

## MEDIEVAL WARFARE AND THE VALUE OF A HUMAN LIFE

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It has always seemed to me illogical and inhumane that the people of our world have frequently decided matters of relatively little importance by sending a large number of their young males out to be killed. The fact that diplomatic negotiations, when used, have more often been made to increase alliances between parties who similarly are willing to send their young males to be killed seems to confirm this illogic and inhumanity. Recently a number of military historians have sought broadly chronological and geographical answers for this dilemma. Focusing almost entirely on culture, rather than technology, Victor Davis Hanson, John Keegan, Geoffrey Parker (to a lesser extent, as he still holds to his technological deterministic theses), Jeremy Black, and, most recently, John Lynn have crossed over the line once reserved for anthropologists and sociologists of trying to analyze why men have fought wars and why, in particular, the west has almost exclusively been the victor in these wars.<sup>1</sup> Using historical examples, these writers have at least surpassed their sociological and anthropological counterparts who all too frequently still rely on the "dark glass" or "rosy shades" belief of man being led to war by something outside of an innate proclivity to do so, *à la* Jared Diamond, who borrows just a little too much of the most wacky Montesquieuesque explanations for warfare to be either sensible or scholarly comforting.<sup>2</sup>

On the other hand, their own reliance on culture to explain warfare and the west's success in this warfare is dissatisfying, although preferable in my estimation to the technological superiority explanations

<sup>1</sup> References to these works are listed below.

<sup>2</sup> Jared Diamond, *Guns, Germs, and Steel* (New York: W. W. Norton and Company, 1997). See also Harry Holbert Turney-High, *Primitive War: Its Practices and Concepts*, 2nd ed. (Columbia: University of South Carolina Press, 1991); Lawrence H. Keeley, *War Before Civilization* (Oxford: Oxford University Press, 1996); and the various studies in R. Brian Ferguson and Neil L. Whitehead, *War in the Tribal Zone: Expanding States and Indigenous Warfare* (Santa Fe: School of American Research Press, 1992).

proffered by so many military and non-military historians, most recently the very dreadful *Throwing Fire: A History of Projectile Technology*, by Alfred W. Crosby.<sup>3</sup> Most specifically, at least for the premodern period, and in particular for my speciality, the Middle Ages, culture appears to be incomplete as a means of defining the history of warfare and its success. What I intend to do here is to supplement what is currently being written about the relationship of warfare and culture by adding another factor to the definition, the value of a human life. First, let me review the literature, beginning with the works of one of the most popular military historians currently writing, but one who also serves as the doyen of the neo-conservatives, Victor Davis Hanson. John Lynn has done this very well in reviewing Hanson's work in general in the first chapter of his book discussed below; my purpose here, as with the other authors discussed below, is simply to focus on the place of the Middle Ages in their historical writings. Building on the thesis put forth earlier in his *The Western Way of War: Infantry Battle in Classical Greece*, which looked specifically at Greek hoplite warfare and its success against the Persians,<sup>4</sup> Hanson has recently written the chronologically and geographically broad *The Soul of Battle: From Ancient Times to the Present Day, How Three Great Liberators Vanquished Tyranny* (1999), which determines military leadership excellence as a "western way of warfare," and his even more chronologically and geographically broad *Carnage and Culture: Landmark Battles in the Rise of Western Power* (2001), which determines tactical superiority as a "western way of warfare." Based on the above description, neither of these books seems to focus on culture, although I assure you that they do. What is more troubling for the medieval military historian is that neither focuses much on the Middle Ages. *The Soul of Battle* does not introduce any medieval general in its case studies, thus at least implying the author's agreement with the well-worn but expressly disproved notion that the Middle Ages produced no efficient general.<sup>5</sup> What is even more of a problem with Hanson's

<sup>3</sup> Alfred W. Crosby, *Throwing Fire: Projectile Technology Through History* (Cambridge: Cambridge University Press, 2002). For my assessment of this book see my upcoming review in *The Journal of Interdisciplinary History*, although several other reviewers have pointed out similar problems to those I have with Crosby's premise, his use of evidence, and his conclusions.

<sup>4</sup> Victor Davis Hanson, *The Western Way of War: Infantry Battle in Classical Greece* (Oxford: Oxford University Press, 1989).

<sup>5</sup> Hanson does not actually say this in his work, but the fact that he admires

notion of military leadership and the "western way of warfare," as expressed in this book is that during the Middle Ages it was not the western military leaders who were the most efficient. Indeed, most medieval military historians would assign greatness to only four medieval generals, Attila, Charlemagne, Saladin, and Genghis Khan, with only Charlemagne considered to be "western."<sup>6</sup> *Culture and Carnage* contains more case studies, but only one of these is medieval, the Battle of Poitiers in 732. And the story of this battle, while traditionally seen as a victory for the Franks under Charles Martel against Muslims who had recently conquered the Iberian peninsula, is far from known, being based on relatively poor, wholly Frankish sources. Thus it is far from definitive as a clear victory of western forces over eastern ones, as the Franks failed to pursue their enemy and the Muslims still had time to bury their leader in full religious ritual and honor on the battlefield, and far from decisive, as it took the Franks the rest of Charles Martel's reign and that of his son, Pepin II, and his grandson, Charlemagne, finally to push the Muslims behind the Pyrenees Mountains.<sup>7</sup> Again, if Hanson had wished to find a perfect example of medieval tactical superiority there are many other examples. Take for instance the Battle of Hattin, fought in 1187, where a brilliant medieval general was able to use tactical acumen, the skill of his projectile troops, the weather, and the dearth of supplies, in this case water, to lure an enemy army into a valley trap between two of his forces, resulting in the almost complete annihilation of those forces and the capture of their leaders. The problem is that this leader was Saladin and thus not western, although he arguably fought a western style of warfare in this battle and in his bloodless capture of Jerusalem a short time later.<sup>8</sup>

several books that conclude that there was a lack of medieval military leadership—i.e. B. H. Liddell Hart, *Strategy*, 2nd ed. (New York: Meridian, 1991), and Michael Howard, *War in European History* (Oxford: Oxford University Press, 1976)—has led me to the statement made in the text above.

<sup>6</sup> Naturally the western military leadership of Belisarius, William the Conqueror, Edward I, Edward III, Henry V, and Joan of Arc must also be considered, but none of these leaders conquered nearly as much as those mentioned above, nor were their conquests always held for any length of time. Equally impressive non-western medieval military leaders include Bayezid I, Mehmed II, and Suleyman the Magnificent.

<sup>7</sup> Bernard S. Bachrach's description of this battle (*Early Carolinian Warfare: Prelude to Empire* [Philadelphia: University of Pennsylvania Press, 2001], pp. 170-77) is the best description of the battle, far superior to that of Hanson.

<sup>8</sup> For a recent synopsis of this battle see my "The Battle of Hattin, 1187: Beginning

Hanson's "western way of war" has been accepted almost completely without criticism by John Keegan, in *A History of Warfare*,<sup>9</sup> and Geoffrey Parker, in *The Military Revolution: Military Innovation and the Rise of the West, 1500-1800*,<sup>10</sup> but not by Jeremy Black or John A. Lynn. Black's focus is largely post-medieval, so I will not spend any time discussing his ideas here,<sup>11</sup> but John Lynn's *Battle: A History of Combat and Culture from Ancient Greece to Modern America* devotes an entire chapter to "Chivalry and Chevauchée: The Ideal, the Real and the Perfect in Medieval Warfare."<sup>12</sup> Of all these cultural studies of war, Lynn's is the finest for medieval warfare, perhaps because I assisted him with his research on this chapter, although I disagree with some of its parts—Lynn chose to follow Clifford J. Rogers' definition of Edward III's crossing of Normandy from the Cotentin peninsula to Crécy as a chevauchée rather than the campaign that I have described it as;<sup>13</sup> however, he does prefer my version of what happened at the battle of Crecy over Rogers',<sup>14</sup> so I suppose we are somewhat even. Lynn's medieval military culture is clearly a literate crowd, one that champions the reading and writing of chivalric discourses and tales, as much as participating in warfare and tournaments, what he calls "the perfected form of war." Here he is capably

of the End," *Medieval History Magazine* 5 (Jan 2004): 24-31. See also David Nicolle, *Hattin, 1187: Saladin's Greatest Victory* (London: Osprey, 1993), and Benjamin Z. Kedar, "The Battle of Hattin Reconsidered," in *The Horns of Hattin*, ed. Benjamin Z. Kedar (Jerusalem: Yad Izhak Ben-Zvi and Israel Exploration Society, 1992), 190-207. Saladin's own account of the battle is found in C. P. Melville and Malcolm Cameron Lyons, "Saladin's Hattin Letter," in *The Horns of Hattin*, 208-12. On Saladin's life and his military capabilities as a whole see Malcolm Cameron Lyons and D. E. P. Jackson, *Saladin: The Politics of the Holy War* (Cambridge: Cambridge University Press, 1982).

<sup>9</sup> John Keegan, *A History of Warfare* (New York: Alfred A. Knopf, 1993).

<sup>10</sup> Geoffrey Parker, *The Military Revolution: Military Innovation and the Rise of the West, 1500-1800*, 2nd ed. (Cambridge: Cambridge University Press, 1996).

<sup>11</sup> Jeremy Black's large collection of works on military history is well known. His rejection of the "western way of war" can be found in a number of these. See, for example, *War and the World: Military Power and the Fate of Continents, 1450—2000* (New Haven: Yale University Press, 1998); *The Cambridge Illustrated Atlas of Warfare: Renaissance to Revolution, 1492-1792* (Cambridge: Cambridge University Press, 1996); and *Western Warfare, 1775-1882* (Bloomington: Indiana University Press, 2001).

<sup>12</sup> John A. Lynn, *Battle: A History of Combat and Culture from Ancient Greece to Modern America* (Boulder: Westview Press, 2003), 73-109.

