

REASSESSING FRONTLINE MEDICAL PRACTITIONERS OF THE BRITISH CIVIL WARS IN THE CONTEXT OF THE SEVENTEENTH-CENTURY MEDICAL WORLD*

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In 1676, Richard Wiseman recalled an incident from his days as a surgeon in the royalist armies during the British Civil Wars. Following the siege of Taunton, he was called upon to treat a man whose

Face, with his Eyes, Nose, Mouth, and forepart of the Jaws, with the Chin, was shot away, and the remaining parts of them driven in. One part of the Jaw hung down by his Throat, and the other part pasht into it. I saw the Brain working out underneath the lacerated Scalp on both sides between his Ears and Brows.

Faced with this horrific scene, Wiseman noted simply that he ‘was somewhat troubled where to begin’.¹ Many new challenges faced the medical personnel deployed in the Civil Wars, the English sphere of which represented the first significant conflict in that country for over 100 years. Civil War armies were reasonably large by contemporary standards and casualty figures were high.² Technological advances had led to the development of more sophisticated weaponry, with greater and more accurate killing power, whilst many who survived suffered from terrible wounds.³

A key feature of the so-called ‘Military Revolution’ of the early modern period was the emergence of armies raised on a larger and more permanent scale, supported by greater financial and bureaucratic mechanisms. In assessing how far Civil War armies confirm

evidence of the Military Revolution in Britain during this period, the historiography has focused on issues such as drill, discipline, equipment, organisation, funding, and supply.⁴ The issue of medical provision within this context has largely been ignored. Yet, if the Military Revolution in Britain is to be fully assessed, then the influence of continental knowledge and practice upon army medical services must also be considered. Quality medical care was vitally important in influencing an army's fighting capacity, and the strategic and tactical choices available to its commanders.⁵ Harold Cook argued that it was after the Glorious Revolution that the medical infrastructure of the British armed forces was brought in line with Continental practices, particularly those of the Dutch army, though he conceded that the transformation 'had its roots in previous decades'.⁶ In fact, as this article will demonstrate, almost all the developments identified by Cook can be found in Civil War armies.

By far the most comprehensive study of Civil War medical provision is from Eric Gruber von Arni, which is particularly successful in utilising the archives of parliament's permanent military hospitals of the Savoy and Ely house to provide an authoritative account of hospital care and nursing during the Wars. However, he devoted less attention to regimental medical staff or how medical developments in the Wars related to long-term developments in the military. If his argument that the Civil Wars 'elicited a dramatic improvement' in the medical care afforded to military casualties is to be accepted, then more consideration needs to be given to the personnel who delivered day-to-day treatments to Civil War armies in the field.⁷ Writing in 1902, C. H. Firth expressed a rather uncomplimentary opinion of these men, regarding the large majority as 'not remarkably skilful' and some 'notoriously incompetent'.⁸ Seventy years later, Clive Holmes was in agreement.⁹ Even Gruber von Arni regarded army surgeons as 'the least competent members of the trade'.¹⁰ As Margaret Pelling argued, the eccentric behaviour of early modern practitioners was exaggerated by nineteenth-century writers to distance themselves from the past, whilst

modern medicine represented the ideal.¹¹ The lack of a fresh perspective since Firth's time has simply perpetuated his views.¹²

This article will argue that like other technological and tactical aspects of the Military Revolution, the English were well-aware of current medical practice in European armies and endeavoured to implement similar procedures during the Civil Wars. Most failures can be attributed to administrative and financial miscarriages, rather than ignorance of contemporary medical developments. Moreover, there is little to suggest that medics mobilised for Civil War armies were any less capable than those who practised civilian medicine in this period. Unfortunately, due to discrepancies in the surviving evidence, this article has a significant bias towards the larger parliamentary armies but royalist comparisons and examples from parliament's other regional armies and garrisons will be used where possible.

I.

Theoretically, each of the parliamentary armies had one or two physicians, one or two surgeons, and an apothecary attached to the general staff, whilst each regiment had its own surgeon assisted by two mates. Like many of the military reforms of this period, this arrangement was based on that employed by the Dutch army in the Eighty Years War.¹³ It was the system that Cook noted that 'the British were accustomed to expect' by the beginning of William and Mary's reign and, in fact, seems to have been established practice in English armies by the time of the Civil Wars.¹⁴ A similar scheme was suggested in 1621 for a proposed army intended to recover the Palatinate and was actually employed in the army sent against the Scottish Covenanters in 1639.¹⁵ The adoption of the Dutch-style model brought English military medical provision in line with one of the foremost European armies of the day. Only the Swedish army of Gustavus Adolphus could boast more regimental medical personnel, with an extra two surgeons per regiment/brigade.¹⁶ Of course, the medical

provision stipulated on paper was not always implemented in practice. As Holmes pointed out, John Lilburne's regiment lacked a surgeon throughout the Eastern Association's northern campaigns in 1644.¹⁷ In mitigation, efforts were made to cover for absences. Roger Dixon (surgeon to Henry Bulstrode's regiment in the earl of Essex's army) cared for Thomas Tyrell's regiment until Tyrell got a new surgeon and one John Stanley cared for Sir John Meyrick's regiment until John Woodward arrived to take up his appointment.¹⁸

Parliament also copied the novel concept introduced by the Dutch of paying their troops all year round, not just during the campaigning season.¹⁹ Interestingly, the remuneration of parliamentary physicians and apothecaries compares advantageously to their Dutch counterparts. Physicians in the Netherlands received 600 guilders a year, which roughly equated to £100.²⁰ At the start of the war, the two physicians in Essex's army, Richard Gardiner and Edward Odling, were allocated 6s 8d a day, which amounts to more than £100 per year.²¹ In spring 1643, the wage was raised to 10s a day and they were issued with back-dated warrants for the additional pay to the date of their commissions.²² Thereafter, this was the going rate.²³ From 1649 onwards, the wage varied, possibly reflecting senior and junior status. For example, of the two physicians to the army for the invasion of Ireland, William French was paid at the 6s 8d rate but Joseph Waterhouse at 10s per day.²⁴ The apothecaries, who received no daily pay in the Dutch armies, were paid 5s a day in the parliamentary armies, rising to 6s 8s in 1647, and sometimes had two assistants at 2s 6d per day each.²⁵ Physicians and apothecaries were also able to claim expenses.²⁶

Parliamentarian surgeons were paid the same as those in the Netherlands, who could expect a wage of 25 stivers a day.²⁷ The military author John Cruso calculated this equated to 4s, whilst surgeons' mates received the equivalent of 2s 6d.²⁸ Thus, with some exceptions at the start of the war,²⁹ this was the pattern settled upon.³⁰ The same rates applied to the surgeons on the general staff.³¹ Those who incurred expenses beyond usual received

recompense from the public purse, whilst each regimental surgeon received money for a chest of medicaments.³² The provision for surgeons' chests, introduced in the Dutch army by 1612, had been brought into English armies by Charles I for the expedition to the Île de Ré in 1627, though apparently he did not honour the bill.³³

However, it is well-known that army wages were far from regularly paid in the Civil Wars.³⁴ Thomas Trapham, surgeon to Philip Skippon's regiment in Essex's army, was forced to petition the House of Commons in October 1644 for his arrears, whilst Lord Willoughby's surgeon, Isaac Demergue, was imprisoned for debt after his arrears were unpaid.³⁵ The failure to pay and supply regimental medical personnel potentially had a crucial impact on their army's military capabilities. For example, throughout summer 1644, Essex's army suffered from a complete lack of supplies, despite the earl's repeated requests.³⁶ By the time his army reached Lostwithiel, frequent deaths hampered their efforts to hold off royalist attacks because the surgeons were 'ill stored with provisions'.³⁷ On 1 November, four surgeons in Essex's army were referred to the Commissioners for Martial Affairs for ignoring orders to repair to the army shortly before the second battle of Newbury 'to the great Detriment of the Service'.³⁸ Two weeks previously, the neglected state of Essex's surgeons had been a matter of concern and it seems that the £4 advance they had received was not enough to convince them that their past and future wages would be honoured.³⁹

Eric Gruber von Arni argued that the royalists' lackadaisical approach to administration engendered insufficient medical provision but this assessment was based on sparse documentation surviving from the royalist headquarters at Oxford and, as Jonathan Worton highlighted, may not reflect the situation in the king's other armies and garrisons.⁴⁰ Recent historiography has shown that military administration in the king's camp was much more successful than previously thought, though the lack of evidence makes it impossible to tell if a uniform pattern of medical organisation and pay existed in royalist armies.⁴¹ A pay

establishment for the royalist garrison at Worcester in June 1643 allocated 2s 6d per day for one surgeon for every horse regiment.⁴² During the same period, Sir William Russell (governor of Worcester) paid the surgeon of his foot regiment, Richard Addis, 5s a day, money to furnish his chest and 10s a week for his apprentice (who was presumably acting as his mate).⁴³ At Lichfield, the surgeons seem to have been paid per cure, whilst Dr Whittaker the physician was paid £1 5s per week.⁴⁴ Elsewhere, fragmentary remains from a royalist account book suggests a standard rate: £10 each was paid to six surgeons but it is unclear what period of employment this sum covered.⁴⁵

