

At the instigation of his long time friend and fellow paediatrician, Professor John Pearn (Surgeon General ADF 1998–2000), Dr David Jackson was the honoured guest at a special dinner held at the United Service Club in Brisbane on 12 February this year, the 60th anniversary of the battle. David was presented with memorabilia of the action and he reflected on his time in the Royal Naval Volunteer Reserve.

History

War and medicine in the nineteenth century

Lieutenant Colonel Robert L Pearce, AM, RFD, MB BS, BA, FRCS, FRACS, FRSA, FRSH, FRGS, FLS, FACTM, FAIM, MAIBiol, RAAMC

IT IS DIFFICULT to know if any nation is ever adequately prepared for war, particularly in view of the unpredictable nature of the political and socioeconomic ramifications of major conflict. Such lack of planning and preparation has often proved costly. The post-Wellington period in Britain is a good example of the administrative and logistical disarray arising in an otherwise proven military organisation through a generation of government parsimony and inattention. Largely because of their non-combatant role, the military medical services of the period suffered a lack of recognition and low priority in planning, finance and facilities. The necessity of maintaining an active medical organisation, and what level of preparedness it should have, will always be open to question during peacetime. But the sad deficiencies brought to light in successive battles have been shamefully and painfully repeated, while the lessons learned have frequently been forgotten or ignored.

Not only casualty rates but often the outcome of wars have been determined by the health and fitness of armies and by the dedication of medical support services.

The Napoleonic wars

The Napoleonic wars, at the beginning of the 19th century, introduced some important developments in military medicine. Most significant was the work of the military surgeon Dominique Jean Larrey, who, with courage, skill and determination, evolved a system of immediate treatment in the

Lieutenant Colonel Robert L Pearce, AM, RFD, MB BS, BA, FRCS, FRACS, FRSA, FRSH, FRGS, FLS, FACTM, FAIM, MAIBiol, RAAMC, Plastic and Reconstructive Surgeon.
Correspondence: Lieutenant Colonel Robert L Pearce, C/- Director of Health Resources, Defence Health Service Branch, CP2-7-93, Campbell Park Offices, Canberra, ACT 2600.

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Abstract

Casualty rates and the outcome of wars have often been determined by the health and fitness of armies and the dedication of medical support services. Major changes in the care and evacuation of battle casualties were seen during the Napoleonic campaigns, but periods of conflict have traditionally been followed by years of administrative and logistic disarray. The developing military medical organisation has experienced a protracted, slow, sometimes painful, evolution. In the Crimean War and the American Civil War — both wars fought by highly organised and wealthy nations — the lack of medical preparedness was a factor in high casualty rates from disease and high mortality rates for casualties in medical care.

ADF Health 2002; 3: 88-92

field, as he himself wrote in his *Mémoires de Chirurgie Militaire et Campagnes*:

... at Aboukir there were 1900 wounded, and many amputations were performed in the field of battle amid a shower of bullets.

Larrey instituted early evacuation of the wounded by means of “ambulances volantes”, which were light, two-wheeled, well-sprung vehicles, each drawn by two horses, although, of course, Ambroise Paré had used carts and waggons in 1552 to evacuate the wounded after the retreat from Metz.¹ Like Paré, Larrey often disregarded rank, insisting on treating the severely wounded first. Larrey can rightly be said to have awakened the conscience of mankind to the inhumanity of war.

To his great credit Bonaparte, following his success in Egypt in January 1799, ordered Larrey to check on the surgical staffing of the regiments and *demi-brigades*. Larrey was to ensure that the senior positions were held by those with

the highest grade and the longest service. Surgical efficiency, according to Napoleon, at both practical and administrative levels, had to be sustained throughout the army. Larrey's response displayed the slightest tinge of arrogance:

There are only sixty places for surgeons of the first class in all the Republic ... these places are allotted to those who, besides enthusiasm, courage, long service, and outstanding talent, possess a profound knowledge as revealed by practical examination.²

By this time Larrey, surgeon-in-chief to the Imperial Guard, had almost convinced the Emperor that military medicine was an essential part of warfare.

During the battle of Waterloo Larrey attracted the attention of Wellington.

"Who is that bold fellow?" asked the Duke. "It's Larrey," someone answered.

"Tell them not to fire in that direction; at least let us give the brave man time to gather up the wounded." And so saying he doffed his hat.

"Who are you saluting?" enquired the Duke of Cambridge.

"I salute the courage and devotion of an age that is no longer ours," said Wellington, pointing to Larrey with his sword.

