that a significant length of its successor should have been positioned in the same fashion. It is also apt that the method of launching should have provided the highlights on each occasion. If the incremental launching of part of the new bridge was a notable feat so also was the launching of the navigation spans of its predecessor.

The two navigation spans of the original Bailey Bridge, totalling 320 feet in length, were built high in the air on top of the western approach spans. With ten bays of launching-nose and in Quadruple/Double construction, they were launched across the river pinned one behind the other. When across, they were unpinned, separated and jacked down 10 feet to their final positions. A third storey was then added. Launching was accomplished by a tackle operated by the winch of a Size I tractor on the eastern bank. A similar arrangement did the "preventing" on the western side. Throughout the launch monitoring parties were stationed at every working place and roller position. The launch was controlled by a code of flag signals ingenious in its simplicity. The operation was completed in heavy rain and near gale force winds.

Facts and Figures

The following facts and figures concerning the new bridge may be of interest:

—Responsibility for the design and construction of the bridge lay with the Bridge Department of The Rijkswaterstaat.

—The Contractor was Dirk Verstoep bv of Gouderak.

—The contract sum was f12,780,000 (gulden) while the overall cost of the bridge amounted to about f20 million.

—The bridge took 2½ years to build.

Quantities:—

Concrete placed under water	2,000 cubic metres
Reinforced concrete	4,000 „ „
Prestressed concrete	9,000 „ „
Prestressed light weight concrete	3,000 „ „
Concrete piling, 0·45 metres square	3·5 kilometres in length
Steel reinforcement	1,500 tons
Steel for prestressing	420 „
Steel sheet piling	1,800 square metres

THE OPENING CEREMONY

12 November 1980, the day the new bridge was to be opened, dawned misty and dull. Auspiciously however, the day by mid-morning became brilliantly clear and fine. Above the River Maas the two bridges were conspicuous in the bright sunlight. The new bridge stood proudly and was gaily bedecked with flags. The old bridge was somewhat out-classed by its new neighbour and looked a trifle forlorn with trenches dug across the road at the abutments. It still had dignity however, and remained a worthy example of its kind.

The new bridge was to be opened by the Dutch Minister for Highways and Public Works. His motorcade was taken across the river by ferry and drove back over the new bridge for the opening ceremony to be performed near its eastern end. There a pageant known as "Vendelzwaaien" had been staged to greet him, as is a custom in the Province of Limburg. Flags flew; bands played; resplendent banners were trooped and paraded. Then there were speeches, applause, smiles and goodwill all round.

The climax came when The Minister unveiled a pillar beside the bridge. Into this pillar had been set two of the bronze plaques that had ornamented the ends of the old bridge for twenty-five years. In English and Dutch the plaques read as follows:—

Photo 3. *Vendelzwaaien.* A custom in the Province of Limburg

Queens Bridge, the old and the new 3

Photo 4. Dismantling the Bailey Bridge

QUEENS' BRIDGE

Built by Dutch and British Military Engineers, May–August 1954
37th Corps Engineer Regiment Royal Engineers
A Coy 112 Pontoneer Battalion Dutch Engineers

To raise such a monument was a gracious idea. The name, "Queens' Bridge" will thus be perpetuated by a splendid new bridge throughout its own life.

Two other bronze plaques have been left over from the old bridge. One in English has been sent to the RE Museum. The other in Dutch has gone to the Dutch Army Engineer Museum at Vught.

Queens Bridge, the old and the new 4

The Bailey Bridge Dismantled

If people who lived by the river had marvelled at the speed at which the Bailey Bridge was built in 1954, that was nothing to the surprise they were to receive on 8 and 9 December 1980. During those two days a mammoth floating crane came and simply carried away the two navigation spans, one by one. Each weighed approximately 150 tons but they vanished, just like that—snuffed out as it were!

The remainder of the bridge will be dismantled early in 1981. The whole bridge will go for scrap except for a portion of the navigation spans which will be re-erected as an exhibit at the Dutch Army Engineer Museum.

Royal Engineers Air Postal Engineering

R HUDSON ESQ Ro SPA Lit, FMCPS

The Author joined the Army in 1937 serving with the Sherwood Foresters, the Grenadier Guards and the Special Investigation Branch until demobilisation as a Warrant Officer in 1946. After civil police service he entered industry having been licensed by the Royal Society from Aston University to practise industrial health and safety and became a Chief Health & Safety Officer in the Chemical industry. He is now living in retirement due to health reasons. His main hobby has been philately. Past President of various local Societies and Past Chairman of the North West Federation of Philatelic Societies he has also been active in the organisation of philatelic events at national and international level. He holds the Gold Medal of the International Air Post Exhibition of 1973 and was granted a Fellowship of the Manchester Central Philatelic Society in 1975.

Today, when we use a Post Office Aerogramme form or a Forces Letter Form, it is still one of the cheapest and most convenient ways of sending news to almost any part of the world, we little think of the origins. The introduction of these lightweight services was entirely due to the successive drive, inventiveness and foresight of three Royal Engineers who were responsible for the invention, use and popularisation of early air post forms which led to the world wide aerogrammes of today. But how did it all come about?

EARLY IRAQ ACTION

In the world of philately, Iraq has a place as the first country to issue an Air Mail Letter Card in 1933. The territory had been awarded by mandate to the British by the Supreme Allied Council in April 1920, Turkey renouncing its sovereign rights over Mesopotamia, a state of affairs confirmed by the treaty of Lausanne in 1923. The British ensured that King Faisal was elected ruler and they also continued to occupy the key administration positions, which were formerly established by British Forces in occupation. This explains why the Inspector General of Posts and Telegraphs was Major D W Gumbley CBE DSO, Royal Engineers.

Gumbley having trained as an Engineer, entered the Indian Civil Service in 1898 and by 1904 at the age of twenty-four he was engaged in surveying land for a telegraph land line from Karachi to Teheran. In 1914 he went to Basra and joined the

RE Air postal Engineering R Hudson ESQ Ro SPA Lit, FMCPS

British Army, first as a civilian attached to the Signals, he was then gazetted as a Lieutenant in the Royal Engineers, promoted Captain and later Major. Mentioned in dispatches four times, he was awarded the OBE in 1919 and the CBE in 1932.

Firstly he concentrated upon land services. The desert between Bagdad and Damascus was thought to be impassable but he heard of an Australian, Nairn, who was making regular crossings to transport and sell model T Fords and was able to establish a contract for a regular mail service. The Nairn Project then developed into a bus service and this took letters for the United Kingdom across in a few days. This overland route via Damascus and Haifa was infinitely better than sending the letters by the old route, via Bombay.

IRAQ AIR POSTS

The Inspector General selected the site of, and devised a scheme for, the building of an international airport at Bagdad and turned his attention to air mails. Commercial flying was still in the early stages of development and air mail was still something of an expensive luxury. He realised that improvement to the service demanded air letters of much less weight than the normal 10 gramme surface letter of varying sizes, thereby he could cut the carriers and the postal costs. To meet these needs he designed, patented and had printed the Iraq Air Mail Letter Card and put it on sale from 15 July 1933. It enabled the user to despatch by air at a cost exactly the same as the charge for a 10 gramme surface letter to the same destination—15fils (3d). Moreover, the user did not have to provide the paper, an envelope, or affix an adhesive stamp, all the normal requirements for a surface letter.

FIRST POST OFFICE AIR LETTER

The form, on thin paper, was 124 × 99mm, greyish in colour, with blue lined framing and with the designation legend on the front. It had a beautifully impressed effigy of King Faisal and was printed by Bradbury Wilkinson to their usual impressive standards.

It says something for the design that the almost identical form, after being adopted by many other countries, remained in use well into the sixties. It also says something for the designer in that he had the foresight to register a patent at Stationer's Hall in London, a fact publicly proclaimed on the front of the form, which weighed just under four grammes. When folded and sealed, two openings remained at the edges, each 3mm long, through which it was just possible for postal staff to check the contents. This excess weight precaution was probably of more psychological importance than of practical use and was supplemented by a warning notice on the front of the form which said nothing could be enclosed therein.

Gumbley moved to Palestine where he became Director of Civil Aviation from 1935 to 1947. During this time he designed and built Lydda Airport. Returning home, he began in October 1947 five years of service with Iraq Petroleum, finally retiring in 1957. He died in 1973.

ANOTHER WAR

We move now to World War II and another Royal Engineer veteran of World War I enters the field. He was the A I F Postal Officer for Palestine and Syria. During the earlier conflict he had seen service in Gallipoli, Macedonia and Palestine and in those far off pre-air mail days they had suffered from, and complained bitterly about, the slowness of mails. He was determined that "his" Forces in this war would not suffer such inordinate delays.

By 1940–early 1941, the Australian Forces air mails were somewhat haphazard to say the least. They were largely dependent upon the RAAF for the space they could make available in their aircraft and surface mail was at snail pace. In order to cut the size of his bags this Officer consulted the Director of Civil Aviation in Palestine, Gumbley, who had plenty of experience in this field. As the result of the consultation Major Gumbley suggested the adaption of his Iraq Air Mail Letter Card and shortly afterwards, with Australian Government consent (they gave the A I F autogenous powers), the Australian issue was born. Printed locally, the design colouring and size all closely followed the Iraq pattern. The main changes were that a

3d adhesive stamp had to be applied and the country of destination, *Australia*, was printed on the address panel. Later printings deleted the country name.

Many later variations of this form were printed and used extensively in other campaigns, principally in the Pacific. The name of the Officer concerned with the introduction is not known to the writer, in spite of extensive enquiries from Australia Post and the Australian Defence Department. They claim no dates and no records exist.

