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VIRGLIO ILARI



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European Cavalry, 1815-1871: The Challenge of “Arms of Precision.”

by GERVASE PHILLIPS

The decades following the end of the Napoleonic Wars may seem, at first glance, a barren period for the historian of cavalry. The final climatic battle, at Waterloo 18 June 1815, had been an inauspicious day for the mounted arm. The failure of French cuirassiers, who charged *en masse* repeatedly to break squares of Wellington’s foot marked the genesis of a new military credo: “Cavalry cannot charge infantry.”¹ Only when infantry was already shaken or broken, might a well-timed cavalry action crown a victory already won by the other arms. In terms of its battlefield role, the cavalry of the early nineteenth century was now itself, according to Professor Édouard De La Barre Duparcq of the French military academy Saint-Cyr, merely “an *accessory* arm.”²

Naturally, cavalry still fulfilled a wide sphere of field duties beyond the battlefield, such as providing advance guards, establishing vedettes and outposts, undertaking reconnaissance, and screening the movements of armies. Yet their scale was limited. The “strategic use of cavalry” (undertaking bold, independent operations, distant expeditions, “partisan” duties, or raids against the enemy’s lines of communication) had been “recognised and practised during the Napoleonic wars.” In their aftermath, however, “the very idea of thus utilising the cavalry arm had fallen into abeyance...”³

In part, this sense of the mounted arm’s decay was simply the consequence of the enervating effects, for military professionals at least, of long years of peace. The Victorian military historian F. N. Maude wrote of the Prussian cavalry in

1 Frederick. N. Maude, *Cavalry: Its Past and Future*. London: William Clowes, 1903, 181.

2 Édouard De La Barre Duparcq, *Elements of Military Art and History*. Translated by George W. Cullum. New York: D. Van Nostrand, 1863, 116.

3 F. Chenevix Trench, *Cavalry in Modern War*. London: Kegan Paul, 1884, 53.

this period, “officers were weary of war, their ruined estates needed all their attention...” Those officers without private means, who remained with their regiments, were “dispersed all over their districts wherever forage was cheapest ... condemned to a life of stagnation, against whose numbing influence only the strongest will can hope to contend.”⁴ Yet this lack of vitality was not simply born of the monotony of garrison duties. The development of new “arms of precision” for the infantry, only seemed to weigh the scales of combat yet further against the horse trooper, armed primarily with sword or lance.

The 1830s and 1840s saw key developments in the loading and firing mechanisms of muskets that made it possible to place accurate rifles, “arms of precision,” into the hands of all line infantrymen. Prior to this, the rifle had been a specialist weapon, accurate but slow to load and fire, issued only to the relatively small proportion of soldiers that composed the light infantry and skirmishers. In 1842, the Prussian infantry adopted the “Dreyse needle gun,” a bolt-action, rifled breech-loader. This could fire six rounds a minute, compared to the two or three that a well-drilled regular could achieve with a smoothbore muzzle-loader. Most armies, wary of poor fire discipline and excessive expenditure of ammunition, retained muzzle-loaders. Yet, after 1846, these were generally rifled rather than smooth-bored. This was made possible by the use of the cylindro-conoidal bullet developed by Claude Étienne Minié. This small bullet eased loading, giving the rifled musket the same rate of fire as an old smoothbore. Yet, when fired, the bullet expanded to fit the rifling of the barrel, resulting in greater range and accuracy. The new arms were simply more dependable in combat too. By the 1830s, most European armies began issuing muskets with percussion caps, a recently developed ignition system that significantly reduced the rate of misfires and operated reliably in all weather conditions.⁵

On military firing ranges across Europe, the performance of the new arms of precision seemed to usher in a revolution in tactics. The effective range of the old smoothbores had been less than 200 yards (183m). In contrast, Sir Charles Shaw cited experiments in which 100 soldiers armed with Miniés had fired at a com-

4 Maude, *Cavalry: Its Past and Future*. 159.

5 Earl J. Hess, *The Rifle Musket in Civil War Combat, Reality and Myth*. Lawrence: University of Kansas Press, 2008, 24-26. Dennis E. Showalter, “Infantry Weapons, Infantry Tactics, and the Armies of Germany, 1849-64,” *European Studies Review*, Vol.4 (1974), 119-140.



