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Choreographing urban ambulance in Britain, c.1870–1920: movement, gender, biological time and the city

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ABSTRACT

Modern British ambulance originated during the late 1800s in the country's metropolitan areas. The fast-urbanising cities of Glasgow and London recognised that biological-temporal need required the time between injury and specialist care to compress. This was nowhere more urgent than in the large number of burn injuries that occurred in the cities' homes and workplaces. In tracing the origins and choreography of ambulance – a set of skills; a body of trained responders; and emergency service vehicles – in Glasgow and London, this article argues that the rollout of ambulance technologies was a key moment in urban modernity. Using first aid publications, newspapers, police and fire brigade reports, and London Ambulance Service log books, we reveal how much of the early development of first aid was improvised by enterprising individuals. This led to the formation of voluntary organisations, the St John and St Andrew's Ambulance Associations in England and Scotland respectively, followed by municipal services at the turn of the twentieth century. This early choreography of ambulance was organised on strictly gendered lines, which shut women out of public-facing roles before the First World War, and we discuss the ways in which this was achieved, from clothing to learning.

KEYWORDS

Ambulance; biological time; gender; military; police; first aid; accident; 'golden hour'; London; Glasgow

'In civil life as in war it is what is done to and for the patient during the first half-hour after an accident or wound on which the whole future of the man's life may depend', argued Sir James Cantlie as early as 1914. 'The hospital doctor and hospital nurse keep inside the hospital building and expect the patient to be brought to them. Who by?'[1] This question was at the crux of Cantlie's sentiments, as a pioneer of first aid in Britain since the 1870s. This article considers the birth of ambulance as an emergency service and, more pointedly, as a key moment in urban modernity. Predating by

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[1]Wellcome Library (subsequently WL), London, MS.7922, 'Sir James Cantlie, K.B.E. A Banffshire Man's Achievements', 1918, in scrap-book containing newspaper and journal cuttings, 175.

decades the establishment of what are now termed emergency departments,[2] what Cantlie and large cities across Britain strived to create was first aid infrastructure: a network of trained first-aiders stationed on street corners, enabled by medical equipment, roads, vehicles, telephones and ambulance posts.

Through the establishment of early civilian ambulance services we can see how the injured human body regulated modernity across the long turn of the twentieth century. The early recognition of a biological-temporal need came to calibrate urban improvisation and planning. The siting of ambulance infrastructure – stations, appliances, emergency equipment and trained first-aiders – was recognised by specialists as being key in responding promptly to calls for help as critical interim care before reaching hospital. In this, ambulance providers took the lead from the other emergency services, specifically police and fire, which similarly operated a decentralised approach to their work, opting to embed their resources into the urban environment for more effective protection at street level. In turn, time and movement in urban society were reshaped by ambulance as the demand for a prompt response both required effective corporeal and vehicular choreography, and became an accepted feature of the public service ethos during the twentieth century. Predating the 1970s acceptance of the 'golden hour' in the medical specialism of treating trauma, and the 1990s conceptualisation of the 'platinum ten minutes', by almost a century, the temporal imperative had been established in emergency ambulance work. However it was termed, time, space and human body were conceived as interdependent by planners and ambulance workers alike as the service professionalised.[3]

Few historians have studied the early history of emergency first aid and medicine. They have tended to characterise civilian ambulance as inspired by the military and a reaction to the speed of the city, changes in the conception of risk, or the dangers of modernisation.[4] Many innovations in the technology and organisation of first response were influenced by ambulances across battlefield environments, where understandings of choreography developed swiftly, from loading injured bodies onto transport to the potential for additional physical damage and pain caused by movement in

[2]H. Guly, *A History of Accident and Emergency Medicine, 1948–2004* (London, 2005), 2–5.

[3]F.B. Rogers and K. Rittenhouse, 'The golden hour in trauma: dogma or medical folklore?', *Journal of Lancaster General Hospital*, 9, 1 (2014), 11–13; L. McCann, E. Granter, P. Hyde and J. Hassard, 'Still blue-collar after all these years? An ethnography of the professionalization of emergency ambulance work', *Journal of Management Studies*, 50, 5 (2013), 750–76.

[4]R. Cooter, 'The moment of the accident: culture, militarism and modernity in Late-Victorian Britain' in R. Cooter and B. Luckin (eds), *Accidents in History: Injuries, fatalities and social relations* (Amsterdam, 1997), 107–57; E. Isaac, A. Bajramovic, I. Miller, C. Pan, E. Ratté and A.V. Kliot, 'To "labour with a greater sense of safety": first aid, civic duty, and risk management in the British working class, 1870–1914', *Journal of Social History*, 54, 2 (2020), 526–45. See also J.F. Hutchinson, 'Civilian ambulances and lifesaving societies: the European experience, 1870–1914', in Cooter and Luckin, *op. cit*., 158–78; K.T. Barkely, *The Ambulance* (Kiamesha Lake, NY, 1990); J.S. Haller, *Farmcarts to Fords* (Carbondale, IL, 1992).

evacuation vehicles.[5] Further, the dual pressures of industrialisation and urbanisation rendered it imperative to transport people to hospital in the quickest time possible, which inevitably meant embracing modern forms of horse-drawn and, later, motorised transport.[6]

Underpinning this spatial-temporal urgency were a variety of interconnected urban, social and environmental problems and ideological prejudices that were largely mediated through the middle-class and gendered social investigation of urban conditions between c. 1870 and 1920.[7] During the public health crises of the 1830s and 1840s, as the ecology of large cities was breaking down, and in the sanitary reforms that followed, urban space was reframed as a site of circulation and flow. As Martin Daunton notes, the 'continuous circulation', of goods, people, ideas and profits, was the only way to combat the flow of waste and disease in the modern industrial city. Such a reading of the city – that 'the health and care of the city was at one with the health and care of the body' – later shaped civilian ambulance provision, in terms of both its choreography and its administration, well into the twentieth century.[8] Moreover, modernised notions of the 'accident', as opposed to 'providence', came to propel the sense that man (often explicitly so gendered) could intervene effectively.[9] Similarly, 'accident' in the twenty-first century has been reconceptualised: an unintended injury is always predictable and preventable.[10]

In this article, we argue that it was the physical and temporal intensity of emergency first aid that were key determinants in the organisation of a civilian ambulance service. City streets that were increasingly motorised certainly demanded keener awareness, but for ambulance pioneers in London and Glasgow especially, unintended injuries such as burns and scalds, as well as metropolitan streets, could be routed by choreographed movement. Nevertheless, from the 1870s ambulance skills were considered

[5]For example: M. Allitt, 'Somatic, Sensuous, and Spatial Geographies in First World War Medical Caregiving Narratives' (D.Phil., York, 2016); J. Arrizabalaga and J.C. Garcia-Reyes, 'Technological innovation and humanitarianism in the transport of war wounded: Nicasio Landa's report on a new elastic suspension system for stretchers', *História, Ciências, Saúde–Manguinhos*, 23, 3 (2016), 887–97; A. Carden-Coyne, *The Politics of Wounds: Military patients and medical power in the First World War* (Oxford, 2015), 15–88; A. Hawk, 'An ambulating hospital: or, how the hospital train transformed army medicine', *Civil War History*, 48, 3 (2002), 197–219.

[6]A. Pollock, 'Ambulance services in London and Great Britain from 1860 until today: a glimpse of history gleaned mainly from the pages of contemporary journals', *Emergency Medicine Journal*, 30, 3 (2013), 218–22; I. Loudon, 'Doctors and their transport, 1750–1914', *Medical History*, 45, 2 (2001), 185–206.

[7]B. Luckin, 'Revisiting the idea of degeneration in urban Britain, 1830–1900', *Urban History*, 33, 2, (2006), 234–52.

[8]M.J. Daunton, 'Introduction' in M.J. Daunton (ed.), *The Cambridge Urban History of Britain, Volume III: 1840–1950* (Cambridge, 2000), 1–13, at 7; B. Luckin, *Death and Survival in Urban Britain: Disease, pollution and environment, 1800–1950* (London and New York, 2015), 13–18; C. Hamlin, *Public Health and Social Justice in the Age of Chadwick: Britain, 1800–1854* (Cambridge, 1998); P. Laxton and R. Rodger, *Insanitary City: Henry Littlejohn and the condition of Edinburgh* (Lancaster, 2014).

[9]For an overview, see H. Loimer and M. Guarnieri, 'Accidents and acts of God: a history of the terms', *American Journal of Public Health*, 81, 1 (1996), 101–07.

[10]R.M. David and B. Pless, 'BMJ bans "accidents"', *British Medical Journal*, 322, 7298 (2001), 1320–21; T. Crook and M. Esbester, 'Risk and the history of governing modern Britain, c. 1800–2000' in T. Crook and M. Esbester (eds), *Governing Risks in Modern Britain: Danger, safety and accidents, c. 1800–2000* (London, 2016), 21–22.

to rely on the same sort of ad hoc nature of military action and 'continuous circulation' across sprawling urban spaces. Improvisation was a central part of ambulance skills, raising the physical and emotional intensity of such work from the outset.[11] The repurposing of things to hand was embedded into the regimented teaching of the St John and St Andrew's Ambulance Associations (SJA and SAA) in England and Scotland, respectively. A national College of Ambulance and a publicly funded Ambulance Service in London, both formed in 1914, several months before Britain declared war on Germany, manifested this symbiosis of planned choreography and on-the-hoof creativity.