COLONEL EVANS

The early British Forces postal services were also very slow, due to peacetime routes having been cut. Three to four months was not an outstanding time for air mails from the United Kingdom to the Middle East, but the right man was on the way. He was Lieut Colonel R E Evans, who, having joined the Postal Branch in 1940, left the Home Depot at Bournemouth on 24 June 1940, with a Postal Directorate Staff of four Officers and eighteen Other Ranks. They sailed on the *Aquatania* from Liverpool, bound for South Africa en route for the Middle East.

Lieut Colonel Evans arrived in Cairo in advance of his party, on 20 July, having flown from Cape Town with nine bags of mail. On arrival he was appointed ADAPS Middle East and quickly to work, he set off on a tour of the various Commands. Whilst in Palestine he saw the Australian Air Mail Letter Card being handled in the civil posts and obtaining samples from the Australians, he took them back to Cairo. As early as 7 August he was reporting on the state of the Middle East military mails and suggested that considerable improvement could be achieved by using air mail letter cards.

SIR ANTHONY EDEN'S HELP

The matter was considered in London after the Secretary of State for War (the late Lord Avon, then Sir Anthony Eden), returned from his Middle East visit. The report he took back suggested air mail letter cards could be produced locally at a weight of 3·46 grammes each and that three cards weighing less than 10 grammes could be sent home for 1/– carriage (4d each) which would cover all costs, including production. In November and December the matter was talked over by the War Cabinet sub-committee on postage and was authorised. In late January 1941, the Commander-in-Chief Middle East was told: "Your ADAPS may forthwith introduce an Air Mail Letter Card Service for the Middle East. Use British stamps from all countries, including Egypt." The latter part of the instruction appears a very curious directive in view of the fact that the senders must have known of the existing postal arrangements with Egypt, whereby British Forces used Egyptian stamps. The first British service was extended beyond the Middle East by Naval personnel who normally used closed air mail services. In the case of difficulties in obtaining supplies of the new forms, lightweight letters under 4 grammes were made acceptable at the 3d rate.

MIDDLE EAST FIRST SERVICES

Perhaps the London decision was a political one. Certainly at about this time the Egyptian Government was showing more and more leanings towards the Axis powers. In actual fact, a pro-British Prime Minister was to be installed by the King of Egypt at British insistence and upon threat of removal of the monarchy—but that is another story, substituting Tank diplomacy for Gunboat diplomacy. On 1 March 1941 the service from the Middle East to the United Kingdom was started with Palestine, Cyprus, Cyrenaica, Greece and Crete, all included at a rate of 3d each. This left only the British base in Egypt without the service. The early printings were copies of the Australian form, the only difference being that *Gt Britain* was printed on the address panel.

By 1 April the Egyptian Government had still not agreed to alter the status quo. Naturally enough they did not take kindly to the proposed reduction in their postal revenues. The British C-in-C then asked for and obtained a subterfuge issue for personnel in Egypt to use, this was to be an air mail letter card printed *Official Paid* and sent forward as such. The users were to be charged 3d each for the forms.

Meanwhile, and before the official paid issue could be put to use, the Egyptian

Government agreed to grant free postage on surface mail sent by British troops and to allow British stamps to be used on air mails from May 1941. The official paid issue was eventually used about June of the same year, after earlier printings had been used from Egypt. By the summer of 1941, the service had been extended not only to cover the home route but also over most parts of the African continent.

ADAPS ME MOVES ON

Colonel Evans completed the introductory services for the Middle East and by late 1941 the service was extended to other commands—he was not to see these later introductions—he left Cairo in mid 1941 and served in Nairobi for a few months on liaison work. He then returned home and upon arrival in the United Kingdom was promoted Colonel, becoming DDAPS for *Operation Torch*. Serving at Allied Headquarters in Algiers, he later moved with the Headquarters to Italy in 1944. Again returning home in mid 1945 he commanded the Home Postal Depot at Nottingham. After his demobilisation he was appointed Head Postmaster at Liverpool.

FULFILMENT

During the remaining period, leading up to 1945, very many Armed Forces versions of the Air Mail Letter Card were to be printed, in many millions, by the British and Commonwealth. The British Post Office and other countries also produced their own versions and continue to do so. The Forces versions were superseded in 1945 by the introduction of the Forces Letter Form, also still in use today.

Thus we can see the debt owed to these pioneering air post engineers. It is totally due to the direct working line of descent that a new, efficient and cheaper postal service is available today.

Acknowledgments

I gratefully acknowledge research help and kind assistance from:

Colonel (Retd) R W Day OBE
Lieut Colonel (Retd) A Walker
Major M W H Day RE, MA, C Eng, MICE
Brigadier (Retd) J W Bridge FAAI, until recently Director Postal and Courier Services RE

The Royal Engineers Historical Society

COLONEL A H W SANDES MA, C Eng, MICE

AVID readers of the *Monthly Supplement to the RE Journal*, or *The Sapper* may recall seeing brief notices about the Friends of the RE Museum and Corps Library, and latterly The Royal Engineers Historical Society (REHS). This is to tell you more about them and to gain your interest and support.

The REHS came into being in December 1979, following a suggestion by Major General John Woollett, when President of the Institution of Royal Engineers, that a Society of Friends could do much to help with the running of the RE Museum and Corps Library. I suspect that he aimed his suggestion at me because I had for some years been pushing a scheme to set up an Open Air Museum of Military Engineering Equipment at Fort Amherst close to the Royal School of Military Engineering at Chatham, and so it was that I soon found myself Chairman presumptive of a Society which at the moment has no obvious concern with Fort Amherst! Luckily for me I also found myself an enthusiastic Honorary Secretary in Major Joe Baston MBE RE and an Honorary Treasurer, well known at Brompton, in Major Percy Johnston late RA, later RAPC. That is how it began.

No sooner had we cemented our relationship by co-opting Lieut Colonel Charles Holland, the Curator of the Museum, and Major John Hancock, the Corps Librarian to form a Committee, and summoned a first General Meeting, than we discovered that our brainchild would have to be renamed. Members rather understandably did not much care for so ponderous a title as Friends of the RE Museum and Corps

Library and while punchy acronyms such as RECALL or REPAST might have had some appeal no one had been able to think of words to fit them, so we fell back on REHS which to some of us seemed familiar. This was not surprising as it proved on investigation that a society of this very name had quite recently existed under the auspices of the Institution, but as it was no longer active we have been allowed to assume its name. This underlines that it does not pay not to advertise!

The aim of REHS is to promote interest in the history of the Corps and its predecessors, and in general terms this means helping the work of the RE Museum and Corps Library, in co-operation with the Institution, and also helping our own members to develop their knowledge of military engineering history. We differ from the former REHS in being autonomous and also in being able to recruit members without regard to military rank; this we think is particularly valuable in broadening our field of support and expertise and in fostering regimental comradeship. We are very grateful for the support and encouragement we have had from the Chief Royal Engineer, the Engineer-in-Chief, the Institution and the Royal Engineers Association (REA).

Since it was more as a result of inspired guidance from the Institution than grassroots pressure that the REHS came into existence, we recognised from the start the paramount importance of building up a viable organisation. We reasoned that Corps history was likely to appeal more on the whole to older people and that serving members of the Regular Army might tend to move too often to become involved at all easily with the Society, and so we planned to recruit at first mainly from those who had left the service or reached the more senior ranks—in doing so we foresaw a magnificent opportunity of interesting ex-members of the Corps by liaison with the REA. We also hoped to widen our membership with younger officers and soldiers as and when possible, and later to attract civilian enthusiasts and perhaps institutional members such as engineering firms connected with the Corps. Recognising that members would probably be spread widely throughout the UK and perhaps abroad as well we envisaged that in time we could build up a network of branches in the same way as the REA; indeed it seemed sensible to expect branches to develop alongside those of the REA or near major static RE units at places like Chatham, Aldershot and Dover.

Under this concept we have set out to undertake the main tasks involved in helping the Museum and Library by establishing two working groups, to either or both of which members who wish to do so may belong. Group A is for those who wish to support the Museum and Library in their day to day work such as model making, arranging displays, cataloguing and research; for obvious reasons this would mainly attract people in the Chatham area. Group B is for those who wish to support the projected major expansion of the Museum to include a collection of military engineering equipment worthy of the Corps. We hope that members of this group will be able to advise on what items should be acquired and where to find them; help to procure, transport, store and restore exhibits, whether full size equipments or models; find and provide supporting information about exhibits such as drawings, specifications, still and cine photographs, handbooks, research development production and service histories, and so on; and perhaps most importantly, help to raise the funds to get the project going. As many of these tasks could arise or be carried out almost anywhere we expect that Group B will tend to form local branches outside Chatham.

In the event, the initial build up of the Society has gone pretty well. At the time this article was written (in March 1981) we had about forty individual members, of whom most were willing to support one or both of Groups A and B, and four or five REA Branches either pledged to join as soon as membership terms had been approved or very interested in joining—the Longmoor Branch deserves special mention for being the first to ask to join. At this very early stage of the Society's growth it has not been possible to organize any very striking activity, but we can report that Group A members have been able to give most useful help in preparing Museum displays and keeping the Library running when very short staffed, while Group B have contri-

buted to the planning of the Museum expansion project and investigated equipments of interest (though possibly not available for acquisition) such as an armoured petrol driven locomotive built in 1918 and a railway coach said to have been used by Lord Kitchener in the Sudan.