<sup>13</sup> Clifford J. Rogers' view is put forward in his *War Cruel and Sharp: English Strategy under Edward III, 1327-1360* (Woodbridge: Boydell Press, 2000), 238-64. My alternate view had appeared in Kelly DeVries, *Infantry Warfare in the Early Fourteenth Century: Discipline, Tactics, and Technology* (Woodbridge: Boydell Press, 1996), 155-58.

<sup>14</sup> DeVries, *Infantry Warfare*, 158-75, and Rogers, *War Cruel and Sharp*, 264-72.

influenced by the work of Richard W. Kaeuper, who recently reiterated this thesis in his paper, "Literature as the Key to Chivalric Ideology," delivered as the *Journal of Medieval Military Lecture* annual lecture at the 39th International Congress of Medieval Studies at the University of Western Michigan in 2004.<sup>15</sup> Lynn also holds to a strong ecclesiastical role in medieval warfare, both in trying to mitigate it—the Peace and Truce of God—and to encourage it—the Crusades. This, too, is the culture that defines medieval warfare, although to Lynn it sits at the end of his chapter, while I feel its prominence is more pronounced than chivalry.

I do not object to John Lynn's efforts here. I do think that culture played an important role in the means and motivations of medieval warfare, especially among the nobility and military leadership. And, as he also does not try to push the untenable position of western dominance so prevalent in the writings of Hanson and others, I certainly feel that this is a preferable work to theirs. But I wonder if it goes far enough to explain the way wars were carried out in medieval society at large, especially among those lower-class soldiers who did most of the fighting. For one thing, few medieval soldiers were able to participate in the kind of military culture Lynn champions. Most neither participated in tournaments nor could read or were the audience for chivalric manuals or literature; I have also concluded that by the late fourteenth century, if not earlier in some places, those who fought in tournaments and were influenced by chivalric works, fictitious or otherwise, were not the same ones who fought wars.<sup>16</sup>

Second, John Lynn focuses, as do most other authors, primarily on the offensive military struggles of the Middle Ages, and in particular the waging of offensive conflicts in the form of battles. In this he has been influenced by the importance placed on such conflicts by many medieval military historians, including, among others, Gustav Köhler, Sir Charles Oman, Hans Delbrück, Emil Daniels, Wilhelm

<sup>15</sup>This will appear in a forthcoming issue of *The Journal of Medieval Military History*. The work that most influenced John Lynn is Kaeuper's excellent *Chivalry and Violence in Medieval Europe* (Oxford: Oxford University Press, 1999).

<sup>16</sup>My ideas on this will appear initially in an article, "Was There a Renaissance in Warfare? Intellectual Evolution and Technological Determinism, 1300-1560," forthcoming in the *Journal of Military History*, and will be developed further in *The Hundred Years Wars, 1302—1485* (forthcoming in the Longmans Modern Wars in Perspective Series).

Erben, Ferdinand Lot, Alfred Burne, and J. F. Verbruggen,<sup>17</sup> when in fact early or high medieval battles were largely infrequent endeavors. Large medieval land battles were usually fought in desperation, only when one power was invading or trying to stem an invasion (e.g. Poitiers [mentioned above], Edington, the Dyle, Lechfeld, Stamford Bridge, Hastings, Manzikert, Northallerton, Arsuf, and Falkirk) or when leading or encountering rebellions (e.g. Cassel, the Elster, Brémule, Bourghérolde, Lincoln, Legnano, Parma, Benevento, Tagliacozzo, Lewes, Evesham, and Bouvines). On only very rare occasions would a leader fight more than one large battle—for example, Kings William the Conqueror and Henry I, and Emperors Henry IV and Frederick II—and then, it seems, only when their self-confidence overpowered their wisdom. As often as not, a leader flushed with victory in one battle would meet defeat in a following engagement, e.g. Harold Godwinson, Simon de Montfort, and William Wallace. Even the renowned warrior, Richard the Lionheart, was only involved in three pitched battles during his career, including all of those fought during the Third Crusade.<sup>18</sup> Certainly some change in this came at the end of the Middle Ages, during the fighting of the Hundred Years War, the Swiss-Burgundian Wars, and the Wars of the Roses. This may be true in consideration of the rather unique Swiss-Burgundian Wars (4 battles in two years) and Wars of the Roses (fifteen battles

<sup>17</sup> Gustav Köhler, *Die Entwicklung des Kriegswesens und der Kriegführung in der Ritterzeit von Mitte des 11. Jahrhunderts bis zu den Hussitenkriegen*, 3 vols. (Breslau: W. Köbner, 1886); Sir Charles Oman, *A History of the Art of War: The Middle Ages from the Fourth to the Fourteenth Century* (London: Methuen, 1898) and *A History of the Art of War in the Middle Ages*, 2 vols. (1924; reprint, London: Greenhill Books, 1998); Hans Delbrück, *History of the Art of War Within the Framework of Political History*, vol. 3, *Medieval Warfare*, trans. W.J. Renfroe, Jr. (Westport: Greenwood Press, 1984), originally *Geschichte der Kriegskunst im Rahmen des Politischen Geschichte*, vol. 3, *Mittelalter*, 2nd ed. (Berlin: G. Stilke, 1923); Emil Daniels, *Geschichte des Kriegswesens*, vol. 2, *Das mittelalterliche Kriegswesen*, 2nd ed. (Berlin: Göschen, 1927); Wilhelm Erben, *Kriegsgeschichte des Mittelalters* (Berlin: R. Oldenbourg, 1929); Ferdinand Lot, *L'art militaire et les armées au moyen âge en Europe et dans le proche orient*, 2 vols. (Paris: Payot, 1946); Alfred H. Burne, *The Crecy War: A Military History of the Hundred Years War from 1337 to the Peace of Bretigny, 1360* (London: Eyre and Spottiswoode, 1955) and *The Agincourt War: A Military History of the Latter Part of the Hundred Years War from 1369 to 1453* (London: Eyre and Spottiswoode, 1956); and J. F. Verbruggen, *The Art of Warfare in Western Europe during the Middle Ages (from the Eighth Century to 1340)*, trans. S. Willard and R. W. Southern (Woodbridge: Boydell Press, 1996), originally *De krijgskunst in west-europa in de middeleeuwen (IX<sup>e</sup> tot XIV<sup>e</sup> eeuw)* (Brussels: Paleis de Academiën, 1954).

<sup>18</sup> John Gillingham, "Richard I and the Science of War in the Middle Ages," in *War and Government in the Middle Ages: Essays in Honour of F. O. Prestwich*, ed. John Gillingham and J. C. Holt (Totowa: Barnes and Noble, 1984), 78-91.

in thirty years). However, the Hundred Years War, which gave history such battles as Sluys (1340), Crécy (1346), Poitiers (1356), Agincourt (1415), Formigny (1450), and Castillon (1453), was really more a war of sieges; for example, the Burgundian leader, John the Fearless, certainly one of the greatest Hundred Years War leaders, never fought a single battle in that war, while Henry V and Joan of Arc only fought in one each—and Joan's participation in the battle of Patay was minimal at best.<sup>19</sup> Moreover, at the same time as the Hundred Years War, the Ottoman Wars being fought across the continent involved almost no pitched battles and yet yielded some of the largest ground gains in history.<sup>20</sup> Simply put, medieval sieges were fought far more frequently than battles because medieval warfare was characterized more by the defensive than the offensive; and it was characterized more by the defensive because of the high value of human life placed on combatants and noncombatants.<sup>21</sup>

Now I know that this view goes against the traditions and myths that for so many centuries have described medieval warfare. The notion of blood-thirsty barbarians—Goths, Huns, Vikings, and Mongols, to use the four popular "Barbarian" cultures identified in the recent popular History Channel show—or ruthless nobles have permeated almost all narratives set in the Middle Ages, from *Idylls of the King* and *Ivanhoe* to *The Once and the Future King* and *Lord of the Rings*. But this is an erroneous image of medieval warfare, and while I will be able to do little more than outline my ideas here, for further development later, I wish to express my thesis firmly; medieval military leaders, by and large, placed a very high value on human life, and

<sup>19</sup>On John the Fearless' generalship see Kelly DeVries, "John the Fearless' Way of War," in *Reputation and Representation in Fifteenth Century Europe*, ed. Douglas L. Biggs, Sharon D. Michalove, and A. Compton Reeves (Leiden: Brill, 2004), 39-55; on Henry V see Christopher Allmand, *Henry V* (Berkeley and Los Angeles: University of California Press, 1992), and Desmond Seward, *Henry V as Warlord* (1987; reprint, London: Penguin Books, 2001); and on Joan of Arc see Kelly DeVries, *Joan of Arc: A Military Leader* (Stroud: Sutton Publishing, 1999).

<sup>20</sup>Two good general studies of the early Ottoman Empire are Halil İnalcık, *The Ottoman Empire: The Classical Age, 1300–1600*, trans. Norman Itzkowitz and Colin Imber (New York: Praeger, 1973), and Colin Imber, *The Ottoman Empire, 1300-1650* (Houndmills: Palgrave Macmillan, 2002). On the military success of these early conquests see Stephen Turnbull, *The Ottoman Empire, 1326-1699* (London: Osprey, 2003).

<sup>21</sup>See Jim Bradbury, *The Medieval Siege* (Woodbridge: Boydell Press, 1992); R. Rogers, *Latin Siege Warfare in the Twelfth Century* (Oxford: Clarendon Press, 1992); and Bernard S. Bachrach, "Medieval Siege Warfare: A Reconnaissance," *Journal of Military History* 58 (1994): 119-33.

this not only supplements the cultural definition that John Lynn uses to define medieval warfare, but also more than anything else determines the reasons why medieval wars were fought and why leaders led and soldiers fought in them.