II

Although Firth suggested that the wages paid to parliamentary physicians were suitable for ‘a man of some standing in his profession’, he claimed that those offered to surgeons were ‘too small to secure really able men’.⁴⁶ Admittedly, surgeons sometimes found their wages unsatisfactory. In October 1655, Thomas Fothergill (surgeon to the Protector’s regiment of horse) claimed his wages were ‘farre short of a subsistance’.⁴⁷ However, the parliamentary surgeons’ day-rate was the same as that accorded to a lieutenant of a foot regiment: an interesting comparison given that Firth concluded that ‘the officers both of horse and foot were well paid’.⁴⁸ Furthermore, unlike infantry officers’ wages, surgeons’ wages responded to changes in the economic climate until 1658, when the Protectoral government was financially over-stretched.⁴⁹ At this time in Scotland, George Monck ordered his surgeons to be entered as privates in regimental muster rolls so that they could earn an extra 9d a day.⁵⁰ Surgeons’ salaries in the parliamentary armies were certainly more generous than in the navy, where a surgeon received 30s a month and his mate 20s a month.⁵¹ These rates were raised to 50s and 30s respectively in 1653.⁵²

Yet, what makes Firth's claim particularly bold is that it is extremely difficult to discern what a surgeon might expect to be paid in this period. Early modern surgeons (and indeed physicians, though they seldom cared to admit it) earned their living on a case-by-case basis by negotiating a contract with their patient (or the patient's family or friends), in which the practitioner received an agreed fee in return for the time their patient spent under their cure.⁵³ The fees agreed would vary according to the severity of the condition and the length of time over which treatment was administered. Contracts that appear lucrative at first sight often masked the fact that the surgeon might be treating the patient for several years.⁵⁴ Salaried positions were unusual and where they existed, a practitioner expected to supplement this with other commissions.⁵⁵ Surgeons stationed in garrison towns, for example, may have acquired clients from the civilian population upon whom they were billeted. As Cook noted, the prominence of a military position provided the opportunity to build up contacts and reputation, both of which might be used to expand a surgeon's civilian practice when he left the army.⁵⁶ Anne Digby demonstrated that at least from the eighteenth century, state-salaried positions were eagerly contested, despite sometimes low wages.⁵⁷ The dangers and hardships of war may have made army positions less attractive state positions but for those prepared to brave the risk, there were rewards to be had.

Indeed, loyalty to a cause brought the promise of material rewards beyond simple wages. Even surgeons like Trapham might be rewarded with an honorary MD, whilst after the Restoration, John Knight (surgeon to Prince Rupert's forces at Leicester in 1645) was appointed serjeant-surgeon to Charles II.⁵⁸ On 16 July 1649, the Commons passed an act enabling those who had served in their armies to use their pay debentures to purchase Crown lands.⁵⁹ Trapham redeemed his debentures to acquire parcels of land in Lincolnshire.⁶⁰ Likewise, Daniel Judd, surgeon to Sir Arthur Hesilrige's regiment in the New Model, purchased several messuages in Middlesex.⁶¹ The acquisition of land brought the benefits of

status, diversification of income and investment. Furthermore, like other officers, surgeons brought debentures well below their face-value from soldiers (for whom ready cash was more attractive) to acquire sizeable estates.⁶² Judd used eight soldiers' debentures to secure his purchases in Middlesex valued at £184 14s, whilst more spectacularly, Henry Cleare and his son, also Henry, brought the manors of Ennerdale in Cumberland and Radnage in Buckinghamshire for £1278 19s 09d using 37 soldiers' debentures.⁶³

All this said, to suggest that meagre wages might put off able surgeons from joining Civil War armies presumes that such men would have only been attracted to the service by financial benefits. It is true that in some cases, parliament resorted to impressing surgeons and conscription does not have a reputation for obtaining skilled men.⁶⁴ However, for those who willingly volunteered, higher ideals may have overridden material concerns. Lawrence Loe, the earl of Essex's first staff surgeon, seems to have shared his master's objectives for the parliamentary coalition. He apparently allied himself to the Presbyterian movement in London, which looked to the earl for leadership until Essex's death in 1646.⁶⁵ Thomas Burton, surgeon to the Southwark White Auxiliaries of the London Trained Bands, was described in 1652 by no less a man than Oliver Cromwell as 'very honest and faithfull to the interest of the Commonwealth'.⁶⁶ Preambles couched in distinctly godly language preface the wills of parliamentary surgeons John Anthony, Jonathan Crosse, Bradbury Clarke and Henry Barnwell.⁶⁷ Perhaps more instructively, a number of former parliamentary surgeons were practising non-conformity at the Restoration. The two Cleares were prosecuted for attending a Presbyterian conventicle at Kingston-upon-Thames in 1677 and Edward Atkinson was a close friend of the Socinian preacher John Knowles.⁶⁸ In 1665, Atkinson wrote a heart-breaking letter to Knowles following the death of his 'Deare, Deare, Deare wife' in which he took comfort in the 'great Satisfacc[i]on' she had found in attending the Independent congregation led by George Griffith in London during her last months.⁶⁹

Conversely, when William Clowes, serjeant-surgeon at the royalist army's headquarters in Oxford, begged to compound for his estates in 1646, he presented his royalism as an inevitability as the king's 'sworn servant and surgeon for these 40 years'.⁷⁰ A more eccentric expression of royalism allegedly came from Edward Molins. Molins served as a surgeon with the royalist forces from the beginning of the war until he was captured at the siege of Arundel in January 1644. Nevertheless, his reputation as a lithotomist was such that Cromwell sought his treatment when suffering from a bladder stone in 1656.⁷¹ The Genovese Ambassador, a friend of Cromwell, reported that Molins gave Cromwell a draught to relieve the pain and then turned him upside down three times in imitation of how Molins claimed the Protector had treated England. Molins refused any payment but asked for a drink, which he then used to toast King Charles.⁷²

It was not only surgeons of whom Firth held a low opinion. He also questioned whether the physicians were sufficiently qualified because few were fellows of the College of Physicians.⁷³ As Table 1 shows, that much can be verified. However, Margaret Pelling has shown that in the seventeenth century there was 'a lack of real difference in educational attainment between Fellows and a significant number of outsiders'.⁷⁴ The College's role was simply to licence practitioners of physic within a seven-mile radius of London and so prosecution of those who practised without their licence took precedence over other activities such as literary production or anatomy lectures.⁷⁵ Moreover, although the most important academic centres for medical learning were located abroad, the College limited those with qualifications from foreign universities to becoming licentiates and censored continental authors in favour of the classical greats.⁷⁶

Considering Gruber von Arni's assertion that the number of graduate physicians in England was 'abysmally low' at this time, then Table 1 might give a brighter view of Civil War physicians' educational credentials.⁷⁷ That said, university was not the only method of

qualification. Many physicians learnt by apprenticeship and even university-educated physicians increasingly undertook practical apprenticeships alongside academic study.⁷⁸ In fact, former Civil War soldier-turned physician Thomas Sydenham recommended apprenticeships over attendance at university for would-be physicians.⁷⁹

Table 1: Physicians in Civil War armies⁸⁰

Name	Army	London College of Physicians status (brackets indicates status after army service)	Academic qualification (brackets indicates qualification after army service)
Nathaniel Chamberlain	Earl of Essex	-	BMed Oxford 1636
Richard Gardiner	Earl of Essex	-	-
John King	Earl of Essex	-	MD Leiden 1629
Paul de Laune	Earl of Essex	Fellow 1618	MD Padua 1614
Anthony Metcalfe	Earl of Essex	-	-
Francis Neville	Earl of Essex	-	-
Edward Odling	Earl of Essex	-	(MD Cambridge 1632 by royal letter)
Dr [John] Pordage	Earl of Essex (Windsor garrison)	-	MD Leiden 1639
Samuel Read	Earl of Essex	-	Entered Leiden 1632
Thomas Sheafe (may not have served)	Earl of Essex	Fellow 1637	MD Cambridge 1636
John St John	Earl of Essex	-	MD Padua 1640

Adam Stryall	Earl of Essex/New Model	-	-
Edward Emily	Eastern Association	Licentiate 1641 (Fellow 1647)	MD Leiden 1640
Henry Glisson	Eastern Association	(Honorary Fellow 1664)	MD Cambridge 1639
William Staines	Eastern Association	Fellow 1641	MD Cambridge 1639
John Pratt	Southern Association	(Candidate 1649) Had appeared for examination in 1636 but too few censors were available	MD Cambridge 1645
Henry Hayhurst	Northern Association	-	No medical degree but BA Oxford 1619
John Troutbeck	?Northern Association/New Model	-	(MD Cambridge 1661 by royal letter)
John Baber	New Model	(Candidate 1651, Fellow 1657)	MD Leiden 1648
Samuel Barrow	New Model	-	-
Claudius Fenwick	New Model	-	MD Franeker 1647

John French	New Model	(Examined for membership 1648 but no admittance record)	(MD Oxford 1648)
William French	New Model	-	(MD Cambridge 1647)
Jonathan Goddard	New Model	Fellow 1646	MD Cambridge 1643
Thomas Payne	New Model	-	-
John Short	New Model	-	Entered Leiden 1639
Joseph Waterhouse	New Model	-	(Rewarded MD Oxford 1651)
Dr Massey	Plymouth garrison (parliamentarian)	-	?
John Hall	Plymouth garrison (parliamentarian)	-	?
Francis Goddard	Oxford Army (royalist)	-	MD Oxford 1641
Samuel Turner	Oxford Army (royalist)	-	MD Padua 1611
Dr Whittaker	Lichfield Garrison (royalist)	?	?