Looking to the immediate future, the first priority must still be the recruitment of members; we think that about 100 would be reasonable. For this we are relying greatly on those who have already joined to bring in others, but we hope that publicity in this Journal and elsewhere will also help. We realise though that achievements provide the best advertisement, so we are trying to show what we can do within our limitations and hope that our members will respond to the challenge to meet the needs of the Museum and Library. Later on, as the Society grows, it should be possible to widen our activities. The acquisition of a collection of engineer equipments seems likely to require major effort for many years in planning, execution and fund raising. There should be much scope for design, research, craftwork and organisational effort of all kinds, all over the world. The example set by the Fortress Study Group under the chairmanship of Brigadier Jock Hamilton-Baillie suggests that we could also become involved in organising lectures and conferences and producing our own Journal, though any such activity would clearly need close liaison with the Institution. We shall in any event keep in close touch with the Fortress Study Group, and have also established a link with the Panel for Historical Engineering Works of the Institution of Civil Engineers.

Finally, I would like to float an idea to stimulate comment. It may be that, in seeking to expand the RE Museum with an equipment collection, we should have a target or focus to attract popular interest in the form of a pre-eminently important exhibit, which necessarily should also be difficult to acquire. A Bailey bridge or an AVRE would meet the first criterion, but not the second. So what about a Steam Sapper, surely the original ancestor (1871) of all engineer plant and in its Boer War armoured version perhaps of the tank as well? Prolonged search has not yet discovered a specimen, but this does not mean we should give up—if necessary a replica might be made? Any ideas would be very welcome.

If you are interested in the REHS, please contact me or (since Joe Baston has been posted abroad) our new Honorary Secretary, Graham Hornby Esq, Coach House, Flowers Hill, Pangbourne, Berks (Tel 07357-3232).

Colonel Pearson's Sword

COLONEL D R WHITAKER MA, FI Nuc E

Most of the Corps Silver, familiar to Sapper Officers because they see it at Chatham functions, is well documented. Quite by chance the other day I heard the story of a most interesting item in the possession of a TA unit which I believe is well worth putting on record with this note.

In 1910 Lieut Colonel Andrew Pearson was presented with an elaborate silver, silver gilt and enamel sword by the Officers of the 2nd Lanarkshire Royal Engineers (Volunteers). The sword eventually descended to his step daughter, Mrs Frank Beswick, and was recently given back by her to the TA unit which now represents the original donors, 124 (Lowland) Field Squadron RE (V). Mrs Beswick is the wife of Dr Frank Beswick, a Deputy Director of the Chemical Defence Establishment at Porton, in whose office I first saw a photograph of this beautiful sword.

The hilt of the sword is of silver gilt, is surmounted by a lion's head, and has an enamel miniature of Colonel Pearson on one side, clearly taken from a photograph still in the possession of Mrs Beswick. On the obverse, also in enamel, are his initials. The scabbard is of silver with heavily engraved silver gilt sheathing at top, middle and bottom. The scabbard itself is engraved with four groups of Sapper grenades and

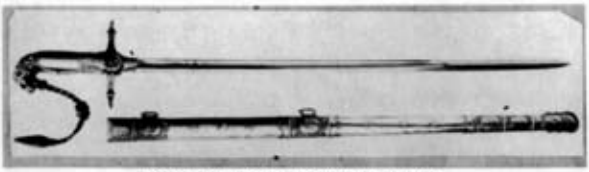

Photo 1. Colonel Pearson's sword and scabbard

Scottish thistles, whilst the sheaths are engraved or enamelled with the Arms of the County of Lanark, the crest of the Regiment and other devices.

The very idea of the Officers of a Regiment today presenting their CO with such an elaborate gift is not easy to entertain. Colonel Pearson had, however, done them all a signal service—he had literally raised their Regiment in 1903. The Minute Book (No 1) of 2nd LRE (Vols) (*sic*) is still in the possession of 124 Field Squadron and records the fairly simple procedure which had to be followed in those days to raise a Territorial Regiment. The whole initiative came from the local population, not from the War Office. The Minute Book opens with the Minutes of a Meeting held in the

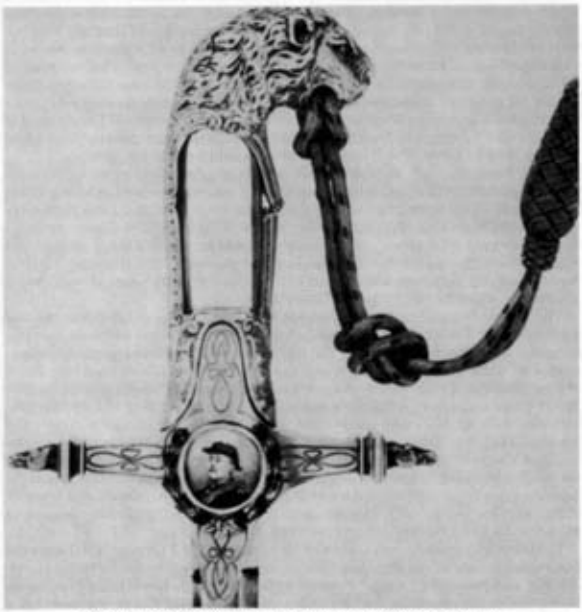

Photo 2. The hilt, showing an enamel miniature of Colonel Pearson

Colonel Pearsons Sword 1,2

Photo 3. The plaque from the original sword box

Central Station Hotel, Glasgow, on 25 September 1901 and chaired by Mr Andrew Pearson who at the time was a Captain in the HLI Volunteer Battalion. It refers to previous Minutes and the business was so far advanced that the Committee approved a list of names to be submitted to the War Office as Officers of the proposed Regiment—3 Field Officers (including Mr Pearson), 6 Captains, 6 Lieutenants, a Quartermaster and 5 Medical Officers. Unfortunately the application arrived too late for the 1902/3 Army Estimates and the next Meeting a year later did little but vote Mr Pearson to the command of the Regiment and add a Chaplain to the list of potential Officers. Three days later, however, Pearson submitted a full proposal to GOC Scottish Command for an Infantry Battalion of 1000 men in twelve Companies. He promised accommodation, magazines, a range, ample training areas and a pipe band of fifteen and a brass band of thirty all ready to be enrolled! They wished to be called the Lanarkshire Highlanders, to be associated with the Highland Light Infantry, and be kilted. The Battalion clothing would be paid for privately.

In the event the support of numerous influential people had to be called upon before authorisation for the formation of the new unit was received in March 1903; also the unit was to be an Engineer Regiment since it was considered that there were already sufficient Infantry Volunteer Regiments in the area. The change of Corps was in fact very appropriate, the majority of potential recruits being artisans and many of the Officers civil, mining or mechanical engineers. The Honorary Colonel was to be Lord Belhaven and Stanton, "a Sapper for thirty years service during fourteen of which he was Brigadier General."

The Minute Book continues until March 1908 and appears to have been the sole repository for all unit business. It contains fascinating detail about uniforms, training, social functions, finance and so on, and leaves the reader with a very strong impression of what the atmosphere in a TA unit eighty years ago must have been like. There was no shortage of recruits—by August 1903 they had 1252 applicants for the 900 Other Rank vacancies—a Soldier's complete outfit cost £3–0–4 and an Officer's, including mess kit, frock coat and sword £34–17–0. A bandsman's kilt was 24/– and his plaid 12/6. The Theatre of Varieties on Coatbridge was leased as a Regimental HQ and it was left to Company Officers to make "the best arrangements they could for suitable premises". And so it goes on, with newspaper cuttings, extracts from the London Gazette, short biographies of the Officers, accounts, (more and more of these as time went on!) menus, invitation cards and sufficient interesting memorabilia to fill this Journal several times over.

To return to the sword, and Lieut Colonel Pearson. On 3 October 1903 after the first public parade of the Battalion the Officers dined together in the Royal Hotel, Airdrie, and presented Colonel Pearson with a silver rose bowl. In addition to an inscription commemorating the fact that he had formed the Corps, the bowl has a delightful engraving of a pontoon and of a timber arch improvised bridge. Mrs

Photo 4. The Rose Bowl. The inscription on the obverse side reads: "Presented to Lieut Col Andrew Pearson by the Officers of The 2nd Lanarkshire Royal Engineers (Volunteers) in recognition of his having formed the Corps, 3rd October 1903.

Pearson at the same time was presented with a gold and silver brooch. The bowl is still in the possession of Mrs Beswick. Entries in the Minute Book had ceased before the sword was presented to Colonel Pearson seven years later, so I am unable to give any background to the event. The best clue comes from the plaque from the original sword box (it currently travels in a Bren gun box!), the inscription on which can easily be read in the photograph. (Photo 3).

I had the good fortune to serve during the late 50s, as Adjutant to what was then 124 (L) Fd Engr Regt (TA) with Headquarters at Rutherglen. Somehow what had been one of the outlying squadrons of Colonel Pearsons Regiment had become RHQ, a fact which may have been connected to the presence of Colonel Pearson's home in that part of Glasgow. At the time I knew nothing of all this history although I well remember how sacrosanct was the Pipe Band, how independent was the Coatbridge Squadron and how the general atmosphere was, I suppose, not altogether different to that in the days of the enterprising Colonel Andrew Pearson.

Finally I would like to say what great thanks are due from the Corps to Mrs Frank Beswick for returning this most interesting and valuable historical item into the keeping of a Sapper unit.

The History of the Hanovarian Engineers

LIEUT COLONEL R D GARNETT MBE RE

The Author when weeding out some of his older files came across some notes he had made based on the German History of Military Engineering. It is thought that they will be of considerable interest.