Let me begin by establishing the fact that medieval soldiers were different from their ancient counterparts, and that this began very early in the Middle Ages. Even before many of the successes of the barbarian invaders had brought about any governmental or societal changes in the Roman Empire, a barbarization of the Roman armies had taken place. Vegetius and Ammianus Marcellinus decried it; Sidonius Apollinarius and Procopius accepted it.<sup>22</sup> With the barbarization of the Roman army came the barbarization of military leadership—Aetius, Stilicho and others—and the ultimate barbarization of government. New legal codes introduced new societal statuses and values: *wergeld*, which quite literally reduced all humans to monetary worth.<sup>23</sup> The warrior in these legal systems was placed at the top, his value recognized and, consequently, protected by virtue of the impoverishment that would be suffered by the one who killed him. This was quite different from the Roman tradition and certainly led to an elitism developed by early medieval warriors, a machismo not earlier seen. In 470 Sidonius Apollinarius wrote with awe when he encountered Frankish warriors in a southern Gaulish urban setting:

Their swords hung from their shoulders on baldricks, and round their waists they wore a belt of fur adorned with bosses [ . . . ] In their right hands they held barbed lances and throwing-axes, and in their left shields, on which the light shone, white on the circuit and red on the boss, displaying both opulence and craftsmanship.<sup>24</sup>

Invariably these warriors fought, but not as often as one would think. Battles described by Gregory of Tours, Paul the Deacon, Jordanes, Bede, and other "narrators of barbarian history"<sup>25</sup> were small affairs,

<sup>22</sup> See Kelly DeVries, *Medieval Military Technology* (Peterborough: Broadview Press, 1992), 8, 54—55. This is also indicated in Arther Ferrill, *The Fall of the Roman Empire: A Military Explanation* (London: Thames and Hudson, 1986), and Bernard S. Bachrach, "Procopius, Agathias and the Frankish Military," *Speculum* 45 (1970): 435-441.

<sup>23</sup> Examples of *wergeld* sums can be found in *The Lombard Laws*, trans. Katherine Fischer Drew (Philadelphia: University of Pennsylvania Press, 1973), and *The Burgundian Code*, trans. (Catherine Fischer Drew (Philadelphia: University of Pennsylvania Press, 1972).

<sup>24</sup> Translated in R. H. C Davis, *A History of Medieval Europe: From Constantine to Saint Louis* (London: Longmans, 1970), 108-09.

<sup>25</sup> The term is Walter Goffaert's, taken from his excellent study of these authors



involving few soldiers, especially after the initial conquests of Gaul and Italy had been accomplished. More time seems to have been spent avoiding open conflict and, when unavoidable, getting it over quickly with the least amount of damage and the least number of fatalities.<sup>26</sup> Old Norse sagas tell similar stories about the Scandinavians before and during the early Viking period.<sup>27</sup> When large battles did result, one also sees that they were fought to cause rout rather than death, with defeated soldiers often allowed their flight from the battlefield without pursuit. Already by the early Middle Ages narrative sources begin to list names and numbers killed in conflicts, obviously to indicate the prominent men who had been slain, but in doing so also indicating how few actually were killed because they *could* list the names of all who had died! For example, Einhard, Charlemagne's biographer, in recording the Battle of Roncevalles, mentions only three deaths, one of whom was the soon to be made famous Roland.<sup>28</sup>

By the time of Charlemagne, but certainly begun by his father, Pepin II, and grandfather, Charles Martel, a new direction was followed: the establishment of an extremely large and dominating military force filled with well trained, well armed, and well provisioned professional soldiers. In this, despite the fact that it is unpopular to do so, I am convinced by the work of Bernard S. Bachrach, although I do not think that by building this force Charlemagne was attempting to recreate a Roman-style military force as Bachrach avers;<sup>29</sup>

and their narrative chronicles, *The Narrators of Barbarian History (A.D. 550—800): Jordanes, Gregory of Tours, Bede, and Paul the Deacon* (Princeton: Princeton University Press, 1988).

<sup>26</sup> See the numerous examples mentioned in Bernard S. Bachrach, *Merovingian Military Organization, 481—751* (Minneapolis: University of Minnesota Press, 1972).

<sup>27</sup> See, for example, David M. Wilson, *The Vikings and their Origins: Scandinavia in the First Millennium* (London: Thames and Hudson, 1970), and Jesse Byock, *Feud in Icelandic Saga* (Berkeley and Los Angeles: University of California Press, 1993).

<sup>28</sup> In Einhard and Notker the Stammerer. *Two Lives of Charlemagne*, trans. L. Thorpe (Harmondsworth: Penguin Books, 1969), 64-65.

<sup>29</sup> This is most recently seen in Bachrach's *Early Carolingian Warfare*, but see also his numerous articles on Carolingian warfare including: "Military Organization in Aquitaine under the Early Carolingians," *Speculum* 49 (1974): 1-33; "Charlemagne's Cavalry: Myth and Reality," *Military Affairs* 47 (1983): 181-87; and "Charlemagne and the Carolingian General Staff," *Journal of Military History* 66 (2002): 313-58. Those opposing Bachrach's ideas include: John France, "The Military History of the Carolingian Period," *Revue Belge d'histoire militaire* 26 (1985): 81-100; "The Composition and Raising of the Armies of Charlemagne," *Journal of Medieval Military History* 1 (2002): 61-82 and J. F. Verbruggen, "L'armée et la stratégie de Charlemagne,"

indeed, the position of cavalry in Charlemagne's army denies that possibility in my estimation. Instead, I believe that Charlemagne built this force in part because he valued the lives of his soldiers. His goal was obviously for conquest, and the surest way of achieving this goal was to build up the numbers of his soldiers, to require them to be well armed and armored, to keep them well trained and well provisioned, and to provide them with good leadership. The result was that all of his conquests were successful and that the losses of his soldiers were minimal.

There is of course much more to be said about the early Middle Ages, the Carolingian period, Viking invasions, and high Middle Ages, but in this brief survey I want to mention three aspects of warfare that came out of this time that define the defensive priorities of medieval warfare in general, at least until the very end of the Middle Ages, and characterize the high value placed on human life during the Middle Ages: armor, fortifications, and military surgery.

### *Armor*

The first of these was the development of defensive armaments for individual protection. Although personal defensive armaments, or armor for short, had been used since prehistoric times, as evidenced in cave paintings, it was not until the ancient period that Egyptian, Greek, Persian, and Roman forces began to acquire standardized metallic armor, yet even then this did not cover the entire body and was largely limited in use to elite and regular soldiers.<sup>30</sup> By the Carolingian period, this had begun to change. Charlemagne recognized quite early in his reign that his military conquests depended on the security of his soldiers, whose expertise at fighting wars could not be easily replaced.<sup>31</sup> Consequently, they needed to be well armored.

in *Karl der Grosse: Lebenswerk und Nachleben*, band 1, *Personlichkeit und Geschichte*, ed. H. Beumann et al. (Dusseldorf: L. Schwann, 1965), 420-36; "L'art militaire dans l'empire carolingien (714-1000)," *Revue Belge d'histoire militaire* 23 (1979-80): 289-310, 393-412; "De krijgers van Karel de Grote," *Genootschap voor geschied- en oudheidkunde te Vilvoorde* 5.2 (June 1999): 2-20; and "De oorlogen van Karel de Grote (768-814)," *Genootschap voor geschied- en oudheidkunde te Vilvoorde* 5.1 (Mar 1999): 2-22.

<sup>30</sup> DeVries, *Medieval Military Technology*, 50-55, and Arther Ferrill, *The Origins of War from the Stone Age to Alexander the Great* (London: Thames and Hudson, 1985), 22.

<sup>31</sup> This expertise is not contested by any of the Carolingian military historians.

The first extant law to state this policy was the *capitulaire missorum* of 792/3, which demanded that all benefice and office holders in the Carolingian realm possess full armor and shield as well as a horse and offensive weaponry.<sup>32</sup> This was followed in 802/3 by a capitulary again charging these nobles to have their own helmets and cuirasses (known to the Carolingians as *byrnies*).<sup>33</sup> Finally, in 805, the law was made even more specific. In this capitulary, Charlemagne required anyone of his empire who held twelve *mansi* of land to have his own armor and to serve as a horseman in his army; if he failed in his duty, both his land and his armor would be taken from him.<sup>34</sup> These *byrnies* were standardized coats of interlaced rings (chain mail), which were draped from the shoulders but also covered the thighs and upper arms, with bibs and coifs that could be attached by laces to the also required helmet.<sup>35</sup> Shields, too, were required of Carolingian soldiers.<sup>36</sup>

Coats of mail such as the Carolingian *byrnies* were not unique to the Carolingian Empire. Indeed, the Romans had the skill to produce these types of iron armor but generally seem to have preferred the solid bronze breast plate. However, Charlemagne did seem to believe that his *byrnies* were unique enough to keep them out of the hands of his enemies. As early as 779, Charlemagne forbade the sale of this armor outside the realm; in 803, he added a declaration that soldiers were forbidden even to give it to a merchant, who might sell it to a potential enemy. It does appear, however, that certain amoral Frankish merchants still sold *byrnies* to Muslims, Bretons and Vikings.<sup>37</sup> It also appears that the Carolingian *byrnie* became the standard for all medieval armor until the very end of the Middle Ages, when during the fourteenth century plates began first to be attached to vulnerable parts of the coats of mail and then, in the mid to late fifteenth century, to be formed into complete metal suits.<sup>38</sup> While

<sup>32</sup> Simon Coupland, "Carolingian Arms and Armor in the Ninth Century," *Viator* 21 (1990): 30.

<sup>33</sup> Coupland, 38-39.

<sup>34</sup> François Ganshof, *Frankish Institutions under Charlemagne*, trans. Bryce and Mary Lyon (New York: W. W. Norton and Company, Inc., 1968), 66, and Bernard S. Bachrach, "Military Organization in Aquitaine," *Speculum* 49 (1974): 29.

<sup>35</sup> DeVries, *Medieval Military Technology*, 60-62.

<sup>36</sup> DeVries, *Medieval Military Technology*, 59-60.

<sup>37</sup> Coupland, 39, and Ganshof, 66.

