



Resuscitation Great
Larrey and Percy—A tale of two Barons

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Fig. 1. Dominique Jean Larrey (Musée de l'histoire de la médecine de Paris).

The wars of the late 18th and 19th centuries produced casualties on a scale that is usually assumed to have started during the First World War. This was a result of a deadly combination of close engagement of mass formations of troops (a



Fig. 2. Pierre Francois Percy (Musée de l'histoire de la médecine de Paris).

practice dating from medieval times) with increasingly concentrated and accurate firepower from rifled musketry and cannon. Thus Napoleon Bonaparte would lose over 40,000 dead and wounded in 2 days at the battle of Wagram (1809) while the murderous engagement at Antietam in the American civil war in September 1862 produced 1-day losses of 25,000 men, which rivaled even the fatalities of the British on the Somme during 1st July 1916.

Into the grim conditions of warfare at the end of the 18th century stepped two eminent French military surgeons who were to change the fate, not only of those wounded in battle,

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but also of those injured in accidents and mass disasters up to the present time. Dominique Jean Larrey (Fig. 1) is familiar to many English-speaking doctors for his groundbreaking contributions to triage and the rapid evacuation of the wounded from the battlefield. His contemporary and compatriot Pierre François Percy (Fig. 2) (whose name is immortalized to this day in the newest of the Parisian military hospitals) is less familiar outside France but his contribution to casualty management was no less than that of Larrey.

Dominique Jean Larrey was born near Bagnères de Bigorre in the Pyrénées on the 6th July 1766. Orphaned at the age of nine he followed the career of his uncle, a surgeon at Toulouse. After studying in Lyon he went to Paris in 1786 shortly before the French Revolution with the intention of continuing his surgical studies but instead he joined the Royal French Navy and saw service in North America in the frigate *Vigilante*. He did not remain in the navy (he suffered from chronic seasickness) but returned instead to continue his studies at the Hôtel-Dieu hospital, beside the cathedral of Notre Dame in Paris.

In 1792, at the outbreak of the War of the Monarchist Coalition against the newly declared French Republic he joined the Army of the Rhine as an assistant surgeon and served in Corsica and Spain before becoming Professor of Surgery at the great military hospital of Val de Grace in Paris. The French Army was becoming reformed and highly effective under the leadership of the 26 year-old General Bonaparte with whom Larrey soon became a favourite. Larrey accompanied him on his campaigns to Egypt, Palestine and Syria and undertook a complete re-organization of the field medical services, which hitherto had been rudimentary in common with other armies at that time. Larrey was appointed Surgeon in Chief to the French Army in 1805 and took part in increasingly bloody campaigns in Germany and Poland as well as the ill-fated expedition to Russia in 1812. In 1815 Larrey was wounded and captured during the Battle of Waterloo. He avoided being executed by the Prussians after being recognized by their Commander-in-Chief, Blucher, whose son's life Larrey had saved some years earlier. Larrey had been created Baron by Napoleon in 1810 and it is a mark of the esteem in which he was held in France that his title was confirmed by the restored Monarchy in November 1815. Larrey's busy medical life was to continue for another 27 years. After the restoration he was appointed Inspector General of the Medical Service and held surgical posts at the Garde Royale and the Hôpital des Invalides in Paris as well as organizing the medical service of the newly-created Belgian Republic in 1831.