Wellington, the "Iron Duke", had shown a compassion previously unknown when, on the morning after Waterloo, he shed tears and rocked with emotion as his principal physician, Dr Hume, read for four hours a detailed account of the killed and wounded.³ But his own Director General of Medical Services, Sir James McGrigor, did

much to enhance the standard of military surgery, attracting some outstanding young surgeons to the service. One of them, George James Guthrie, became regarded as the most distinguished British army surgeon in history. At the age of 26 he had 3000 wounded under his care after the battle of Albuera, where he won the admiration of Wellington for his skill and devotion to duty. Guthrie wrote extensively on gunshot wounds (1815), on operative surgery of the eye (1823), on diseases and injuries of arteries (1830), and in 1855 published his *Commentaries on the Surgery of War*. Like Larrey, he recommended amputation for compound limb injuries within 24 hours, accepting a mortality rate of 50%. He declined a knighthood in 1816, but then founded the Royal Westminster Ophthalmic Hospital and became President of the Royal College of Surgeons on three occasions, in 1833,

1841 and again in 1854. From this exalted position he was one of the first to stress the need for medical representation in Parliament.⁴

The Crimea

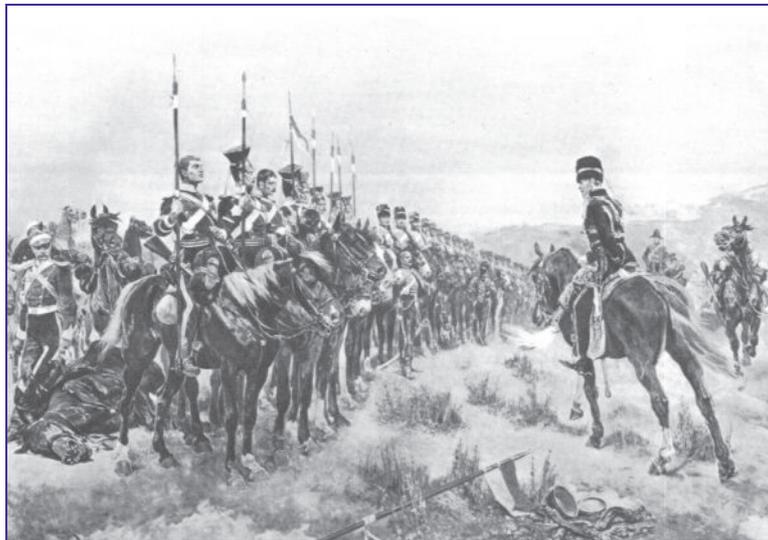
The defeat of Napoleon and stability in Europe produced a prolonged period of peace for England. There were few changes in army policy or administration before the next major conflict, the war in the Crimea (1854–1856). Lord Raglan, who commanded the British forces, was a contemporary of Wellington's, who had died in 1852. As Lord Fitzroy Somerset, Raglan had been Wellington's Military Secretary in the Peninsula campaign and at Waterloo — where he had lost an arm. At 65 years he had "a competent knowledge of tactics, outstanding courage, a mastery of the complex by-ways of military administration and absolutely no experience of commanding even so much as a platoon in action".⁵

The Crimean War arose from a Russian invasion of what was then Turkish territory in southeastern Europe. Fifty-seven thousand troops, combined British and French forces, entered the Black Sea and established themselves at Varna (in Bulgaria) within two months of war being declared against Russia on 27 March 1854, but neither of the allies had adequate transport. The Russians withdrew from all the Turkish territory they held before the English and French could engage them in battle —

and then cholera struck the allied armies. Even at this early stage over a thousand cholera cases were sent back to the military hospital hastily established at Scutari (in Istanbul).

When urged by the *Times* of London to justify the expense of the expeditionary force by taking Sebastopol, the general view of the armies was summed up at Varna by the British Inspector General of Hospitals, who wrote, "They might as well be killed there as die of cholera here."⁶

As the British army embarked at Varna for the Crimea, 30 000 men crammed the inadequate transports to cross the Black Sea, while pack animals, tents, cooking equipment, hospital marquees, regimental medicine chests, bedding and stores all had to be abandoned. And a week later, after the battle of the Alma, the wounded suffered without bedding or shelter, without bandages or splints, without chloroform or



All that was left of them. Richard Caton Woodville. Showing the roll call after the disastrous charge of the Light Brigade during the Battle of Balaclava in the Crimean War. Of 673 men who charged, only 195 were present at that roll call.

morphia. Amputations were performed without anaesthetics, the surgeons working by moonlight, as there were no lamps or candles. A further thousand cholera cases were evacuated to Scutari.