This article will first consider the expansion of ambulance first aid, choreography and improvisation through education and the emergency services. The growth of the skills base, as well as the expansion of ambulance as a mobile and responsive piece of urban infrastructure, will then be considered, using Glasgow and London as case studies. In both cities, the early impetus for organisation and improvisation came from volunteers, medical and emergency professionals, and philanthropists, rather than the state – although local government became increasingly sensitive to the advantages of a public service by 1900, once longstanding issues concerning capital investment had been settled. What is more, while local authority control and funding of civilian ambulances became the norm by the interwar period, voluntary interest in first aid provision did not cease, despite the British state assuming expanded health and welfare responsibilities from the Second World War onwards.[12]

Glasgow was a port city, characterised by hyper-rapid expansion. Its population almost doubled, to approximately 800,000, between 1861 and 1911, while the city secured two controversial extensions to its boundaries in 1891 and 1912 following lengthy parliamentary investigations. Glasgow was home to heavy industry, including shipbuilding, foundries and railway works.[13] While it was the birthplace of the SAA, its large-scale manufacturing and rapid urbanisation conspired to hinder the transportation of people to hospital for treatment. London faced similar challenges, but addressed these earlier through a mixed economy of public, private and voluntary ambulances from the 1870s. The English capital was also the location of much of the concerted foundational work for everyday ambulance skills: the 1877 creation of the SJA; groundbreaking public first aid classes, drills and demonstrations from 1878; the 1887 introduction of the St John Ambulance Brigade (which ensured that trained, uniformed figures were on hand to

[11]E. Granter, P. Wankhade, L. McCann and J. Hassard, 'Multiple dimensions of work intensity: ambulance work as edgework', *Work, Employment and Society*, 33, 2 (2019), 280–97.
[12]S. Ramsden and R. Cresswell, 'First aid and voluntarism in England, 1945–85', *Twentieth Century British History*, 30, 4 (2019), 504–30.
[13]C.M. Allan, 'The genesis of British urban redevelopment with special reference to Glasgow', *Economic History Review*, new series, 18, 3 (1965), 598–613; I. Maver, *Glasgow* (Edinburgh, 2000).

provide swift first aid at public events); and the 1914 establishment of the first national College of Ambulance. More singularly, the records for London are detailed and complete in comparison to elsewhere, with 'call-outs' during the First World War being especially comprehensive, coinciding with the greater use of women as ambulance drivers and attendants amid shortages in the number of working-age men.

What we see across 50 years in these metropolitan cities is movement: ambulance choreography at injury events, through urban space, and towards mixed providers, stations and motorisation. Although first responders attended to a range of human frailty, we will use burn and scald injuries as a lens through which to explore time, care and the city. Such injuries were a common hazard that cut across spaces – domestic, work and conflict – and remained a constant danger between 1870 and 1920. However, they also offer a window onto modernisation with the shift in technologies of heating and burning: from hearth to furnace; from taper to incendiary bomb. Burns and scalds were a real challenge to first responders through this complexity: their variegated causes and presentations, as well as their seriousness (irrespective of wound size) and sensitivity to treatment meant that the choreography of and around the injured body was especially complex. Taken together, this focus on ambulance and burn injuries in Glasgow and London reveals the bio-temporal shaping of the city, and efforts to override the chaotic sprawl of rapidly urbanising spaces.

The birth of civilian ambulance

The lineage of modern civilian ambulance in Britain – as a means to help the injured, rather than remove the infectious body from the community, as was the case before the mid-nineteenth century – was stimulated by man-made trauma – its birth inspired by war, but instigated by the city, and rooted in biological time. While The Order of St John, a hospitaller organisation, dated back to the medieval Christian invasion of the Middle East, the notion of a body for emergency intervention rose and fell with subsequent military action. In the 1790s, the French Surgeon-General, Baron Larrey, began developing a system of triage and battlefield evacuation using *ambulances volantes* (flying ambulances).[14] The American Civil and European wars of the late nineteenth century developed increasingly organised responses. Between 1863 and 1869, three Red Cross meetings were held, which cemented the first Geneva Convention in 1864, establishing the red cross as a protective sign of caregiving in conflict.[15] Simultaneously, German war surgeon Friedrich von Esmarch began introducing new techniques of

[14]P.N. Skandalakis, P. Lainas, O. Zoras, J.E. Skandalakis and P. Mirilas, '"To afford the wounded speedy assistance": Dominique Jean Larrey and Napoleon', *World Journal of Surgery*, 30 (2006), 1392–99.
[15]Hutchinson, *op. cit.*

emergency treatment or 'Erste Hilfe' onto the battlefield.[16] In between, in 1870, during the Franco–Prussian War, the British National Society for Aid to the Sick and Wounded in War (later renamed the British Red Cross) was established in London by men including John Furley, an important founding figure of ambulance in Britain.[17]

Responding to the need to attend to the dangers of mine work in Stoke-on-Trent and Wolverhampton in the English Midlands, Peter Shepherd, a Scottish army doctor and graduate of Aberdeen, began to introduce ambulance in the early 1870s.[18] He later used these skills with troops in the field when deployed to Grahamstown, South Africa. On return to Britain, Shepherd worked closely with fellow countryman and alumnus Colonel Francis Duncan at Royal Herbert Military Hospital at Woolwich Arsenal, London. Inspired by Esmerch's methods, Shepherd and Duncan began to teach ambulance to army stretcher-bearers.[19] In 1877, The Order of St John sought renewal of its hospitaller roots and established the SJA, as a subscriber-funded organisation, to roll out such skills more widely and to introduce improved 'litters' to carry injured bodies, similar to those used on the battlefield.[20] The focus shifted to civilians, especially in urban and industrial areas, where there was growing concern about the increasing number and variety of hazards, especially in the workplace and the street, and the determination to avoid or deal effectively with injuries in everyday life.[21]

While it has been emphasised that the impetus for training was working-class men's self-help and solidarity with workmates,[22] the drive began and gathered pace beyond workplace walls. On 12 January 1878, a large public meeting was held at Woolwich to formally inaugurate ambulance classes. On the platform, a tranche of senior clerics, military and medical men (including Furley and Shepherd) urged the gathered crowd to join. The object was to form 'a class, open to all male persons, for teaching the knowledge necessary to enable them to deal with accidents, whether occurring on the battlefield or on the streets'.[23] Duncan reportedly set out their stall clearly:

[16]F. von Esmarch, *Der erste Verband auf dem Schlachtfelde* [transl. *First Aid on the Battlefield*] (Kiel, 1869); F. von Esmarch, *Handbuch der kriegschirurgischen Technik* [transl. *Handbook of War Surgery*] (Hannover, 1877).
[17]R. Gill, 'The origins of the British Red Cross Society and the politics and practices of relief in war, 1870–1906', *Asclepio*, 66, 1 (2014), 1–13.
[18]I. Fletcher, 'Aid, first and foremost: a brief outline history of the St John Ambulance Association Brigade', *Injury*, 11 (1979), 104–09, at 104.
[19]*ibid*.; J. Pearn, 'The earliest days of first aid', *British Medical Journal*, 309, 6970 (1994), 1718–20.
[20]Fletcher, *op. cit*., 104–05.
[21]D.M. Turner and D. Blackie, *Disability in the Industrial Revolution: Physical impairment and coalmining, 1780–1880* (Manchester, 2018), 67–69; Crook and Esbester, *op. cit*., 15–17.
[22]Isaac et al., *op. cit*.
[23]*Kentish Independent*, 2 March 1878, 8.

> They proposed to alleviate suffering, to minimise pain, and they proposed to do this by practising a little self-denial, and giving up a little of their leisure for study, – a thing often much more difficult to do than to give up a little of their money . . . How often when an accident occurs – he should say nine times out of ten – does the first duty fall to some chance passer-by, the doctor not being near, [who] often complicates the injury to such an extent that [this resulted in] months of pain . . .