A Corps of Officers employed as Military Engineers existed in the 17th Century. In 1705 Garrison Engineers were stationed at Hanover, Celle and Brunswick amongst other places. In 1732 the Corps of Engineers split off from the Artillery and had a strength of 20 Officers.

During the siege of Gibraltar from 1779 to 1783 a number of Hanovarian Infantry Battalions formed part of the Garrison. It is quite possible, therefore, that the efforts of Sergeant Major Ince and the Soldier Artificer Company influenced the creation of a Mining Company on the Hanovarian establishment in 1782. It was also about this time that the fortification of the Kluet, over the river from Hamlin, took place. This was known as "The Gibraltar of the North".

By 1786 a Company of Sappers and Miners was stationed at Hamlin and a Company of Pioniers and Pontooniers was stationed at Hanover. The total strength was 17 Officers, 6 Conductors, 8 NCOs, 4 Trumpeters and 60 Rank and File—a total of 95.

During the campaign against Revolutionary France in 1793 the Hanovarian Pioniers provided a detachment of 1 Sergeant and 17 men equipped with a prefabricated "Dry Support Bridge". This was 6·9m long, 4·4m wide and took 10 Pioneers 30 minutes to erect. What price MGB!

The following year the detachment was increased to a Pontoon Train. This was equipped with 24 Copper Pontoons, and had a strength of 6 Officers, 160 Soldiers and 318 horses. About 155m of bridge could be produced. The pontoons weighed 385kg and had a buoyancy of 4000kg but were expensive and easily damaged. The cost of each pontoon was 380 thalers.

Value engineering obviously took place during the next few years and in 1802 the Pontoon Train was re-equipped with larger wooden pontoons. These cost a mere 80 thalers, had a buoyancy of 5000kg but were much heavier with a weight of 850kg. Nevertheless the Train could now span 170m and the horse establishment was reduced to 240.

In 1803 Hanover was annexed by Napoleon and formed part of the Kingdom of Westphalia. Much of the Hanovarian Army escaped to England and formed the King's German Legion from 1803 to 1815. Eleven Engineer Officers were on the establishment.

The Hanovarian Army reformed in 1816 and the Engineer strength remained static at about 200 up to 1842. The tensions in Germany during the 1850's led to an increase in establishment so that in 1855 the strength was up to 369. 125m of heavy pontoon bridging was held as well as a set of the "modern" Birago equipment. This was a very light and adaptable bridging train. It could be used for trestle bridging, as well as a light or heavy floating bridge. A heavy floating bridge of 47m could be constructed or 67m of the lighter construction.

During the war of 1866 Hanover was allied to Austria. A battle took place at Langensalza near Goettingen which was won by the Hanovarians. The Engineers were employed preparing field defences—and later burying the dead. Hanover paid the price of Austria's disastrous defeat and was annexed by Prussia.

On 11 October 1866 the Hanovarian Engineers were re-capbadged and moved to the old Prussian garrison of Minden where they became the Pionier Battalion No 10 (Hanovarian) on the Prussian establishment, taking with them their Regimental March "The Hanovarian Pioniers".

Extracts from Letters of Brigadier C G Martin VC CBE DSO The First Six Weeks of World War I

THESE extracts are from letters written in 1916 covering the period 4 August to 14 September 1914 on the second anniversary of the actual events. The original diary used cannot be found and is believed to have been destroyed. The letters were written to his wife when Lieutenant Martin was in the Sudan in 1916.

We are grateful to Squadron Leader R F H Martin (retd) for preparing these extracts for the Journal.

* * *

3RD DIVISION

GOC Major General H I W Hamilton

7th Infantry Brigade	*8th Infantry Brigade*	*9th Infantry Brigade*
Brig-Gen McCracken	Brig-Gen Doran	Brig-Gen Shaw
2nd Worcesters	2nd Royal Scots	1st Northumberland Fus
2nd South Lancashire	2nd Royal Irish	4th Royal Fus
1st Wiltshire	4th Middlesex	1st Lincolnshire
2nd Royal Irish	1st Gordon Highlanders	1st Royal Scots Fus

3RD DIVISION RE

CRE	Lieut Colonel Wilson C S
Adjutant	Captain Wright F (Attd)
56th Field Company:	Major Hopkins N J
	Major Berradaile B (Ord)
	Captain Nation J J H
	Lieutenant Moores C G
	2nd Lieutenant Martin C G
	2nd Lieutenant Leventhorp J A
	2nd Lieutenant Holt H W (RESR)

August 4th 1914. Tuesday.

War declared. I was sent to Newbury to collect horses for the Divisional Engineers. The Remount Officer had collected most of the troop horses required but was short of Officer chargers. Eventually we collected our full quota and returned to Bulford. In the following days we went through the vaccination and inoculation programme and concentrated on route marching to get the men and horses fit.

August 16th. Sunday.

We left Bulford at 2am for Amsbury Station and arrived at Southampton Docks at 1pm. The ship was on the London–Bordeaux trip and we shared it with a Company of the ASC. We had to sling our horses aboard but the pontoon wagons would not go through the holds and so had to be unloaded. We finished loading at 6pm. The ship left the docks and anchored off the Isle of Wight till it got dark. We were lucky as the ship had just been stocked up for its run from London to Spain and so we had a good dinner and each Officer a cabin to himself.

August 17th. Monday.

Crossed to France that night and woke up at 5am and recognised Havre. As soon as we entered the Seine and I knew that we were making for Rouen. We were a fast ship and soon passed half a dozen slower transports, there was much shouting, cheering and singing of Tipperary. All the villages were decorated with flags and people on the banks were shouting *Vive les Anglais.* At about noon we reached Rouen and berthed above the Transporter Bridge about 4pm. Unloading the horses was difficult as the gangways were very steep and narrow. Temporary horse lines were made on the quay by attaching ropes to the lamp posts. We then started unloading the pontoon wagons, the first got jammed in the small hatch and by the time we had cleared it we realised we could not complete the unloading that evening,

so we had to have another night on board with a comfortable bed and another good dinner. I had to do duty on the horse lines from 11pm to 1am on the quay.

August 18th. Tuesday.

We got everything off the ship by 11am and marched to a rest camp about 2 miles South of Rouen near the Race Course. Having got comfortable in the rest camp by about 2pm we were warned that our train left Rouen at 5am next morning, so turned in early as the parade next morning was at 1.30am.

August 19th. Wednesday.

Marched from the camp at Rouen at 3am and moved to the Gare du Nord station and entrained. A long journey through Amiens to Sasseignes where we detrained at about 6pm. Marched about 2 miles to our billets. This was our first experience of billets—the men were in empty houses sleeping on straw. The Officers slept in an empty house but had meals with a family, we had a good meal and drank many healths before we got to bed.

August 20th. Thursday.

Left Sasseignes at 6am and marched to billets at Harmies. It was a very hot day and after we had settled down in our billets we had a grand bathe in a little stream nearby. Before I left England I bought a small bivouac tent, 6ft by 6ft and very light, and when I could I pitched it near our billets and found it much more comfortable than a dirty French bed one had to share with undesirable companions. No one knew where we were going or what our job was going to be or where the Germans were located.

August 21st. Friday.

We continued marching North and just after midday we marched through Mauberge. We passed some of the forts just like those around Chatham. The French were digging new trenches and putting up barbed wire entanglements around them. Some of the barbed wire was 70 yards wide which surprised me as we had always been taught that 20 yards was enough for defences. Mauberge was full of French troops, a dirty looking lot, mostly reservists.

We marched on about 5 miles to Feignes where we got a fine billet in a school but just as we had settled down to supper we were ordered to move on a further 7 miles to Goesgnies Chausse. I was acting as guide to the Company (56) and it was a pitch black night. I was very frightened that I would lose my way, however we got there safely. We found a large farm, half in France and half in Belgium, and tied our horses to the trees in the orchard. Here we got our first news of the Germans, that they were advancing towards Mons. (16 miles).

August 22nd. Saturday.

Continued our march towards Mons and before we had gone a mile I was ordered to take my Section to Givry to help the Royal Irish to entrench. When I got there I found Holt, one of our Subalterns, already at work but I had orders for him to join the Company at Mons. I then looked at the proposed work and thought it was wrongly sited being on the front slope instead of the back slope. I had a bit of an argument with Major Daniel, (Royal Irish), and got him to agree with me, so we resited the whole line. At about 2pm I was ordered back to Mons and heard of the German advance. I marched back and found the Company bivouaced at Myon. I pitched my tent and it began to pour with rain, so the tent became the Officers Mess and Hopkins, Nation and I had supper in it.

August 23rd. Sunday.

At 8am I was ordered to take my Section to Mons and await orders. At 8.30 I was told to move to Symphorien to help the Royal Scots dig in but on arrival was told I was not wanted so hurried back to Mons. On arrival I was ordered to destroy the bridge at Obourg 2 miles away. I rode off telling the Section to follow. On arriving at Obourg at 11am I found the 4th Middlesex holding the railway station on this side of the canal and bridge. There was a good deal of firing and I saw a German cavalryman shot on the other side of the bridge. The tow path was on the other side of the canal so the only way to get below the bridge was to cross the bridge. During a lull in the firing I dashed across the bridge and got under it and saw that it would take a long time to fix

the charges. I dashed back over the bridge and found my tool cart had come up and was under cover about 50 yards away and the explosives were being unpacked. I found a ladder and with five men and all the stuff dashed across the bridge and got under it. By now a few shells were arriving and heavy rifle fire, mostly from our side. We found that the ladder was too short and that without a quantity of planks and uprights it was impossible to fix any charges to the underside of the bridge.