Dr John Hall, Chief of Medical Staff of the British Expeditionary Army, was a strict disciplinarian averse to pampering the troops. Although chloroform had been in use for seven years with proven success, Hall did not believe in it and warned his officers at the opening of the campaign against its use. "The smart use of the knife is a powerful stimulant," he wrote, "and it is much better to hear a man bawl lustily than to see him sink silently into the grave."⁷

The winter of 1854-1855 was the most severe in living memory and a hurricane on 14 November sank 16 ships in Balaklava harbour, with the loss of large quantities of stores and all the army's winter clothing. This combination of a supply failure and a hard winter ensured that the British army would suffer heavy casualties, and the incompetence of the medical services saw to it that many of the casualties had a fatal outcome. The medical department was a ramshackle affair, which, despite being responsible to three distinct ministers in London, was not responsible for its own supplies. These were controlled by two separate sections of the Treasury, which were usually at loggerheads with each other, were grossly understaffed, and, like the Commissariat, were pinioned by minute regulations. The army in the Crimea lost 19 584 officers and men dead and 2873 permanently incapacitated. Of these, only 3754 were battle casualties; the remainder died of disease, largely as a result of the chaos within the medical services.⁸

The inadequacy of the hospital at Scutari became a scandal and led to the appointment of Florence Nightingale to oversee the introduction of female nurses. Having overcome criticism, obstruction and abuse at all levels, she contrived to reform the system and standard of nursing care for the British troops at Scutari. In January 1855 there were 12 000 men in hospital and only 11 000 in the camp before Sebastopol — and still the shiploads arrived. When 1200 sick men arrived at Scutari in one consignment, Nightingale noted that 85% were cases of acute scurvy. For want of lime juice and vegetables the men's teeth were dropping out; in some cases they were losing toes. As her biographer Cecil Woodham Smith wrote, "in this emergency she became supreme."⁷ Her calmness, her resource, her power to take action raised her to the status of a goddess.

Of course, scurvy was preventable, and it was difficult to explain the large quantities of essential lime juice which remained unopened in the Commissariat stores. Meanwhile, the obvious shortage of other medical supplies, particularly bedding and sanitary items, dressings and bandages, created further havoc in an overcrowded situation. Similar insanitary, overcrowded conditions prevailed in the French camp, where more than 40 000 soldiers perished from disease, mainly typhus, in the first three months of 1856.⁹ Typhus affected nine-tenths of all the patients conveyed in the ambulances, and it was conceded that the dirty, overcrowded condition of the

ambulances, transports and hospitals was responsible for the rapid spread of the epidemic.

The war in the Crimea is usually remembered as a series of administrative disasters punctuated by episodes of great but pointless heroism on both sides (such as the charge of the Light Brigade immortalised in Tennyson's verse). The first awards of the Victoria Cross were made for conspicuous gallantry during this conflict and the medal is traditionally struck in bronze from a Russian cannon captured at the Crimea. In fact, one of the earliest VCs was won by Surgeon James Mouat in the Charge of the Light Brigade on 25 October 1854. He was also awarded the French *Légion d'honneur*, was knighted and later became Surgeon General of the British army.¹⁰

The introduction of the French Delvigne and the British Brunswick rifles to the infantry was innovative, but, despite this, the British and the French both fought their battles in exactly the way they had done 40 years earlier. However, only the poor armament of the Russian infantry and its preference for the bayonet enabled them to do so with any success. With field artillery virtually unchanged since Waterloo, the Crimea contributed nothing to the advance of military tactics.

There were, however, some practical innovations. It was the first war in which a tactical railway was built expressly for the purpose of resupply. Communications were also improved by the introduction of the electric field telegraph. Newspaper journalists also entered the field of battle; the war correspondent was to be a feature of all future wars. Largely as a result of the publicity given to the medical problems in the Crimea and the huge impact of public emotion flowing from the success of Florence Nightingale in overcoming extreme difficulties, the British Army thereafter sought to reform its service administration. The pace of reform, however, remained slow. In 1857, the Medical Staff Corps was reorganised into the Army Hospital Corps, but it was not until 1898 that the various components of the Army Medical Services amalgamated to form the Royal Army Medical Corps.¹¹

The American Civil War

It is said that "the American Civil War of 1861–1864 was a war on a host of fronts, economic, civil, diplomatic, industrial, and more."¹² Questions of nationalism versus regionalism revolved around the issue of slavery rivalries over economic and political power.