Apprenticeship has suffered from later social devaluation, which might partly explain the negative portrayal of Civil War surgeons, as this was their main method of education.⁸¹ In the London Barber-Surgeons' Company, apprentices were bound to liverymen for at least seven years, which consisted of on-the-job training accompanied by teaching and personal study. Apprentices were admitted as freemen at the end of their term of service but none was allowed to practice surgery without first being examined by the Company.⁸² Furthermore, regular dissections and lectures took place at Barber-Surgeons' Hall, attendance at which was (apparently) compulsory for all the Company's surgeons.⁸³ Tables 2 to 6 give a rough indication of the proportion of Civil War surgeons who were free of the London Barber-Surgeons' Company.⁸⁴ It must be stressed that this evidence should not be used too definitively, as it is sometimes impossible to make clear identifications between a particular Civil War surgeon and a man of the same name in the Barber-Surgeons' Company.

Table 2: Surgeons in the earl of Essex's army⁸⁵

Freeman of the London Barber-Surgeons' Company	Identifiable surgeons not in the London Barber-Surgeons' Company	Other unidentifiable surgeons
?William Alley/Allen	John Anthony	Bromfield
James Bricknell	Stephen Beddard	Mapheston
?John Browne	Nicholas Boden	Mr Purlervant
[?Thomas] Burton	Matthew Broad	Mr Rondes
Henry Cleare Snr	John Broughton	Mr Stanley
?Edward Cooke	John Cleare	
Roger Dixon (translated)	James Cooke	
John Franklin	James Cooke	
Nathaniel Harris	John Fletcher	
Nicholas Heath	Peter Francis	
Timothy Langley	Meredith Jones	
Lawrence Loe	Thomas Kinker	
Ralph Nicholson	Thomas Lugg	
John Rice	William de Margey (possibly the same man as below)	
William Roberts	Isaac de Morgane/ Demergue	
?Mr [?Christopher] Southwell	Thomas Noxe	
?James Swright/?Wright	William Parkes	

Thomas Symonds	Llewellyn Price	
Thomas Trapham	Francis Rishworth	
?Hugh Ward	Peter de Sallenova	
James Winter	Richard Searle	
?John Woodward	Isaac Smitheis/Smythes	
	William Stannard	
	Richard Thurston	
	Christopher Tiack	
	John Waylett	
	Robert Woodward	

Table 3: Surgeons in the Eastern Association⁸⁶

Freeman of the London Barber-Surgeons' Company	Identifiable surgeons not in the London Barber-Surgeons' Company	Other unidentifiable surgeons
Matthew Birchinall	Richard Barton	
Enoch Bostock (translated)	Edward Atkinson	Mr Berry
?Samuel Browne	Joyce Bennett	Mr Boyer
Bradbury Clarke	Timothy Bond	Mr Fudge
?William Clarke	James Bowman	Mr Goodrich
Joseph Echell	Thomas Bullock	Mr Gutteridge
?Mr [?Richard] Elliot	Jonathan Crosse	
Thomas Fothergill (by redemption)	Edward Elsing	Mr Lindsey
?Mr [?Christopher] Goulesborough	Basset Jones	
?John Nichols	William Kseamd	Mr Meyring
Nicholas Seres	Francis Loyal	Mr Sandford
John Waylett	Henry Lloyd	Mr Siler
John Wyther	William Le Neave	Mr Timms
	Ar. Purlevant	
	Abraham Roe	
	Lodowick Sommervell	
	Thomas Tylor	
	John Vandale	

	Andrew Vanderlash	
	John Walker	
	John Wasse	
	Edward Webb	

Table 4: Surgeons in the Southern Association⁸⁷

Freeman of the London Barber-Surgeons' Company	Identifiable surgeons not in the London Barber-Surgeons' Company	Other unidentifiable surgeons
?Richard Allen	Thomas Aisernelry	Mr Bicknor
Alexander Aurelius	James Brichett	Mr Hannam (?Elnathan Hannam)
Henry Cleare Jnr	Nicholas King	Mr Harris
?John Watts	Peter Ray	
	James Stocke	

Table 5: Surgeons in the New Model Army⁸⁸

Freeman of the London Barber-Surgeons' Company	Identifiable surgeons not in the London Barber-Surgeons' Company	Other unidentifiable surgeons
?William Alley/Allen	Henry Barnwell	Mr Bettris
Alexander Aurelius	Stephen Beddard	Mr Browne
Samuel Bradshaw	Matthew Broad	Mr Knowles
Henry Cleare snr	Humphrey Cole	Mr Simmes

Henry Cleare jnr	William Dodd	
(?James Cleare)	James Donaldson	
?Edward Cooke	Thomas Fothergill	
?Mr [?Matthew] Coutch/?Crouch	Nathaniel Frakes	
Thomas Crutchley	Richard Gwyn	
Thomas Harding	Thomas Harvest	
Giles Hicks (translated)	Richard Hinges	
?Mr [?Edmund] Higgs	John Hubbard	
Richard Morley	Humphrey Hughes	
Guy Noble	Meredith Jones	
John Payne	Daniel Judd	
Daniel Pew/Pugh	Thomas Lawrence	
Robert Rand	Robert Mustow	
Thomas Symonds	Valentine Nickson	
Thomas Trapham	Francis Prujean	
Richard Tompkins	Francis Rishworth	
James Winter	Arnold Sallenoza	
	Isaac Smitheis/Smythes	
	Bonham Spencer	
	Thomas Standford	
	Walter Stephenson	
	Sandys Suter	
	Walter Thompson	

	Mr [?John] Walker	
	Edward Wentworth	

Table 6: Surgeons in royalist armies⁸⁹

Freeman of the London Barber-Surgeons' Company	Identifiable surgeons not in the London Barber-Surgeons' Company	Other unidentifiable surgeons
William Clowes	Richard Addis	Mr Bowman
Edward Hales	Thomas Brugis	Monsieur Parsonnes
Henry Johnson	Stephen Fosset	Mr Spooner
John Knight	Richard Irish	Thorneton
Edward Molins	Gervis Nevill	
Humphrey Painter	James Rummage	
?William Thorpe	John Shelvock	
Mr [?Richard] Watson	James Thornehill	
Richard Wiseman		

What of the education of the remainder? Taking the Eastern Association as an example, barber-surgeons' companies have been found in Ipswich, Lincoln, Norwich and St Albans.⁹⁰ Furthermore, large numbers of barber-surgeons existed in the sizeable corporate towns of King's Lynn, Colchester and Great Yarmouth, which suggests that although surgeons did not have their own company, they may have been included in conglomerate companies with related crafts. This was certainly common practice in other parts of the country like the north-west.⁹¹ Unfortunately, very few records for these companies survive.⁹²

The recording of one ‘Andreas Vanderlas’ as warden to the Norwich Barber-Surgeons’ Company in 1645 provides an intriguing hint that many of the surgeons of the Eastern Association, which was largely raised in the Eastern Counties, may have come through the ranks of East Anglian barber-surgeons’ companies.⁹³ Was this the same Andrew Vanderlash who was surgeon to Sir John Norwich’s troop in the Eastern Association and paid out of the Norwich weekly assessment?⁹⁴