<sup>38</sup> DeVries, *Medieval Military Technology*, 63-72.

the coats of mail themselves changed in amount of body covered, until they were worn over the head and even on the hands and feet, the concept of defensive, life-saving protection did not change.

Yet, what may be perhaps more interesting in view of the thesis I am proposing is that this armor was not meant solely for the elite or cavalry soldier. While infantry during the Carolingian period were not always outfitted with body armor, although the Capitulary of Aachen, proclaimed in 802/3, did require them all to carry a shield,<sup>39</sup> nearly all soldiers, infantry or cavalry who participated on the Crusades in the Holy Land and elsewhere from 1096 until the end of the Middle Ages were outfitted with mail armor. In addition, by at least 1302 and the Battle of Courtrai, if not earlier, as evidenced in the contemporary Courtrai Chest and confirmed by contemporary documents and narrative sources, urban militias were also completely outfitted with armor.<sup>40</sup> Excavations of grave mounds at the battlefields of Visby (1361) and Towton (1461) suggest that this was similarly true of rural warriors.<sup>41</sup>

Never in military history have armies been so uniformly well armored; and this armor was effective. Those same excavations at Visby and Towton have shown how protective body armor in the Middle Ages was, as only wounds to the limbs and head were found, those to the head being, of course, the fatal ones.<sup>42</sup> Experiments car-

<sup>39</sup> Coupland, 30.

<sup>40</sup> The best book on the battle of Courtrai remains J. F. Verbruggen, *De slag der guldensporen: Bijdrage tot de geschiedenis van Vlaanderens vrijheidsoorlog, 1297—1305* (Antwerp: Standaard Boekhandel, 1952), which has been recently translated as *The Battle of the Golden Spurs: Courtrai, 11 July 1302*, ed. Kelly DeVries, trans. David Richard Ferguson (Woodbridge: Boydell Press, 2002). In this Verbruggen goes through the scenes on the Courtrai chest and how they relate to the battle. However, recently some have doubted the veracity of this artifact. See, for example, R. H. Marijnissen, *De "Chest of Courtrai": Een vervalsing van het pasticcio-type* (Brussels: Paleis de Academiën, 1978), and Brian Gilmour and Ian Tyers, "Courtrai Chest: Relic or Recent: Reassessment and Further Work: An Interim Report," in *Papers of the 'Medieval Europe Brugge 1997' Conference*, vol. 5, *Art and Symbolism in Medieval Europe* (Bruges: I. A. P. (Instituut voor het Archeologisch Patrimonium), 1997), 17-26. These have been countered decisively, in my estimation, in A. L. J. Van de Walle and R. Heughebaert, "De Chest of Courtrai: Een diplomatieke koffer anno 1302, zijn techniek en geheim," *Driemaandelijks tijdschrift voor industriële cultuur* 74 (2001): 1-72.

<sup>41</sup> Bengt Thordemann, *Armour from the Battle of Wisby, 1361* (1939; reprint, Union City: Chivalry Bookshelf, 2001), and Veronica Fiorato, Anthea Boylston, and Christopher Knüsel, *Blood Red Roses: The Archaeology of a Mass Grave from the Battle of Towton, AD 1461* (Oxford: Oxbow Books, 2000).

<sup>42</sup> Both of the books in fn. 41 have sections devoted to the wounds suffered by the excavated corpses, acknowledging the lack of torso wounds.

ried out by the Royal Armouries in England and elsewhere have confirmed how difficult it was to penetrate a moving target covered by mail or plate armor, especially if also wearing some heavy material under this armor; even thick felt would provide extra protection, while a quilted gambeson or leather garment, the more common, was ideal.<sup>43</sup>

### *Fortifications*

Moving from individual to societal protection, a second military technological development of the early Middle Ages that reflected the cultural value of human life was the fortification. Of course, medieval fortifications were not the first such societal protections in world history. Sydney Toy's *A History of Fortification from 3000 B.C. to A.D. 1700*, which grew out of his earlier study, *Castles: A Short History of Fortifications from 1600 B.C. to A.D. 1600*, established for every castellologist an incredibly large chronology for the study of fortifications.<sup>44</sup> Yet once one begins reading either of these chronologically broad tomes, one realizes that the pages devoted to fortifications built during the Middle Ages, both castles and city walls, constitute the majority of these or any similar studies.

Again, it is in the early Middle Ages that earth-and-wood fortifications began being used to protect not just individuals and individual families but also somewhat larger societies. These were especially important in the face of invading forces, such as the Vikings or Hungarians, especially as these invaders were often not numerous or serious enough to undertake the effort to attack or besiege such a

<sup>43</sup> About two years ago members of the Royal Armouries staff carried out a number of experiments using different medieval weapons against a free moving dummy to approximate human movement and dressed it in mail armor, varying the garments under the mail-leather, quilted gambeson, heavy, thick felt, etc. The armor in all cases and with all undergarments protected its user almost completely against all weapon attacks, hand-held, cast, and shot. These experiments have not yet been published. Other experiments have proven the weapons to be more successful, but these were against staid targets and without various layers of undergarments. See, for example, Peter N. Jones, "The Metallography and Relative Effectiveness of Arrowheads and Armor during the Middle Ages," *Materials Characterization* 29 (1992): 111-117.

<sup>44</sup> Sydney Toy, *Castles: A Short History of Fortifications from 1600 B.C. to A.D. 1600* (London: W. Heinemann, 1939), and *A History of Fortification from 3000 B.C. to A.D. 1700* (London: W. Heinemann, 1955).

fortress. Alfred the Great thus found in his earth-and-wood *burhs* safety from Vikings invading his kingdom,<sup>45</sup> while German and French Marcher lords secured their borders from similar invasions with similar fortifications.<sup>46</sup> Eventually these ring-work style of forts were replaced by the motte-and-bailey castles, which utilized a tall man-made hill placed within a ring-work to provide even greater protection for its inhabitants and potential refugees.<sup>47</sup>

Yet, it was the Crusades that introduced European fortification builders and, even more importantly, fortification financiers to the styles, techniques, and uses of precipitous terrain as added defense that would become characteristics of all high and late medieval fortifications. While by the time of the First Crusade Europeans had already been constructing castles in stone, William the Conqueror's White Tower and Colchester Castle being two of the most famous of these structures,<sup>48</sup> the paucity of wood in the Middle East necessitated that all Crusader fortifications be constructed in stone. Additionally, as so few Crusaders remained in their captured "kingdoms" after their initial conquests, with perhaps as many as one-half to two-thirds of those still alive at the fall of Jerusalem—estimated to be fewer than 25,000—returning to Europe, and few newer Crusading recruits taking their place,<sup>49</sup> numerous fortifications needed to be built there. Unfortunately, scholars have not been able to put a definitive total on the number of castles that were built during the time of the Crusaders' Middle Eastern occupation. However, it is clear that the number lies above one hundred, if not two hundred.<sup>50</sup>

<sup>45</sup> *The Defence of Wessex: The Burghal Hidage and Anglo-Saxon Fortifications*, ed. David Hill and Alexander R. Rumble (Manchester: Manchester University Press, 1996). Both Richard P. Abels, *Alfred the Great: War, Kingship and Culture in Anglo-Saxon England* (London: Longman, 1998), and John Peddie, *Alfred: Warrior King* (Stroud: Sutton Publishing Limited, 1999), also discuss the *burhs* in the context of Alfred's defensive plans against these invaders/raiders.

<sup>46</sup> DeVries, *Medieval Military Technology*, 197-201.

<sup>47</sup> DeVries, *Medieval Military Technology*, 201-12. Numerous studies have been made on these fortifications, especially in England. For a bibliography of these works see Kelly DeVries, *A Cumulative Bibliography of Medieval Military History and Technology* (Leiden: E. J. Brill, 2002), 837-42.

<sup>48</sup> DeVries, *Medieval Military Technology*, 220-25.

<sup>49</sup> On the numerical strength of the Crusaders who chose to remain in the Middle East see Steven Runciman, *A History of the Crusades* (New York: Harper and Row, Publishers, 1964), 1: 336-41.

<sup>50</sup> See R. C. Smail, "Crusaders' Castles of the Twelfth Century," *Cambridge Historical Journal* 10 (1951): 35-38, and R. C. Smail, *Crusading Warfare, 1097-1193* (Cambridge: Cambridge University Press, 1956), 204-07.

In deference to those built in Europe at the same time, Crusader castles built in the countryside used the harshness and inaccessibility of the Middle Eastern terrain to add to the defensibility of the structures. These castles were built on the summits of precipitous crags or next to steep ravines. At two places, Tyron and Habis, the Crusaders even fortified caves. Most castles had thick walls, usually more than five meters in width, faced with large stones, and intricate, well-defended entryways. They were also incredibly large, what I have called elsewhere "castle complexes," able to shelter and provide all of the necessities of life for a large number of people for a long time. Because their inhabitants anticipated long sieges that might last until reinforcements could arrive from Europe, the castles were provided with reservoirs for water supply and large cellars for food storage. For example, at the castle of Margat it is estimated that there were sufficient food and water supplies to feed a garrison of 1000 men for five years.<sup>51</sup>

It seems logical, although this logic can also be confirmed by empirical, archaeological, and written evidence, that soldiers returning from the Crusades were deeply impressed by the security provided by the fortifications there, for only at the end of the Crusades, from the middle of the thirteenth century on, were these castles even threatened by enemy troops. Indeed, most withstood almost all attempts to attack or besiege them, with many surrendering only when the numbers of defenders inside fell so low as to make abandonment more prudent than resistance.<sup>52</sup> These returning soldiers then transferred this fortification construction knowledge to Europe where it influenced the building of castles and urban fortifications for the remainder of the Middle Ages, especially during the twelfth and thirteenth centuries, the so-called golden age of medieval fortifications.<sup>53</sup>

Without going into further detail on the construction of castles and town walls throughout medieval Europe, let me end with two observations that I will state with far more simplicity than their

<sup>51</sup> DeVries, *Medieval Military Technology*, 228; Smail, *Crusading Warfare*, 217-18; and T. S. R. Boase, *Castles and Churches of the Crusading Kingdom* (London: Oxford University Press, 1967), 44-45.