The American Civil War once again focused attention on the lack of preparation of medical support. In his medical history of the Union Army, George Worthington Adams wrote:

The Army Medical Department chief, Colonel Thomas Lawson, a veteran of the (Mexican) War of 1812, was over eighty ... and concerned principally with pruning the budget. He considered the purchase of medical books an extravagance and is reported to have

flown into a rage on learning that one army post owned two sets of surgical instruments.¹³

The Surgeon General is credited, however, with having secured the passage of the Act of 1847, which conferred army rank upon surgeons.¹³

With the formation of the United States Sanitary Commission, a government-appointed organisation outside the Army which was created as a result of public demand, the Medical Department of the Union was goaded into action. From its inception in the early months of the war, the prime concern of the Commission was to ensure that the insanitary horrors of the Crimea would not be repeated. The irony was that Britain sent its own Sanitary Commission to the Crimea with limited success, and probably too late in the war to have had an impact. For the Union, the Sanitary Commission would have greater and more immediate effect on the administration than on the outcome of any reform and only limited influence on the health and welfare of the troops.

Enlistment procedures provide a host of salutary lessons. In the Civil War whole regiments were enlisted without being examined. Only slightly less scandalous were the superficial assessments practised by surgeons who could process eager volunteers at the rate of 90 recruits an hour. How perfunctory these examinations were is indicated by the estimated number of 400 women enrolled as soldiers in the Union Army.¹⁴ Of course, marked variations in standards, particularly of medical qualifications and competence, existed between the States, and it would be difficult to imagine any degree of uniformity being possible in such a disparate group, at least for the duration of a five-year war in the 1860s.

Regulations existed, but were rarely enforced. In the South, always hard-pressed for recruits after the first year of the war, instructions governing who should serve and who should be rejected cautioned doctors to “exercise a sound and firm discretion and not to yield your judgment in favour of every complaint of trivial disability.” If a man had a short leg, a weak heart, bad eyesight, a stutter, bladder trouble, haemorrhoids, a hernia, even a missing eye or absent fingers, so far as the army was concerned he was fit for service.

The inept medical screening of recruits introduced infectious diseases into the ranks. Measles, mumps, chicken pox, whooping cough and scarlet fever struck down country boys who had never before been exposed, and epidemics of these “children’s diseases” resulted in high mortality. Similarly, intestinal infections, most commonly spread through poor hygiene and poor sanitation, accounted for thousands of casualties, with many deaths. Typhus was common and spread rapidly in all areas where camps were established, even to hospitals. Malaria, better known as “the ague” or “intermittent fever”, was more feared than the enemy, and more than a million cases were diagnosed by the end of the war.¹² Typhoid, or “camp fever”, with its origins in contaminated water, was also common and may have accounted for as many as a quarter of all deaths in the Confederate army.¹²

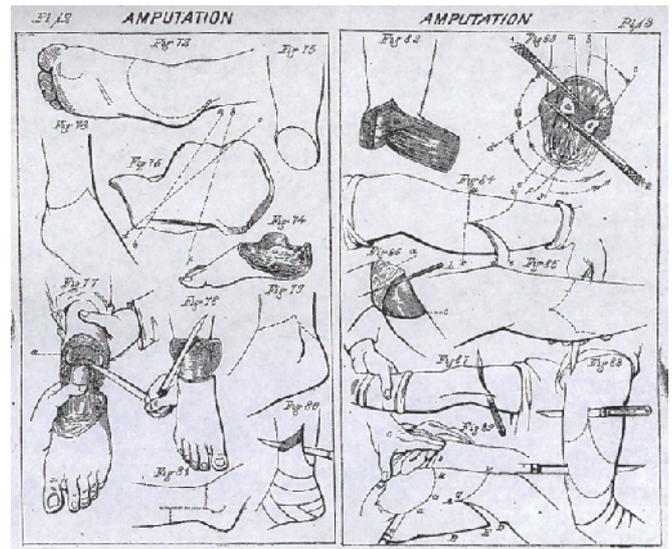


Illustration from *A Manual of Military Surgery*, by Samuel D Gross — a pamphlet produced for the Confederate army in 1862. Reproduced by kind permission of the Rare Book, Manuscript, and Special Collections Library at Duke University (USA). <<http://scriptorium.lib.duke.edu/pathfinders/civil-war/documents/surgery.html>>

More than two and a half million men fought in the Civil War. At least 620 000 died, and at least 60% of these deaths were from disease.¹² The inadequate standards of medical care are evidenced by reports of prescribing liquor and quinine, even laudanum, for pneumonia; of slashing wrists for bloodletting; and of pouring burning alcohol on the chest. For intestinal disorders, in addition to salts, calomel, turpentine, mercury, chalk, and even strychnine — any combination of which could be expected to aggravate rather than relieve most conditions — surgeons often applied hot bricks to the feet and oil cloths to the abdomen. Watermelon juice was expected to help a cold and tree bark and whisky to relieve malaria. Morphine was apparently readily available for a price, and it is stated that “so indiscriminately did surgeons administer opiates that they indirectly created a substantial post-war problem with drug-addiction.”¹⁵