That said, Pelling discovered during her research into the Norwich barber-surgeons that large numbers lay outside the formal procedures of apprenticeship, freedom, and guild membership.⁹⁵ Masters could not enrol an apprentice into a company without paying ‘extortionate’ fees and many avoided this if possible, whilst the desire to enforce guild procedures varied with time.⁹⁶ Apprenticeships operating outside the auspices of municipal craft companies did not necessarily produce less-skilled surgeons. The Elizabethan military and naval surgeon William Clowes (father of Charles I’s Serjeant-Surgeon), whose treatise on gunshot wounds *A proved practice for all young surgeons* became a standard work for the generation of Civil War surgeons, had not served a formal apprenticeship in a barber-surgeons’ company.⁹⁷ Clowes was not afraid to criticise ignorant surgeons and though he may have been biased because of his own experience, he claimed to know many surgeons who had no formal training but practised ‘honestly, carefully, painfully, and skilfully’.⁹⁸

III

It remains to consider how Civil War medical practitioners may have fared in practice. Many of the daily medical conditions that they would have encountered, such as ulcers, fractures, ‘fluxes of the belly’, dislocations, and even amputations, would have been common civilian complaints. However, Wiseman contended that ‘Wounds made by Gun-shot are the most complicate sort of Wounds that can be inflicted’, a notion with which John Woodall

concurrent.⁹⁹ Woodall, surgeon-general to the East India Company and a former military surgeon, recalled that when the Privy Council instructed the London Barber-Surgeons' Company to impress surgeons experienced in curing gunshot wounds for the voyage to the Île de Ré, 'by reason of that long and happy peace that our Nation had enjoyed, many good Surgeons being put to it at the first, were likely to have been found somewhat to seek therein'. He thought the same could be said on the eve of the Civil Wars.¹⁰⁰

With war against Scotland looming in 1639, Woodall republished *The surgeons mate*. Like Clowes's treatise, Woodall's work was probably indispensable to Civil War surgeons. The royalist surgeon Thomas Brugis certainly admitted to following Woodall's methods.¹⁰¹ The wide availability of Continental literature in Britain prior to the Civil Wars is a well-known phenomenon to military historians.¹⁰² Yet, Civil War medics too were well-read in the medical works of leading Continental military practitioners. The works of Wiseman and James Cooke (surgeon to the parliamentary garrison at Warwick) incorporated the techniques of men like Hieronymus Fabricius, Ambroise Paré, and Johannes Scultetus.¹⁰³ The literature of the military revolution was not merely confined to drillbooks.

Some Civil War surgeons may have gained previous experience by enlisting in the English regiments serving in Protestant armies on the Continent. No evidence of this has yet been traced, though some were fortunate enough to learn from those with prior military experience. For example, the younger Clowes had been apprenticed to his father, whilst Timothy Langley (staff surgeon to Essex's army from June 1644) had been apprenticed to Henry Boone, Woodall's pupil.¹⁰⁴ Several surgeons honed their skills by serving in the war against Scotland, including Loe and Langley.¹⁰⁵ The Civil Wars were themselves a learning experience. Henry Johnson, surgeon to the king's own troop of horse, took his apprentice William Gill with him on campaign in the Civil Wars, whilst many of the unnamed surgeons' mates in pay warrants must also have been apprentices.¹⁰⁶

It was not just apprentices who learnt on the job. As Cook argued for the later seventeenth century, military service not only provided a training ground for medical practitioners but also reinforced the growing trend towards empirical, practical, ‘clinical’ medicine.¹⁰⁷ Military practitioners dealt with large numbers of men at once and thus had little time for the physic of learned physicians, which sought the causes of disease in the unique physiological conditions of each person's constitution. Instead, they sought specific cures for specific diseases, which led to uniformity in diagnosis and treatment.¹⁰⁸ Cook himself noted the involvement of Civil War practitioners such as John French in the new ‘chemical medicine’, whilst according to Stephen Rutherford, the writings of Civil War practitioners are examples of ‘evidence-based practice’. These men demonstrated good understandings of physiology, anatomy, antiseptics, infection control, and pharmacology, and embraced forward-thinking and scientific principles that enabled them to become ‘pioneers of medical practice’.¹⁰⁹ Men like the captain of a company of dragoons on whom Wiseman experimented with an innovative dressing survived who otherwise would have perished.¹¹⁰

That said, even the most competent practitioners could do little in the face of the epidemics that ripped through soldiers’ quarters and paralysed armies.¹¹¹ Failure to treat disease undoubtedly had a severe impact on an army’s capability, though military historians must be cautious of exaggerating its effects. As Malcolm Wanklyn and Frank Jones argued, tactical contingency was also important. They pointed out that whilst the New Model was severely hit by the ‘New disease’ (probably typhus) during winter 1645, that Army still outnumbered their opponents by a considerable margin but it took Fairfax four months to force the surrender of the royalist army in the west and another two months to capture the major garrisons.¹¹²

No doubt some surgeons were incompetent. Firth cited the case of Mr Fish, a former surgeon’s mate who had been forced to resign to avoid court martial ‘for some miscarriages’

but was later appointed surgeon of the artillery in Scotland. Monck begged Cromwell to rescind Fish's commission, complaining that Fish was 'unfit to take such an employ upon him' because he was 'never bound prentice to the profession'.¹¹³ Yet, Monck's letter infers that there were plenty of other competent surgeons who could have been appointed in Fish's stead. Elsewhere, Holmes backed up his claim that 'a number of chirurgions were unqualified' with an Indemnity Committee case in which James Bowman, surgeon to the earl of Manchester, was prosecuted by Eber Birch of Beverley for using physic as well as surgery.¹¹⁴ However, although surgeons were theoretically confined to performing outward manual procedures, they had long assumed certain privileges in the practice of physic. This concerned physicians, who jealously guarded their right to administer internal medicine.¹¹⁵ Woodall argued that in military contexts where a physician may not be available, it was 'uncharitable to forbid an expert Surgeon at any time, or in any place, the use of the instruments and medicines which are necessary to his art, for the curing of his patients'.¹¹⁶ It appears that Bowman was not so much unqualified as, like many others amongst the Indemnity papers, being prosecuted for the necessities of war.

Further investigation into the case of Edward Cooke is similarly revealing. Firth highlighted that Cooke had been accused of incompetence and neglect of his patients.¹¹⁷ Cooke had served as surgeon-general to the army in Ireland but this case refers to the Flanders campaign conducted by the Protectorate in 1657-9.¹¹⁸ Cooke had been sent to Dover to supervise the reception of casualties from Mardyke and Dunkirk but his efforts were hampered by the poor planning and lack of funding that surrounded the campaign.¹¹⁹ Complaints arose about the standard of care in Dover and Cooke was forced to answer for it. In his defence he appended a statement signed by 31 of his patients, who testified to his personal skill and care.¹²⁰ Moreover, 40 wounded soldiers in Dover subsequently petitioned to be removed to London not due to neglect from Cooke and his army assistants, by whom

they ‘bin Carefully and duely dressed’, but because they had been recently transferred to the care of local civilian surgeons, one of whom was ‘a public Drunkard’ and the other ‘stricken in yeares’.¹²¹ The Dover debacle, coupled with criticisms from Wiseman of civilian surgeons, illustrates that civilian medics were used to supplement army practitioners to spread the workload in garrison town, not, as Firth maintained, because the latter ‘were not remarkably skilful’.¹²² This is not to deny that parliament dispatched leading London medics when senior officers were sick or wounded, such as when Skippon was wounded at Naseby, though the importance of that victory prompted parliament to ensure that regimental medics had the resources to deliver exemplary care to all the wounded.¹²³

IV

James Wheeler argued that prior to the Civil Wars, ‘while the English were abreast of many of the tactical and technological aspects of the continental Military Revolution, they had still failed to undertake the interrelated financial and administrative changes which were essential and integral long-term parts of that process’. It was not until the Civil Wars that these changes were implemented.¹²⁴ Wheeler’s argument applies as much to frontline medical provision as to any other aspect of the Military Revolution. Many features of Civil War regimental medical provision had been trialled previously but it was not until that conflict (and through the implementation of the weekly assessments and the excise) that the Continental military medical practises highlighted by Cook were implemented in Britain for any sustained period of time. If warfare drives medical advancement as the cliché suggests, then the experience of the Civil Wars is a reminder that progression is not based solely on the battlefield environment but also on the bureaucratic procedures that supported it. The raising of armies might provide many new opportunities for practitioners to improve their knowledge and treatment of military conditions, as well as develop new techniques in response to the

challenges posed by the evolution of weaponry and engage in aspects of medicine beyond their strictly defined civilian roles (the practice of physic by surgeons, for example).

However, such opportunities were more likely to have been taken up by practitioners if the promise of sufficient material compensation for their efforts was fulfilled.