This sat alongside quips (amusing because the audience was overwhelmingly male) about how many of those gathered would be able to construct a sick room, including 'how to make a bed . . . without leaving a great lump in the middle . . . Or else they put too much pepper in the beef-tea . . . [or] know how to take a dear little baby out of its bassinet'.[24] The itinerary, it was explained, would enable the men 'to be able to check hemorrhage, distinguish arterial from venous bleeding, to bind a fractured limb with care, and distinguish a drunken man from a man in a fit'.[25] Alongside other sessions, including stretcher use and 'the drill connected with the conveyance of injured persons . . . Burns and scalds were . . . touched upon, and the general treatment to be pursued pointed out'.[26]

Shepherd developed the curriculum in 'first aid' – coining the term in English – and was the primary tutor for the classes. Indeed, he was considered so effective that the SJA requested that he write up his course into a pocket-sized book. Before he could complete this, he was deployed with British forces to invade Zululand (a historic kingdom, located in what is now KwaZulu-Natal). He hurriedly gave his notes to a colleague to finish the manuscript. Shepherd was killed in action in 1879, but the colleague shared a lodging with Dr James Cantlie of Charing Cross Hospital, another Scot and Aberdeen graduate. Cantlie not only completed the St John manual (*Aids for Cases of Injuries or Sudden Illness*, first published in 1878 under Shepherd's name), but would become an energetic proponent of ambulance in London and nationwide.[27]

Textbook choreography

The St John manual was not, however, the first publication to deal with first aid. Advice books on the subject slowly increased in number in the nineteenth century, and with them developed a particular choreography of response. Treatment began at the point of injury with the first responder moving to the injured party to provide medical help, and thereafter moving the wounded body. For burn injuries especially, this choreography was often dramatic because in many cases the original source of the burn – clothing

[24] *ibid*., 19 January 1878, 8.
[25] *ibid*., 9 March 1878, 5.
[26] *ibid*., 2 March 1878, 8.
[27] Pearn, *op. cit*.; J.C. Stewart, *The Quality of Mercy: The lives of Sir James and Lady Cantlie* (London, 1983), 16–18.

that had caught fire – remained active. Moreover, this sort of incident illustrates the gendered nature of early emergency first aid.

In 1806, for example, founder of the Royal Humane Society Dr William Hawes felt that clothes catching fire was a peculiarly gendered incident. 'Flimsy dress of females catches flame from the slightest spark. The moment this happens, they fly from room to room, and fan the flames'.[28] Children's garments were also susceptible to catch fire. In both cases (as if to underscore the supposed infantile nature of women), Hawes counselled 'attendants' to press the burning clothing 'close to the body . . . A carpet, a table cloth, a blanket, any close wrapper will instantly extinguish' the flames.[29] Advice seldom changed over ensuing decades. From 1869, *Cassell's Household Guide* repeated Hawes's gendered considerations:

> The first thing for a by-stander to do is to provide himself with some non-inflammable article with which to envelop the patient [such as . . .] a coat or cloak – or, better, a table-cloth or drugget . . . Throwing this around the sufferer, he should if possible, lay her on the ground and then rapidly cover over and beat out all the fire.[30]

While this was clearly about taking control of the confusion, it was also about clothing. 'Men, from the nature of their clothes, are much less liable to burns than women . . . for one lightly-clad female to attempt to succour another . . . is simply to imperil two lives'.[31] *Cassell*'s advice also contained instructions around recovery, urging 'that the slower a wound can be made to heal, the less likely it is to leave unsightly contractions [of the skin] behind'.[32] The time in between the immediate aftermath and convalescence was absent. It was here that the theme of ambulance began to dwell.

Shepherd's 1878 SJA manual was officially the first English ambulance textbook to be published. Thereafter, the international market was replete with different handbooks, including von Esmarch's (English translation, first published 1882), George Beatson's for the SAA (1891), and Cantlie's SJA (1901) and new British Red Cross manuals (1912).[33] Burns continued to be considered an inevitability of sex, with the choreography more firmly embedded as part of the entrenchment of heroic ideals and muscular humanitarianism in the ambulance movement. Such incidents were split along gender lines and made it clear that women burned, while men

[28]W. Hawes, *Manual of Popular Instructions, for Recovering Persons Apparently Dead from Drowning, Suffocation, Lightning, Swoonings, Intense Cold, Intoxication, Hanging, Smothering, Falls, Blows, &c.* (Glasgow, 1806), 42.
[29]*ibid*., 30.
[30]*Cassell's Household Guide to Every Department of Practical Life: Being a complete encyclopaedia of domestic and social economy* (London, 1869), 74.
[31]*ibid*.
[32]*ibid*.
[33]F. von Esmarch, *First Aid to the Injured: Five ambulance lectures*. Transl. Princess Christian (London, 1882); G.T. Beatson, *Ambulance Handbook on the Principles of First Aid to the Injured* (Glasgow, 1891); J. Cantlie, *First Aid to the Injured* (London, 1901); J. Cantlie, *First Aid Manual No. 1* (London, 1912).

intervened.[34] All suggested forcibly tackling women to the ground before smothering the flames. Beatson, for instance, stated that

> a woman or girl who meets with this accident should immediately lie down on the floor, and that any one going to her assistance, if she be still erect, should make her lie down, or, if needful, throw her down into a horizontal position and keep her in it.[35]

Cantlie and others advised that '[w]hichever part of the clothing [was] burning always lay the patient down ["at once, forcibly, tripping her up if need be"] so that the flames [were] uppermost', blazing away from the female body.[36]

Directions for burn treatment itself remained largely improvised and mostly centred on the incident and the immediate choreography and effects – not on how to reach specialist medical attention at a hospital. Certainly, each ambulance manual included formalised stretcher exercises, which were intended to be learnt prior to any such incident happening. The regimented movements of loading an injured party onto a stretcher, together carrying the stretcher without incident, loading onto a vehicle, and removal from the vehicle, all while avoiding further damage to the passenger, were laid out. The key question, however, remained: how to move the injured body in order to secure the specialist attention that was waiting elsewhere?

Time was beginning to compress at the site of the 'accident', but an organised response, navigating the city, in order to arrive at hospital at a pace demanded by biological necessity, was not included in the manuals. Time and movement lagged behind physical needs. In Birmingham – the heavily industrialised English 'second city' – for example, of the 69 burn fatalities before the city's coroner in 1890, only one travelled to hospital in an ambulance vehicle. The rest walked, or else were carried in someone's arms, or travelled in traps, trains, prams or even an armchair.[37] The growth of interest in improvised, civilian ambulance had not been matched by organised, official intervention, but this was on the march, as the remainder of this article will demonstrate.

The nature of Glasgow

The improvised nature of first response was challenged more comprehensively by the growth in the number of ambulance-trained police and firemen (as firefighters were then known), and the standardisation and professionalisation of ambulance skills. In Glasgow, for instance, the route of

[34]On gendered emergency first aid, see J. Fairman and J. Gilbride, 'Gendered notions of expertise and bravery', *Journal of the History of Medicine*, 58, 4 (2003), 442–48.
[35]Beatson, *Ambulance Handbook*, *op. cit.*, 356.
[36]Cantlie, *First Aid Manual*, *op. cit.*, 122.
[37]Birmingham Archives and Collections, CO2/1890A-1890D, 'Coroners' Inquests, 1890'.

ambulance into the city streets can clearly be mapped. While the SJA had been in Scotland since 1879, Glasgow was not among its local branches, although affiliated courses began to appear. '[S]ome ladies' had discovered that ambulance classes were being held in London, 'and it occurred to them that they might make use of the machinery already in existence with their school for cookery to introduce the subject to Glasgow'.[38] During the point at which education and not organisation was the key, these classes were aimed at women. At its location at the St Andrew's Hall complex in the West End, Glasgow School of Cookery offered a domestic curriculum intended for working-class women, but which also attracted those better off. Dr Robertson Renton, under the supervision of Professor George Buchanan from the Western Infirmary, the city's main teaching hospital, was the first to undertake regular teaching there.

Winter 1879/1880 saw 130 women attend ambulance classes at the Cookery School, and another run of sessions at St Andrew's Halls was organised in association with the Glasgow Society for the Promotion of the Higher Education of Women.[39] Adverts appealing to 'Ladies desirous of Joining the Course' also appeared.[40] With such interest, others quickly contributed to course teaching, especially Dr George Beatson. At St Andrew's Halls, the 'ladies of the class', he later recalled, 'would bring extempore triangular bandages of varied and brilliant hues, together with several of their offspring, for bandaging purposes'. The 'latter they would bind and secure with a firmness and ingenuity that brought out forcible protestations from the victims of their new-born zeal'. They used 'a kind of electioneering heckling', with queries 'on all manner of subjects, being expected to say at a moment's notice what should be done if the baby fell into the soup tureen, or there happened the rare but possible contingency of a broken heart'.[41]

With the appetite for ambulance unabated, men began to plan further training, care and provision. These were built on the experiences of the 1st Lanark Rifles, and then the 5th Lanarkshire Rifle Volunteers, a pioneer group of ambulance-trained men in the Scottish military, under Lieutenant-Colonel James Mactear. Mactear was the engine behind what would, building on the training site for Glasgow's women, in 1882, become St Andrew's Ambulance: Scotland's equivalent of the SJA. The concerns around the name and the meanings of 'ambulance' came to shape founding discussions and help clarify how practice came to be heavily gendered. The intentions behind its establishment were twofold: 'to impart amongst its members