Juliusz Kossak: *Polish lancers at the Battle of Ostrołęka, 1831*

mon target at varying known ranges; at 450 yards (411m), 81 shots out of 100 had hit, 51 out of 100 at 700 yards (640m) and 31 out of 100 at 1000 yards (914m). He concluded that “a new era in warfare has commenced and the new firearm, with its ammunition, will make a complete change in the system of actual warfare.” Cavalry, Shaw noted, offered a particularly large target: a squadron was 200 feet (61m) long and nine feet (2.74m) high. This, in theory, would make them vulnerable as they manoeuvred on the battlefield even at extreme ranges. Shaw ventured to suggested that “half of the balls fired at cavalry at 1400 yards [1280m] would take effect.” The squadrons would be exposed to, at least, six minutes of such fire to cover 1100 yards (1006m) as they manoeuvred at the trot, *before* they even reached charging distance, 300 yards (274m) at the gallop.⁶

⁶ Sir Charles Shaw, “Modern Warfare, Or Minie Versus Cavalry And Field Artillery.” *The*

Small wonder then that, as the Victorian hussar Valentine Baker later noted, with the arrival of arms of precision, “officers of experience and weight in all armies were found, who urged that the days of cavalry had passed away, and that this arm in future would only become an encumbrance to an army.”⁷ Yet they were mistaken. The half century following Waterloo would demonstrate both the mounted arm’s continued potency on campaign and its capacity for reform, notwithstanding the “stagnation” of peacetime or the challenge posed by arms of precision.

In terms of doctrine, organisation and training, the Prussian army would set the pace. Surveying the history of the mounted arm over the course of the nineteenth century in 1903, F. N. Maude, would date the beginning of what he termed “the revival of the Prussian Cavalry” to the decades immediately following 1815.⁸ This concept of a “cavalry revival” is a useful one more widely, for eventually most European cavalries would emulate the Prussian model. And “revival” is the most appropriate term. This was not some atavistic impulse, ignoring all that had changed since the days of Frederick the Great’s dauntless cavalry generals Friedrich Wilhelm Seydlitz and Hans Joachim von Zieten, although such figures remained exemplars in terms of leadership. Rather, the revival was a practical endeavour both to recover eroded capabilities (such as the “strategic” role) and to hone modern tactical doctrine and training to a peak of efficiency.

Historians have, for the most part, failed to note the significance of the emerging cavalry revival during the apparently uninteresting decades following Waterloo. In 1913, George T. Denison, the Canadian officer who one might credit with establishing the field of cavalry history, set a pattern when he largely dismissed the period 1815-1854 as a period where “there were no great campaigns, and no marked improvements in the military art.”⁹ One exception to this tendency should be noted: Dennis Showalter’s insightful article examining the Prussian cavalry arm from its destruction at Jena in 1806, through its long years of rebuilding in the half-century after Waterloo, to its successes in the Franco-Prussian War,

Times, December 27, 1854.

7 Valentine Baker, “Organisation and Employment of Cavalry,” *Royal United Services Institute* [hereafter *RUSI*] 17, 1873, 375.

8 Maude, *Cavalry: Its Past and Future*, 158-178.

9 George T. Denison, *A History of Cavalry From the Earliest Times*. London: Macmillan, 1913, 341, 247-355.

1870-71. This noted significant developments in training in the first half of the century that fostered mobility, cohesion and initiative, laying the groundwork for a mounted arm that might still play a deceive role on campaign.¹⁰ One of the chief theoreticians of the early cavalry revival was Count Frederick Wilhelm von Bismark. This Napoleonic War veteran's manuals on cavalry tactics were widely disseminated among European soldiers, helping to make the Prussian revival ultimately a continent-wide one. Bismark identified speed as the defining and irreplaceable characteristic of well-mounted and well-trained cavalry: "great rapidity in all manoeuvres is its first and most eminent quality and by which it has obtained that supremacy which so many fields of battle testify."¹¹

Arms of precision notwithstanding, infantry, artillery and their baggage remained ponderous in comparison. An infantry division could typically march about fifteen miles (24km) in a day (8-12 hours, depending on the weather and condition of roads). Twenty miles (32km) was considered a "forced march," which would leave soldiers foot-sore and exhausted. Good cavalry could cover from twenty-five to thirty miles (40-48km) in a day at a relatively leisurely pace. By alternately walking and trotting their horses and taking a ten-minute rest every hour, regiments could stay reasonably fresh. When necessary, cavalry could march fifty miles (80km) in a day, although this pace could not be sustained for more than 24 hours, unless a regiment was prepared to pay the price in dead and lame horses. Over shorter distances, cavalry could manoeuvre at a comfortable pace of 8 miles an hour (13kmh), or 12 miles an hour (19kmh) at a fast canter. At the trot, a regiment of horse could deploy on the battlefield three times faster than infantry at the "quick march." Cavalry was thus "the instrument of speed in war, *par excellence*."¹² "Motion", wrote Bismark, "is the element of cavalry; it is therefore to be employed upon every description of ground, so long as the army is in movement."¹³

10 Dennis E. Showalter, "Prussian Cavalry 1806-1871", *Militärgeschichtliche Mitteilungen*, 19 (1976), 7-22.

11 F. W. von Bismark, *Lectures on the Tactics of Cavalry*, translated by N. Ludlow Beamish. London: William Ainsworth, 1827, 45-47.