<sup>52</sup> See Hugh Kennedy, *Crusader Castles* (Cambridge: Cambridge University Press, 1994), 98-119.

<sup>53</sup> DeVries, *Medieval Military Technology*, 235-43.

obvious complexity warrants. First, the construction of any medieval fortification was extremely expensive. Whether it was an earth-and-wood construction built using only the expense of forced labor, a large stone castle complex that served both as royal residence and fortification, or a town wall to extend around the urban area of even a small town, let alone a city the size of Bruges, Ghent, Milan, Florence, Naples, Paris, or Constantinople, such a construction was a major economic endeavor. Sometimes the cost of a medieval fortification is known; for example, the cost of Caernarvon Castle, built by Edward I in Wales at the end of the thirteenth century, is recorded as having cost the English king £20,000, with a total for all of his castle construction projects in Wales costing between £62,000 and £80,000.<sup>54</sup> At other times, the medieval military historian must recognize the expense implied from more indirect means, such as the punishment so often levied by conquering generals of having the urban fortifications of a defeated town pulled down, the expense of rebuilding a perceptible deterrent against disputes with the conqueror.<sup>55</sup>

The second observation is less of an obvious one, because it goes against what most modern historians are led to believe about medieval fortifications. These buildings, with their straight, tall stone walls, did not fall easily. If those inside a fortification, whether a castle or a town, wanted to withstand an attacking army they generally did, and little could dissuade them from this determination. Attacking the walls of such fortresses was costly in terms of men and was generally only accomplished with the use of large numbers of artillery pieces and other siege machines, and generally also if there was no army friendly to the besieged that could bring relief. Thus time in these situations was of the essence, as the old saying goes; the army with time on its side usually won the siege. Time also allowed conquest more frequently by the old means of mining, starvation, negotiation, or treachery. This meant that almost all sieges took a very long time to accomplish, if they were accomplished at all: Rome took ten years to fall in 410; Château-Gaillard was besieged for more than a year in 1203–04; Calais took nearly the same amount of time

<sup>54</sup> On Edward I's castles in Wales see DeVries, *Medieval Military Technology*, 244–49. Costs of these castles can be found on p. 248.

<sup>55</sup> See the examples in Kelly DeVries, "The Rebellions of the Southern Low Countries' Towns during the Fourteenth and Fifteenth Centuries," in *Power and the City in the Netherlandic World, 1000–2000*, ed. W. TeBrake and W. Kibler (Leiden: E. J. Brill, 2004 [forthcoming]).



in 1346-47; and Constantinople held out for almost a year in 1453; while Neuss did not fall after more than a year's siege in 1474-75.<sup>56</sup> Again, despite the contrary thought prevailing, gunpowder weaponry did not alter this situation decisively, as the siege of Neuss proved.<sup>57</sup> At times in the history of the world the value of protection, the value placed on the human life, both combatant and noncombatant, did not warrant the expense of fortification construction, but throughout the Middle Ages it did, sometimes in an almost incomprehensible way: Edward I's bankruptcy of the English treasury to build his Welsh castles has never been satisfactorily explained, for example, at least not for most medieval English historians.<sup>58</sup>

### *Military Surgery*<sup>59</sup>

Finally, despite these attempts at protection, those fighting in medieval wars, as in all of history's military engagements, were sometimes wounded. Like armor and fortifications, military surgery had its ancient predecessors, quite good ones in fact. In particular, those ancient imperial and royal leaders who valued the lives of their soldiers furnished their military units with medical personnel who would accompany and take care of the troops.<sup>60</sup> By the time of the Roman Empire, military surgery had progressed so far that only the soldier who was most severely wounded would perish.<sup>61</sup>

<sup>56</sup> The best book on medieval sieges, which dates all of these sieges and many more lasting equally long is Bradbury, *The Medieval Siege*.

<sup>57</sup> This is dealt with at length and with more examples in Robert D. Smith and Kelly DeVries, *The Artillery of the Valois Dukes of Burgundy, 1363-1477* (Woodbridge: Boydell Press, 2005).

<sup>58</sup> A bibliography of works on Edward's castle-building in Wales is found in DeVries, *Cumulative Bibliography*, 887-89.

<sup>59</sup> Much of the following section originally appeared as Kelly DeVries, "Medieval Military Surgery," *Medieval History Magazine* 4 (Dec 2003): 18-25.

<sup>60</sup> A good general study of this can be found in Guido Majno, *The Healing Hand: Man and Wound in the Ancient World* (Cambridge: Harvard University Press, 1975). For a more specific approach to ancient military surgery see Christine F. Salazar, *The Treatment of War Wounds in Greco-Roman Antiquity* (Leiden: E. J. Brill, 2000).

<sup>61</sup> Roman military historians have often suggested that at the height of the Roman imperial army (first-second century A.D.), it was so costly to replace the training and experience of a soldier that it was imperative to preserve him for warfare. See, among others, G. R. Watson, *The Roman Soldier* (Ithaca: Cornell University Press, 1969), and Yann Le Bohec, *The Imperial Roman Army*, trans. Raphael Bate (London: Routledge, 1994).

The Byzantines retained the Roman military system and organization, including military surgeons. The military treatises of Emperor Maurice and Emperor Leo VI, the *Strategikon* and *Tactika* respectively, established that each unit of three to four hundred cavalry or infantry was to have two physicians (a general practitioner and a surgeon) and between eight and ten orderlies attached to it. As with the Romans, for the Byzantines the immediacy of military wound treatment and repair was most important and saved the most lives. To accomplish this, the orderlies worked as medics in a modern sense, carrying stretchers, performing first aid, and transporting wounded soldiers from the battlefield. Orderlies were even given financial incentives for the most wounded saved, and booty was also shared between the soldiers and medical personnel.<sup>62</sup>

Greek and Roman medical and surgical texts continued to be used by Byzantine military surgeons. As the weapons had not changed, the wounds and other afflictions that plagued the troops continued to be the same. These ancient texts were supplemented in the seventh century by a surgery manual contained in the text, *Epitome*, of Paul of Aegina. So popular was this manual that it became the standard surgical text for military surgeons until the twelfth century.

It was not just in military engagements that wounded Byzantine soldiers were taken care of. Veterans who were disabled, wounded, or crippled were hospitalized and housed for life at government expense. Constantine established the first veterans' hospitals in Constantinople in the beginning of the fourth century, with Emperors Justin II and Alexius Comnenus I also founding crippled and long-term veteran hospitals.

As for what was happening in the former Western Roman Empire, unfortunately much erroneous scholarly thought persists about the Barbarian invaders. That they did not retain any Roman military organization and technology has largely been disproved, as has the idea that military surgery virtually disappeared.<sup>63</sup> Fortunately, the

<sup>62</sup> Ian McCulloch, "Battlefield Medicine—The Middle Ages A.D. 500-1450," *Osprey Military Journal* 4.2 (2002): 14-17. On the Byzantine military system, including the aspects of military surgery and care for the wounded and aging veterans, see John Haldon, *Warfare, State and Society in the Byzantine World, 565-1204* (London: UCL Press, 1999), and Warren Treadgold, *Byzantium and Its Army, 284-1081* (Stanford: Stanford University Press, 1995).

<sup>63</sup> The best history for this and much of what follows is found in Pierre Huard and Mirko Drazen Grmek, *Mille ans de chirurgie en occident: V<sup>e</sup>-XV<sup>e</sup> siècles* (Paris: R. Dacosta, 1966).

notion that no evidence means decline and disappearance is no longer seen as valid.

This still leaves a gap in our knowledge. Early medieval military actions were not recorded with as much detail about the wounded as they were in Roman sources. Of much greater importance was the recording of the names of those killed in action rather than those saved. Nevertheless, that there were some important figures who had been wounded and then survived gives an indication that military surgery may have been practiced. Nor does it do much good to dwell on unknown "German tribal medicine" as some historians have done. Anthropological arguments of pharmacological treatment are largely unfounded; indeed, pharmacology generally indicates the educative skills of a craftsman.<sup>64</sup> Certainly there are several problems associated with practices and myths of humor inequities and poisons in the body that have their origins somewhere, but simply because there are no texts that explain ancient Barbarian pharmacological practices does not denote a lack of knowledge or skill.

Evidence of the continued importance and skills of military medical personnel comes from numerous sources. The accounts of Ammianus Marcellinus (c. 330-395) discuss many engagements between Romans and Barbarians where surgical personnel were present, although it is clear that their numbers and skills were not sufficient to keep up with the large numbers of wounds suffered in such warfare. Scythian surgeons in the Crimean region are known to have bandaged wounds. Medieval Norse medics used herbs and cauterization to staunch blood flow from wounds. And care and transportation from the battlefield of wounded soldiers continued. While it must be admitted that these are isolated accounts, they do show a continuity in military surgery with the Roman past, as well as the existence of an inherent Barbarian system of military surgery.<sup>65</sup>

At the same time as the early medieval military surgeons were developing their skills, a new and different tradition of military medicine, seemingly uninfluenced by Roman practice, appeared among the lands dominated by Islam. Instead, Islamic military surgical techniques probably descended from Arab bedouin or merchant training

<sup>64</sup> On this see Carole Rawcliffe, *Medicine and Society in Later Medieval England* (Stroud: Sutton Publishing, 1997) and Nancy G. Sirasi, *Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice* (Chicago: University of Chicago Press, 1990).