[38]*Glasgow Herald*, 2 December 1879, 3.
[39]*ibid.; Glasgow Evening Post*, 23 November 1881, 4.
[40]See, for example, *North British Daily Mail*, 14 January 1882, 1.
[41]G.T. Beatson, 'The formation and early days of the St. Andrew's Ambulance Association', *Glasgow Medical Journal*, 73, 1 (1910), 27–32, 28.

a knowledge of what is termed, "First Aid to the Injured"', to alleviate the suffering of 'wounded or disabled individuals' until a physician was on scene; and the requirement then to be 'supplemented by an efficient transport service, for the proper removal of patients' to hospital or home, which '[demanded] the utmost gentleness and skill in its execution'.[42] While these 'two aims in ambulance', wrote Beatson, were 'intimately associated with one another', they were 'really quite separate'.[43] This segregation of first aid skills and an ambulance service, in effect, shut women out of the more collective, active, public and street-facing side of the SAA, especially as this organisation was, like its London counterpart, so heavily associated with the military. Indeed, most of the classes were taught by 'medical men connected with the Volunteer corps of the city'.[44]

The specific dangers of the home – especially in the tenements, built swiftly to accommodate the rapid expansion of the 'Second City of the Empire' – were not included in the rationale for an urban ambulance service, as they were for the formation of an independent fire brigade around the same time.[45] Glasgow's size, heavy industry and, as one writer put it, 'nature' were another matter:

> It is undoubtedly one of the most painful evils that human injury has among a large population to be recognized as a matter of course and of daily occurrence. Whereas so many workers are engaged in more or less dangerous occupations . . . in engineering yards, in mills, on railways, in shipbuilding yards and so forth, it appears to be only in the nature of things that accidents should sometimes happen; and that strong men should be stricken into helplessness and agony seems no more than a fact of industrial economy.[46]

Indeed, aside from the 'usual way an ambulance class [was] formed' being 'for some lady or gentleman undertaking to do so',[47] it was often the male manufacturing topography of the city which ensured that skills spread and the importance of ambulance was swiftly recognised. One of the first plans of the SAA was to ask 1200 'large employers of labour' to '[send] a few of the more intelligent of their men to receive a practical course of training with the treatment of the various accidents likely to happen in connexion with the pursuit of their several industries'. This resulted in 'ambulance squad[s]' at shipyards, foundries and railway depots throughout the city.[48] Whereas this supports the sort of argument made by Isaac et al., that working men drove ambulance expansion through a sense of self-help and localised

[42]J. Whitson, 'The ambulance movement in Scotland', *Edinburgh Medical Journal*, 20, 3 (1884), 193–9, at 194.
[43]G. Beatson, 'Letter to the editor: ambulance work in Glasgow', *Glasgow Herald*, 5 June 1882, 8.
[44]*Glasgow Herald*, 20 May 1882, 6.
[45]S. Ewen, 'The problem of fire in nineteenth-century British cities: the case of Glasgow', in M. Dunkeld (ed.), *Proceedings of the Second International Congress on Construction History, vol. 1* (Cambridge, 2006), 1061–74.
[46]*Glasgow Evening Post*, 12 April 1886, 4.
[47]*ibid*.
[48]*ibid*.; Whitson, *op. cit*., 194; *Glasgow Herald*, 20 May 1882, 6.

solidarity,[49] it is evident that matters were more complex, with idealists in Scotland promoting the techniques via employers.

Beyond the industrial outposts of Glasgow, one organisation offered the SAA a ready infrastructure of networked offices stretching across inner city and suburbs: the police. Accessing this network was one of the new organisation's first priorities, particularly so at a time when the Glasgow Town Council was greatly extending its boundaries into surrounding urban and rural districts: amalgamation of local authorities promised improvements to emergency first aid as well as the provision of other public services, especially with the promise of increased rateable revenues entering the town. In 1882, the SAA asked the Town Council for permission to 'grant them accommodation at the various police stations throughout the city for stretchers and other appliances to be used in cases of street or other accidents'. A Watching and Lighting Committee member present 'admitted that it would be of great advantage to the community that the police should be trained to handle the ambulance appliances'.[50] These included items such as stretchers and the Mactear-designed compact and portable 'ambulance box', which contained 'all the material and appliances necessary for dressing wounds, burns or fractures'.[51] The contents and reporting of the appliances offer some insight into both what were considered vernacular injuries and vital by a local authority that had for the past century taken an elastic view on what constituted 'policing', so long as it was deemed to be in the interest of civic improvement.[52]

Within five years of the Town Council discussions, Glasgow police had introduced an in-house 'regulation course of Ambulance instruction' for their 1106 men. The course was delivered by the Casualty Surgeon for the Central District. The training had made a significant difference to the city: 'Officers and Constables thus instructed have rendered valuable assistance in cases of accidents, and in several instances have been the means of alleviating pain, if not of saving life'.[53] With the ongoing development of first aid on the streets of Glasgow, time around the injured party was beginning to compress. While an 'accident' had always created a centre of gravity – pulling in the space and people around it and causing disruption – those officially responsible for the smooth ground-level working of urban space were now intervening immediately to manage the survival of the injured person's body, rather than simply managing the street. This meant that time spent in agony contracted, with the imperative to get first aid to the victim before these trained and equipped men transported them as

[49]Isaac et al., *op. cit.*
[50]*Glasgow Herald*, 25 April 1882, 3.
[51]*ibid*., 9 March 1882, 4.
[52]D. Barrie, *Policing in the Age of Improvement: Police development and the civic tradition in Scotland, 1775–1865* (London, 2008).
[53]Glasgow City Archives (subsequently GCA), E2/1/2/2, 'City of Glasgow Police: criminal returns', 1887, 5.

quickly as possible to hospital, and therefore that an 'accident' did not necessarily result in death or disablement. Moreover, this was the reshaping of urban life and space: city officials were challenging the 'natural' course of events.

By 1900, all police held an ambulance certificate. Despite the nudge by the SAA, this determination was unsurprising given the scale of police intervention, not only at street level, but also in homes and premises throughout Glasgow. Burns and scalds featured prominently in the statistics reported by the police. While the groupings of injuries and the terminology around them changed over the years – and included anything from 'Bed caught fire' to 'Boiler explosion' and 'Molten metal' – burns and scalds made up between around 3.4% and 13.33% of fatal injuries (which annually varied dramatically from 177 to 532) in the surviving data from 1870–1900. Non-fatal burn injuries, which only entered record-keeping in 1899/1900, stood at around 4.4% during 1900 (121 out of a total of 2751).[54]

In November 1901, local councillor Dr Erskine urged the Town Council to give greater support in the provision of a system of 'civic ambulance' during a public lecture at the local college of the Young Men's Christian Association (YMCA).[55] The following year, Dr Robert Bain Lothian was appointed 'Lecturer on Ambulance to the whole of the Police Force and the members of the Fire Brigade'.[56] Police personnel began to sit the external course run by the SAA. While Lothian wanted 'every Constable [. . . to] be in possession of that Association's Certificate and Badge', a key driver was the broader trend in group competition. Glasgow Police had won 'a Silver Challenge Shield for Inter-Divisional Competition', and now harboured ambitions for the St Andrew's Challenge Shield, which could only be entered by those holding an SAA certificate.[57] In 1903 the numbers taking the SAA certificate had increased to 170, 'with a view to [have] all Officers and Men qualified to pass' the SAA examination.[58] That same year, the first group of men from the 132-strong Glasgow Fire Brigade successfully passed this same examination.[59]

Regimen and improvisation: London

This heady recipe of individual determination, muscular competition and first response can also be seen in the development of English Ambulance – albeit driven significantly by Scottish figures. What appeared to be different

[54]GCA, E2/1/2/1–8, 'City of Glasgow Police: Criminal Returns'.
[55]*First Aid*, 1 November 1901, 36.
[56]'Robert Bain Lothian', in *Index of Glasgow Men* (1909), *Glasgow West Address*, http://www.glasgowwestaddress.co.uk/1909_Glasgow_Men/Index_of_1909_Glasgow_Men.htm, accessed 14 August 2020.
[57]GCA, E2/1/2/6, 'City of Glasgow Police: Criminal Returns', 1902, 5.
[58]GCA, E2/1/2/7, 'City of Glasgow Police: Criminal Returns', 1903, 5.
[59]*ibid*.

was where ambulance was introduced, and the irrepressible fetish for improvisation. In England, James Cantlie and others were also training police, although, unlike in Glasgow, no compulsory internal course seems to have been introduced;[60] the inroads into city workplaces were also slower in the capital.[61]

In 1883, James Cantlie and later Surgeon-Major Evatt (based at Woolwich Arsenal) were developing the idea of the Volunteer Medical Association (VMA) from work by retired Scotsman Major Andrew McLure. The VMA, later renamed the Royal Army Medical Corps (Territorial), created the ambulance support the Territorial Army needed to be able to deploy. While McLure had concentrated on developing ambulance inside the army, Cantlie was making incursions into hospitals, pushing medical students to be ambulance-trained. Given that universities were only then begrudgingly starting to permit women onto courses, this thrust again ensured that ambulance was largely a male preserve.[62]