12 Frederick G. Guggisberg, *Modern Warfare or How Our Soldiers Fight*. London: Thomas Nelson, 1903, 32-33; Louis Jules Trochu, *L'Armée Française en 1867*. Paris: Amyot, 1867, 184.

13 Count F. W. von Bismark, *Bismark's Tactics and Manoeuvres of Cavalry*, translated by N. Ludlow Beamish. London: John Ebers, 1830, 219. Sir G. J. Wolseley, *The Soldier's Pock-*

Motion, however, would be of little use if regiments lost cohesion as they deployed, or left a trail of straggling troopers and horses in their wake as they rode across country. The basis of Bismark's system was thus achieving a high standard of military equitation for individual troopers and fostering the capability of formations to maintain order as they crossed difficult terrain or re-deployed, for example from line to column. Yet it was not simply the well-drilled movement of horses and riders that had to be accomplished at pace. For an arm whose defining quality was motion, decision making too had to be rapid. Cavalry leadership had to exhibit "a quick *coup d'oeil* – a calm, firm mind – a boldness sometime rash, sometime cautious – in a word a great deal of talent." Here the impetuous commanders of the past served as exemplars; Bismark quoted with approval von Zieten's remark to his king: "the moment I see the enemy, my dispositions are already made."¹⁴

It was, of course, not enough simply to express these ideals in principle. The enervating effects of peacetime and garrison duties had to be countered by rigorous and well organised training. In 1842, Prussian cavalry undertook its first field manoeuvres for twenty-two years. Firstly, under the guiding hand of Field Marshal Friedrich Graf von Wrangel, and then under his pupil, Prince Frederick Charles, a spirit of initiative was fostered in officers and men in a series of large-scale exercises. The autumn manoeuvres of 1853 were of particular significance. Regiments demonstrated considerable skill in manoeuvring at pace, changing front, and operating in smaller, handier formations. Squadron columns and half columns were employed widely to facilitate cohesion in movement. The handling of lines in the attack was practised and perfected: rear lines protected the flanks of preceding lines or delivered flank attacks in support of frontal charges. The evolutions that were devised at these manoeuvres gave mounted troops far greater tactical mobility, improved their exploitation of terrain, and fostered the capacity to seize fleeting opportunities. They were acknowledged by subsequent generations of cavalrymen, such as Sir John French, as having begun "a new era in cavalry training."¹⁵

While Prussian cavalry set new standards in training and doctrine, the expe-

et-Book. London: Macmillan, 310-312.

14 Bismark, *Tactics and Manoeuvres of Cavalry*, 45.

15 John D. P. French, "Cavalry Manoeuvres," *RUSI* 39, 1895, 560.

periences of other armies on campaign would also give grounds for more confidence in the future of the mounted arm. During the Russo-Polish War, 1830-31, although ultimately outmatched by numerically superior Tzarist forces, Polish troopers scored some notable successes. At Stoczek, on 14 February 1832, a Russian field army deployed for a frontal assault on a strong Polish position, artillery and light infantry holding a dyke across their line of advance. The Polish commander, General Józef Dwernicki, pushed his cavalry forward. Advancing undetected through the dense cover provided by a forest, they manoeuvred to the Russian flank. From there, they fell upon the Russian batteries as they established their positions: "In a moment both artillery and the [Russian] cavalry were completely dispersed." The disorder rapidly spread to neighbouring Russian infantry columns caught on the march, and "a general and disorderly retreat commenced."¹⁶

Similar impetuosity was exhibited at Dembe-Wielke, 30 March 1831. There, a Polish cavalry brigade, organised in "columns of attack," executed a twilight sabre charge. Their initial deployment was covered by artillery fire, and infantry acted in close support as they advanced. A Russian battery was taken; its accompanying infantry scattered into near-by woodlands. This rather effective combined arms approach was evident through much of the conflict. At Worna, 10 July 1831, the Polish cavalry first masked the withdrawal of their hard-pressed army's batteries. They then successfully pulled off an age-old light cavalry tactic: the feigned retreat. Russian troopers pursuing what they thought was a disorderly flight were led into woodland teaming with Polish light infantry.¹⁷

Besides these tactical successes, the conflict also witnessed the revival of "strategic cavalry." George T. Denison highlighted the "well executed partisan campaign of Polish General [Henryk] Dembinski" in Lithuania in the early summer of 1831. Leading a mobile detachment of around 3800 men, Dembinski covered some 400 miles in around 20 days, through territory "swarming with Russian troops." Co-ordinating with insurgent Lithuanian cavalry that had been actively harassing Russian lines of communication, he seized large quantities of supplies and remounts. Some of the latter he employed to create a force of