That said, as Gavin Robinson maintained, during the Civil Wars resources were often contingent on political circumstances and the outcome of battles. Reliable tax revenues did not guarantee success and administrators had to work hard to make victory possible.¹²⁵ Parliament had constructed sustainable tax systems to support its armies in a long war by mid-1643 but in autumn 1644, it took the humiliating surrender at Lostwithiel to jolt parliament into supplying their surgeons. The recognition that resources were contingent on political circumstances explains why the evolution of British military medicine was a process of ebbs and flows, rather than teleological development. What the Glorious Revolution resolved, as Wheeler again argued, was the difficulties in government finance which stemmed from the conflict of political philosophies between the Stuarts and their parliaments that had re-emerged to plague English military operations at the Restoration.¹²⁶ This political shift no doubt had as profound implications for the administration of military medicine as the rest of military administration. Yet if a revolution may build upon previous advances, and its impact may not be fully realised until later, but it occurs where a paradigm shift takes place that qualitatively reshapes subsequent affairs, then it is in the Civil Wars that we must place the revolution in British military medicine.¹²⁷

By placing Civil War regimental medics in the context of what is known about seventeenth-century practitioners more generally, it seems that they differed little from their civilian colleagues, in terms of their education and training, whilst a medical career in the army was potentially a lucrative one. With this in mind, it is difficult to argue that the armies habitually enlisted substandard practitioners. No doubt some were more skilled than others

but the Wars provided an environment in which the innovative could flourish. Of the 580 parliamentarian wounded who received medical treatment in Northampton in the immediate aftermath of the battle of Naseby, only forty-six (7.93 per cent) were subsequently noted ‘*mortuus est*’.¹²⁸ Lack of comparable evidence from the beginning of the Wars makes it difficult to determine how far the survivors had benefitted from observation-based practice conducted over the years of sustained warfare but it does not seem unreasonable to suggest that this may have been the case. Moreover, as Rutherford pointed out, the numerous maimed soldiers who petitioned for financial relief from the state during the Civil War years had survived severe and often multiple injuries.¹²⁹ Some claimed relief as late as the 1700s, showing that they survived their injuries for decades afterwards.¹³⁰ Indeed, it is not known what happened to the soldier from the siege of Taunton with which this article opened but he was still alive a week later when Wiseman left him to move on with the rest of the army¹³¹

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¹ R. Wiseman, *Severall chirurgicall treatises* (London, 1676), p. 402.

² E. Gruber von Arni, *Justice to the maimed soldier* (Nottingham, 2015), p. 8.

³ R. A. Gabriel, *Between flesh and steel* (Washington, WA, 2013), p. 1.

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- ⁴ A. Hopper, 'The armies', in M. J. Braddick, ed., *The Oxford handbook of the English Revolution* (Oxford, 2015), p. 267.
- ⁵ *Ibid.*, p. 261.
- ⁶ H. J. Cook, 'Practical medicine and the British armed forces after the "Glorious Revolution"', *Medical History*, 34 (1990), pp. 1-26, at pp. 1 and 26.
- ⁷ Gruber von Arni, *Justice to the maimed soldier*, p. 2.
- ⁸ C. H. Firth, *Cromwell's army* (London, 1962), pp. 254-5. This work was originally published in 1902.
- ⁹ C. Holmes, *The Eastern Association in the English Civil War* (London, 1974), p. 174.
- ¹⁰ Gruber von Arni, *Justice to the maimed soldier*, p. 43.
- ¹¹ M. Pelling, *The common lot* (Harlow, 1998), pp. 232-4.
- ¹² C. Carlton, *Going to the wars* (London, 1992), pp. 226-8; Gabriel, *Between flesh and steel*, p. 71; K. Roberts, *Cromwell's war machine* (Barnsley, 2013), p. 122.
- ¹³ British Library (BL), Kings MS 265, fos. 44v-45v (pay-rates of the Dutch army in 1630); J. Cruso, *Militarie instructions for the cavallrie* (Cambridge, 1632), p. 24; H. Hexham, *The second part of the principles of the art militarie* (London, 1638), p. 6 (note irregular pagination).
- ¹⁴ Cook, 'Practical medicine and the British armed forces', pp. 4-5.
- ¹⁵ F. Grose, *Military antiquities* (London, 1786), I, pp. 278 and 370-8; TNA, SP 14/119/93 (report presented by the council of war for raising an army for the Palatinate, 13 February 1621), fos. 159-64; J. Rushworth, *Historical collections* (London, 1682), pp. 1046-1050.
- ¹⁶ Gruber von Arni, *Justice to the maimed soldier*, pp. 5-6; G. Parker, 'The universal soldier' in G. Parker, ed., *The Thirty Years' War* (London, 1997), p. 183; G. Parker, *The army of Flanders and the Spanish Road, 1567-1659* (Cambridge, 2004), pp. 233-5; C. L. Heizmann, 'Military sanitation in the sixteenth, seventeenth, and eighteenth centuries', *Annals of Medical History*, 1 (1917-18), pp. 281-300, at pp. 287-94.
- ¹⁷ Holmes, *Eastern Association*, p. 174.
- ¹⁸ TNA, SP 28/127 fo. 310v (Aylesbury garrison accounts, 6 May 1643), SP 28/2B/III fo. 510 (pay warrant for John Stanley, 7 September 1642).
- ¹⁹ P. Wilson, *Europe's tragedy* (London, 2010), p. 145.
- ²⁰ BL, Kings MS 265, fo. 45v. A guilder was comprised of twenty stivers and Cruso's *Militarie instructions* suggests a conversion rate of six stivers to a shilling. Thus 600 (guilders) x 20 = 12,000 (stivers), which ÷ 6 = 2,000 (shillings) i. e. £100.

²¹ TNA SP 28/3B/II fo. 440, SP 28/6/I fo. 80, SP 28/6/II fo. 252 (pay warrants for Richard Gardiner, 23 November 1642, 1 March 1643 and 12 April 1643), SP 28/3B/II fo. 442, SP 28/5 fo. 335 (pay warrants for Edward Odling, 23 November 1642 and 28 February 1643). The pay warrants show that the physicians were paid every day, so on a calculation for 365 days, their salary would have been £121 13s 4d.

²² TNA, SP 28/7 fo. 127 (pay warrant for Edward Odling, 26 May 1643), SP 28/7 fo. 145: (pay warrant for Richard Gardiner, 29 May 1643).

²³ For example, TNA, SP 28/12/I fo. 69 (pay warrant for Edward Odling, 5 February 1643/4), SP 28/25/III fo. 379 (payment to Henry Glisson (Eastern Association) for 1 January to 26 February 1644), SP 28/29/I fo. 9 (pay warrant for Adam Stryall (New Model), 17 April 1645). Stryall only collected 5s a day in accordance with the New Model Ordinance, whereby any officer who received 10s a day or more received half their pay at the time and was issued with a debenture for the rest: Firth, *Cromwell's army*, pp. 200-1.

²⁴ TNA, SP 28/62/II fo. 229 (pay warrant for William French, 21 August 1649), SP 28/62/I fo. 40: (pay warrant for Joseph Waterhouse, 30 August 1649).

²⁵ BL, Kings MS 265, fo. 45v; TNA, SP 28/2A/II fo. 189 (pay warrant for Abraham Webb (Essex's army), 8 September 1642), SP 28/25/III fo. 379 (payment to Thomas Bert (Eastern Association), 20 December 1643 to 28 February 1644), SP 28/36/II fo. 147 (pay warrant for Abraham Webb (New Model Army), 6 February 1645/6); *Journals of the House of Lords*, x, p. 66.

²⁶ For example, TNA, SP 28/2/IIA fo. 197 (warrant to pay Richard Gardiner, 9 September 1642), SP 28/2A/I fo. 96 (warrant to pay Abraham Webb, 3 September 1642).

²⁷ BL, Kings MS 265, fo. 44v.

²⁸ Cruso, *Militarie instructions*, p. 24.

²⁹ For example, Lawrence Loe/Lowe, Essex's original staff surgeon, was paid 20s a day for himself and two mates: TNA, SP 28/3B/II fo. 499 (pay warrant for Lawrence Loe, 29 November 1642). Likewise, the pay warrants issued to the colonels in Essex's army in August 1642 only allowed for 2s a day for the surgeon's mates: TNA, SP 28/1A fos. 29, 38-9, 40-1, 64, 66-9 (pay warrants for regimental colonels, August 1642).

³⁰ For example, TNA, SP 28/3B/II fo. 411 (pay warrant for Roger Dixon (Essex's army), 19 November 1642), SP 28/14/I fo. 180 (account of Thomas Fothergill (Eastern Association), 1 January to 21 April 1644), SP 28/122/III fo. 417 (payment made to Alexander Aurelius (Southern Association), 25 April 1645); SP 28/138/III fo. 4v (Beverley garrison accounts, 1642-3).