Cantlie's 'home hospital', Charing Cross, became the epicentre for the initiative, which in its first afternoon saw 72 volunteers enlist. The Voluntary Medical Staff Corps (VMSC) soon began to spread through contact with other London teaching hospitals,[63] and later, with the desire for an older, 'civilian company', mature men from Birkbeck.[64] In 1885, the VMSC battalion was officially raised and Charing Cross was converted into a uniform and arms store ahead of public Easter Manoeuvres. 'After meeting in front of the Hospital, the Corps marched to the Chapel Royal, Savoy . . . entrained at Victoria Station for Brighton . . . left the train . . . and marched 15 miles to the quarters for the night'. After '[t]hree days marching and drilling together had brought the men into good form', they paraded 'without a hitch'. At 'the scene of the sham fight', the VMSC '[established] stretcher-bearer parties, dressing stations, sections of Field Hospitals etc'.[65] Such demonstrations included ambulance, railway waggon and cacolet loading (of two 'injured' men onto a mule), but manoeuvres sometimes competitively pitted different companies against one another.[66] By 1887, plans were in place to convince the government to recognise the VMSC.[67]

[60]Isaac et al., *op. cit*., 533.
[61]WL, MS.7936/19/1, 'Annotated typescript', Appeal for the College of Ambulance in Vere Street to become a national institution, 21 October 1919.
[62]WL, MS.7936/10, 'Cantlie's ts./MS. draft account of the Volunteer Medical Service Corps and his role in its raising, 1891', 10.
[63]According to the manuscript, University College London, London Hospital, St Bartholomew's, St Thomas's and Guy's; later joined by St Mary's. *ibid*., 21, 55.
[64]*ibid*., 33.
[65]*ibid*., 63.
[66]*ibid*., 68.
[67]*ibid*., 25.

The sort of drilling carried out by the VMSC in London and elsewhere, as well as that of the SJA and SAA, is described by historian William H. McNeill as 'muscular bonding'. While McNeill meant it to describe 'the euphoric fellow feeling that prolonged rhythmic muscular movement arouses among' those drilling together,[68] the phrase resonates with the pervasive later-nineteenth-century philosophy of Muscular Christianity. The manliness, group belonging, competitions and patriotism are writ large in the development of ambulance in Scotland and England. For ambulance, while first aid was important, it was movement – stretcher drill and the regimented learning of carrying weight and loading bodies – which organised significant amounts of time. Ambulance choreography, then, served a dual purpose, which was infused with the military priority to avoid losing fight-power: it bonded groups together, but did so in order to avoid inflicting additional pain and trauma on the injured party, in the hope of returning them to health (and the ranks).

Indeed, the ambulance movement considered the human body the first ambulance vehicle. Thoughts about how differently sized or abled bodies moved together had been embedded in the SJA manual from its first iteration. Like the treatments outlined by earlier advice books, the lifeblood of the manual was improvisation. The descriptions began with the chair lifts available to two ambulance men by using their interlinked hands and wrists, or else in an intimate dancing stance, clasping each other's shoulder with one hand, and each other's hand with the other (Figure 1). After outlining the lifts, the improvised stretcher was described with images, of using a buttoned-up jacket with inside-out sleeves through which 'two stout poles' could be passed. If there were no jackets, then sacks, carpet, tarpaulin or a blanket could be employed. The manual provided instructions for how to navigate a ditch or wall while carrying an injured person, and how to load and unload a waggon. Formalised stretcher drills were conveyed, with the assurance that they would not necessarily answer every eventuality, but that those trained would answer the task, '[f]or instance, the placing of a stretcher in a road-cart or railway carriage must depend on the shape of the vehicle, and perhaps on the width of the door'.[69]

While the idea of ambulance was underpinned by war, Cantlie and others were passionate advocates of civilian ambulance – and not simply members of national associations, but the creation of a bedrock of practical knowledge. For Cantlie, ambulance was a secular, humanitarian religion. Building on extant training for the British Red Cross,[70] by March 1913 Cantlie had instituted classes at Regent Street Polytechnic, London. Within months of Britain entering the First World War, a testimonial was arranged for

[68]W.H. McNeill, *Keeping Together in Time: Dance and drill in human history* (Cambridge, MA, 1995), 1–3.
[69]Beatson, *Ambulance Handbook*, *op. cit*.
[70]Stewart, *op. cit*., 145.

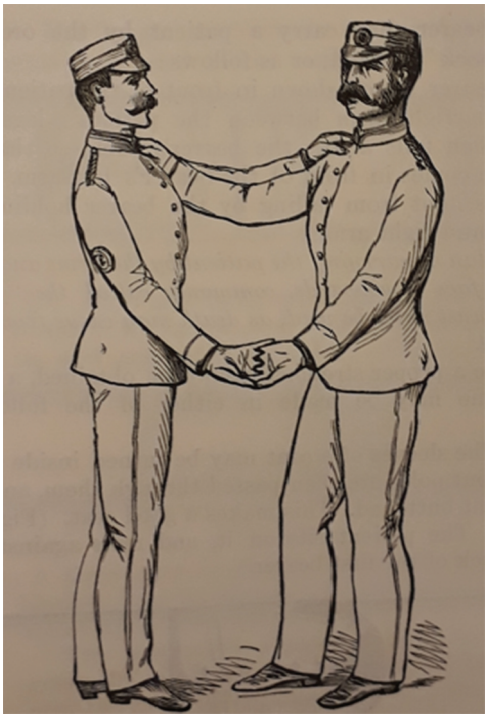

Figure 1. Two men demonstrating the formation of a chair lift. Peter Shepherd, *First Aid to the Injured: Being the hand-book describing aids for cases of injuries or sudden illness* (London, 1894 edition), 73. Wellcome Collection, London. CC-BY-4.0.

Cantlie, as 'the embodiment of ambulance work in this country for well nigh forty years'.[71] The money raised from the testimonial established the College of Ambulance in London to cement the latent skills possessed by people all over Britain. This would, explained Cantlie, be 'a sort of Mecca for ambulance workers in this country'.[72] It would 'lift ambulance work up to a high grade, and stamp it as a new science, so that experts in it shall take a standing alongside experts in other sciences'.[73]

The college opened off Oxford Street in 1914 and was the physical manifestation of Cantlie's ideals. On the first floor was 'the drill and gymnastics room', which contained 'a wooden structure to represent either a hospital train or an ambulance, so that practical instruction in loading and unloading is enabled'. There were also models of waggons and 'an old country cart which can be used to make a fairly comfortable ambulance'. On the second floor was a museum, replete with a model of a modern battlefield, which ran the length of the room. The lecture

[71]WL, MS.7922, *Hospital*, 8 March 1913, in scrap-book containing newspaper and journal cuttings, 9.
[72]*Glasgow Herald*, 10 September 1914, in *ibid*., 28.
[73]*ibid.*

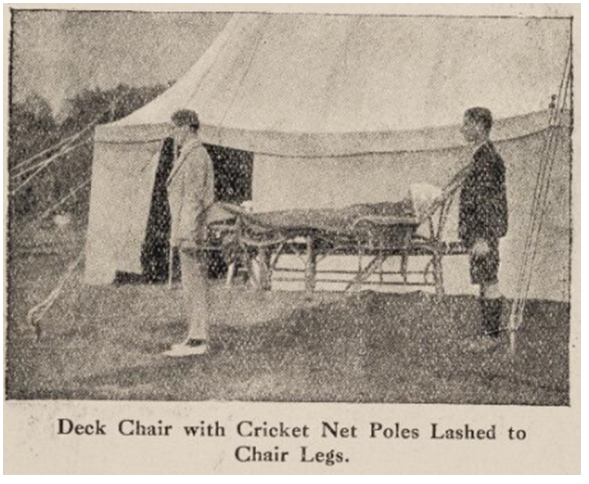

Figure 2. 'Deck chair with Cricket Net Poles Lashed to Chair Legs', MS.7936/8. Illustrations of stretcher-bearing, cart ambulances and operating tents, based on Cantlie's ideas and work. The volunteer medical staff corps, ambulance and first aid movement in Britain. Wellcome Collection.

theatre occupied the third floor; above that was a mock hospital ward and operating theatre.[74] Burns, scalds, and carrying were key parts of the syllabus, which was taught through lectures, demonstrations and practical training.