16 Joseph Hordynski, *History of the Late Polish Revolution*. Boston: Privately Published, 1833, 111-115.

17 Hordynski, *Polish Revolution*, 208-222, 371-372,

“mounted infantry.” These could maintain pace with his cavalry and seize and defend positions on foot as required. Overall, Dembinksi’s campaign, Denison suggested, prefigured “the cavalry raids of the American Civil War.”¹⁸

Alongside the promise of the new era in cavalry training, such exploits challenged the narrative of the mounted arm’s battlefield impotence. The tactical question of the possibility of successful shock action against formed infantry on the battlefield remained a subject of controversy. Bismark thought that “brave cavalry, under the command of a chief who is intrepid and impressed with the necessity of conquering, will overthrow any infantry, but success thus gained is attended with considerable loss.” N. Ludlow Beamish, a British officer who published an English translation of Bismark’s 1827 treatise, could not agree and thought that such “estimates of the power of cavalry” were the products of the “partiality and natural prejudice” of cavalry officers. Yet Bismark was an experienced veteran. His opinion could not simply be dismissed. He did not advocate charging formed masses of foot soldiers lightly and emphasised that infantry was best tackled when surprised or shaken. Thus, Bismark cautioned that “where the moral element has not been weakened, a charge of cavalry in line will seldom succeed.” Nevertheless, the succession of concentrated blows struck by well-disciplined cavalry in column (as at Dembe-Wielke) seemed, to Bismark, to offer more prospect of success. If the infantry was deployed in line, then it would be vulnerable partly because, with no visible gaps to ride for, horses were impelled to move straight at their target.¹⁹

When charging a square, cavalry tended to veer off around the sides of the formation, as the French had done repeatedly at Waterloo. Yet some commentators pointed to the generally decayed condition of most French and German cavalry regiments in 1815, and how this had affected their capacity to deliver effective shock action. One of Blucher’s generals, Friedrich von der Marwitz, had recalled the impossibility of raising efficient cavalry for the final campaigns against Napoleon: “after 1812, when the few remaining suitable horses had either died in Russia or been hopelessly overworked, we had to collect an enormous number to reconstruct the cavalry, and there was neither a sufficient supply nor was there even time enough to make suitable choice. We had, in fact, to take what we could

18 Denison, *A History of Cavalry*, 342-343; Hordynski, *Polish Revolution*, 390-397.

19 Bismark, *Lectures on the Tactics of Cavalry*, 88-92.

get, old riding horses, carriage horses, cart horses, whatever the French had left over for us...” The recruits were little better, “the horses are no longer in the control of their riders. When one wants them to gallop, they bolt; when they are required to stand still, they turn about ... [the horses] obey their own untutored instincts instead of the will of their riders.”²⁰ Such cavalry would naturally struggle to drive home a charge.

20 Quoted in Maud, *Cavalry: Its Past and Future*, 153-157.

Henri Félix Emmanuel Philippoteaux, *Chasseurs d'Afrique at Balaclava 1854*



There was no suggestion that, prior to Waterloo, well-mounted cavalry had regularly broken squares. Attempting such an act was, it was understood, a desperate venture. Yet it was also acknowledged to have sometimes happened. The King's German Legion (Hanoverians in British service) had, for example, overrun a French square at Garcia Hernandez, 23 July 1812. The "apparently impenetrable" barrier presented by ranks of close order infantry was broken when "a shot from one of the kneeling ranks, by killing a horse threw both it and its rider on the bayonets, and into the gap thus made rode the dragoons."²¹ Even De la Barre Duparcq recognised that defensive firepower itself might be the infantry's undoing, whereby "four or five horsemen thrown forward are sufficient to make a breach by means of their dead horses."²² It was understood that musket balls rarely stopped charging horses in their tracks, even those they fatally injured: "saddles will be emptied, horses will be killed and wounded, but no horse, unless he is shot through the brain, or has his legs broken, will fall, though stricken to the death he will struggle through the charge."²³

As the century progressed, proponents of the *arme blanche* could point to other actions which defied the dictum "cavalry cannot charge infantry." On 28 January 1846, the British 16th Lancers had broken into a square of Sikh infantry at Aliwal. These had been well drilled by European officers and British veterans present at the battle asserted that their fire discipline was better than that of Napoleonic infantry.²⁴ During the Anglo-Persian War, at Kooshab, 8 February 1857, the 3rd Bombay Light Cavalry had "cut its way completely through a perfectly formed square" of Persian infantry, that was described as "excellent, steady and untouched by artillery." Lieutenant A. T. Moore had led the charge. As he neared the square, his horse "daunted by the flashes and the fire and the noise and crackle of the musketry," had "swerved." Moore caught up the reins in both hands, "screwed [the horse's] head straight and then coolly, as if riding at a fence, leapt him at the square." The horse "fell stone dead upon the bayonets," but that broke the square.²⁵