Rifle bullets caused more than 90% of all Civil War battle casualties, while hand-to-hand combat was not commonplace and there were few bayonet wounds.¹⁵ Many military surgeons achieved extensive experience in treating gunshot wounds. Men with head or serious body wounds were generally set aside at triage with some whisky or opium to await a fatal outcome. Amazingly, about a quarter of these men actually recovered without surgical intervention.¹³ Of the many limb wounds which did receive surgical attention, about three out of four led to amputation and as many as 50% died as a result of blood loss or subsequent infection.

As in the Crimean War, the real medical lessons of the Civil War would not be learned for decades. Casualty evacuation had improved due to a reorganised ambulance corps, and hospital organisation was more efficient behind the lines,

where improved sanitation and hygiene evolved with the advent of female nursing. But, for all the death and suffering, there was little in the way of medical advancement. In endeavouring to provide regimental surgery close to the field of battle, surgeons invariably exposed their patients to greater dangers than they might have faced in better facilities further to the rear. In the absence of proper stabilisation and ambulance transport, however, further evacuation would have been a pipe dream.

Later medical advances

The major medical advances of the second half of the century were the development of safe anaesthetic procedures, antiseptics based on the microbial theory of infection, and the practical application of aseptic techniques in surgery. Add to these the results of vaccination for a number of common infectious diseases and one might anticipate a greatly improved health status and survival rate in the army at the end of the century.

During the Franco-Prussian War (1870–1872) many new observations were made on wound infections. Having espoused the principle of antiseptics, and acknowledging the work of Louis Pasteur, Joseph Lister wrote a treatise entitled “A method of antiseptic treatment applicable to wounded soldiers in the present war”, which led to the immediate acceptance of his techniques by German surgeons.¹⁶ The results, however, were far from satisfactory because of delays in transporting the injured to hospital. Meanwhile, on the French side, there was little attempt at antiseptics and surgeons avoided its use, with obvious consequences. Bottles of carbolic supplied to the field hospitals were returned to Paris unopened!¹⁷

Although many surgeons throughout Europe had by this time converted to the new antiseptic techniques, realising, as did Velpeau, that “a pinprick is a door open to death”,¹⁶ for doctors visiting the ambulance ward during the war of 1870 it was a scene of perpetual agony. “Pus seemed to germinate everywhere,” said Landouzy, “as if it had been sown by the surgeon.” Another French surgeon, M. Denonvilliers, would tell his students, “When an amputation seems necessary, think ten times about it; for too often, when we decide upon an operation, we sign the patient’s death warrant.”¹⁶

Nelaton, in despair at the death of almost every patient who had been operated on, declared war on infection, saying, “He who should conquer purulent infection would deserve a golden statue.” But only after the war did it occur to Alphonse Guerin and others that the cause of purulent infection may be due to the germs or “ferments” discovered by Pasteur to exist in the atmosphere.

At a time when the mortality after amputation performed in most hospitals was over 60%, surgeon Leon LeFort “banished sponges, exacted from his students scrupulous cleanliness and constant washing of hands and instruments before every operation, and employed alcoholised water for dressings.”¹⁶

LeFort was perhaps ahead of his time, but such revolutionary protocols were ultimately found to be successful in controlling the transfer of infective organisms to clean surgical wounds. The work of Semmelweis and others in controlling hospital and child-bed fevers only confirmed the value of aseptic techniques, which were to affect dramatically the outcome of both elective and emergency procedures.

By the time of the Boer War (1899), the British Medical Staff Corps had become the Royal Army Medical Corps by Royal Warrant (1898). (The infant corps had received its baptism of fire in the Sudan, where it had won the praise of Lord Kitchener.) The Boer War, like others before and since, was expected to be over by Christmas, but it dragged on for almost four years and cost the British taxpayer more than two hundred million pounds.¹⁸

Of the 450 000 British and colonial soldiers who fought there were more than 100 000 casualties, with 22 000 dead. Seventy-four thousand troops were treated for dysentery and typhoid fever, the latter claiming at least 8000 lives. It was a war fought on an extended front where transport was crucial, and, despite all the tactical lessons which eluded the British until after the bloody stalemates of the Dardanelles and Flanders, their leaders learnt “above all the need for a staff system to plan, organize, feed, doctor and co-ordinate the huge, far-flung armies that modern war demanded.”¹⁸

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