<sup>65</sup> McCulloch, 15-16.

that evolved as Islamic armies came in contact with the Byzantine, Egyptian, and Persian armies they conquered. Like the myths that sprung up about Barbarian military surgery, it used to be thought that early Muslim armies also had no military surgical capabilities, although the love of learning brought about by a desire to read and follow the *Qur'an* must eventually have led to an understanding of the importance of surgery in preserving the lives of wounded soldiers. The value placed by Islamic teaching on hygiene and human life led to further interest in the treatment of wounds. There were of course some Qur'anic restrictions to surgery, but most of these concerned the treatment of women and the dissection of the dead.

As this study is meant to focus on western medieval military experience, I will not focus further on Islamic practice, except to suggest that surgeons working among Muslim armies developed different skills than did their European counterparts. This became especially evident during the Crusades when the two traditions were forced to co-exist together. This is unfortunate, because historians have put too much emphasis on comparative comments made about the two surgical traditions in the twelfth-century autobiography of Usama ibn Munqidh (1095-1188), an Arab living in the Crusader-occupied Holy Land. In an oft-cited passage Usama describes the experience of his uncle who sent a Syrian surgeon "to treat certain sick persons" among the Christians. However, at the point of successfully healing some of these, this surgeon was pushed aside by a Crusader surgeon whose crude techniques not only brought the death of his patients, but increased their pain quite markedly.<sup>66</sup>

Usama's indignation towards European military surgical practices may be justified or it may be exaggerated. Indications are that as Islamic surgery had progressed, so too had European surgery. Certainly there was no lack of European wars before the Crusades, and in each of these there were naturally wounded soldiers who needed care. Still, one of the most important improvements in military medicine actually came in the Holy Land after the success of the First Crusade. Around 1110, the monastic military order known as the

<sup>66</sup> Usamah ibn-Munqidh, *An Arab-Syrian Gentleman and Warrior in the Period of the Crusades: Memoirs of Usamah ibn Munqidh*, trans. Philip K. Hitti (Princeton: Princeton University Press, 1987), 162. For a study of this passage see David C. Nicolle, "Wounds, Military Surgery and the Reality of Crusading Warfare: The Evidence of Usamah's Memoirs." *Journal of Oriental and African Studies* 5 (1993): 33-46.

Knights of St. John, or the Hospitallers, was established as an order concerned with the health of soldiers and pilgrims; only later did it evolve into a fighting organization, although one that never gave up its initial mission. The Hospitallers, both in the Holy Land and later when they were given first Cyprus, then Rhodes, and finally Malta as refuges, continued to provide military surgery and hospitalization for their knights and other soldiers. While the knights did not often provide medical service, choosing instead to devote themselves to military and administrative duties, the Hospitaller order would hire civilian physicians, surgeons, and orderlies to staff their hospitals and campaign positions.<sup>67</sup>

While the Hospitallers were thriving in the Holy Land, a European school of surgery was founded in Salerno. Begun under the influences of Islamic and Byzantine occupation, the Salerno school remained in operation once the island of Sicily had been conquered by the Normans. The dominant influence in the rise of the school was Constantinus Africanus (c. 1015-1087), but it is the surgical manual of Roger of Salerno that is perhaps the most important work to come from the school. The *Chirurgia*, written in 1180, attributed to Roger of Salerno but probably written by his student, Gui of Aries, was enormously popular, surviving in more than twenty manuscripts in England and France alone, several of them illustrated, with more than fifteen translations being made before the sixteenth century. Roger's manual borrowed from numerous other, now lost, texts and was influenced by Byzantine and Islamic, as well as European, traditions of the time. While *Chirurgia* was not specifically meant for military surgeons, its influence must certainly have been felt.<sup>68</sup>

Other surgical manuals followed, a number of which were written during the thirteenth and the first half of the fourteenth centuries. These included volumes written by Gilbertus, Roger de Barone,

<sup>67</sup> There are several histories of the military monastic orders and several different histories of the Hospitaller order. One could do no better than to start with Helen Nicholson, *The Knights Hospitaller* (Woodbridge: Boydell Press, 2001) and Jonathan Riley-Smith, *Hospitallers: The History of the Order of St. John* (London: Hambledon Press, 1999). For the later history of the order see H. J. A. Sire, *The Knights of Malta* (New Haven: Yale University Press, 1994). For a more complete bibliography of the order see DeVries, *Cumulative Bibliography*, 480-84.

<sup>68</sup> McCulloch, 16. See also Linda M. Paterson, "Military Surgery: Knights, Sergeants, and Raimon of Avignon's Version of the *Chirurgia* of Roger of Salerno (1180-1209)," in *The Ideals and Practice of Medieval Knighthood II*, ed. Christopher Harper-Bill and Ruth Harvey (Woodbridge: Boydell Press, 1988), 117-46.

Lanfranc, Arnald of Villanova, Anselm of Genoa, Guy de Vigevano, Jan Yperman, Bernard de Gordon, Jean Pitart, Jean de Prouville, Pierre Fromont, Henri de Mondeville, Guy de Chauliac, Thomas Scellinck. John of Arderne, and John de Gaddesden. Most of these surgeons were associated with royal or noble courts, and many also served as military surgeons.<sup>69</sup> In particular, Guy de Vigevano served as a surgeon with the Holy Roman Emperor, Henry VI, in his early fourteenth-century campaigns in Italy,<sup>70</sup> and John of Arderne served as a military surgeon with King Edward III of England during the opening phase of the Hundred Years War.<sup>71</sup> Others may not have served as battlefield surgeons but directed much of their surgical writings to wounds that might be suffered by soldiers. For example, in Book II of Henri de Mondeville's *Cirurgia*, the surgeon is instructed on how to treat wounds. The procedure suggested by Mondeville was to cleanse the wound, removing all detritus, especially "strange metals," and then to bandage the wound, to allow suppuration, or to suture it. Should the metal detritus prove to be too difficult to be removed by fingers or probes, the surgeon was instructed to use a crossbow to assist in its removal. This was done by cocking the crossbow string, attaching the string to the object to be removed, and then discharging the weapon. The detritus would be jerked out of the wound with such a speed that, hopefully, it might lessen any pain to the victim.<sup>72</sup>

By the end of the Middle Ages battlefield surgery had reached its medieval peak. The constant warfare of the age demanded skilled medical personnel who could dress wounds of soldiers, and almost all surgeons of the fourteenth and fifteenth centuries had seen military action. The invention and proliferation of gunpowder weapons brought yet another technological innovation to the field of military science. Armor and fortifications tried to adapt to the weapons, and

<sup>69</sup> Huard and Grmek, 35-52.

<sup>70</sup> Huard and Grmek, 35-36.

<sup>71</sup> Huard and Grmek, 51-52, and Jeremy J. Citrome, "Bodies that Splatter: Surgery, Chivalry, and the Body in the *Practica* of John Arderne," *Exemplaria* 13 (2001): 137-72.

<sup>72</sup> Huard and Grmek, 40. Henri de Mondeville's treatise, written originally in Latin, is badly in need of a modern critical edition, although numerous translations exist, mostly into French or German. On the use of the crossbow as a surgical tool see Robert Ignatius Burns, "The Medieval Crossbow as Surgical Instrument: An Illustrated Case History," in *Essays on the History of Medicine*, ed. S. Jarcho (New York: Science History Publications, 1976), 64-70.

so too did the battlefield surgeons. Initially, military surgeons seem to have adopted a similar technique of wound repair as they had used so effectively in treating non-gunpowder wounds: cleansing the wound, removing the detritus, and then suppurating or suturing. However, some surgeons, especially those influenced by Islamic surgical practice, began to consider wounds caused by gunpowder weapons to be poisoned, and that the only means of eradicating that poison was cauterization. Life had grown cheap in the eyes of medieval leaders faced with so many wounds. Sometimes these wounds were not even cleansed nor the detritus removed from them before they were filled with boiling oil. Of course, few wounded soldiers could withstand the damage such a "cure" caused and many died. Ultimately, at the siege of Turin in 1536, the French military surgeon, Ambroise Paré, discovered that leaving gunshot wounds untreated was actually better than cauterization by hot oil, and his observations would lead to a halting of this procedure. Of course, he only discovered what many medieval military surgeons had long been practising: the effective and life-valuing repair of wounded soldiers on the battlefield or at a siege.<sup>73</sup>

No doubt this idea of the value of a human life being a defining feature of medieval warfare needs to be developed more fully than I can do here. Let me merely suggest that changes were afoot in warfare and its relation to the value of human life by the end of the Middle Ages, especially during the last few decades of the fourteenth and the entire fifteenth centuries. The greatest cause of this was the constant warfare going on throughout Europe during this period. Added to this was the encounter of the western with the eastern armies of the Ottoman Turks whose leaders did not value human life in the same way as European generals and soldiers did. Witness the massacre of prisoners at the conclusion of the disastrous (for the west at least) Battle of Nicopolis in 1396 and the shock wave that sent throughout Europe, at least until such a massacre

<sup>73</sup> Kelly DeVries, "Military Surgical Practice and the Advent of Gunpowder Weaponry," *Canadian Bulletin of Medical History* 7 (1990): 131-46. Ambroise Paré's initial observations are made in Ambroise Paré, *The Apologie and Treatise*, ed. and trans. G. Keynes (Chicago: University of Chicago Press, 1952). 138. He discusses more extensively his treatment for gunshot wounds in his later work, *Ten Books of Surgery with the Magazine of the Instruments Necessary for It*, ed. and trans. Robert White Linker and Nathan Womack (Athens: University of Georgia Press, 1969), 1-47.

was duplicated by Henry V two decades later at Agincourt.<sup>74</sup> Then there was Joan of Arc, whose military superiority came from the fact that, as she believed she was on a mission from God, any soldier who died fighting with her would go to heaven. Consequently, she could be said to have lessened the value of her own soldiers—or at least worried less about their deaths in military conflict, as such would certainly bring their salvation—which allowed her to use their numerical advantage (at least 300 per cent) to gain victory over less numerous English forces in the Hundred Years War.<sup>75</sup> Finally, while not giving into any facet of the Military Revolution thesis, the inaccuracy of gunpowder weapons, the first military technology in which selecting and aiming at a target did not matter, meant the democratization of the battlefield, with the result that nobles and elite soldiers could not ensure their survival based on economic worth alone.<sup>76</sup> All of these changes, together with others that I cannot even mention in this short outline of later medieval warfare, weakened the value of human life on the battlefield and began the early modern military period. The medieval culture that defined warfare valued human life as no era before or after.