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- ³¹ For example, TNA, SP 28/16/I fo. 108 (pay warrant for Timothy Langley, 26 June 1644), SP 28/15/III fo. 265 (Pay warrant for Edward Elsing, 10 May 1644), SP 28/30/II fo. 172 (pay warrant for James Winter, 6 May 1645).
- ³² TNA, SP 28/41/III fo. 224 (payment to Thomas Fothergill, 21 December 1646), SP 28/1A fos. 29, 38-9, 40-1, 64, 66-9 (pay warrants for regimental colonels, August 1642).
- ³³ G. F. Hildanus, *Cista militaris* (London, 1674); J. Woodall, *The surgeons mate* (London, 1639), preface to ‘Viaticum, being the path-way to the surgeons chest’; S. Young, *The annals of the Barber-Surgeons of London* (London, 1890), p. 405.
- ³⁴ Holmes, *Eastern Association*, pp. 146-7; I. Gentles, *The New Model Army* (Oxford, 1994), pp. 49 and 239-40; Firth, *Cromwell’s army*, pp. 197-9.
- ³⁵ Historic Manuscripts Commission, *Thirteenth report, appendix, part I* (London, 1891), p. 187; *Journals of the House of Commons (JHC)*, iii, p. 658; TNA, SP 21/7 fo. 227 (Proceedings of the committee of both kingdoms, 9 October 1644); Parliamentary Archives, HL/PO/JO/10/1/177 (petition of Isaac Demergue, 21 December 1644).
- ³⁶ M. Wanklyn, *The warrior generals* (London, 2010), pp. 116-17 and 121.
- ³⁷ B. Whitelock, *Memorials of the English affairs* (Oxford, 1853), i, p. 300.
- ³⁸ *JHC*, iii, p. 683.
- ³⁹ *Calendar of state papers domestic (CSPD)*, 1644-5, p. 25.
- ⁴⁰ Gruber von Arni, *Justice to the maimed soldier*, pp. 16-31; J. Worton, ‘The royalist and parliamentary war effort in Shropshire during the First and Second English Civil Wars, 1642-1648’, Unpublished PhD dissertation, University of Chester, 2015, p. 216.
- ⁴¹ M. Wanklyn and F. Jones, *A military history of the English Civil War* (Abingdon, 2014), p. 18.
- ⁴² J. W. Willis Bund, ed., *Diary of Henry Townshend of Elmley Lovett, 1640-63* (London, 1920), ii, p. 126.
- ⁴³ *Ibid.*, p. 153.
- ⁴⁴ I. Atherton, ‘The accounts of the royalist garrison of Lichfield Close, 1643-5’, *Staffordshire Studies*, 18 (2007), pp. 63-96, at pp. 82-90.
- ⁴⁵ TNA, SP 28/143/III fos. 20a, 66a and 68a (Royalist account book, 19 March to 13 June 1644).
- ⁴⁶ Firth, *Cromwell’s army*, pp. 253-4.
- ⁴⁷ TNA, SP 18/101 fo. 14 (petition of Thomas Fothergill, 3 October 1655).
- ⁴⁸ Firth, *Cromwell’s army*, p. 186.
- ⁴⁹ *Ibid.*, pp. 184-7 and 254

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- ⁵⁰ Ibid., p. 254.
- ⁵¹ J. J. Keevil, *Medicine and the navy* (2 vols., London, 1957-8), i, p. 213.
- ⁵² Ibid., ii, p. 8.
- ⁵³ M. Pelling, *Medical conflicts in early modern London* (Oxford, 2003), pp. 246 and 267-9.
- ⁵⁴ Ibid., pp. 263-5.
- ⁵⁵ Pelling *common lot*, p. 89.
- ⁵⁶ Cook, 'Practical medicine and the British armed forces', p. 8.
- ⁵⁷ A. Digby, *Making a medical living* (Cambridge, 1994), pp. 50, 119 and 230.
- ⁵⁸ C. Webster, *The Great Instauration* (London, 1975), p. 293; C. S. Knighton, 'Knight, John (*bap.* 1622, *d.* 1680)', *ODNB*.
- ⁵⁹ C. H. Firth and R. S. Rait, eds., *Acts and ordinances of the Interregnum, 1642 – 1660* (London, 1911), ii, pp. 168-91.
- ⁶⁰ TNA, 121/3/3/118-119 (certificates of sales of Crown lands to Thomas Trapham, 18 May 1653 and 26 May 1653).
- ⁶¹ TNA, E 121/3/4/95 (certificate for sale of Crown land to Daniel Judd, 14 February 1652).
- ⁶² I. J. Gentles, 'The debentures market and military purchases of Crown land, 1649-1660', Unpublished PhD dissertation, University of London, 1969, pp. 70-9.
- ⁶³ TNA, E 121/3/4/95; TNA, E 121/5/7/36 (certificate for sale of Crown land to Henry Cleare, 20 November 1650).
- ⁶⁴ Firth and Rait, *Acts and ordinances*, i, pp. 241-2; Carlton, *Going to the wars*, p. 68.
- ⁶⁵ T. Liu, *Puritan London* (London, 1986), p. 134; K. Lindley and D. Scott, eds., *The journal of Thomas Juxon, 1644-47* (London, 1999), p. 21.
- ⁶⁶ TNA, SP 28/121A/III fo.339 (muster roll of the Southwark White Auxiliaries, 16 April 1644); London Metropolitan Archives, H01/ST/A/067/001/19 (letter from Oliver Cromwell to St Thomas's Hospital, 1652).
- ⁶⁷ TNA, PROB 11/267 fos. 250v-251 (will of John Anthony, 17 September 1657), PROB 11/211 fos. 31v-32 (will of Jonathan Crosse, 25 January 1650), PROB 11/315 fos. 179v-180 (will of Bradbury Clarke, 25 November 1664), PROB 11/293 fo. 20 (will of Henry Barnwell, 25 June 1659).
- ⁶⁸ Surrey History Centre, QS2/5/1677, m. 19 (Quarter Sessions Roll, Easter 1677); J. Foster, *Alumni Oxonienses, 1500-1714* (Oxford, 1891), I, p. 41; *CSPD*, 1655-1656, pp. 113-14.
- ⁶⁹ TNA, SP 29/119/26/VI fo. 62 (letter from Edward Atkinson to John Knowles, 25 April 1665).

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- ⁷⁰ M. A. E. Green, ed., *Calendar of the proceedings of the committee for compounding, 1643-1660* (5 vols., London, 1889-92), ii, p. 1567.
- ⁷¹ G. C. R. Morris, 'Molins, Edward (1610?-1663)', *ODNB*.
- ⁷² C. Prayer, ed., 'Oliviero Cromwell dalla battaglia di Worcester alla sua morte', *Atti Societa Ligure Storia Patria*, 16 (1882), pp. 366-8; G. C. R. Morris, 'Which Molins treated Cromwell for stone – and did not prescribe for Pepys?', *Medical History*, 26 (1982), pp. 429–35, at p. 428.
- ⁷³ Firth, *Cromwell's army*, p. 254.
- ⁷⁴ Pelling, *Medical conflicts*, p. 142.
- ⁷⁵ *Ibid.*, pp. 1-2 and 102.
- ⁷⁶ *Ibid.*, pp. 142 and 167-8.
- ⁷⁷ Gruber von Arni, *Justice to the maimed soldier*, p. 11.
- ⁷⁸ Pelling, *common lot*, pp. 237-8; A. Wear, *Knowledge and practice in English medicine, 1550-1680* (Cambridge, 2000), p. 471.
- ⁷⁹ Pelling, *common lot*, p. 238.
- ⁸⁰ TNA SP 18/131 fo. 59 (Petition from Henry Hayhurst, 1656), SP 28/3B/II fos. 440 and 442, SP 28/7 fo. 335 (pay warrant for Francis Neville, 2 June 1643), SP 28/11/II fo.17 (payment to Samuel Read, 1643), SP 28/24 fo. 62 (payments to Henry Glisson, 8 April to 14 July 1644), SP 28/25 fo. 229 (pay warrant for Edward Emily, 14 August 1644), SP 28/28 fo. 203 (pay warrant for William Staine/Stane, 12 March 1645), SP 28/29/I fo. 9, SP 28/29/II fo. 319 (pay warrant for Anthony Metcalfe, 7 April 1645), SP 28/35/III fo. 380 (payment to John St John, 1645), SP 28/36/II fos. 145-6 (pay warrants for Thomas Payne and William French, 6 February 1646), SP 28/36/V, fo. 597 (certificate of service for Adam Stryall, 12 December 1642), SP 28/42/I fo. 106 (certificate from Mr Trootbeck, 3 October 1646), SP 28/62/I fo. 40, SP 28/70/III fo. 595 (pay warrant for John Baber, 11 September 1650), SP 28/80/I fo. 8 (pay warrant for John Short, 5 August 1651), SP 28/125/III fo. 345 (Payment to Claudius Fenwick/Phenwithe, 1648-50), SP 28/126/I fo. 57 (Windsor garrison accounts, 1642-4), SP 28/128/XXVI fo. 5 (Plymouth garrison accounts, 1645-8), SP 28/144/10, fo.2a (payment to John King, 5-19 July 1642); *JHC*, iii, p. 150; *CSPD*, 1651, p. 251; Green, *committee for compounding*, iii, pp. 2242-3; Gruber von Arni, *Justice to the maimed soldier*, pp. 20, 27, 38 and 76; A. L. Wyman, 'Barrow, Samuel (1625?-1683)', *ODNB*; P. Elmer, 'French, John (c.1616-1657)', *ODNB*; M. Jansson, 'Turner, Samuel (d. 1647?)', *ODNB*; W. Munk, *The roll of the Royal College of Physicians of London* (London, 1861), i, pp. 160, 206, 231, 240, 244-5, 277 and 325; Royal College of Physicians of London, *Annals*, iii, fo. 163a, and IV, fos. 18a, 20b and 26a;