21 Evelyn Wood, *Achievements of Cavalry*. London: George Bell, 1897, 72.

22 De la Barre Duparcq, *Elements of Military Art and History*, 131.

23 Louis Nolan, *Cavalry: Its History and Tactics*. London: Bosworth & Harrison, 1860, 301-302.

24 Maud, *Cavalry: Its Past and Future*, 181.

25 "The Persian War of 1856-57," *Blackwood's Edinburgh Magazine* 90, 1861, 356. "The Ca-

If such exploits were possible against well-drilled infantry armed with smoothbores, it might, nevertheless, have been reasonable to suggest that the new generation of rifle-muskets had significantly changed the equation. Fire, it was thought, would bring down men and horses long before they could close with infantry formations. In a lecture given in 1857, Lieutenant-Colonel R. A. Dixon, Royal Artillery, spoke of “the impossibility of [cavalry’s] standing before compact infantry armed with the rifle.” He could envisage no potential for cavalry to deliver decisive strokes on the battlefield, “We shall not see again cavalry thrown away at an early period of action, while infantry are still intact.” Instead, he foresaw that the arm would only be “retained as a special reserve for determining the rout of infantry when in disorder from the action of artillery or other causes, and for reaping all the fruits of victory by pursuing and destroying a broken army.”²⁶

Yet the actual performance of the new arms of precision in battle did not fulfil their theoretical potential. Their accuracy had been attained at a price. As Lieutenant-Colonel Lane Fox, instructor at the British army’s Hythe School of Musketry, explained in 1858, “accuracy may be increased by tightening the hold of the grooves [in the barrel of a rifle] upon the bullet,” but “velocity may be retarded by the increased friction which is produced by the pressure of the bore.” The consequent low muzzle velocity of the Minié, lower than that of a smoothbore, caused its bullet to fly on a parabolic trajectory, curving through the air before finally plunging, at a steep angle, to the target. In contrast, the smoothbore, while inaccurate above 100 yards, fired on a flatter trajectory, to “produce a more grazing fire.”²⁷

Lieutenant Andrew Steinmetz explained the implications. In battle, unaimed smoothbore volleys exchanged by massed formations at close range had a fearful effect: “the ball met a man who happened to be in the line of fire.” In contrast, “the great curvature of the rifle trajectory necessitates a most exact estimate of the distance to hit the object.” Since the bullet plunged on its target rather than grazed towards it, the “dangerous space” was “reduced to a few yards.” A miscalculation by the rifleman would result in a missed shot. At 540 yards (493m),

valry Charge at Kooshab,” *Southampton Herald*. 18 April 1857, 2.

26 R.A. Dixon, “The Rifle - Its Probable Influence on Modern Warfare,” *RUSI* 1 (1857), 114.

27 Lane Fox, “On the Improvement of the Rifle as a Weapon for General Use,” *RUSI*, 2 (1858), 481.

a rifleman who erred in estimating the range by about 33 yards (30m), “would miss a target 10 feet high and, of course, be clear over the heads of cavalry.” The Minié rifle, he knew, was “sure and terrible in practised steady hands,” but he was equally certain “that nineteen-twentieths of men will never be able to use it with perfect ease.” In particular, in battle, “[the soldier] excited to the highest degree, cannon-balls decimating the ranks, shells and bullets whistling their infernal tune overhead ... surrounded by smoke, amid the groans of the dying and the shrieks of the wounded ... will simply raise his rifle to the horizontal, and fire without aiming.”²⁸

This phenomenon was of especial significance to cavalry. A line of trotting cavalry advanced at four yards per second. At 500 yards (457m) range, it passed through the “dangerous space” into which bullets plunged in just seven seconds; “if the infantry fires seven seconds too soon or seven seconds too late, not a shot will hit except by chance!” Failing to stop the cavalry at 500 yards, the infantry had only two minutes at most before impact, with the cavalry moving to a gallop at 200 yards (182m) and the full charge at 100 yards (91m). The infantryman could pause to adjust his sights, but if he did so he reduced his rate of fire. Nor was it likely that, under battle conditions, he would make the correct adjustment.²⁹

Experience tended to favour this argument. In China in 1860, a British battalion fired over a body of cavalry at just 70 yards (64m).³⁰ The Prussian gunner Prince Kraft undertook a reconnaissance mission near Nübel, during the war with Denmark in 1864. He and a dozen or so horsemen had halted before a house “on the wall of which bullets kept on striking above our heads.” The sniping came from a clump of trees which they estimated to be 800 paces (c.600m) distant. The startled Prussians thus marvelled at the range of the Danish rifled muskets. After the enemy had been driven from his position, they had the distance properly measured: “it was 240 paces” (c.182m). The enemy had made the same error in judging the range, “for he shot steadily too high.”³¹