#### *Bibliography*

- Abels, Richard P. *Alfred the Great: War, Kingship and Culture in Anglo-Saxon England*. London: Longman. 1998.
- Allmand, Christopher. *Henry V*. Berkeley and Los Angeles: University of California Press, 1992.
- Bachrach, Bernard S. "Charlemagne and the Carolingian General Staff." *Journal of Military History* 66 (2002): 313-58.
- . "Charlemagne's Cavalry: Myth and Reality." *Military Affairs* 47 (1983): 181-87.
- . *Early Carolingian Warfare: Prelude to Empire*. Philadelphia: University of Pennsylvania Press, 2001.

<sup>74</sup> See Kelly DeVries, "The Effect of Killing the Christian Prisoners at the Battle of Nicopolis," in *Crusaders, Condottieri, and Cannon: Medieval Warfare in Societies Around the Mediterranean*, ed. L. J. Andrew Villalon and Donald Kagay (Leiden: E. J. Brill, 2002), 157-72.

<sup>75</sup> See DeVries, *Joan of Arc*, where this thesis is introduced; it will be developed further in a forthcoming study specific to Joan's "use" and "value" of her troops.

<sup>76</sup> Although I disagree with much that is in this article, Clifford J. Rogers, "The Military Revolutions of the Hundred Years War," *Journal of Military History* 57 (1993): 241-78; reprinted in *The Military Revolution Debate: Readings on the Military Transformation of Early Modern Europe*, ed. C.J. Rogers (Boulder: Westview, 1995), 55-94, does suggest the democratization of gunpowder weapons, although I differ markedly with his conclusions on what results from this democratization.



- . "Medieval Siege Warfare: A Reconnaissance." *Journal of Military History* 58 (1994): 119-33.
- . *Merovingian Military Organization, 481-751*. Minneapolis: University of Minnesota Press, 1972.
- . "Military Organization in Aquitaine under the Early Carolingians." *Speculum* 49 (1974): 1-33.
- . "Procopius, Agathias and the Frankish Military." *Speculum* 45 (1970): 435-441.
- Black, Jeremy. *The Cambridge Illustrated Atlas of Warfare: Renaissance to Revolution, 1492-1792*. Cambridge: Cambridge University Press, 1996.
- . *War and the World: Military Power and the Fate of Continents, 1450-2000*. New Haven: Yale University Press, 1998.
- . *Western Warfare, 1775-1882*. Bloomington: Indiana University Press, 2001.
- Boase, T. S. R. *Castles and Churches of the Crusading Kingdom*. London: Oxford University Press, 1967.
- Bradbury, Jim. *The Medieval Siege*. Woodbridge: Boydell Press, 1992.
- . *The Burgundian Code*. Translated by Katherine Fischer Drew. Philadelphia: University of Pennsylvania Press, 1972.
- Burne, Alfred H. *The Agincourt War: A Military History of the Latter Part of the Hundred Years War from 1369 to 1453*. London: Eyre and Spottiswoode, 1956.
- . *The Crecy War: A Military History of the Hundred Years War from 1337 to the Peace of Bretigny, 1360*. London: Eyre and Spottiswoode, 1955.
- Burns, Robert Ignatius. "The Medieval Crossbow as Surgical Instrument: An Illustrated Case History." In: *Essays on the History of Medicine*, edited by S. Jarcho. New York: Science History Publications, 1976.
- Byock, Jesse. *Feud in Icelandic Saga*. Berkeley and Los Angeles: University of California Press, 1993.
- Citrome, Jeremy J. "Bodies that Splatter: Surgery, Chivalry, and the Body in the *Practica* of John Arderne." *Exemplaria* 13 (2001): 137-72.
- Coupland, Simon. "Carolingian Arms and Armor in the Ninth Century." *Viator* 21 (1990): 29-50.
- Crosby, Alfred W. *Throwing Fire: Projectile Technology Through History*. Cambridge: Cambridge University Press, 2002.
- Daniels, Emil. *Geschichte des Kriegswesens*. Vol. 2, *Das mittelalterliche Kriegswesen*. 2nd ed. Berlin: Göschert, 1927.
- Davis, R. H. C. *A History of Medieval Europe: From Constantine to Saint Louis*. London: Longmans, 1970.
- Delbrück, Hans. *Geschichte der Kriegskunst im Rahmen des Politischen Geschichte*. Vol. 3, *Mittelalter*. 2nd ed. Berlin: G. Stilke, 1923.
- . *History of the Art of War Within the Framework of Political History*. Vol. 3, *Medieval Warfare*. Translated by W. J. Renfroe, Jr. Westport: Greenwood Press, 1984.
- DeVries, Kelly. "The Battle of Hattin, 1187: Beginning of the End." *Medieval History Magazine* 5 Jan 2004): 24-31.
- . *A Cumulative Bibliography of Medieval Military History and Technology*. Leiden: E. J. Brill, 2002.
- . "The Effect of Killing the Christian Prisoners at the Battle of Nicopolis." In *Crusaders, Condottieri, and Cannon: Medieval Warfare in Societies Around the Mediterranean*, edited by L. J. Andrew Villalon and Donald Kagay. Leiden: E. J. Brill, 2002.
- . *The Hundred Years Wars, 1302-1485*. London: Longmans, forthcoming.
- . *Infantry Warfare in the Early Fourteenth Century: Discipline, Tactics, and Technology*. Woodbridge: Boydell Press, 1996.
- . *Joan of Arc: A Military Leader*. Stroud: Sutton Publishing, 1999.
- . "John the Fearless' Way of War." In *Reputation and Representation in Fifteenth Century Europe*, edited by Douglas L. Biggs, Sharon D. Michalove and A. Compton Reeves. Leiden: E. J. Brill, 2004.

- . "Medieval Military Surgery." *Medieval History Magazine* 4 (Dec 2003): 18-25.
- . *Medieval Military Technology*. Peterborough: Broadview Press, 1992.
- . "Military Surgical Practice and the Advent of Gunpowder Weaponry." *Canadian Bulletin of Medical History* 7 (1990): 131-46.
- . "The Rebellions of the Southern Low Countries' Towns during the Fourteenth and Fifteenth Centuries." In *Power and the City in the Netherlandic World, 1000-2000*, edited by W. TeBrake and W. Kibler. Leiden: E. J. Brill, 2004, forthcoming.
- . "Was There a Renaissance in Warfare? Intellectual Evolution and Technological Determinism, 1300-1560." Forthcoming.
- Diamond, Jared. *Guns, Germs, and Steel*. New York: W. W. Norton and Company, 1997.
- Einhard and Notker the Stammerer. *Two Lives of Charlemagne*. Translated by L. Thorpe. Harmondsworth: Penguin Books, 1969.
- Erben, Wilhelm. *Kriegsgeschichte des Mittelalters*. Berlin: R. Oldenbourg, 1929.
- Ferguson, R. Brian and Neil L. Whitehead. *War in the Tribal Zone: Expanding States and Indigenous Warfare*. Santa Fe: School of American Research Press, 1992.
- Ferrill, Arthur. *The Fall of the Roman Empire: A Military Explanation*. London: Thames and Hudson, 1986.
- . *The Origins of War from the Stone Age to Alexander the Great*. London: Thames and Hudson, 1985.
- Fiorato, Veronica, Anthea Boylston and Christopher Knüsel. *Blood Red Roses: The Archaeology of a Mass Grave from the Battle of Towton, AD 1461*. Oxford: Oxbow Books, 2000.
- France, John. "The Composition and Raising of the Armies of Charlemagne." *Journal of Medieval Military History* 1 (2002): 61-82.
- . "The Military History of the Carolingian Period." *Revue Belge d'histoire militaire* 26 (1985): 81-100.
- Ganshof, François Louis. *Frankish Institutions Under Charlemagne*. Translated by Bryce and Mary Lyon. New York: W. W. Norton and Company, Inc., 1968.
- Gillingham, John. "Richard I and the Science of War in the Middle Ages." In *War and Government in the Middle Ages: Essays in Honour of J. O. Prestwich*, edited by John Gillingham and J. C. Holt. Totowa: Barnes and Noble, 1984.
- Gilmour, Brian, and Ian Tyers. "Courtrai Chest: Relic or Recent: Reassessment and Further Work: An Interim Report." In *Papers of the 'Medieval Europe Brugge 1997' Conference*. Vol 5. *Art and Symbolism in Medieval Europe*. Bruges: I. A. P. (Instituut voor het Archeologisch Patrimonium), 1997.
- Goffaert, Walter. *The Narrators of Barbarian History (A.D. 550-800): Jordanes, Gregory of Tours, Bede, and Paul the Deacon*. Princeton: Princeton University Press, 1988.
- Haldon, John. *Warfare, State and Society in the Byzantine World, 565-1204*. London: UCL Press, 1999.
- Hanson, Victor Davis. *Carnage and Culture: Landmark Battles in the Rise of Western Power*. New York: Doubleday, 2001.
- . *The Soul of Battle: From Ancient Times to the Present Day, How Three Great Liberators Vanquished Tyranny*. New York: The Free Press, 1999.
- . *The Western Way of War: Infantry Battle in Classical Greece*. Oxford: Oxford University Press, 1989.
- Hill, David and Alexander R. Rumble, eds. *The Defence of Wessex: The Burghal Hidage and Anglo-Saxon Fortifications*. Manchester: Manchester University Press, 1996.
- Howard, Michael. *War in European History*. Oxford: Oxford University Press, 1976.
- Huard, Pierre and Mirko Drazen Grmek. *Mille ans de chirurgie en occident: V<sup>e</sup>-XV<sup>e</sup> siècles*. Paris: R. Dacosta, 1966.
- Ibn-Munqidh, Usamah. *An Arab-Syrian Gentleman and Warrior in the Period of the Crusades: Memoirs of Usamah Ibn Munqidh*. Translated by Philip K. Hitti. Princeton: Princeton University Press, 1987.

