MEMOIRS OF AN ARMY SURGEON

McCOMBE LECTURE*

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"Brigadier John Smith McCombe, who endowed this lecture, had a distinguished Career. Born in Edinburgh in 1885, he qualified in Ireland, joining the Army in 1908. He served in India, in Mesopotamia, in both World Wars, retiring as Brigadier in 1944, and he died in 1959. He reached the semi-finals of the Army and Navy boxing championships as a heavy-weight in 1910. He had several awards for life saving, and in 1917 he was appointed to the Distinguished Service Order for bravery in the field. A man therefore distinguished for gallantry as well as professional excellence, a man of some imagination also, as the founding of the Lectureship shows."

It is therefore a great honour to be invited to speak under his name, and to follow the last Lecture, "Sometime Upon a Powder Wagon" delivered by Sir John Bruce.

The continual civil war in Ireland, with all its horrors, and the flare up from time to time of wars around the world, keeps mankind attuned to the necessity of knowing something about weapons of war and their effects on the human frame.

My first encounter with war wounds was at Shorncliffe Military Hospital in May to June 1940. I was new to such cases, as were my colleagues James Mason-Brown and Wallace Dennison. Our hospital was suddenly presented with the problem of dealing with 500 of the more seriously wounded evacuated from Flanders. In addition to these many "walking wounded" passed through our hands. The casualties arrived in every conceivable condition and after various intervals from the time of their injury, but most of the wounds had been sustained at least 24 hours before arriving in England. Many of the patients had been immersed in the sea for long periods. Some men, wounded in the first onslaught across the Belgian frontier, were not received for four or five days. Not a few had been wounded on two or even three different occasions during their retreat and embarkation under fire. Most wounds were still protected by an unchanged "first field dressing". Coated with grime and sand, unshaven, exhausted by lack of food and sleep, shaken by many hours of continual bombardment, and with fearful wounds, it was amazing to us how they had survived at all.

After resuscitative treatment, the question of operation arose. Sorting out a convoy of casualties and deciding on the order in which they would proceed to the theatre seemed to be our most difficult task. The sorting out of patients is well understood nowadays as of the first importance, when dealing with the mass casualties in civilian major disasters.

Irrespective of the specific region involved, early operation was essential in many cases to arrest the shock arising from absorption of toxic substances from large traumatised areas. In others it was necessary to control haemorrhage more permanently than had been possible during the evacuation. A variety of tourniquets were

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encountered, from the orthodox anchor pattern down to helmet straps, puttees, scarves and string. Information regarding time of application was scanty. The tourniquet undoubtedly had saved many lives, but the limb below the compression level in several instances, was the seat of gangrene.

The problem of the retained projectile fragments, was of course of great importance. In this group of casualties, as in the other campaigns in this war, the majority of injuries were wounds of the extremities — 82 per cent in one of my own series, 79 per cent in another. This is similar to what has occurred in the Israeli-Arab conflicts, but different from the war in built-up areas such as Northern Ireland, where gunshot wounds of the head are frequent.

Most of the wounds we saw were caused by shell and bomb splinters and bullets — projected by field guns, howitzers, aerial cannon, mines, bombs and machine guns. Later in that year we also saw injuries caused by the long-range German "Channel Charlies". All caused variable amounts of damage to the tissues, terrible enough but not as destructive as the modern "high-velocity" projectiles. Projectiles carry in with them fragments of cloth and equipment, leather, cigarette packets, cuff-links and so on, teeming with organisms. The passage of ragged metal fragments often opens areolar planes, splitting fascia longitudinally, which close behind them. The split may well be missed in the initial operation on the wound. X-ray examinations therefore are of the utmost value, essential in fact in cases presenting an entry and no exit wound, and the certainty of a retained projectile. It is logical that in seeking and removing the projectile fragment, the wound tract is thereby opened and can be cleaned. While prolonged hunting for small fragments in a shocked patient is unjustifiable, it is sound surgery to open up, cleanse and explore. Large retained fragments may carry in gas gangrene organisms with fatal results; they may press on nerves, erode blood vessels causing secondary haemorrhage, delay healing and return of function if in the vicinity of joints.

Our general technique for wounds of the limbs followed the methods of Bohler and Trueta, based on the teaching of Winnett Orr, that is, opening up, cleansing, debridement of dead tissues, removal of the accessible projectile fragments, loosely packing with gauze soaked in proflavine, and immobilisation in plaster of Paris. In the treatment of burns a coagulum of silver nitrate — 10 per cent, tannic acid — 10 per cent and gentian violet — 1 per cent, was applied. We employed this treatment on seventeen burnt sailors carried in from Her Majesty's Ship Wyvern bombed at the strafing of Rotterdam by the Luftwaffe, and on many airmen from the great air battles raging as the Allies fell back on Dunkirk, and later on the airmen in the Battle of Britain.