At this moment the firing above us showed that the Germans were very close so I decided to get back. I semaphored the Middlesex for covering fire and dashed over. As we got back to the tool cart we saw the Middlesex retiring from the station. I told the men to pack up and return to Mons and as I turned I saw the Germans swarm over the bridge. I jumped on my horse and only just got away and soon caught up with my Section. We rejoined what was left of the Company. I was lucky not to have a single casualty. Holt on a bridge nearby was caught under it with his whole Section and was killed. Day was in the same box and was captured. The Company was then sent to the right flank at Nouvelles and spent the rest of the day and the night digging trenches. At 4am the retreat commenced.

August 24th. Monday.

We left Nouvelles at 6am after having taken shelter in a village from a German battery which shelled us with shrapnel. After taking a short cut which proved to be a very long one, we got on to the Bavai road. The road was packed with refugees and their carts and troops without units. We reached Bavai at about 3pm where the stragglers were collected into units. The Sappers marched all day with their tool carts. We got to our halting place at Amfroipret about 2 miles SE of Bavai at 4pm and spent the night there. Great difficulty in getting supplies, but Nation and our QM managed to find enough to keep us going.

August 25th. Tuesday.

Left Amfroipret at about 4am and the men had their breakfast before leaving, but the cooks had put salt in the tea instead of sugar, the men were awfully sick and started grousing. I told them not to blame the Officers for it and if they did not shut up they would have to march at attention all the way, some 35 miles and that stopped them. We marched solidly all day going through Le Quesnuy and on to Solesmes arriving at 7pm hoping to stop there; but were ordered to march on another 5 miles in the dark to Caudry. I was sent on to get our billets while the men had a drink in a pub which cheered them up. I got hold of the Mayor and got about 60 small houses. It was around 11pm so they were all in bed. We had to wake them all up and explain in my poor French that they had to have four soldiers each billeted on them. All the men were settled in by midnight. I was Duty Officer and had just got to sleep when I was woken up with orders that the Company was to parade at 3am for trench digging.

August 26th. Wednesday.

Up at 3am but hardly any of the men paraded. We had to go round the houses and pull them out of bed as they were all so tired. The QMS managed to find a bakery so it was bread and bully beef for breakfast. We moved off to the rendezvous the Staff had given us but they did not turn up until 8am and with them some German shells, so no digging was done and we were sent to the village square to await orders.

The Le Cateau position ran due East to Caudry and from there it bent South West. The Royal Irish occupied the North of the village.

A report came in that a Battery of Gunners had been held up by wire and had no wire cutters. I was sent with some cyclists to help them. I met a Battery and asked for information but they knew of no wire, so returned to the village and found the square empty. I collected all the Sappers I could find, about 15 including the CSM and cooks and Officers servants and reported to the Royal Irish HQ. They wanted ammunition taken up to the Regiment. We found their men lining the edge of the village behind a small bank with a field of fire of about 100 yards. Standing up I could see over a mile to the village of Bethancourt. We distributed the ammunition and my men joined the firing line. Quite a lot of bullets were coming over but our line being on the reverse slope we were quite safe.

The Officer in charge of the Infantry was very nervous and kept saying we ought to retire. I said you can't, your CO has just sent you up ammunition. I then told him that I would go into one of the houses just behind us and direct the fire of his men. I got up to an attic window and had a wonderful view. I saw a firing line of sorts about a mile away and behind that some dismounted Cavalry and what looked like two Companies of Infantry in close formation. It was obvious that we would soon be attacked so I thought that the more noise we made with our rifles the longer it would be delayed. I passed the word to the men below me to pass the following order along the line—All men to put their sights at 1000yds, Aim straight in front, Load magazines and fire five rounds rapid whenever I blew my whistle. The scheme worked well, the Germans took what cover they could find or withdrew a bit. The morale of our men rose and it was hard to make them wait for the next whistle. We kept up this type of firing with several gaps till about one o'clock when the Germans started shelling us. Suddenly as I was pointing out a target the whole house shook and I found myself on the floor rather dazed. The bed, and the back wall of the room, had disappeared with all my kit on it. Just under the window out of which I was looking was a round hole about one foot in diameter and I am sure that the shell must have passed between my legs which were about 2 feet apart. It took me a minute or two to collect myself and get out of the house. I opened the front door and found that all the infantry had cleared off and my Sappers wondering what was left of me. I told them to go on firing as hard as they could to pretend that we were still a large force. I lay down next to my Sergeant Major who was rather large, he felt awfully unhappy because a machine gun was firing about 3 inches above him and he could not move. The man on my right lifted his foot for a second and had the heel of his boot taken right off.

The Infantry reported that I was dead and that the Germans had captured the village. The Infantry mounted a counter-attack and found us instead of the Germans holding the village. We stayed till about 3pm and then had an order to retire and slipped away with only one Sapper wounded. I had lost my hat but luckily picked up a soldiers hat lying in the road that fitted me perfectly. We marched in pouring rain and darkness until we reached Le Catelet; there was no sign of my forage cart which contained all my kit, equipment and my tent.

Editor's Note: It was for this action on 26 August that Lieutenant Martin was awarded the DSO. The Supplement of December 1914, reporting the award reads "... he held with his Section (of 56 Field Company) a post from which the Infantry had been driven and remained there under a very fierce fire until the Infantry relieved him"

August 27th. Thursday.

We left Le Catelet at 3am and marched to St Quentin where we stopped for four hours and then marched on to Ham. Here I managed to buy some blankets, underclothing and socks and so had a little bit of kit. A total march of 27 miles, we had billets at Maille.

August 28th. Friday.

Left Maille early in the morning and marched through Noyon to Pontoise (16 miles) and camped in open fields. A lovely day for sleeping in the open. This was the first time we had anytime to get things shipshape after Mons and we turned out our wagons to see what was lost in the way of tools etc. We had Holt's tool cart, which was not with him when he and his section were captured at Mons, so we were able to make up all our deficiencies.

August 29th. Saturday.

A short march to Cuts (3 miles). Camped in a large park belonging to a chateau. I went foraging and found a good supply of eggs and sausages so we ate well that evening hoping that the retreat was over.

August 30th. Sunday.

Ordered to march at 4am. A long march and just after dark crossed the Aisne by a repaired bridge at Vic sur Aisne where we billeted in a farm.

August 31st. Monday.

Marched to Crepy (15 miles). I was sent ahead to fix up billets and was able to buy a good supply of eggs and milk for the company.

September 1st. Tuesday.

Marched to Nantueil (8 miles).

September 2nd. Wednesday.

Marched to Monthyon (10 miles). I was sent off by Nation for a five mile bicycle ride to look and see if the French had prepared a bridge for demolition.

September 3rd. Tuesday.

The retirement continued and we crossed the Marne at Meaux halting at Sancy. (12 miles).

September 4th. Friday.

A day of rest and we did not move on till after dark.

September 5th. Saturday

We ended the retreat at Tournan, South East of Paris in the middle of the Forest of Crecy. (13 miles).

September 6th. Sunday.

Started to advance again. There was no fighting and we bivouacked in a field near Coulommiers. That night saw the formation of the Composite Company RE, the first and only one formed. In each Division there were only two Field Companies to divide between three Brigades and Colonel Wilson decided to make a third by taking one Section from each Company. I and my Section came from the 56th and Mr Wells from the 57th. We were under the command of Major H M Henderson, the one with the Bulldog.

September 7th. Monday.

Marched off from the 56th and 57th to join 8th Brigade under Brigadier General Doran. We had a long march and in the end caught up with our Brigade and got our billets. No fighting.

September 8th. Tuesday.

We were marching along merrily when about a mile from a valley that contained the Petit Moriss river we got shelled. The ground was open like parkland and no shelter till we got to trees just on the edge of the valley. We extended and in the end got to the woods without any casualties and sat down in the woods while the Infantry tried to force the valley. It took about four hours because of several machine guns in the village that gave a lot of trouble. We waited on the edge of the wood and were comfortable for about half an hour but then two howitzers came and unlimbered about 100 yards from us and the German guns put about fifty shrapnel shells right in the middle of us. I found a fallen tree and got under it, I could feel the shrapnel bullets hitting the tree about a foot above me. Out of twenty men we had ten wounded but only one badly. He was sitting next to me when the first shell came between us and struck the ground above five yards in front of us. When the village was taken we crossed the river and billeted for the night. We caught about fifty Germans, some dead drunk.

September 13th. Sunday.

Left Braius at 4am and marched towards the Aisne, our Brigade being the advanced guard. We heard that the bridge in front of us was blown up and when we got to within 500 yards of the river the Germans began shelling us. Major Henderson and I had to go on and examine the bridge. We made a wide detour keeping to the woods and got to the river about 500 yards East of the bridge. Opposite us across the canal was the village of Vailly occupied by the Germans. By crawling along the bank we got to within sight of the bridge when the Germans spotted us from across the river, they hit Henderson in the elbow but missed me. I sent Henderson back with the man we had with us and then made a rough sketch of the bridge and went back to report. I now found myself in command of the Company! The Infantry reached the canal bank and found the bridge over the canal undamaged, and that there was a single plank across the gap of the destroyed river bridge. I was told to go and see if it

was safe. When I got there I found it was about three feet wide and made a dash across it expecting it to collapse, but I got over and secured it with some rope and the Infantry then crossed the river. It was a pretty warm time as the Germans were firing from quite close. I then began to make preparations to repair the bridge with timber from a big barn. However the CRE decided to put a pontoon bridge across that night. We started work when it was dark, the 56th building the bridge and the 57th the roads. It was a hard nights work and we finished it at about 3am.

September 14th. Monday.