- Imber, Colin. *The Ottoman Empire, 1300-1650*. Houndmills: Palgrave Macmillan, 2002.
- Inalcik, Halil. *The Ottoman Empire: The Classical Age, 1300-1600*. Translated by Norman Itzkowitz and Colin Imber. New York: Praeger Publishers, 1973.
- Jones, Peter N. "The Metallography and Relative Effectiveness of Arrowheads and Armor during the Middle Ages." *Materials Characterization* 29 (1992): 111-117.
- Kaeuper, Richard W. *Chivalry and Violence in Medieval Europe*. Oxford: Oxford University Press, 1999.
- . "Literature as the Key to Chivalric Ideology." Unpublished paper delivered as the *Journal of Medieval Military Lecture* Annual Lecture, 39th International Congress on Medieval Studies, University of Western Michigan, 2004.
- Kedar, Benjamin Z. "The Battle of Hattin Reconsidered." In *The Horns of Hattin*, edited by Benjamin Z. Kedar. Jerusalem: Yad Izhak Ben-Zvi and Israel Exploration Society, 1992.
- Keegan, John. *A History of Warfare*. New York: Alfred A. Knopf, 1993.
- Keeley, Lawrence H. *War Before Civilization*. Oxford: Oxford University Press, 1996.
- Kennedy, Hugh. *Crusader Castles*. Cambridge: Cambridge University Press, 1994.
- Köhler, Gustav. *Die Entwicklung des Kriegswesens und der Kriegführung in der Ritterzeit von Mitte des 11. Jahrhunderts bis zu den Hussitenkriegen*. 3 vols. Breslau: W. Köbner, 1886.
- Liddell Hart, B. H. *Strategy*. 2nd ed. New York: Meridian, 1991.
- Le Bohec, Yann. *The Imperial Roman Army*. Translated by Raphael Bate. London: Routledge, 1994.
- The Lombard Laws*. Translated by Katherine Fischer Drew. Philadelphia: University of Pennsylvania Press, 1973.
- Lot, Ferdinand. *L'art militaire et les armées au moyen-âge en Europe et dans le proche orient*. 2 vols. Paris: Payot, 1946.
- Lynn, John A. *Battle: A History of Combat and Culture from Ancient Greece to Modern America*. Boulder: Westview Press, 2003.
- Lyons, Malcolm Cameron and D. E. P. Jackson. *Saladin: The Politics of the Holy War*. Cambridge: Cambridge University Press, 1982.
- Majno, Guido. *The Healing Hand: Man and Wound in the Ancient World*. Cambridge: Harvard University Press, 1975.
- Marijnissen, R. H. *De "Chest of Courtrai": Een vervalsing van het pasticcio-type*. Brussels: Paleis der Academiën, 1978.
- McCulloch, Ian. "Battlefield Medicine—The Middle Ages AD 500-1450," *Osprey Military Journal* 4.2 (2002): 14-17.
- Melville, C. P., and Malcolm Cameron Lyons. "Saladin's Hattin Letter." In *The Horns of Hattin*, edited by Benjamin Z. Kedar. Jerusalem: Yad Izhak Ben-Zvi and Israel Exploration Society, 1992.
- Mondeville, Henri de. *Die Chirurgie des Heinrich von Mondeville*. Edited by J. Pagel. Berlin: n.p., 1892.
- Nicholson, Helen. *The Knights Hospitaller*. Woodbridge: Boydell Press, 2001.
- Nicolle, David. *Hattin, 1187: Saladin's Greatest Victory*. London: Osprey, 1993.
- . "Wounds, Military Surgery and the Reality of Crusading Warfare: The Evidence of Usamah's Memoirs." *Journal of Oriental and African Studies* 5 (1993): 33-46.
- Oman, Sir Charles W. C. *A History of the Art of War in the Middle Ages*. 2 vols. 1924. Reprint, London: Greenhill Books, 1998.
- . *A History of the Art of War: The Middle Ages from the Fourth to the Fourteenth Century*. London: Methuen, 1898.
- Paré, Ambroise. *The Apologie and Treatise of Ambroise Paré, Containing the Voyages Made into Divers Places with Many of His Writings upon Surgery*. Edited and translated by Geoffrey Keynes. Chicago: The University of Chicago Press, 1952.

- . *Ten Books of Surgery with the Magazine of the Instruments Necessary for It*. Edited and translated by Robert White Linker and Nathan Womack. Athens: University of Georgia Press, 1969.
- Parker, Geoffrey. *The Military Revolution: Military Innovation and the Rise of the West, 1500-1800*. 2nd ed. Cambridge: Cambridge University Press, 1996.
- Paterson, Linda M. "Military Surgery: Knights, Sergeants, and Raimon of Avignon's Version of the *Chirurgia* of Roger of Salerno (1180-1209)." In *The Ideals and Practice of Medieval Knighthood II*, edited by Christopher Harper-Bill and Ruth Harvey. Woodbridge, 1988.
- Peddie, John. *Alfred: Warrior King*. Stroud: Sutton Publishing Limited, 1999.
- Rawcliffe, Carole. *Medicine and Society in Later Medieval England*. Stroud: Sutton Publishing, 1997.
- Riley-Smith, Jonathan. *Hospitallers: The History of the Order of St. John*. London: Hambledon Press, 1999.
- Rogers, Clifford J. "The Military Revolutions of the Hundred Years War." *Journal of Military History* 57 (1993): 241-78. Reprinted in *The Military Revolution Debate: Readings on the Military Transformation of Early Modern Europe*, edited by Clifford J. Rogers. Boulder: Westview, 1995.
- . *War Cruel and Sharp: English Strategy under Edward III, 1327-1360*. Woodbridge: Boydell Press, 2000.
- Rogers, R. *Latin Siege Warfare in the Twelfth Century*. Oxford: Clarendon Press, 1992.
- Runciman Sir Steven. *A History of the Crusades*. Vol. 1, *The First Crusade and the Foundation of the Kingdom of Jerusalem*. New York: Harper and Row, Publishers, 1964.
- Salazar, Christine F. *The Treatment of War Wounds in Greco-Roman Antiquity*. Leiden: E. J. Brill, 2000.
- Seward, Desmond. *Henry V as Warlord*. 1987. Reprint, London: Penguin Books, 2001.
- Sirasi, Nancy G. *Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice*. Chicago: The University of Chicago Press, 1990.
- Sire, H. J. A. *The Knights of Malta*. New Haven: Yale University Press, 1994.
- Smail, R. C. "Crusaders' Castles of the Twelfth Century." *Cambridge Historical Journal* 10 (1951): 133-49.
- . *Crusading Warfare (1097-1193)*. Cambridge: Cambridge University Press, 1956.
- Smith, Robert D., and Kelly DeVries. *The Artillery of the Valois Dukes of Burgundy, 1363-1477*. Woodbridge, forthcoming.
- Thordemann, Bengt. *Armour from the Battle of Wisby, 1361*. 1939. Reprint, Union City: Chivalry Bookshelf, 2001.
- Toy, Sydney. *Castles: A Short History of Fortifications from 1600 B.C. to A.D. 1600*. London: Heinemann, 1939.
- . *A History of Fortification from 3000 BC to AD 1700*. London: W. Heinemann, 1955.
- Treadgold, Warren. *Byzantium and Its Army, 284-1081*. Stanford: Stanford University Press, 1995.
- Turnbull, Stephen. *The Ottoman Empire, 1326-1699*. Essential Histories. London: Osprey, 2003.
- Turney-High, Harry Holbert. *Primitive War: Its Practices and Concepts*. 2nd ed. Columbia: University of South Carolina Press, 1991.
- Van de Walle, A. L. J., and R. Heughebaert. "De Chest of Courtrai: Een diplomatieke koffer anno 1302, zijn techniek en geheim." *Driemaandelijks tijdschrift voor industriële cultuur* 74 (2001): 1-72.
- Verbruggen, J. F. "L'armée et la stratégie de Charlemagne." In *Karl der Grosse: Lebenswerk und Nachleben*. Band 1, *Personlichkeit und Geschichte*, edited by H. Baumann et al. Dusseldorf: L. Schwann, 1965.

- . "L'art militaire dans l'empire carolingien (714-1000)." *Revue Belge d'histoire militaire* 23 (1979-80): 289-310, 393-412.
- . *The Art of Warfare in Western Europe During the Middle Ages from the Eighth Century to 1340*. 2nd ed. Translated by S. Willard and R. W. Southern. Woodbridge: Boydell Press, 1997.
- . *The Battle of the Golden Spurs: Courtrai, 11 July 1302*. Edited by Kelly DeVries and translated by David Richard Ferguson. Woodbridge: Boydell Press, 2002.
- . "De krijgers van Karel de Grote." *Genootschap voor gescheid- en oudheidkunde te Vilvoorde* 5.2 (June 1999): 2-20.
- . "De oorlogen van Karel de Grote (768-814)." *Genootschap voor geschied- en oudheidkunde te Vilvoorde* 5.1 (Mar 1999): 2-22.
- . *De krijgskunst in west-Europa in de middeleeuwen (IX<sup>e</sup> tot XIV<sup>e</sup> eeuw)*. Brussels: Paleis der Academiën, 1954.
- . *De slag der guldensporen: Bijdrage tot de geschiedenis van Vlaanderens vrijheidsoorlog, 1297-1305*. Antwerp: N.V. Standaard Boekhandel, 1952.
- Watson, G. R. *The Roman Soldier*. Ithaca: Cornell University Press, 1969.
- Wilson, David M. *The Vikings and their Origins: Scandinavia in the First Millennium*. London: Thames and Hudson, 1970.