This coagulum treatment, after an adequate preliminary cleansing of the burnt areas, saved many lives by preventing the great loss of fluid from the burnt surfaces — the same principle which is now effected by the application of porcine skin. The supple coagulum of the triple tan proved far superior to the rigid eschar of tannic acid alone. But elsewhere the method was condemned especially in Royal Air Force hospitals, where necrosis of phalanges was encountered; the treatment, not the depth of burn being blamed. No doubt coagulum treatment is wrong when

applied to deep burns on the fingers. In extensive superficial burns on body surfaces it can be life-saving.

After the Dunkirk evacuation, the staff of Shorncliffe hospital moved back from the coast in two sections, one to Leeds Castle, the other, of which I was the surgeon, to a wing of Chartham Asylum, near Canterbury, and almost immediately we received casualties from the Battle of Britain which was fought in the skies over our heads.

I can still see vividly in my mind's eye those swarms of German bombers coming out of France, in regular formation with their fighters around them, and filling the skies over Kentish orchards in that brilliant never to be forgotten summer of 1940. I can hear the menacing humming of the drone of their engines as they advanced. But then, as we watched anxiously from those sunlit fields far below, we could see the silver wings of the Spitfires flying into battle. Then the blue sky filled with the patterned white spirals of the exhaust fumes, the red flashes of the guns, the rattle of machine guns, the barking of the ack-ack, the bursts of cannon; and those proud German squadrons, Goering's pride, were broken up, the bombers shot down. Seven I counted on one occasion, falling out of the sky, red-black smudges with long black tails, staining the pure cleanliness of the vault of heaven.

Some fifty of our patients were airmen, both Allied and German. Exhausted, with nerves still keyed to the highest pitch, with heads still spinning from the swift rush earthwards, and with wounds bleeding freely from the battle, they formed a striking contrast to the Dunkirk soldiers with their grimy and inflamed wounds often several days old. We saw for the first time the multiple minute fragments of aircraft cannon shell peppered all over the skin, and wounds caused by tracer bullets, smoking furiously on account of their phosphorous content till they were excised.

My next experience of war wounds was in the Middle East as surgeon to No. 58 General Hospital, a 200 bedded field hospital which functioned to all intents and purposes as a Casualty Clearing Station (C.C.S.), but also catering for the routine surgery in the neighbouring units as well. A young regimental medical officer came in one day out of the Western Desert for treatment for a septic lesion of his right forearm, requiring incision. I saw him some thirty years later, as Lieutenant-General Sir James Baird, Director-General of Army Medical Services (D.G.A.M.S.).

I was almost three years with this unit, up and down the North African Desert and later in Sicily, in the campaigns of Wavell, Auchinleck and Montgomery. We were stationed first at Abd-el-Kedir, south of Lake Mariut, then up near Mersa Matruh, then back to Ismailia near the Canal and later forward to Benghazi and Tripoli.

At first I was appalled at the thought of operating in the desert, in a hut or tent but I was wrong. The desert was sterile and wounds sustained in the clean sand healed well. It was here that we began to use the "Tobruk plaster", which proved so efficient for evacuating men with wounded lower extremities down the long line of communication to the hospitals in the Delta. After the wound had been dealt with, the broken limb—femur or tibia—with strapping applied for extension, was fixed in a Thomas's splint with a supporting strut, and immobilised in a plaster of Paris case, incorporating the limb and the splint. Fractures of the upper extremity

travelled well in a thoracobrachial plaster, perfected later by Major Ewan Jack, incorporating the arm and the trunk.

At our camp near Mersa Matruh in May-June 1942, we received the wounded evacuated from No. 62 General Hospital at Tobruk, who had been treated by that very gallant officer, Colonel Alex Simpson Smith, and the wounded from the battles at Gazala and Bir Hakim. A convoy then arrived bringing the Sisters of No. 62 safely out of the battle. Then Tobruk fell, the Germans advanced. Fortunately for us, Colonel "Daddy" Holmes had managed to acquire some transport and we got away, through the lines of the New Zealanders and the 9th Australian Division who had come up to hold the front.

We halted at Ikingi Mariut for a few days, and took casualties from the first Alamein battle, Auchinleck's, that saved Egypt. We set up again near Ismailia. There I saw a number of these tragic cases—soldiers diving into the shallow water on the edge of Lake Timsah, and breaking their necks.

Rommel's prestige was at its height in those days. He had put 80,000 troops out of action and driven them back 400 miles. But of course Monty sorted all that out later.

Then we went up by sea to Benghazi, and looked after the wounded being evacuated from the C.C.S.'s in the 8th Army marching forwards towards Tripoli and Tunis. Once the Eighth Army reached the more cultivated soils of Algeria, wounds became readily infected. Several secondary haemorrhages from deep wounds of the thigh sustained at Mareth in March 1943, required proximal ligation of the main artery. Many patients also had maggots under their plaster casts—repulsive but with beautiful clean granulations underneath.