The case for the continued viability of shock action was not, therefore, unrea-

28 Andrew Steinmetz, “Military Gymnastics of the French,” *RUSI*, 5 (1861), 386-390.

29 Steinmetz, 391.

30 Steinmetz, “Military Gymnastics of the French,” 389.

31 Prince Kraft zu Hohenlohe-Ingelfingen, *Letters on Infantry*. London: Edward Stanford, 1892, 34, 153-154.

sonable. Yet it did perhaps retard the progress of the cavalry revival in two ways. Firstly, the attention given in training to perfecting battlefield tactics led to a neglect of reconnaissance and outpost work. Secondly, it perpetuated the existing and inflexible force structure of the cavalry arms of most European armies. The cavalry arm itself was traditionally divided into three branches: heavy, medium, and light. Heavy cavalry, such as carabineers or cuirassiers, were men of large stature on large horses, 16 hands or above. Ideally, they were reserved for shock action on the battlefield, where weight was considered decisive. Medium cavalry, such as lancers or dragoons (some armies fielded heavy and light versions of the latter), were lighter men who typically rode horses of about 15 ½ hands. They were expected to be able to deliver shock action when required but also to have the stamina to be able to contribute to reconnaissance, screening and outpost work. The light cavalry, such as hussars and chasseurs, combined lightweight riders with small, hardy, and active mounts, of 14 to 15 ½ hands. Undertaking the most hair-raising and risky of “detached duties,” they were, in some respects, the equivalent of modern-day special forces.³²

Light horseman, such as the British captain Louis Nolan, became increasingly critical of the slow and inflexible heavies. It is unfortunate that Nolan’s reputation will be forever tarnished by his association with the charge of the Light Brigade. He was the courier entrusted with a vaguely worded order from the British commander-in-chief, Lord Raglan, requiring the cavalry to prevent the Russians removing cannon from a captured redoubt. Lord Lucan, the cavalry division’s lacklustre commander, failed to understand the order. Nolan, allegedly quick-tempered and impatient, failed to clarify. Lucan then ordered the Light Brigade down the wrong valley, to attack a Russian battery frontally, under enfilade fire from elevated positions on both flanks.³³

Nolan was one of the first to be killed. There is no reason to believe he misdirected the brigade deliberately and much reason to be sceptical of attempts to scapegoat him after the disaster. He was a tactical progressive, who advocated charging in a loose open line or *en fourraguers* (as foragers), a swarm of

32 Barre Duparcq, *Military Art and History*, 117-119. General Boissau, “Les hussards, un phénomène européen”, *Revue Historique Des Armees*, 4, 1993), 14-23.

33 Terry Brighton, *Hell Riders: The Truth about the Charge of the Light Brigade*. London: Penguin 2005. Cecil Woodham-Smith, *The Reason Why: The Story of the Fatal Charge of the Light Brigade* London: Constable, 1953.

fast-moving light horsemen. Such dispersed order was particularly useful when in broken terrain or engaging enemy artillery whose firepower might exact a fearful toll from denser formations. Nolan thus advocated tackling a battery from the flanks, “in skirmish order, and with very few men.”³⁴ Notably, while acting to support the British Light Brigade, the French 4th Chasseurs d’Afrique had charged a Russian battery and its two supporting battalions of infantry on the Fedioukine Heights *en fourraguers*. The Russians had been driven from their positions with considerable losses and the “murderous fire” upon the Light Brigade consequently lessened.³⁵

For traditional shock action, delivered by heavy cavalry, troopers riding knee-to-knee at the trot, Nolan was a critic. Weight still had its victories on occasion. At Balaklava, the British army’s attenuated Heavy Brigade, some 700 troopers under General James Scarlett, had launched a bold charge that drove some 3500 Russian light horse from the field. On this occasion, though, it was the Russians who had blundered. Inexplicably, they had met the British heavies at the halt. A British dragoon recalled, “But oh, the work of slaughter that began! It was truly awful; but I suppose it was necessary. We cut them down like sheep, and they did not seem to have power to resist.”³⁶ Against more active and agile opposition, heavies faced a tougher challenge.

Indeed, as early as the mid-eighteenth century, the Prussian cavalry generals Seydlitz and Zeithen had challenged the conventional wisdom that the greater weight would always triumph in shock tactics. Placing more emphasis on pace, Zeithen, in particular, had led his hussars to victory over heavier opponents in the sort of set-piece engagements that light cavalry would traditionally have avoided. Henceforth, light cavalymen grew in their confidence to undertake shock action.³⁷

34 Baron Antoine-Henri de Jomini, *The Art of War*. Westport: Greenwood Press, 1975, 306; Nolan, *Cavalry*, 247-248; Brent Nosworthy, *Battle Tactics of Napoleon and His Enemies*. London: Constable, 1995, 284-285.