Pierre François Percy (1754–1825) was born at Montagny in Haute Saône on the 28th October 1754 a decade before Larrey. The son of a surgeon, he qualified from the University of Besançon and entered the French Army a year later. His active military career was to span three decades, first in the service of Louis XVI and then for Napoleon where, as Inspector General of the Medical Services, he introduced a major re-organization. Percy was surgeon to the Grande Armée in 1803 at the time of the aborted invasion of Eng-

land and the victory at Trafalgar forced Napoleon to pursue campaigns on the mainland. Percy took part in some of the bloodiest battles of the wars including Austerlitz (1805), Jena (1806), Eylau (1807) Wagram (1809) and the Spanish campaign of 1808–1809. After the battle of Eylau Percy wrote graphically of the plight of the wounded for whom there was practically no organization, a fact which came to the attention of Napoleon who ordered radical changes in the provision of surgical care. After Wagram, Percy, because of his age and health, withdrew from active campaigning and devoted his time to administration of the army health services and to teaching in the University of Paris. Percy was not so gifted in diplomacy as Larrey and did not fare so well after the restoration in 1815. He was, however, created a member of the newly formed Academy of Medicine in 1820.

Before the Napoleonic Wars the plight of battle wounded was dire. Left on the battlefield or removed to the rear of the action by their comrades using commandeered farm carts or whatever else was available they often waited several days for rudimentary surgical treatment which consisted either of amputation or the probing of wounds to try and locate a musket ball or piece of shrapnel. Penetrating wounds of the head, abdomen and thorax were usually fatal. Transportation was slow and agonizing and perhaps the major contribution of both Barons was the realization that this had to be improved.

From the outset of his career Percy tried to organize a means of bringing surgeons further forward into the battlefield and evacuating the wounded. His first idea was to transform captured Bavarian artillery wagons into an 'ambulance' drawn by six horses, a vehicle known as the 'Wurst' (sausage). This idea did not prove to be a success and further attempts to provide rapid transport were blocked by the military administration who did not feel it was appropriate to give horses to medical officers ('who might become insolent to authority as a result and in any case should go by foot').

Percy finally did succeed in creating the first formation of medical attendants (or brancardiers). This was the first time personnel had been dedicated solely to the care of the wounded. These men used collapsible stretchers made from two lances. They wore large shako hats in which were stored basic dressings which could be transported to the point of wounding. Larrey, however, was the first to conceive and introduce special horse-drawn wagons to remove the wounded from the field as quickly as possible. His 'flying ambulances' are justly famous for the effective transport service they provided from the battlefield but, more importantly their creation underlined the understanding (long before Trunkey's 'Golden Hour') that the quicker a wounded man could receive attention the better his chances of survival. The other important development in military medicine at the time was the concept of triage. It was Percy who first specified the idea that evacuation from the battlefield should be based upon the seriousness of the wound and chances of survival if treated early. Evacuation was therefore not based upon wealth or rank. The palpably Republican notion of triage at