When our unit was in transit in Tripoli, I went with a surgical team as an extra unit on the hospital ship *Amra*, which sailed on July 10th to the invasion of Sicily. The personnel were a contingent of the South African Medical Corps.

The invading armada anchored off the beach at Avola. There was some aerial attack that night and next day. One ship, the *Timothy Pickering* with a cargo of ammunition and petrol was hit, and we had most of the patients from it — all burnt because they had to jump off the burning ship into a blazing layer of petrol on the surface and swim through the flames.

In the fields of Sicily and in the advance up Italy, our work was at first light. In January 1944 I joined No. 15 C.C.S. My anaesthetist for a short while was Major Norman Talbot, later in his career to become Lieutenant-General Sir Norman Talbot, D.G.A.M.S.

Then we moved up to the Anzio Beachhead. There, the Casualty Clearing Stations were very close to the front line, and were soon working to capacity. The Germans were putting out their full strength to push the Allies off the beachhead, and a dreadful battle was being waged.

The pre-operation ward became an unforgettable sight in those days. The brigaded English Pattern—Indian Pattern tents forming the sections of the pre-operation ward, let in water very freely at the junctions, and during the heavy rains it just poured in. Buckets and gutters filled, over-flowed and were crushed in by heavy tramping feet, till the floor became a sea of mud. On either side of the ward were

placed the stretchers of the men awaiting operative treatment for their wounds. At first the stretchers were placed on wooden trestles, but when air attacks started the danger of flying fragments of anti-personnel bombs was too great, and as the tents had not been dug down, we placed the stretchers on the ground.

In this ward there was a continual movement of many men to and fro. Figures in greatcoats, tin hats, and gas cape waterproofs, dripping and mire-stained stumbled in through the doorway, kicking aside the sodden blanket curtain, carrying in the wounded on their stretchers. The theatre stretcher-bearers were continually coming in from the theatre corridor, bringing patients just operated on back in to await the duty ambulance which would bear them away to the post-operation wards. The blood transfusion orderlies hurried about, carrying the transfusion stands, the bottles of blood and plasma, the needles and rubber tubes for administering these fluids. The C.C.S. medical officers and members of the Field Transfusion Unit were continually bending over the patients and fixing the needles of the transfusion apparatuses in the veins and keeping the flow going.

The wounded lay in two rows, mostly British, but some Americans as well in their sodden filthy muddy clothes, soaked, caked, buried in mud and blood. Some had already been splinted at the Regimental Aid Posts or Field Ambulance Advance Dressing Stations; some were brought straight from the battlefield. Most had their first field dressings or shell dressings on. I grew to hate that combination of yellow pad and bloody dirty brown bandage. Some were unconscious, these chiefly head wounds, whose loud snoring breathing distinguished them. Some were carried in dying with gross combinations of shattered limbs, protrusions of intestines and brain. Some carried in, gasping and coughing, shot through the lungs. Others, less badly wounded, looking round with curious eyes, clutching mounds of equipment and agitating about pieces of their kit which had gone astray. All were exhausted through being under continuous fire, and lying in the mud.

This was the sight which continually met the surgeon's eyes as he came during intervals between operations to see how things were going on and to decide on the next cases to be dealt with.

Our experiences tallied closely with that of other forward surgeons, Jolly in Spain, and Guy Blackburn. Of the 1045 cases operated on by our four surgeons, 65 were abdominal wounds, 46 had damage to hollow viscera, 8 had lesions of solid viscera, and 11 had no visceral lesion. None were refused operation, and some recovered though their condition had seemed hopeless. The condition of 33 was satisfactory when we last heard of them from the hospitals around Naples. Operation was performed as soon as possible, and exploration had to be thorough. No short cuts could be taken; even with the greatest care, two perforations of the small intestine were missed in one case. We closed perforations, resected grossly damaged bowel, and exteriorised damaged large bowel. Recovery was rare when the patient also had a compound fracture or a traumatic amputation, and our thoraco-abdominal wounds had a high mortality. The skill of Major Saleh, our chief anaesthetist, and the pre-operative resuscitation by Captain Dick and his Field transfusion team, must have saved many lives.

The continual noise of battle, with bombs falling sometimes in the C.C.S. area

itself, made the recovery period very trying for the badly wounded men, and we had to evacuate them sometimes before we were really happy about their condition.

A great improvement took place when the Queen Alexandra's Imperial Nursing Service sisters arrived — seven of them with the matron, I cannot emphasize enough the value of these ladies in forward surgery. In a very short time the sisters had tidied up the mess collecting everywhere in the tents, making even a dug-down tent look relatively spick and span. These girls were splendid. Shiela Grieves, my theatre sister, was awarded the George Medal for running over and attending to the wounded in the neighbouring transit camp when it was being attacked by the Jerry dive-bombers.