35 Denison, *History of Cavalry*, 351, J.W. Fortescue, *A History of the British Army*, 13, London, Macmillan, 1930; 104, *The Times*, November 13, 1854.

36 Tlepolemus, “Peace and Patriotism: A Letter to Irenaeus,” *Blackwood’s Edinburgh Magazine*, Vol. 77, 1855, 108.

37 Brent Nosworthy, *The Anatomy of Victory, Battle Tactics 1689-1763*. New York: Hippocrene Books, 1990; 163-181. Nosworthy, *Battle Tactics of Napoleon and his Enemies*, 277-280.



Juliusz Kossak, *3th Regiment of Austrian-Hungarian Uhlans under the col. Rodakowski attacks Italian Bersaglierii during the Battle of Custoza in 1866*

During the Hungarian rebellion of 1848-49, Hungarian hussars demonstrated their capacity to best heavy cavalry in a well-timed charge. At Mezökövest, 28 February 1849, the 9th Nikolaus Hussars charged Austrian cuirassiers supported by artillery. A Hungarian officer later recalled “a splendid sight it was to see this swarm of light horsemen dashing in on the cuirassiers, bursting their ranks asunder, cutting down, destroying, and scattering them in all directions.” An Austrian acquaintance of Louis Nolan summarised his conclusions on the experience of the war as follows: “The success of a cavalry attack depends not so much on the description [heavy or light] of cavalry or horse employed, as on the *determination* of the men; on their being accustomed to victory; on confidence in their leader; and last, not least, on the charge being made at the right moment.”³⁸

For Nolan, too, pace was the key to modern cavalry tactics, but he also understood that shock and firepower were not antithetical to each other: “Horse artillery can move with equal speed and in concert with cavalry ... and by their

³⁸ Nolan, *Cavalry*, 91-94.

fire afford the cavalry those favourable moments at which to charge is to conquer.” Cavalry to flank or in pursuit would cause enemy infantry and batteries to deploy. Close-order formations of infantry could then be shattered by cannon fire. If they dispersed, they could be ridden down by the troopers. Guns positioned to flank could keep firing until the cavalry were close to their target. In retreat, horse batteries and mounted squadrons supported each other, one screening whilst the other withdrew. Modern horse artillery, therefore, had, in Nolan’s view, actually tilted the odds back in cavalry’s favour: “with such powerful assistance (under almost all circumstances), cavalry are surely more formidable than before...”³⁹

For Nolan and like-minded officers, therefore, the greatest obstacle to the efficiency of European cavalry on campaign was the lack of pace and rapid exhaustion caused by the excessive weight troop horses were required to carry. This was most obvious in the heavy regiments, but it was true across all branches of the cavalry. The desire to create an impressive spectacle on the parade ground led to the recruitment of unsuitably large troopers. The British example was typical. Field-Marshal Sir Evelyn Wood recalled that, even after the lessons of the Crimea, regimental commanding officers had “a mania for tall men.”⁴⁰ The British army did, eventually, manage modest reform of most of their line cavalry regiments in this regard. By 1869 the average dragoon weighed about 11 ½ stone (73kg), the average lancer about 11 stone (70kg) and the average hussar 10 stone 3 lbs (64kg). In the early twentieth century, weight limits were set for cavalry recruits: 10st 7 lbs (67kg) for men under 20 years of age and 11 stone for those older. Troop horses averaged 15 ½ hands. Continental cavalry tended to maintain a more pronounced distinction between heavies and lighter cavalry, both in terms of weight and tactical employment, into the twentieth century.⁴¹

In addition to the rider, the weight of their dress, arms, accoutrements, ammunition, saddlery, water and rations, amounted to a further 110 lbs (50kg). This meant that the horses of dragoon regiments typically carried in excess of 19

39 Nolan, *Cavalry*, 301.

40 Sir Evelyn Wood, “British Cavalry 1853-1903,” *The Cavalry Journal* [UK], 1, 1906, 150. Tylden, “The Army Horse,” *Journal of the Society for Army Historical Research*, 21, 1942, 49.

41 H. C. Lowther, “The French Cavalry,” *Cavalry Journal*, 4, 1909, 199. Wood, “British Cavalry,” 150; Report of Committee on Cavalry Organisation, 1904, *National Archives WO 33/2914*.

stone (121 kg), horses in lancer regiments about 18 stone 10 lbs (119kg), and the mounts of the light hussar regiments 18 stone (114kg). The Household Cavalry, and the cuirassiers and carabineers of continental armies, recruited particularly large men, weighing between 12 and 13 stone (76-83kg), and equipped them with breastplate and helmet. Their unfortunate horses bore a load in excess of 22 stone (140kg). On campaign, when the greatest physical demands were being made on the horses, troopers might be obliged to carry extra fodder or ammunition. Even heavy rain, by soaking the horseman's uniform and thick woollen cloak, could add another 6 to 8 lbs (2.72-3.62 kg) of weight.⁴² On campaign, these weights did not simply render cavalry slow, they destroyed its single most important piece of equipment: the horse. When the British Light Brigade had disembarked in Bulgaria in 1854, it had landed 1500 horses. It remained in the Balkans for four months, undertaking just one patrol, remembered as the "sore back reconnaissance" because of the horses' suffering, before being re-embarked for the Crimea. By then it numbered only 1000 sabres, "wastage" having claimed a third of its mounts.⁴³