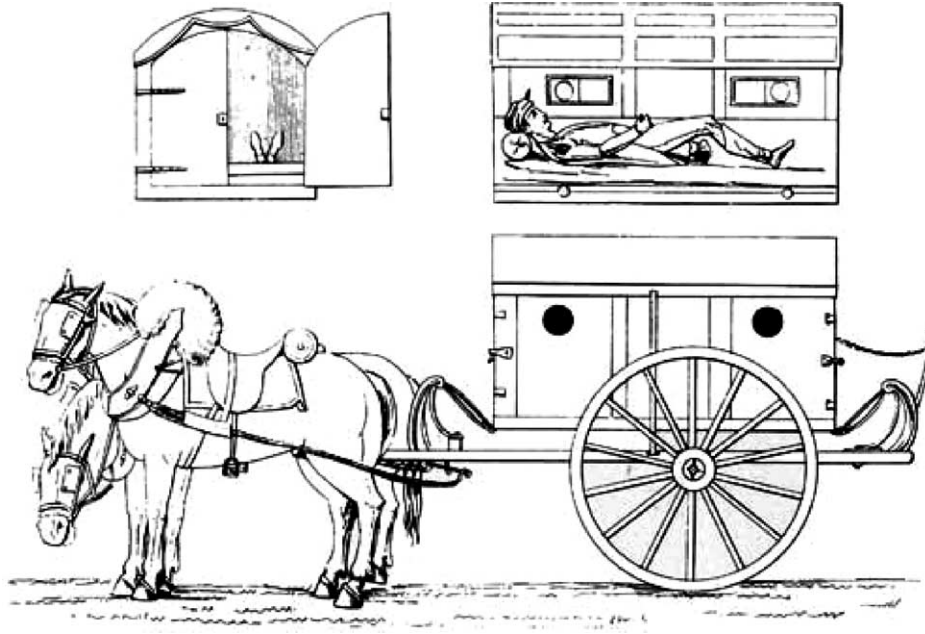


Fig. 3. Plan of the flying ambulance; the central section was carefully sprung on the chassis to provide a less painful ride for the wounded (D. Larrey, *Mémoires de chirurgie et campagnes*. Paris, Rémanences, 1982, 5 volumes).

that time laid the basis of a system that is used in military and civil disaster medicine to the present day.

Larrey's creation of the flying ambulance (Figs. 3–5) and the impact it had on the prognosis of the wounded led to him being appointed Baron by Napoleon in 1810. Apart from his organizational achievements, Larrey made many notable contributions to the military surgery of the time. He stipulated that surgery must be carried out within 24 h of wounding to have a good chance of success. Most field surgery at that time involved amputations and Larrey laid down rules for these. Immediate amputation was indicated if the limb was shattered, or there were comminuted fractures, and if there was major muscle or arterial loss. Larrey operated quickly; he could remove a leg in 1 min and an arm in 17 s. Despite this speed he developed an inverted cone approach that allowed

skin flaps to fall together and be dressed with adhesive bandages that permitted the stump to drain. Larrey stopped the historic use of salves and ointments and washed wounds with water at the point of collection by the flying ambulance.

Larrey, who unlike Percy was a major believer in amputation (he performed more than 200 in one day at the Battle of Borodino in Russia (7 September 1812) noted that delayed treatment led to increased pain during operation, haemorrhage and subsequent infection. Percy had a more conservative approach to amputation. He always attempted, despite the difficulties and lack of resources, to sew and cauterize. If amputation were necessary Percy stipulated that no operation should last more than 20 s.

Percy was no less a skilled surgeon than Larrey but his contribution to re-organization of the medical service was per-

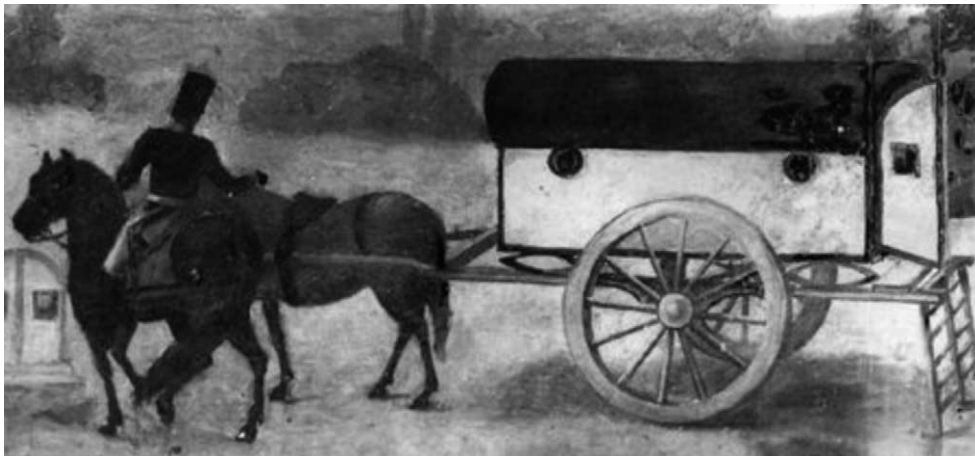


Fig. 4. Larrey's 'flying ambulance' (D. Larrey, *Mémoires de chirurgie et campagnes*. Paris, Rémanences, 1982, 5 volumes).