After this time, the British Armies were on the advance, and conditions for the wounded improved. The Korean War, and Vietnam saw steady progress in the treatment of wounds. When visiting Burma in 1968 and 1970, Mr. Drummond and I saw a number of gunshot wounds in the military hospitals there, coming from their border warfare. I have had first hand accounts of wounds in the Israeli-Arab conflicts, from both sides; and the College's symposia in 1972 and 1976, the Territorial Army Volunteer Reserve exercises and the Deputy Director of Medical Services Army in Scotland Study Periods have kept me up to date in the injuries sustained in the War in Northern Ireland.

In September 1976, as guests of the Pakistan Army Medical Corps, Colonel Peter Edmond and I visited the military hospitals in Rawalpindi and Peshawar, and saw a number of wounds sustained by the gallant soldiers of the Khyber Rifles, in their incessant skirmishes with the high-spirited tribesmen of the Border.

I can summarise briefly some of the changes in these more recent conflicts, compared with the War of 1939-1945.

The use of the helicopter when air supremacy is present, is of immense value in bringing the wounded quickly to the surgeon. Many dramatic rescues can be accomplished in this way.

With the development of intensive care, there is now a better understanding of resuscitation than formerly; immediate setting up of intravenous drips, with blood freely used, has proved its value.

There is better understanding of the respiratory needs of the wounded, especially those whose lungs have been affected by burns, and also of the reduced respiratory function after abdominal operations. Arguments continue about the respective merits of tracheostomy versus endotracheal tube, but there is no doubt tracheostomy has saved the lives of many men with head injuries and burns.

Although controversy still exists regarding exteriorisation of the wounded large bowel, it would appear that it is not so necessary these days with our range of antibiotics.

There is also a better appreciation of the patient's care after extensive burns; the need for a high calorie and protein intake, and the benefits of porcine skin and mesh grafts are now being demonstrated. Another notable advance has been in the field of vascular surgery. Very few limbs survived a damaged popliteal artery in 1939-1945, but in more recent conflicts arterial surgery has been steadily per-

fect. There is also better understanding of the wounded man's psychological state, and the benefits of sedatives such as Valium utilised.

Alongside these advances of treatment, however, have also come the use of more destructive weapons. The new high velocity missiles, with their zone of destruction so much greater than the projectiles of conventional artillery and rifles pose new problems. These are being evaluated in a number of scientific studies by the officers of the Royal Army Medical Corps.

Whatever the future will bring in the way of scientific advances in treatment, the basic principles of treatment remain the same, as Brigadier John Matheson summarised in his review of missile wounds — resuscitations, arrest of haemorrhage, early adequate exploration, cleansing and excision of devitalised tissues and drainage.

We must also remember what one of the great surgeons of all time, Ambroise Paré said "I dressed him, but God healed him".

Publications by Officers — 1977/78

The following is a list of publications by Officers of, or late of, the RAMC, which have appeared during 1977/78, other than in the Journal of the RAMC.

ABRAHAM, P	(McCallum, W C) A permanent change in the EEG (CNV) of schizophrenics. <i>Electroencephalography and Clinical Neurophysiology</i> (1977) 43 , 533
ABRAHAM, P	(<i>et al</i>). Cerebral event-related potentials and spinal cord stimulation. <i>Electroencephalography and Clinical Neurophysiology</i> (1978) 44 , 132
ABRAHAM, P	(<i>et al</i>). Ambulatory EEG recording for extended periods under adverse conditions. In Stott, F D, <i>et al</i> (Eds). ISAM 77 (Proceedings of the 2nd International Symposium on Ambulatory Monitoring). Academic Press. London (1978).
MENZIES, R C	Cardiac contusion: A review. <i>Medicine, Science and the Law</i> (1978) 18 , 3-12
PARRY, E S	(<i>et al</i>) Plasma clearance and renal excretion of erythrocyte cryoprotectant hydroxyethylated amylopectin. <i>British Journal of Haematology</i> (1978) 40 , 231-237
SIMPSON, B	(Heilmann, E). Die einheimische sprue. <i>Therapiewoche</i> (1977) 27 , 7523-7526. 42
YOUNGSON, R M	Screening children for visual defects. <i>British Medical Journal</i> (1977) ii , 1221 (c)
VELLA, E E	(<i>et al</i>). Viral haemorrhagic fever in Southern Sudan and Northern Zaire. <i>Lancet</i> (1977) i , 571-573
VELLA, E E	Legionnaires' disease: A Review. <i>Journal of the Royal Society of Medicine</i> (1978) 71 , 361-367