Foster, *Alumni Oxonienses*, i, p. 258; *Ibid.*, ii, p. 575; *Ibid.*, iv, p. 1579; J. Venn, *Alumni Cantabrigienses*, part 1 (4 vols., Cambridge, 1922-7), ii, pp. 179, 223 and 226; *Ibid.*, iii, pp. 275 and 391; *Ibid.*, iv, pp. 55, 143 and 268; R. W. Innes Smith, *English-speaking students of medicine at the University of Leyden* (London, 1932), pp. 10, 83, 134, 185, 190 and 211; D. Prögler, *English students at Leiden University, 1575-1650* (Abingdon, 2016), p. 194n.

⁸¹ Pelling, *common lot*, pp. 232 and 237.

⁸² Young, *annals of the Barber-Surgeons*, p. 260.

⁸³ *Ibid.*, p. 119.

⁸⁴ Those made free by methods other than apprenticeship are noted, excepting those made free by patrimony because it is not unreasonable to suggest that they learnt from their surgeon fathers. A Daniel Judd was free of the Company by apprenticeship but served a hotpresser, whilst a Humphrey Hughes was free of the Company by patrimony but his father was a haberdasher, so these have been discounted as the Civil War surgeons until further connections can be made (see Table 5).

⁸⁵ E. Peacock, ed., *The army lists of the roundheads and cavaliers* (London, 1874), pp. 27-9, 31, 34-5, 37, 42, 44-5 and 48; TNA, SP 28/2A/I fos. 104 and 145 (pay warrants for Richard Thurston, 3 September 1642, and Hugh Ward, 5 September 1642), SP 28/2B/II fos. 420-1 (pay warrants for James Cooke and James Swright/Wright, 18 October 1642), SP 28/2B/III fo. 534 (commission for Peter Sallenova, September 1642), SP 28/3A/I fo. 45 (payment to Thomas Kinker, 9 November 1642), SP 28/3A/III fo. 285 (pay warrant for William de Margey/de Morger, 9 November 1642), SP 28/3B/I fo. 397 (pay warrant to Roger Dixon, 18 November 1642), SP 28/4 fos. 175 and 358 (pay warrants for Isaac de Morgan/ Demergue, 3 December 1642, and for Ralph Nicholson, 27 December 1642, SP 28/5 fos. 126, 310 and 341 (pay warrants for Henry Cleare, 21 January 1643, John Waylett, 27 February 1643, and Isaac Smitheis/Smythes, 28 February 1643), SP 28/6/I fo. 92 (pay warrant for Thomas Symonds, 1 March 1643), SP 28/6/II fo. 277 (pay warrant for Llewellyn Price, 13 April 1643), SP 28/7 fos. 85 and 316 (pay warrants for Nicholas Heath, 25 May 1643, and John Fletcher, 23 June 1643), SP 28/9 fo. 364 (bill for Francis Rishworth, 21 August 1643), SP 28/18/I fo. 97 (pay warrant for Peter Francis, 18 September 1644), SP 28/10 fos. 21 and 30 (billeting account for Robert Woodward, 1 August to 2 September 1643 and pay warrant for William Alley/Allen, 14 September 1643), SP 28/16/I fo. 108 (pay warrant for Timothy Langley, 26 June 1644), SP 28/20 fo. 41 (Reading garrison accounts, 1644), SP 28/29/II fos. 334-5 (pay warrant for John Franklin, 11 April 1645), SP 28/121A fo. 133 (Warwick garrison accounts, 1643-4), SP 28/122/II fo. 367 (payment to Stephen Beddard, 14 April 1645), SP 28/126 fos. 10 and 64v (Windsor garrison

accounts, 1642-5); SP 28/127 fo. 310v (Aylesbury garrison accounts, 1643-4), SP 28/128/XXVI fo. 6 (Plymouth garrison accounts, 1645-8), SP 28/129/VIII fos. 6v-7 (Portsmouth garrison accounts, 1642-3), SP 28/146/XVIII fo. 27 (pay warrant to Mr Bromfield, 14 October 1643), SP 28/145 fo. 249 (payment to Mr Burton, 31 July 1642); *JHC*, iii, p. 658; Guildhall Library (GL), MS 5265/1 (Register of freedom admissions, 1522-1665); GL, MS 5255/1 (Wardens' accounts and audit books, 1603-1659), unpag.

⁸⁶ TNA, SP 28/5 fo. 310 (pay warrant for John Waylett, 27 February 1643), SP 28/12/II fo. 204 (Pay warrant for Edward Elsing, 21 February 1644), SP 28/13/II fo. 200 (pay warrant to for James Bowman, 4 September 1643, SP 28/14/I fo. 180 (Account of Thomas Forthergill, January to April 1644), SP 28/15/II fos. 275 and 279 (pay warrants to William Le Neave, 13 May 1644, and Joseph Echell, 14 May 1644), SP 28/17/III fos. 348 and 357 (payments to Mr Fudge, 15 August 1644, and Mr Siler, 14 August 1644), SP 28/19/III fos. 346 and 387 (pay warrants for Lodowick Sommervell, 16 October 1644, and Thomas Bullock, 20 October 1644), SP 28/20/II fo. 181 (pay warrant for John Vandale, 5 November 1644), SP 28/20/III fo. 353 (pay warrant for William Kseamd, 24 November 1644), SP 28/21/I fos. 49, 54, 76 and 101 (payments to William Clarke, 14 January 1645, Timothy Bond, 10 December 1644, Mr Sandford, 18 September 1644, and Edward Atkinson, 12 December 1644), SP 28/23/I, fos. 231 and 288 (payments to Mr Lindsey and Mr Goulesborough, March 1645), SP 28/24/I fo. 74 (payment to Mr Gutteridge, May 1644), SP 28/24/IV fo. 519v-20 (payments to Mr Goodrick, 23 March 1645, and Edward Webb, 6 July 1644), SP 28/25/I, fos. 135 and 138 (payments to Bradbury Clarke, 13 August 1644, and Francis Loyal, 31 August 1644), SP 28/25/II fos. 217 and 311 (payments to John Walker, 9 October 1644, and Thomas Tylor, 20 June 1644), SP 28/25/III fos. 1 and 403 (pay warrants for Jonathan Crosse, 27 August 1644, and Nicholas Seres, 25 March 1644, SP 28/26/III fos. 312 and 320 (pay warrants for Andrew Vanderlash, 18 January 1645, and Enoch Bostock, 2 August 1644), SP 28/35/III fo. 371 (Payments to Henry Lloyd, Ar. Purlevant, and Basset Jones, undated), SP 28/121A/III fos. 13 and 15 (Burleigh House garrison accounts 1643-4), SP 28/121B/II fos. 156 and 158 (Newport Pagnell garrison accounts, 1645), SP 28/122/I fo. 171 (payment to John Wasse, 2 May 1645), SP 28/127/1 fo. 18 (Newport Pagnell garrison accounts, 1646), SP 28/133/I fo. 98 (King's Lynn garrison accounts, 1646), SP 28/144/III fo.7a (payment to Samuel Browne, January 1645), SP 28/145 fos. 264-84 (Eastern Association account book, 1644-5); GL, MS 5265/1; GL, MS 5255/1.

⁸⁷ L. Spring, *Waller's army* (Farnham, 2007), pp. 75, 79, 109, 129, 156 and 159-60; TNA, SP 28/35/IV fo. 635 (payment to Henry Cleare, 25 April 1645), SP 28/144/V fo. 80a (Payment to Thomas Aisernelry, 19 August 1644); GL, MS 5265/1; GL, MS 5257/5, (Barber Surgeons' Company court minute book, 1621-1651), fo. 391.