Such simulations were considered imperative, but improvisation was deeply engrained. Publicity photos and images of public demonstrations evidence how far the original improvised stretchers of poles and coats had come, and the range of scenarios in which ambulance skills were thought to be needed. These included a 'Deck chair with Cricket Net Poles Lashed to Chair Legs' (Figure 2) and 'Improvised Gables and Clothes Prop for Support of [an improvised tent] Roof' into which an injured party on a stretcher might be placed; higher roofs were depicted as being reached by a 'Human Ladder', or by one man standing on the shoulders of another.[75] In wartime, the ad hoc nature of ambulance expanded to the 'repurposing' of women. With the emphasis in both literature and praxis on male groups and bodies, women were rarely part of organised and public-facing ambulance activities. As has already been demonstrated, while women were an important and active part of classes and learning, early public meetings and workplace and civilian ambulance were all dominated, taught

[74]WL, MS.7922, Sergeant J. Simcocks, 'Ambulance notes', *The Volunteers' Magazine* (n.d.), in scrap-book containing newspaper and journal cuttings, 163.
[75]WL, MS.7936/8, Illustrations of stretcher-bearing, cart ambulances, operating tents, based on Cantlie's ideas and work.

and conducted by men, in Woolwich and in the army, police and fire services. Neither the ambulance manuals discussed above[76] nor the simulations depict women as participants in ambulance[77] – the images feature men alone, or else, in simulations, women were nurses waiting in tents. This segregation had been formalised in 1887 by the establishment of the St John Ambulance Brigade, made up of male and female 'divisions', with SJA-trained men in an ambulance division, and women in a nursing division. The necessity of having someone arrive immediately, to treat and move bodies in city streets and at war, when men were unavailable or fighting, meant that women moved into public view as participants in previously male-preserved activities, rather than solely in nursing. Even so, for Cantlie women had always been central to his determination for civilian ambulance. Indeed, it was they who were envisaged as being the backbone of the 'First Aid to Humanity' corps.

For Cantlie, embedding ambulance skills was about harnessing time. From the outset, the College of Ambulance was envisaged as the headquarters for a new 'First Aid to Humanity'. This 'corps would have branches all over the country, so that in every village there would be … persons whose duty it was to go *immediately* and attend those in trouble'.[78] Intervention did not stop there for ambulance-trained people:

> The responsibilities assigned to the public by the nation are great. They have charge of the injured during the first 20 minutes or more after the infliction of injury. As in war, so in peace it is the first 20 minutes after the injury that decided the future as to life or death of the individual who has sustained the injury … In our crowded streets a policeman or doctor can generally be called in say 5 minutes, in the suburbs in say 20 minutes and in the country some hours after the accident. The House Surgeon is not supposed to leave his hospital, but tells people who report the case to 'bring him in to us and we'll look after him … ' … the first 20 minutes … is the gap that 'First Aid pupils are designed and required to fill …'.[79]

The ambulance movement had equipped tens of thousands of people, including SAA and British Red Cross volunteers, cookery school students, volunteers in factories and on railways, and fire officers. In 1881, only three

[76]Hawes's *Manual of Popular Instructions* did not include illustrations, but they were a core part of the ambulance manual from the late nineteenth century onwards. Throughout the period discussed here, these popular manuals featured men as standard. See, for instance, G. Black, *First Aid: A Book of Ready Reference in Times of Emergency, a Manual of Instruction for Ambulance Students, and a Plain Practical Guide to the Rendering of Help in Case of Accident or Sudden Illness* (London and New York, 1887); J.S. Riddell [amongst other things, 'Examiner to the St Andrew's Ambulance Association, Glasgow, and the St John's Ambulance Association, London'], *A Manual of Ambulance* (London, 1894). Also, *Cassell's Household Guide*, unusual in depicting men in civilian clothing, still only featured men, 72–73.

[77]For example, see WL, MS.7936/8, Illustrations of stretcher-bearing, cart ambulances and operating tents.

[78]WL, MS.7922, *Glasgow Herald*, 10 September 1914, in scrap-book containing newspaper and journal cuttings.

[79]WL, MS.7936/13, Annotated ts., probably by Cantlie, on the importance of first aid knowledge and training for the general public, 1900–10.

years after public classes were established, the SJA noted that they had already issued 30,000 people with proficiency certificates.[80] By 1901 'an estimated twenty-three thousand of the twenty-eight thousand' English and Welsh police officers were trained.[81]

Whereas ambulance as a movement had developed exponentially, transport methods had not kept pace. Cantlie's 'golden 20 minutes' had observed biological time, compressing the period between injury and first response, but there time stalled. The next challenge was not only to find a way of transporting the injured party to hospital, but to do so quickly by navigating city streets in a new plan for vehicular choreography.

Ambulance organisation: London

In late-Victorian London, the provision of civilian ambulances adhered to a mixed economy of control. It mattered less who moved the injured or sick person than the growing urgency to convey that body promptly and comfortably to hospital. The Metropolitan Asylums Board operated a Land and River Ambulance Service from 1881, to transport patients with infectious diseases and provide rudimentary emergency care to those coming under the remit of the Poor Law. These were generally subsidised in order to encourage the poor to make greater use of the public service rather than relying on older, less trusted methods of transporting the sick to hospital.[82] There was also the philanthropically subsidised London Horse Ambulance Society (established in 1884), a journey which cost passengers 6s (plus 6d per mile after the second), a huge saving of between 19 and 36 shillings on the price of hiring a private horse ambulance.[83]

Such services were shortly thereafter supplemented from two sources, one voluntary and subscription-based, the other privately financed. From 1887, the SJA opened 35 first aid stations across London, with hand-pulled wheeled litters and stretchers made available for public use. Some of these were available at all hours for use by 'anyone who knows where they are situated and how to use the appliances' (generally unpaid volunteers or trained police), as at St Pancras railway station and Hyde Park Corner; others were available on a more limited basis, as with the wheeled litter stationed at Southwark's Borough Market 'during business hours', while the appliances stationed at St John's Gate were limited to use at public gatherings such as Lord Mayor's Day or the Jubilee processions, and were paid for by modest charges.[84] In 1889, banker and philanthropist Henry-Louis

[80]Isaac et al., *op. cit*., 538.
[81]*ibid*., 533.
[82]London Metropolitan Archives (subsequently LMA), PH/LAS/1/3, The London Ambulance Service, Report by the Medical Officer, 24 July 1901, 5.
[83]*The Globe*, 12 November 1897, 1.
[84]*ibid*., 6–7.

Bischoffsheim donated 62 wheeled litters to the City Corporation, which were to be positioned at police and fire stations. Known as the Hospitals Association Street Ambulance Service, it differed from the SJA in that it offered, at Bischoffsheim's own expense, hand ambulances for use 'at any and all times' but without providing training in their use. By 1909 there were approximately 400 wheeled litters across London. A small number of boroughs also maintained hand ambulances, as did the railway companies, the VMSC and several working men's clubs, although it was noted in the latter case that 'the men are of course only in attendance in the evenings'.[85]

For a sprawling metropolis, with a population exceeding four million in 1891, prompt delivery to hospital was a growing challenge for those moving injured bodies through London's notoriously congested streets. This mattered, noted contemporaries, 'considering the number of accidents that occur in its streets, and the risk of being knocked down or run over that everybody incurs on attempting to cross any of its crowded thoroughfares'.[86] Particular frustration was reserved for the failure to link the various emergency services across the capital, with legal, administrative and operational differences repeatedly cited as barriers against close collaboration at street level. For example, no arrangement existed for an ambulance waggon and assistants to accompany the Metropolitan Fire Brigade when called to a building fire, 'in order to attend to those who are burned, and also to apply artificial respiration to those who are suffering from suffocation'.[87] Similarly, the Metropolitan Police was frequently criticised for insufficiently training its constables in ambulance work, especially since these were often the first public servants to arrive on scene. 'How long shall London wait?', asked the SJA's *First Aid* periodical, before politicians accepted that 'It is the duty of the State to protect the lives of its subjects'?[88] The solution, according to one newspaper correspondent, was simple: place an ambulance station at each of the capital's fire stations, 'in the charge of two or more qualified, experienced first aiders', and then the services would be forced to work together.[89] The police and fire services were then seen as key components in ambulance choreography.

Amid a growing swirl of public commentary, relevant authorities investigated. An 1898 survey conducted by the London County Council (LCC) found that, over a four-week period, 994 persons were taken to the 10 principal London hospitals by means other than on foot. Of these, 642

[85] *ibid*., 7–8; The National Archives (subsequently TNA), London, HO/45/10317/126718, 'Ambulance service – London: summary as to the ambulances at present in existence', 6 November 1906; LMA PH/LAS/1/2, London County Council (subsequently LCC), *London Ambulance Service: Historical sketch of the origins, development and present organisation* (London, 1949), 2.
[86] *First Aid*, 15 December 1894, 40. See also P.K. Andersson, *Streetlife in Late Victorian London: The constable and the crowd* (London, 2013), 91–95.
[87] *First Aid*, 15 June 1895, 88.
[88] *ibid*., 15 May 1895, 80.
[89] *The Standard*, 19 July 1898, 4.

arrived in horse-drawn cabs or carts, 302 in wheeled litters, and 50 by other means (such as tramcar). While there was clearly a preference for horse-drawn transportation, which was both quicker and more comfortable than hand-pulled litters, the fact that some 70% of patients, the majority of whom would have been working class, were more likely to reach hospital by means other than civilian ambulance concerned medical practitioners. As the Superintendent of Guy's Hospital was quoted, 'It is very painful to watch the arrival of accidents at hospitals under the present system'.[90] Moreover, ambulance-trained men and women were taught the importance of cleanliness[91]; the same awareness or observance could not be guaranteed in non-specialist vehicles, a source of longstanding concern for Londoners,[92] and a danger to those more susceptible to infection, such as burn-injured people. Farther afield, in Berlin, the hygiene of ambulance vehicles was addressed, but the wider 'system', under different authorities with different ideals, was by 1906 overtly challenged by the local authorities.[93]