Crossed the bridge with all our carts at 4 am followed by the Scots Greys and a Brigade of Artillery. The Germans must have been watching, for when the last gun got over they opened fire on the bridge and tried without success to destroy it.

Editor's Note: Brigadier C G Martin's Memoir is published at page 134.

Memoirs

MAJOR GENERAL J H FOSTER CB

Born 17 May 1925, died 24 May 1980, aged 55

JOHN HULBERT FOSTER was born into a Sapper family, his father and two uncles having served with the Corps. He was educated at Charterhouse and commissioned in April 1945. From that date, until his retirement he served widely in Asia, Africa, the Middle East and Europe as well as in Canada.

He saw service in Kenya on the ill-fated McKinnon Road; in Cyprus and Egypt, to which he moved at a week's notice when 3 Division was sent to reinforce the Canal Zone in 1951; in Libya, Cyprus, Canada and Germany as a Squadron Commander. As the Commanding Officer of 38 Engineer Regiment (1967–1969) he was involved in Cyprus, Canada (again), and also in British Honduras, Kenya, Gibraltar, the Arabian Gulf and Singapore. He was responsible for the Engineer work for the investiture of The Prince of Wales at Caernarvon, possibly the highlight of his tenure of command. Having attended the Joint Services Staff College he became a GSOI planner at CICC (West) before being appointed as CCRE 1(BR) Corps. A year at RCDS followed, after which, in 1975 he became E-in-C and then DVT&C (later known as DAT&C) before he retired in 1980.

Such a summary as this is not usual in this journal, but it may illustrate, however inadequately, the range of John Foster's experience and background. Editors do not normally become emotionally involved in preparing Memoirs but with so many tributes to call on, added to considerable personal knowledge, it was felt that an exception was appropriate on this occasion.

Many contributors refer to his physical and moral strength, his calm, his compas-

Major General JH Foster CB

sion, his friendly and courteous manner and his high principles. They also refer to his ability, his approachability, his capacity to orchestrate and stage manage any course of action he believed in, as well as his determination when executing what he saw as his duty. None doubted that he would argue his views strongly and cogently with enthusiasm, and then comply with directions with great drive and energy which stemmed from his robust character and an enormous capacity for hard work.

He enjoyed work and life to the full. The near permanent twinkle in his eye encouraged contact but it was not a sign of softness. His interest in the individual was always apparent. When at AG7 as DAAG, the younger officers of that time comment on his easy and cheerful manner which would help them to feel at home and relax as he listened with sympathy to their problems.

He was a soldiers man, equally approachable and trusted by young and old, junior and senior. Everyone trusted him and all were encouraged by him. Perhaps his success was based on a real understanding of people, his ability to communicate with them, his judgement of them and his ability to inspire others to work for him.

The cohesion of 38 Engineer Regiment, with detachments spread across the world, called for unusual flexibility in command. That he was successful was illustrated when the Regiment, stretched as usual, was tasked with the Engineer work in connection with the Investiture at Caernarvon. Timings were tight, everything had to be costed, the budget was small. That it was the success it was, was entirely due to John and the flexibility he and the Regiment showed in dealing with all the frustration and problems which arose. This was leadership at its best.

As E-in-C he had one aim—to maintain and prosper the morale of the Corps. In this he set out to meet and see every unit and aspect of Corps work. In one year he was out and away for 180 working days. He travelled far and wide to meet people and to grasp problems first hand. If he promised help it always came. Typically, on a short 3-day visit to Hong Kong, and after a 22-hour flight, he packed in more than many others could have managed in a fortnight. Apart from Guest Nights and functions with British, Gurkha and Chinese Officers, NCOs and men, tours to the Chinese border and visits to works projects, he even made time for a tour of the New Territories hills on horseback.

He was direct, straightforward and painstaking in all that he did. He had the happy knack of knowing how best to get his way for the benefit of the Corps in a post where success depended more on ability to influence than on the authority of the post. He seldom missed a trick.

He was very much a family man. He could not have led such a busy and effective life without the quiet support of his wife Monica and the stimulation he received from the lively pursuits of his family, particularly in the equestrian field. To them we offer our deepest sympathy.

CLR writes: "A Chief Royal Engineer's tenure will often span three or more Engineers-in-Chief. By definition they will be good Sappers and exceptional soldiers. But there is no stereotype. Leadership, technical experience, intellectual profundity, dynamism, breadth of vision and personal charm; all these and many other qualities will make up the mix in different proportions. John Foster was particularly strong on leadership and breadth of vision. Those problems confronting the Corps, which beset successive Es-in-C, seemed to diminish in his presence when faced by his mental vigour and lightened by his "joie de vivre". He was no revolutionary but sought always a practical solution based on consensus and common sense. He had a gift for "salemanship", in the best sense of that word, and he was quietly confident that others would follow where he led.

"His personal charm, reflecting a family life of great happiness, bore fruit in his relationships within the Corps and later in the broader and more complex fields of the Territorial Army where his tenure as Director was highly successful."

TRRW (TA) writes: "I came to learn that I could disagree with him; but there it stopped; one could never be angry for he ever personified the gentleman.

"More than most he knew how to distinguish between the fundamental and the

immaterial; he knew what could be changed and what could not, the hallmark of a good administrator. He had what Kipling called the common touch; he was just as attentive and amiable with a group of soldiers as with those from the higher walks of life. He was a realist who knew where to go to seek answers.

"He was a man who warmed both hands at the fire of life".

DRC, HJG, CH, CAL, RWML, GRMHM, JAN, JGTP, CLR, JS, PCS, MET, TRRW

BRIGADIER C G MARTIN VC CBE DSO

Born 19 December 1891, died 14 August 1980, aged 88

CYRIL GORDON MARTIN was educated at Bath, Clifton and RMA and served with the Corps from 1911 to 1947.

He was the first officer to win both the DSO and VC in WWI and was the last Regular surviving VC in the Corps. The two actions within the first eight months of the war are well documented. Briefly he won the DSO during the retreat from Mons when, at the head of his Platoon, he captured a German trench and held it although wounded twice. Shortly afterwards he was invalided home but soon returned to France. On 10 March 1915, at the Battle of Neuve Chapelle, Martin was wounded early on but volunteered to lead a party of six "bombers" against a section of enemy trenches. Having captured them his party held the trenches for two and a half hours, beating off strong counter-attacks, until ordered to retire. By this defence they held up the German reinforcements at a critical time. This deed of conspicuous gallantry earned him the VC.

The public will remember him for these two actions but in the Corps we should remember more. He was an RE Officer who was equally at home in Works, as were most of his contemporaries. Like them he progressed through the normal career pattern between the wars, of Field, Works and Training Units. He numbered his tours on the NW Frontier between 1929–38 among some of the highlights. From 1938–41 he was Deputy Chief Engineer Northern Command India before going (1941–42) to Iraq as Chief Engineer British Troops Iraq, later to become PAIFORCE. These were challenging times. His energy and zest were fully extended as he concerned himself with construction; in particular, the port of Basra (Margil), the Shaiba base and bridging the Shatt al Arab, to name but a few of the major base projects. At that time the threat of a major German push through Turkey to the Iraqi Oil Fields was very real. He was charged with the construction of a strong defensive position around Mosul to be completed "the day before yesterday". With limited resources of men, materials and transport he worked wonders. The Germans knowing of this decided to avoid a possible major confrontation and switched their attack to the north with disastrous results. Some of the credit for this must go to Martin.

He returned to India in 1943 after a short tour in UK as Commandant RE OCTU at Newark, to become Commandant School of Military Engineering at Roorkee and in 1945 was appointed Chief Engineer Northern Army India.

Of the many tributes paid by those who served with him and under him a single theme stands out clearly; all considered themselves lucky to have served with him. They remember him with gratitude for all he taught them, with respect for his

Brigadier CG Martin VC CBE DSO

undoubted abilities and with real affection for his understanding, friendship and unfailing sense of humour.

He believed implicitly that "near enough was not good enough". He was everywhere, bursting with energy. He had the knack of imparting both confidence and a proper sense of urgency to all those under him. All his subordinates knew that they could count on his wholehearted support provided they *did* something. Mistakes and deficiencies would be pointed out in no uncertain terms but he would always "carry the can" for them. If things went well those at the "sharp end" always got the credit.

He really understood man management and leadership and in particular the plight of the families. He visited the children in hospital, taking them small gifts and cheering them up. He organised picnics for the "abandoned" families of the Officers and BNCOs at Roorkee. Off duty he was a delightful elder brother. Whenever Mab could be with him, abroad or at home, they kept open house to all and sundry.

A modest man, a family man, a man with a simple and unquestioning faith.

WFA, GCC, TK, IGL, AFT, WHCT

Correspondence

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61 Chemical Warfare Company RE

Sir,—Brigadier Lloyd's article *Let's Remember Bobby Maclaren* (March 81 Journal) refers to 1 CW Group which he took "to France, just in time for the fracas there." A little on those early days might amplify the situation as 61 CW Company was part of the Group.

No 61 CW Company was in billets at Lattre, 10 miles South of Arras when the balloon went up on 10 May 1940. The only activity during the next two days was an abortive all-day search for parachutists reported to have dropped near Mons, but we were kept up to date about the increasingly adverse situation by the AHQ Air Liaison Officer, who shared our billets.

Things got moving on 17 May. We were ordered to detach one Section to reinforce the Garrison in Arras after drawing Anti-Tank (A/T) mines, the remainder to move to Merville; I decided to go to Arras with the detachment. The Garrison consisted of the Welsh Guards and a Squadron of 12 Lancers, with HQ in the Mairie, which had been GHQ BEF; rear parties of GHQ were in the process of clearing out, and some were looking round rather wildly for transport; one enterprising Officer had gone back to Boulogne and hired taxis!