⁸⁸ TNA, SP 28/30/II fos. 130 and 172 (pay warrants for Mr Browne, 7 May 1648 and James Winter, 6 May 1645), SP 28/35/III fos. 344 and 417 (Northampton garrison accounts, SP 28/42/II fo.180 (quartering for Edward Wentworth, 1646), SP 28/41/III fo. 224 (payment to Thomas Fothergill, 21 December 1646), SP 28/42/IV, fo. 580 (payment to Francis Rishworth, 27 July 1646), SP 28/51/I fo. 111 (list of general officers, 10 February 1648), SP 28/53/II fo. 164 (pay warrant for Richard Morley, 17 April 1648), SP 28/53/III fos. 413, 430, 434 436 and 463 (pay warrants for Walter Stephenson, 17 April 1648, Henry Cleare snr, Richard Tompkins, and Thomas Symonds, 12 April 1648, and Henry Cleare jnr, 24 April 1648), SP 28/54/II fo. 155 (Certificate from Valentine Nickson, 12 April 1648), SP 28/54/II (pay warrant for Matthew Broad, 25 May 1648), SP 28/57/IV fo. 538 (quartering for Mr Simmes, 1646), SP 28/66/III fo. 475 (payment to Arnold Sallenoza, 25 March 1650), SP 28/67/III fo. 404-22 (pay warrants for Bonham Spencer, Mr Croutch, Mr Bettris, Thomas Crutchley, William Dodd, Mr Knowles, Meredith Jones, Nathaniel Frankes, and Richard Hinges, 2 May 1650), SP 28/67/IV fo. 638-40 (pay warrants for Daniel Judd and Mr Higgs, 28 May 1650), SP 28/70/II fo. 222 (pay warrant for Edward Cooke, 2 August 1650), SP 28/70/III, fos. 585 and 589 (pay warrants for Daniel Pew/Pugh, 11 September 1650, and Robert Rand, 11 September 1650), SP 28/74/IV fo. 854 (pay warrant for Mr Walker, 22 February 1651), SP 28/77/IV fos. 679-99 and 787 (pay warrants for Thomas Harding, Thomas Harvest, Humphrey Hughes, Henry Barnwell, John Hubbard, Walter Thompson, Isaac Smitheis/Smythes, Thomas Standford, John Payne, Thomas Lawrence, and Sandys Suter, 23 May 1651, and Robert Mustow, 30 May 1651); SP 28/124/II fos. 316 and 383 (musters at Newcastle, 1648), SP 28/124/II fo. 332 (list of officers who left Colonel Graves' regiment, 14 June 1648), SP 28/125/I fo. 15 (Tynemouth Castle garrison accounts), SP 28/125/II fo. 197 (Tynemouth Castle garrison accounts), SP 28/126/I fos. 73v and 130v-1 (Aylesbury Garrison Accounts, July 1646 to December 1646); Gruber von Arni, *Justice to the maimed soldier*, p. 80; GL, MS 5265/1.

⁸⁹ Green, *committee for compounding*, ii, 1567; *Ibid*, iii, pp. 2290-1; TNA, PROB 11/197, fos. 66v-67r (will of Edward Hales, 7 July 1646); J. Birch, *Military memoir of Colonel John Birch*, ed. T. Webb and J. Webb (London, 1873), p. 208; Atherton, 'royalist garrison of Lichfield Close', pp. 82 and 86-7; Morris, 'Molins, Edward', *ODNB*; TNA, SP 28/143 fos. 20a and 66a; Wiseman, *Severall chirurgicall treatises*, passim; Gruber von Arni, *Justice to the maimed soldier*, pp. 23, 26 and 29; Willis Bund, *Diary of Henry Townshend*, p. 153; Worton, 'War effort in Shropshire', p. 217; GL, MS 5265/1.

⁹⁰ M. Pelling, 'Barber-surgeons' guilds and ordinances in early modern British towns', p. 5,

<http://practitioners.exeter.ac.uk/>, accessed 7 June 2016.

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- ⁹¹ Pelling, *common lot*, p. 209.
- ⁹² Pelling, 'Barber-surgeons' guilds', pp. 2-3.
- ⁹³ C. Williams, *The masters, wardens, and assistants of the Guild of Barber-Surgeons of Norwich* (Norwich, 1900), p. 15; Holmes, *Eastern Association*, p. 164.
- ⁹⁴ TNA, SP 28/26/III fo. 312 (payment to Andrew Vanderlash, 18 January 1645).
- ⁹⁵ Pelling, *common lot*, p. 208.
- ⁹⁶ *Ibid.*, pp. 211-12.
- ⁹⁷ I. G. Murray, 'Clowes, William (1543/4–1604)', *ODNB*. Clowes's treatise was reprinted as late as 1637 as *A profitable and necessarie booke of observations*.
- ⁹⁸ Pelling, *common lot*, p. 255.
- ⁹⁹ Wiseman, *Severall chirurgicall treatises*, p. 409; Woodall, *surgeons mate*, p. 94.
- ¹⁰⁰ *Ibid.*, preface to 'Viaticum', sig. q2.
- ¹⁰¹ T. Brugis, *Vade mecum* (London, 1651), p. 105.
- ¹⁰² B. Donagan, 'Halcyon days and the literature of war: England's military education before 1642', *Past and Present*, 147 (1995), pp. 65-100, at p. 97.
- ¹⁰³ Wiseman, *Severall chirurgicall treatises*, pp. 66, 122 and 341; J. Cooke, *Mellificium chirurgie* (London, 1648), pp. [x]-[xi] and 28.
- ¹⁰⁴ A. Griffin, 'Clowes, William (1582–1648)', *ODNB*; GL, MS 5265/1.
- ¹⁰⁵ Peacock, *army lists*, pp. 74 and 83. 'Trinity' is almost certainly a misreading of 'Timothy'.
- ¹⁰⁶ Birch, *Military memoir*, p. 208.
- ¹⁰⁷ Cook, 'Practical medicine and the British armed forces', p. 16.
- ¹⁰⁸ *Ibid.*, p. 2.
- ¹⁰⁹ *Ibid.*, p. 15; S. M. Rutherford, 'Ground-breaking pioneers or dangerous amateurs? Did early modern surgery have any basis in medical science?', in I. Pells, ed., *New approaches to the military history of the English Civil War* (Solihull, 2016), pp. 153-85, at p. 156.
- ¹¹⁰ Wiseman, *Severall chirurgicall treatises*, p. 378.
- ¹¹¹ B. Donagan, 'The casualties of war: treatment of the dead and wounded in the English Civil War', in I. Gentles, J. Morrill and B. Worden, *Soldiers, writers and statesmen of the English Revolution* (Cambridge, 1998), pp. 114-32, at pp. 120-1.
- ¹¹² Wanklyn, *warrior generals*, p. 177.

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- ¹¹³ Firth, *Cromwell's army*, p. 254.
- ¹¹⁴ Holmes, *Eastern Association*, pp. 174 and 284n; TNA, SP 24/35 fo. 363 (Bowman v Birch, 15 September 1648).
- ¹¹⁵ Pelling, *Medical conflicts*, p. 53.
- ¹¹⁶ Woodall, *surgeons mate*, pp. [xv]-[xvi].
- ¹¹⁷ Firth, *Cromwell's army*, pp. 254-5.
- ¹¹⁸ Not the same man who served in Essex's army, who was dead by December 1646: TNA SP 28/41/I, fo. 79 (receipt for surgery chest, 3 December 1646).
- ¹¹⁹ Gruber von Arni, *Justice to the maimed soldier*, pp. 116-18.
- ¹²⁰ Bodleian Library, Rawlinson MS, A, LX, fos. 323-6 (examination of Edward Cooke, 7 August 1658).
- ¹²¹ Gruber von Arni, *Justice to the maimed soldier*, p. 117; TNA, SP 18/182 fo. 147 (petition from the sick and wounded in Dover, 2 September 1658).
- ¹²² Wiseman, *Severall chirurgicall treatises*, p. 408; Firth, *Cromwell's army*, p. 255.
- ¹²³ I. Pells, 'Stout Skippon hath a wound': the medical treatment of parliament's infantry commander following the battle of Naseby', in A. Hopper and D. Appleby, eds., *Battle-scarred: mortality, medical care and military welfare in the British Civil Wars* (Manchester, forthcoming).
- ¹²⁴ J. S. Wheeler, *The making of a world power* (Stroud, 1999), p. 16.
- ¹²⁵ G. Robinson, *Horses, people and parliament in the English Civil War* (Abingdon, 2016), p. 3.
- ¹²⁶ Wheeler, *making of a world power*, p. 20.
- ¹²⁷ *Ibid.*, pp. 6-9.
- ¹²⁸ TNA, SP 28/173/I fos. 1a-18a (Payments to the sick and wounded that came into Northampton since 14 June 1645).
- ¹²⁹ Rutherford, 'Ground-breaking pioneers', p. 183.
- ¹³⁰ West Yorkshire Archive Service, QS1/45/3/6 (Petition of William Walker, 1706), QS1/47/8/6 (Petition of William Hilton, 1708) and QS1/48/3/6 (Petition of John Genn, 1709).
- ¹³¹ Wiseman, *Severall chirurgicall treatises*, p. 403; Carlton, *Going to the wars*, p. 226.