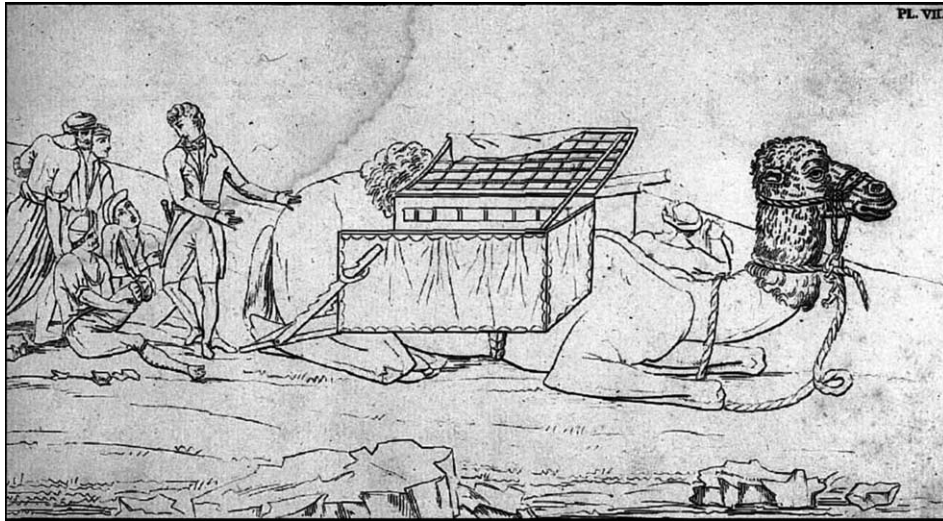


Fig. 5. Camel ambulance in Egypt (D. Larrey, *Mémoires de chirurgie et campagnes*. Paris, Rémanences, 1982, 5 volumes).

haps his greatest achievement. An insight into his approach is given by the following quotation from his writings

‘the art of healing men is a little like that of destroying them; timid actions gain nothing and if victory often follows the audacity of brave soldiers success also crowns the efforts of enterprising surgeons.’

Apart from their surgical advances Larrey and Percy also made contributions to early anaesthesia. In his memoirs, Larrey noted the lack of sensation produced by cold while amputating during the winter retreat from Russia in 1812 and advocated this technique to reduce pain. Percy, writing in the *Panckouke medical dictionary* (Paris, 1820) described how he had used intravenous injections of opium in cases of tetanus.

‘An aqueous extract of opium, introduced in small doses into the crural and medial veins is of great value in cases of traumatic tetanus. We tried this technique seven times in cases of this infamous condition and definitely saved three patients. These experiments done openly and with the consent of Russian officers on their soldiers at the *Hopital des Abattoirs*, established at Menilmontant in 1814 (at that time a village near Paris but now part of the 20th arrondissement of that city).’

Percy also used extracts of *Datura Stramonium* (thorn apple) . . . ‘a distillate of *Datura Stramonium* or 24 grains of this plant in half an ounce of warm water forced into the veins induces a sort of universal paralysis, which helps to treat tetanus.’ Percy was thus among the first to have induced sedation intravenously with a therapeutic objective.

Percy died in Paris in 1825 while Larrey died at Lyon on the 25th July 1842, active to the end of his days. Napoleon had finally died in exile on St. Helena in 1821. In his will he left 100,000 francs to Larrey, his surgeon of the Imperial Guard and wrote;

‘-he was the most courageous and virtuous man I have ever known. . .’

Both Larrey and Percy were great Frenchmen of their era who made a lasting contribution to military medicine. It would be several decades before their lessons were taken up by English speaking nations, notably by Letterman in his re-organization of medical services during the American Civil War. Their contribution to reducing the suffering of the wounded was recognized by both Napoleon and ordinary soldiers alike and is remembered to this day in French and English-speaking countries alike. They well deserve to be remembered among the ranks of Resuscitation Greats.