19 and 20 May saw one or two probing attacks from Cambrai and Bapaume by German recce units in half-track vehicles; these were dealt with faithfully by A/T guns well placed at the outskirts of the town; the Sapper detachment manned a sector of the West perimeter.

The arrival of General Franklyn's Force of 50 Div and 5 Div and 1st Army Tank Bde on 20 May put a new complexion on things; General Martel's attack with 50 Div is described in Churchill's *Their Finest Hours* pp 601 & 602 as the Battle of Arras. The GSO1 (Colonel "Simbo" Simpson) exuded confidence and cheer, "What a pity Bobby MacLaren isn't here, he would love this!" I went back to 5 Div at Vimy to beg for more Sappers and was given a Field Company (Major Abrahams).

I had spent the first two days doing a detailed defence recce, aided by town maps found in the Mairie archives. The West side was fairly well protected against tanks by dry moats and bastions of Napoleonic vintage, but the whole of the South and South

East was level and open. It was in fact an enormous locomotive depot and marshalling yard of the SNCF with about 100 locos all driverless and out of steam.

The last train had left on 18 May, or rather it had tried to leave and failed; it was dive-bombed as it stood in the station; huddled groups of refugees lay dead on the platforms, and all the loco drivers and vanished. However, there was plenty of rolling stock and enough Sappers now available to make them roll, and it was not difficult to organise a three-deep girdle of goods wagons as a mile long anti-tank obstacle covering the South and South East flank of the town. This was later bombed and set on fire, but it continued to form a good obstacle.

The other task that fell to Sappers was water supply; the mains supply went out when electricity failed, but a static tank and one of the town fire engines made an effective water point.

By nightfall 23 May, the enemy were exerting heavy pressure on the Eastern flank and had reached Lens to the North; leaflets were dropped on the town, informing us that we were totally surrounded and this seemed not far wrong. General Franklyn asked for and got permission from GHQ to evacuate at 10pm and we moved out due East in the direction of Douai, through streets well lit by fiercely burning houses. Welsh Guards were able to push light German forces off the Douai road with a spirited Bren Carrier charge, in which one of their Officers were killed.

From Douai via Lille and Armentieres, the Sappers rejoined the remainder of 61 CW Coy at Merville on 25 May and Tom Lloyd's narrative covers everything of importance thereafter.—Yours sincerely, W F Anderson.

Brigadier E C W Myers CBE, DSO, BA, C Eng, MICE
Wheatsheaf House
Broadwell
Moreton-in-March
Glos GL56 0TY

7th Armoured Division Officers Club

Sir,—Amongst the excellent turn-out of seventy-three who attended the Annual Dinner of the 7th Armoured Division Officers Club last December were four Sapper Officers besides myself; Brigadiers John Constant and Charles Turner and Lieut Colonels Peter Guyon and Michael Parker. There were no less than three Field Marshals; Mike Carver, Roland Gibbs and John Harding; as well as ten Generals of various ranks. These included "Hobo", the retiring President, Cecil Smith; and his replacement, Pip Roberts. The new Hon Secretary, Christopher Milner MC, (address—Mill Lane, Radford, Inkbarrow, Worcester. Tel 0386-792262), has set the re-union alight. In fact, until he took over last year, I had never even heard of the Club, which has apparently been in existence since shortly after the end of World War II!

Although some of us are becoming a bit ancient to add further annual re-unions to our yearly activities at this stage in our lives, and we are already forced to attend some of them only on alternative years, I can say that the December re-union was a spirited and enjoyable occasion, with a wide spread of ex-junior as well as senior ranks from all components of this unique Division. Last year George Forty, the Desert Rats author, was the Guest of Honour.

The size of the Sapper turnout was, in my respectful opinion, slightly disappointing. Could we not have a few more next year? Would ex-CsRE and OsC 7 Armoured Division Field Squadrons RE please roust around on behalf of the hardworking Hon Secretary?

The next Dinner (last year's cost £11·50) takes place at the "In and Out", Piccadilly, on Wednesday, 2 December 1981. Membership of the Club costs £1·50 per annum. Will interested individuals please get in touch with the Hon Secretary direct.—Yours sincerely, Eddie Myers.

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RE Officers in Command of Infantry

Sir,—In the September 1980 Journal Lieut Colonel J R V Thompson asked for information on RE Officers, other than his father, who had commanded Infantry battalions.

G B F Smyth DSO* was certainly one such Officer as he commanded 6th (Service Battalion) Kings Own Scottish Borderers from October 1916 to October 1918. Smyth was wounded and lost his left arm in front of the trenches at Givenchy in September 1914 when serving with 17 Field Company RE and was wounded many times in WW1 as he was always in the thick of things. In October 1918 he was promoted Temp Brigadier General and commanded 93 Infantry Brigade, 31st Division and remained with them until they were disbanded in 1919. After a year at Staff College he commanded (as a Brevet Lieut Colonel) 12 Field Squadron at Limerick. He was offered and accepted an appointment as Commissioner of Police in the Province of Munster. On the evening of 16 July 1920 he was shot and killed in the smoking room of the Cork Club by an assassin. His Memoir published on page 167 of October 1920 Journal gives further details of the life and deeds of a very gallant Officer.—Yours sincerely, K M Papworth.

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RE Officers in Command of Infantry

Sir,—Major E R B Hudson (*RE Journal*, March 1981) names me as one RE Officer who has commanded an Infantry Battalion and refers to "Perowne's Rifles" in France, 1940, in support of his nomination. But, "PR" was (as he recalls) composed entirely of Sappers drawn from No 4 Company GBD (No 1 General Base Depot)* at Forges-les-Eaux. Although it evolved, by stages, into one of the "Battalions" comprising Vickforce—extemporized to cover the evacuation of the Depots in and around Rouen—its activities could more properly be classified as "Engineers acting in the Infantry role", of which the history of the Corps furnishes innumerable examples.

On the formation of Beauman Division at the end of May 1940, "Perowne's Rifles" was withdrawn under its 2IC (Major W H Anketell) and was disbanded on 10 June, when the officers and men remaining were re-absorbed into No 4 Company GBD and evacuated to UK. I had meanwhile been posted to the 3rd Provisional Battalion ("Newcomb's Rifles") in "B" Brigade of the new Division and I commanded that unit throughout the ensuing operations up to the evacuation of Cherbourg on the night of 17 June 1940. Now, "Newcomb's Rifles" *was* a Battalion of Infantry, which circumstance (it may be thought) qualifies me rather better than my command of "PR" for inclusion in Lieut Colonel Thompson's list.

If, as stated by Major Hudson, the story of "Perowne's Rifles" has been written-up, I have not seen it published. I offered information on the subject to General Pakenham-Walsh when he was collecting material for the Corps History, but he evidently did not attach much importance to such relatively minor detail on the broad canvas he was painting, for there is no reference to "PR" in Volume VIII. There was some Press coverage at the time, and a garbled version appeared in Sir Charles

Gwynn's *Standard History of the Second Great War* (Serials 23 & 24) in which, unfortunately, the two units I commanded became inextricably mixed up. I have not looked to see if the *Official History* contains any reference to either, but General Beauman (*Then a Soldier*—Macmillan, 1960) records the formation and object of "PR" without going into domestic detail. Basil Karslake (*1940—The Last Act*—Leo Cooper, 1979) buries "PR" nameless at birth among "a number of curious units" and, later, names "Perowne's Rifles" as one of the Battalions in Vickforce "named after their commanding-officers", but without mentioning that it was composed of Sappers. The original of the War Diary was deposited by me two or three years ago with the Corps Archives.

Numerous RE officers have, of course, commanded Infantry Formations in Peace and War, but fewer, I suspect, in recent times than in past history. Between 1943 and 1955, however, I was destined to lead no less than five (four Brigades and one Division) and was at one time counselled by my superior commander to "Forget you are a Sapper"! I never did.—Yours sincerely, L E C M Perowne

* *No 1 General Base Depot was distinct from the IBDs (Infantry Base Depots) in that it held First Reinforcements, Transitees etc of the Gunners, Corps and Services. No 4 Company was the Sapper and Signals Company.*

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Principles of Obstacles

Sir,—In *The History of Submarine Mining in the British Army* by Lieut Colonel P W Baker Brown RE I found the following extracts from the final report of the Committee which reported on the defence of ports and harbours at home and abroad.

"The Committee are of the opinion:

"1st. That mines should never be placed except under the protection of the guns of forts, or of armed vessels, or in localities where they could be protected by guns of position.

"2nd. That they should be placed in advance of the forts, at a distance varying with the nature of the water to be defended, but which should seldom exceed 1000 yards, up to which limit it may be assumed that the artillery of the defence will have a decided preponderance over that of the attack; but at any rate within which most ironclads are penetrable by guns of the present day.

"3rd. That they should be protected by armed vessels, which would watch, especially at night, the movements of an enemy, and would prevent his boats from sweeping for or tampering with the mines.

"4th. That it would be desirable to lay chain cables parallel to the lines of electric cables, so that an enemy shall not be able to lay hold of the latter by dragging.

"5th. That secrecy be most rigorously observed with regard to the lines of defence, the localities in which the mines are placed, the charts of the operators, and the positions of the firing batteries.

"6th. That dummies be liberally used to deceive an enemy, the dummies being in all respects exactly like the mines.

"7th. That electric or other powerful lights should be freely used in all nocturnal operations, and the materials for producing such lights should be included in the stores for every complete system of mines."