Similar discussions were taking place in London. From 1900, advocacy groups appeared as vocal proponents of reform. From 1904, a Metropolitan Street Ambulance Association pushed for 'a more efficient service for the streets of London', speaking on behalf of more than 1000 medical men as well as 'the best known men from every County Council constituency'.[94] Its president, the well-known surgeon Reginald Harrison, used his contacts in the media and government to stress London's lag behind other metropolises. Following first-hand observations, Harrison described New York's civilian ambulances (introduced in 1868) as a 'neat' example of combining bodily comfort with technological innovation and speed. Having learned from Civil War provision, New York's civilian ambulance was a 'solidly-built, easy-running vehicle, provided with a sliding bed or stuffed cushion, which fills the body, and is pulled out to receive the patient . . . and pushed back into its place after the patient is put on it'.[95] In Liverpool, where Harrison previously worked, its council had long operated a combined police and fire service, where horse-drawn rapid-transit vehicles were used

[90]LMA, PH/LAS/1/2, LCC, *London Ambulance Service*, 2.

[91]This training is evident in ambulance manuals referred to throughout this article, reflected in developments around germ theory and the antisepsis introduced by Joseph Lister at Glasgow General Infirmary in the 1860s – see discussions in N. Tomes, 'The private side of public health: sanitary science, domestic hygiene, and the germ theory, 1870–1900', *Bulletin of the History of Medicine*, 64, 4 (1990), 509–39; R. Whyte, 'Public health and public safety: disinfection, carbolic and the plurality of risk, 1870–1914', in Crook and Esbester (eds), *op. cit*., 127–47. A local newspaper article stated, 'We cannot learn ambulance work without teaching on hygiene, and [by 1909] this useful teaching is gradually having a wide beneficial effect': *Bradford Weekly Telegraph*, 22 January 1909, 7.

[92]M.L. Newsom Kerr, '"Perambulating fever nests of our London streets": cabs, omnibuses, ambulances, and other "pest-vehicles" in the Victorian metropolis', *Journal of British Studies*, 49, 2 (2010), 283–310.

[93]'The disinfection of ambulances in Berlin', *The Lancet*, 166, 4249 (1905), 1578–79; 'The first-aid service in Berlin', *The Lancet*, 166, 4294 (1905), 1808–09.

[94]A. James, *The Times*, 22 February 1904, 7.

[95]R. Harrison, *The Use of the Ambulance in Civil Practice* (Liverpool, 1881), 8.

for responding to civilian emergencies, including street accidents. That the Liverpool model was adopted in other northern industrial towns protected by a joint fire–police service – Leeds, Newcastle-upon-Tyne and Manchester, among others – was unsurprising, where horses were inexpensively hired to draw a variety of municipal vehicles.[96]

London, however, was never as simple, Harrison noted: its sheer 'vastness' as well as 'the complex and divided nature of its government' were obstacles to the provision of an effective public service and the smooth movement of animals, human bodies and machines.[97] Moreover, its fire brigade and police force were under separate administrative control, which erected barriers to joint working. Even so, in 1904 the Metropolitan Street Ambulance Association passed a resolution proposed by Sir William Church, President of the Royal College of Physicians, 'urging the need of the organization under one body of an improved ambulance service, summonable by telephone, and provided with more rapid transit'. They followed this with a deputation to the LCC's General Purposes Committee, in which Church argued that combining the work of the fire-fighting and ambulance services would produce 'a very great saving of cost to the community'.[98]

Eventually, in 1906, the LCC sought parliamentary approval for a scheme to keep motor ambulances at fire stations in areas where street casualties were most frequent, and summoned by street telephones. However, the House of Lords dismissed the Bill because the LCC 'was unable to furnish a precise estimate of the cost which would be incurred', while the City Corporation had plans to establish its own fleet of rapid ambulances under the auspices of the City of London Police.[99] A committee of inquiry, reporting two years later, found the existing system to be 'gravely defective', but recommended that 'the most efficient and economical system' involved an extension of the Metropolitan Asylum Board's ambulance service, despite its reticence to handle street cases.[100] This decision frustrated the surgeon Sir William Collins, a member of the small investigatory committee, and recently elected Liberal Member of Parliament (MP) for St Pancras, who set out an alternative plan involving the LCC, ostensibly to avoid any duplication of administrative effort as well as to co-ordinate available resources.[101] Consequently, Collins's Private Bill empowered the LCC to maintain a coherent, if spatially confined, 'ambulance service for dealing with cases of accidents or illness (other than infectious diseases) within the County of London exclusive of the City of London'. Only then would

[96]LMA, PH/LAS/1/3, LCC, 'The London Ambulance Service', 5 December 1902, 12–20.
[97]Harrison, *op. cit.*, 4.
[98]*The Times*, 3 May 1904, 7; *ibid.*, 10 May 1904, 11; *ibid.*, 1 July 1904, 3.
[99]LMA, PH/LAS/1/2, LCC, *London Ambulance Service,* 2.; *The Times*, 13 September 1909.
[100]British Parliamentary Papers (BPP), 'Departmental committee on the ambulance service in the Metropolis', *Report of the Ambulance Committee. Volume I – Report and Appendices*, 1909 (4563), 30.
[101]*ibid.*, 'Memorandum by Sir William Collins', 35–40.

London be provided with, in Collins's own words, 'an efficient ambulance service, under one municipal authority, supplied with motor vehicles, summoned by telephone calls'.[102]

Following further delays, in 1913 the LCC's General Purposes Committee recommended providing an ambulance service under the control of the publicly funded London Fire Brigade, citing 'the many points of resemblance' between the two services.[103] However, the newly named London Ambulance Service (LAS) would be operationally independent of its partner organisation, with its own drivers and medical attendants.[104] Such a concession was important as it protected the fire brigade from redeploying firemen onto ambulance work, while also protecting the duties of other public servants, notably the police, to act as first responders in the majority of so-called 'street accidents': 'the police constable, upon arrival on the scene thereof, will determine whether a motor ambulance or a hand litter is best suited for the removal of the injured person'.[105] To all intents and purposes, then, London had adopted Liverpool's model of civilian ambulance, by which all trained public servants were expected to respond to street incidents as part of a co-ordinated city-wide emergency service, while the shared workload kept capital costs and overheads within acceptable limits.

In practice, this mixed economy of civilian ambulance continued once the LAS was in operation, illustrating how improvisation and planning often went hand in hand. Incident log books for street accidents during the First World War period reveal the prevalence of police officers as first responders, who often reported the incident, performed emergency first aid and waited with the patient before the arrival of an ambulance. Police officers and other first responders (including local doctors) also commonly rendered first aid to the injured, including burn casualties, when they might apply olive oil to relieve pain, bandages, cotton wool and lint to cover the burned skin, and smelling salts and hot water bottles to treat shock, although this did not necessarily prevent death (nor largely, as we now know, was this medically helpful).[106] Of the 345 recorded calls for burns and scalds to the LAS between March 1915 and October 1919, 72% were made by the emergency services; only 3% came from family members or neighbours. Recognising the significance that 'no time should be lost in calling an ambulance', the LCC appealed to all householders with a private telephone to allow uniformed constables access in an emergency to summon an

[102]TNA, HO/45/10317/126718, *The Times*, 13 September 1909, 9; *ibid*., 14 September 1909, 11.
[103]LMA, unreferenced, Proceedings of the LCC, General Purposes Committee minutes, 15 December 1913, 1443.
[104]*ibid*., Report of the General Purposes Committee, 10 March 1914, 565.
[105]LMA, PH/LAS/1/3, LCC, 'Report of the Sub-Committee on the establishment of an ambulance service for London', 11 February 1914, 3.
[106]For examples, see LMA, LCC/PH/LAS/02/008, London Ambulance Service, Daily record of calls received, 17 October 1918, Call Number (subsequently CN) 11628; 14 November 1918, CN13630.

ambulance, and suggested that such premises could be marked with a small notification plate to indicate where the telephone might be so used.[107]

Indeed, time was central to the effective operation and accountability of the public service, especially since, in a decisive break with the existing SJA-endorsed practice, manned ambulances were made available 'at any hour of the day or night including Sundays and public holidays'.[108] For a civilian ambulance service to be considered efficient in terms of its allocation and use of public funds, it had to be demonstrably in control of time as well as injured bodies. It also had to be fully staffed and operational to cope with a growing workload, which, during an acute shortage of working-age men, led to the LAS employing women as drivers and attendants from 1915. This is a significant moment in the history of ambulance, as well as women's employment in the emergency services more generally; the profession was widely regarded as a masculine preserve, as it was framed to require highly skilled driving at high speeds, as well as needing a 'strong stomach' to cope with seriously injured patients.[109] While the identity of the driver and attendant is rarely recorded in the LAS log books, that incidents were responded to by women indicates that they were being trained, skilled and entrusted with the responsibility of saving lives through a prompt attendance; some of these women were photographed by Horace Nicholls, the government's home front photographer, in 1918, publicly demonstrating the skills of the novel all-female crew to a curious crowd.[110]