It is significant that the report was dated 15 April 1871. If we apply these same principles to land warfare today and the creation of obstacles, they follow the classic principles that:

(1) Obstacles must be covered by fire and in range of defence weapons.

(2) Forward posts should be established to prevent the enemy finding the extent of the minefield and start clearing it unhindered.
(3) Multiple obstacles are required to interfere with clearance devices.
(4) There is a need for secrecy and deception.
(5) Surveillance must be provided over the obstacle.

The Corps was responsible for the system of submarine mining as an integral part of the defence of our ports from 1863 to 1905. Submarine mining included both mines and the use of the Brennan torpedo, a remarkable piece of equipment capable of 20/25 knots and carrying 200lbs of war head.

The Submarine Mining Service was remarkable for the cheapness and efficiency of its organisation. It included Militia and Volunteer Corps and also locally enlisted soldiers in the Colonies.

I believe that this branch of the Corps has been rather forgotten but it is of great interest in the development of equipment and support for the Royal Navy. Perhaps a study of the Submarine Mining Service has a considerable bearing on our future support for the Royal Navy and the Royal Air Force.— Yours sincerely, John Wilks.

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RE List

Sir,— Reading the Royal Engineers List recently, it has belatedly dawned on me that for some years now groups of Officers of the same rank and seniority date have been listed in alphabetical order, rather than by actual seniority. As a "W", and therefore a loser all my life when this common form of discrimination has been practised, I must protest! The Secretary of the Institution tells me that a formal decision was made a year or two ago to change to this system because it is now used by MS in their Lists. In an earlier age I could have understood that the alphabetical system would have saved work; with Lists presumably now-a-days handled by computers, a couple of extra punched cards should be all that is needed to print the names in their correct order.

I assume that the change was originally occasioned by the lack of an Order of Merit of Cadets on commissioning from Sandhurst. The loss of this very traditional list is most regrettable and I wonder if we could not impose one of our own at the end of Young Officer's Special-to-Arm training. When I was commissioned into Beringer's Batch we were all very conscious of our position in the batch; for example I can picture now every detail of the scene in Fred Beringer's room in St Catharines as he asked us in strict order of seniority, and after making his own choice, which of the package of postings offered after the Cambridge course we wished to take. My decision will have altered my whole life since.

Can I plead that in future the list is printed as far as possible in the traditional manner.— Yours sincerely, David Whitaker.

Lieut Colonel P F Morgan
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Earthmill

Sir,— I was interested to see the photograph of the Earthmill which accompanied Dr P S Bulson's article on Future Military Engineering Technology and to read his comments on this equipment. The Earthmill has a number of civilian applications

and much improvement has taken place on the machine since the earlier Government development contract.

Three pre-production models have now been built. After having one of these for a six-month trial, a German railway contractor has ordered the first production machine which is now being built. The Earthmill's main use on railways is to remove ballast once the rails have been lifted and to load it rapidly on to a ballast train standing on an adjacent track. A typical timing for this task is to load 60 × 15-ton trucks at an average of one minute each.

British Rail are also showing a keen interest in the equipment after recent demonstrations.

British Army trials have taken place and more are planned. The Earthmill has shown itself able to dig rapidly in many types of soil and recent development of the equipment for civilian purposes has much improved the technical areas mentioned by Dr Bulson including reliability.—Yours sincerely, P F Morgan.

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26 Field Company and the Maginot Line

Sir,—I was interested to read Brigadier Hamilton-Baillie's letter describing a return visit to the Maginot Line.

As OC 26 in 1939 I remember this boyish looking 2nd Lieutenant joining the Company on mobilisation. We shared with French troops the Veckring Barracks in which I found myself the senior officer. On one occasion I had to summon my best French for a notice urging officers not to wash their muddy boots in the Mess baths.

On 4 December 1939 the French Artillery officers celebrated the Fête de Sainte Barbe, their patron saint, and invited a number of British officers to dine in the Fort.

It fell to me to respond on behalf of the guests. We had been so well wined and dined by our hosts that I felt undaunted by the language barrier.—Yours sincerely, W H Blagden.

Book Reviews

THE LINES OF TORRES VEDRAS

A H NORRIS AND R W BREMNER

(Published by The British Historical Society of Portugal. Price £2·00 incl postage from the Hon Librarian, The British Historical Society of Portugal, Colégio dos Inglesinhos, Rua S Boaventura 5, 1200 Lisbon, Portugal)

Many people have heard of the Lines of Torres Vedras—Wellington's brain-child which enabled the Allies to thwart Napoleon's second attempt to add Portugal to his conquests. It remains surprising how few of these—even when living in Portugal and frequently driving through "the Lines"—have any clear idea of where they are. Nor will today's tourist get much help from the local Estremadurans whose forebears' Herculean labours brought these formidable fortifications into being.

Sir Alfred Norris was a friend of the late Colonel Baptista of the Portuguese Engineers, the great 20th-century authority on the Lines. This led to Sir Alfred's publishing a first edition of his monograph with the object of remedying this sad state of affairs but the work has been out of print for some time. A second edition was clearly called for, and this is now ready.

The new edition is considerably enlarged and divided into three parts. The first

gives the historical background, and includes Wellington's Memorandum on the Lines written for Lieut Colonel Fletcher RE. There are also contemporary accounts of the fortifications by British, French and German writers. Part II is a guide to the two main lines of defence. Part III is entirely new, and is the work of Mr Robert Bremner who has made a close study of the Third Line, designed to protect a possible embarkation, around Oeiras and Carcavelos. Mr Bremner also describes the little known defences on the Almada Peninsula on the south bank of the Tagus, and around St Philip's Castle at Setubal, designed to hamper a possible move by the French Southern Army. The book also contains a number of new maps and plans.

Quite apart from its historical interest, this work with its detailed instructions is almost certainly the only comprehensive guide to what remains of the Lines of Torres Vedras available today.

PB

THE HOO PENINSULA

PHILIP MACDOUGALL

(Published by John Hallewell Publications. Price £8·95)

ALL Sappers believe they know the Hoo Peninsula, after all nearly all have spent time in the Medway area. But do they? The Author who teaches Sociology at the Hundred of Hoo Secondary School discusses the past, present and possible future of the area. He found it difficult to define the Peninsula but settled for that area of Kent encompassing the villages of All Hallows, Cliffe, Cooling, High Halstow, Hoo St Werburgh, St James on the Isle of Grain, St Mary's Hoo and Stoke.

Life has certainly changed. In the 18th Century floods were a constant hazard but worse still was the menace of malaria. Few realise that malaria was indigenous to England and that the Peninsula was the "blackest" spot. This first complete historical account is largely the story of hardships. Yet it was not always a place to be avoided. One Saxon King built a palace at Hoo, the Cobham family made their home at Cooling Castle.

A fascinating book, with over 50 photographs and full of surprising facts, it is truly a good read.

BP

A HISTORY OF THE ORDNANCE SURVEY

EDITED BY W A SEYMOUR

(Published by W Dawson and Sons. Folkestone. Price £35·00)

A PROPOSAL to publish a history of the Ordnance Survey, as a private venture in the form of a collection of individual essays was put forward seventeen years ago by R A Skelton, of the British Museum, J B Harley, then of the Liverpool University, and E J S Parsons, of the Bodleian Library. Some four years later, in 1967, with the support of the Royal Geographical Society, the Royal Society and the Institution of Royal Engineers, the government gave approval for the history to be produced as an official document to be published by HM Stationery Office. The History now available has been produced quite differently with fourteen individual contributors and published with the cooperation of a private publisher.

The old saying, "If it is worth having, it is worth waiting for" is certainly true of this product. Some have said that the price is rather high but it is after all a unique reference book resulting from many hours of painstaking research and there can be no doubt that it is extremely good value for money. Between them, the authors seem to have covered just about every aspect of the development of the Ordnance Survey that is worthy of note. Mapping technology, research, development, scientific investigations, politics, personalities, rivalries, good times, bad times and so on. There is even a Chapter on the surveys of Jerusalem and Sinai undertaken by the OS Staff between 1864 and 1870. The Ordnance Survey Act of 1841 confined the respon-

sibilities of the Department to Great Britain, Ireland and the Isle of Man but there were a number of occasions when members of the Staff were employed in many parts of the world under some special arrangement or another. Presentationally, the History is the poorer because of the total omission of illustrations of the personalities of the day and because of the paucity of illustrations of old instruments and equipment. Sir Charles Close included a number of portraits in his *Early Years of the Ordnance Survey* and one could almost sense the personality of those splendid past Directors, such as William Mudge and Thomas Colby, emerging from the pages; these illustrations put life into his book. It was probably a Treasury economy which precluded similar illustrations in this History—but what a pity one could not have used this unique occasion to honour one or two of the more recent and notable Directors General, such as Bruno Brown and Joe Edge. Having mentioned the Treasury, it is interesting to record that there are more references in the index under *Treasury* than under any other single entry. A moral somewhere!

Obviously this is not a book for bedtime. Sometimes it is heavy going but never uninteresting. As a reference book it is excellent. The main topics of the thirty-five Chapters are succinctly outlined in a contents list which is sufficiently detailed to lead one quickly to any particular part of the History. The Chapters and their titles have been well selected to cover convenient periods of development and/or specific subject matters. Typical examples are "The Geodesy of Roy, Mudge and Kater 1784–1823", "The Irish Survey under Hall and James", "Archaeology—The Crawford Period". Chapter headings can be scanned very rapidly thus providing a useful first entry into the History. For detailed referencing there is a comprehensive, sixteen page index.

GAH

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