References to time delays, in reporting the accident or arriving at hospital, abound in the early entries, which reveal problems with miscommunication between first responders, telephone operators and hospitals. For example, 'some delay' was encountered with an incident involving a 60-year-old woman, Margaret S., who 'was badly burned about the arms and upper part of the body' in an accident involving a methylated spirit stove, following which the first responder, a fireman, sought a local doctor's assistance before calling for an ambulance. Margaret died two days later.[111] Miscommunication issues resurfaced during the Gotha air-raids of 1917–1918, which, according to historian Susan Grayzell, brought 'actual war experiences' to ordinary Londoners.[112] First responders were forced to improvise methods in dealing with severely injured casualties, while also issuing general advice

[107]LMA, LCC Proceedings, 27 October 1914, 769.
[108]LMA, LCC/PH/LAS/01/1, M. Cox, 'London Ambulance Service', 3 December 1930.
[109]J. Bowden, *Call an Ambulance!: The story of the London ambulance crews* (London, 1963), 20.
[110]Imperial War Museum, London, photographs Q31092–99, 'The employment of women in Britain, 1914–1918', https://www.iwm.org.uk/collections/photographs, accessed 2 June 2022.
[111]LMA, LCC/PH/LAS/02/008, 23 May 1915, CN79; *Marylebone Mercury*, 29 May 1915, 6.
[112]S. Grayzell, *At Home and Under Fire: Air raids and culture in Britain from the Great War to the Blitz* (Cambridge, 2012), 64–65.

to the public on how to respond in an emergency. For example, Jane (or Jennie) A., a book sewer in her early 20s, received first- and second-degree burns in a raid that struck a public shelter in Covent Garden in January 1918, in which she was taking refuge having left the relative safety of her home less than half a mile away. Firemen removed her from the burning ruins to nearby Charing Cross Hospital (then located just off The Strand) with three other adults, also with burn injuries, but no accommodation was available and they were transferred across the capital to St Bartholomew's. Jane died overnight from septicaemia, having developed an infection following hours of delays.[113] That life-altering decisions were being made at critical moments must be understood in the context of the available information in severely strained wartime conditions; nonetheless, improvised emergency care relied upon open lines of communication between responsible authorities.

If first responders had to hone time-critical skills in first aid and communication, so, too, did the general public. Several cases point to an urgency in educating parents to make use of public ambulances rather than improvise the transportation of critically injured children to hospital. In the panic of witnessing a child suffer a burn from their clothes catching light, many parents' instinct was to carry the injured to the nearest hospital by the quickest means possible. Yet speed did not always translate into control over time, as not all facilities had vacant beds to accommodate in-patients who, invariably suffering from shock, were moved by ambulance to an alternative site. This was the case with 6-year-old Henrietta N. and 12-year-old Lydia P., burned in separate domestic incidents in 1918, and taken by their mothers to the nearest hospital by tramcar, only to be turned away because neither hospital had beds available.[114] The advantage to summoning an ambulance by telephone operator – many of whom were women – was in deciding the most appropriate course of action at the incident location, thereby minimising the discomfort caused to the injured child and reducing the time taken to reach specialist treatment. Access to telephones, however, was limited to a relatively small number of wealthy upper- and middle-class subscribers, which therefore skews the data in the LAS log books to those able to gain such access, and helps account for the predominant use of telephones by emergency service workers to request assistance. In the absence of a private telephone line, 'accident' events could also be reported via street fire alarm posts or, from the 1920s, a public telephone box (ringing the number '0' would connect to the telephone exchange where the speaker could request the assistance of an emergency service in the years

[113]LMA, LCC/PH/LAS/02/007, 29 January 1918, CN1193; LMA, CLA/041/IQ/04/02/48, City of London inquest, 2 February 1918; Barts Health Archives, London, MR/3/9/1913–18, Register of patients: female, No. 171, 29 January 1918, 342.
[114]LMA, LCC/PH/LAS/02/007, 20 March 1918, CN8203; 16 September 1918, CN10328.

preceding the introduction of the three-digit '999' system in 1937).[115] Alternatively, the injured party was accompanied to hospital by means of private transportation and even occasionally by public transport, which inevitably posed risks of infection to people suffering from burns and shock.

Such cases tragically exposed the need to educate the public in embracing time and technology. However, that the majority of cases were arriving at hospital by ambulance does indicate that the public quickly placed their trust in the LAS's time-keeping and its fleet of motorised ambulances. Whereas the LAS made a tentative start, receiving 2405 emergency calls in 1915, the following year (its first full year of operation) it took 9244 calls, and the number increased steadily throughout the remainder of the war's duration (12,632 calls in 1917 and 15,911 in 1918). By 1920, the LAS was responding to nearly 20,000 calls annually, while soon after the yearly total had reached almost 30,000. Occasionally, however, the LAS felt obliged to issue advice on 'How to summon an ambulance' as a public reminder. In one example from c. 1923, it recorded that the average time from the receipt of a call to the arrival of an ambulance was eight-and-a-half minutes. Only with correct summoning via the telephone exchange would a motor ambulance be despatched 'at once … to the spot'. The vehicle would also be accompanied by 'trained attendants' – exclusively male following the cessation of hostilities – able to render first aid 'where necessary' before 'the sufferer is removed expeditiously' to the waiting hospital. Modern time and urban space were being compressed in the interests of public safety in London, while bodies and their gendered identities were being rescued, removed, repurposed and remoulded by a state-run civilian ambulance service.[116]

Conclusion

The choreography of ambulance – a set of skills; a body of trained responders; and emergency service vehicles – reflected the growing challenge of responding to 'accidents' in expanding metropolitan centres during the late nineteenth and early twentieth centuries. Certainly, as other historians have shown, the military played an integral role in shaping civilian ambulance. Yet more precisely, we have shown the influence of Scottish figures on its development north and south of the border and traced the exchange of ideas facilitated by the vectors of collaboration, muscular voluntarism and, not least, visionary individualism.

[115]E. Moss, '"Dial 999 for help!": the three-digit emergency number and the transnational politics of welfare activism, 1937–1979', *Journal of Social History*, 52, 2 (2018), 471–2; H. Glew, *Gender, Rhetoric and Regulation: Women's work in the civil service and the London County Council, 1900–55* (Manchester, 2016).
[116]LMA, LCC/PH/LAS/1/1, London Ambulance Service, 'How to summon an ambulance', ND c. 1923.

These individuals were often focused on one core determinant: time. Swift removal from the battlefield was aimed at securing and redeploying fighting men. This necessity informed civilian ambulance, but here the meaning of time changed. Now it was something more vigorously biological; the physical limitations of the human body ensured that nature reasserted itself to organise chaotic man-made space. In response, James Cantlie was adamant about the 'golden half-hour' (and later 20 minutes) in which time-regimented humans could arrest the encroachment of the 'natural order of things'. This was more of a challenge outside of cities, but here, too, Cantlie envisaged that training, harnessing improvisation, and local ambulance equipment would stymie rural obstacles. The concern with time continued and was a key reason in the decision to place equipment with police and fire services, as first-on-scene, as well as offering extant urban infrastructure. New technologies quickly transformed what was possible, with telecommunications, motorised vehicles and specialist ambulance stations coming together by 1920 to operate in an organised, efficient and timely way.

This mastery of time depended on movement. From educational beginnings, ambulance swiftly became about drill, about bodies moving together. This, as well as the hindrance posed by gendered clothing and beliefs, shown most clearly in the choreography around burn injuries, ensured that women were largely shut out of formalised first response. This was the case both in the SJA and SAA and in their plans to roll out civilian ambulance across urban centres. In this, they used masculine labour in the modern city: heavy industry, manufactories, the police and then the fire brigade in Glasgow, and in London the hospital network, followed by civilian uniformed services. Yet competition, which fuelled uptake, also hindered unified movement, at both a workplace and an interprofessional level, and then in the mixed economy of ambulance provision.

The returned emphasis on formalised education, with the establishment of the College of Ambulance in London, coinciding with the social transformations of world war, accelerated change. The conflict formalised structures and the appreciation of what ambulance could do. Yet improvisation was never far behind, and even came into its own, with women repurposed for active duty on the streets of the city, rather than confined to the sick room. Moreover, the issues they and first responders of all kinds faced also altered, as seen clearly in the case of burn injuries. While wartime uniform and changes in women's fashion did not shift the traditional dangers from burns that women faced domestically, aerial bombing and a deeper understanding of infection both adjusted first aid and the necessity of an organised ambulance service, thus circling the driving force back to the compression of time. By the 1920s, the city's modern mobile infrastructure had effectively scaled down urban space.

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