It was the "sore back reconnaissance" rather than the debacle at Balaklava that provoked the sharpest criticism of British light cavalry during and after the conflict. In March 1855 one correspondent to *The Times*, pointed to the manifestly superior performance of Indian cavalry in recent operations in the Deccan. There, one regiment had marched 100 miles in 26 hours and had arrived "ready and fit for service."⁴⁴ Similarly, Colonel Elers Napier, a British officer with much experience of irregular horse, suggested that the South African Cape Mounted Rifles "might serve as a model" for a revived British light cavalry arm.⁴⁵ This regiment had been first organised in 1827. Its soldiers were lightweights, sparingly equipped, riding small, hardy horses. Their primary arm was a double-barrelled carbine, but they also carried a sword and were quite capable of fighting as conventional cavalry. At the Battle of Gwanga River, 7 June 1846, they charged

42 De La Barre Duparcq, *Elements of Military Art and History*, 120-121; Walseley, *Soldier's Pocket-Book*, 15; Lowther, "The French Cavalry," 1909, 199.

43 Wood, "British Cavalry 1853-1903," 155. Charles Chenevix Trench, "Horsemanship in History," *History Today*, 20, 1970, 779.

44 Edward Bligh, "What Cavalry Can Do," *The Times*, 20 March, 1855, 12.

45 Elers Napier, "Our Light Cavalry," *The Times*, March 29, 1855, 6.

alongside the 7th Dragoon Guards, using their carbines from the saddle.⁴⁶

One characteristic of such colonial mounted rifle units (and the extemporised mounted infantry columns that served in India during the rebellion of 1857-59) was their combination of mobility with a capacity to fight effectively on foot. At this point, most European officers felt that it was impossible to train a trooper to fight effectively both from the saddle and on foot. Jomini, argued for raising mounted infantry units, because he thought “to make cavalry out of foot-soldiers, or a soldier who is equally good on horse or on foot, is very difficult.”⁴⁷ Nolan thought that cavalymen should strictly limit their dismounted action to “covering a retreat, defending defiles and passes against cavalry, and in pushing forward to seize bridges and dismounting to maintain them.”⁴⁸ In Britain, therefore, in 1859-60, there developed a vogue for raising units of Mounted Rifle Volunteers, highly mobile formations who rode cross country like “well mounted hunting men,” but fought on foot, “as infantry skirmishers.”⁴⁹

In the latter decades of the century, a debate arose over whether such units of mounted riflemen (well-mounted, with high standards of horsemanship) or mounted infantry (indifferently mounted, and usually extemporised), should, wholly or partially, supplant conventional cavalry. Reform-minded cavalry officers, such as the British hussar Captain F. Chenevix Trench, sought a dual capacity for existing regiments, to be equipped with both modern rifles and *l'arme blanche*. He argued that “in future the cavalry soldier must be very much of a hybrid animal, and must be trained and able to do a great deal of his fighting on foot and to do it well.”⁵⁰ Opponents, such as G.T. Denison, insisted that such a “hybrid” was impossible, and pointed to the historical example of dragoon regiments. These had originally been raised to fight on horseback and foot but had generally performed poorly in

46 Marquess of Anglesey, *A History of British Cavalry*, 3, 1872-1898, London: Leo Cooper, 1982, 171-174. G. Tlyden, “The Cape Mounted Riflemen, 1827-1870,” *Journal of the Society for Army Historical Research*, 17, 1938, 227-231.

47 De Jomini, *The Art of War*, 308-309.

48 Nolan, *Cavalry*, 65-66.

49 Godfrey Brennan, “The Light Horse and Mounted Rifle Volunteer Corps”, *Journal of the Society for Army Historical Research*, 21, 1942, 3-16. Henry Havelock, *Three Main Military Questions of the Day*. London: Longman, 1867, 65. “Elcho”, “Rifle Cavalry.” *The Times*, 27 June 1877. 4.

50 Chenevix Trench, “On the Progress that has been Made during Recent Years in Developing the Capabilities of Cavalry,” *RUSI*, 21, 1877, 1007.

the latter role. For Denison, two separate service branches were required. These would be mounted rifles, who fought dismounted, and replaced the light cavalry. Alongside these, a small proportion of heavies, armed only with revolvers and sabres, would be retained, for those rare and fleeting opportunities for “shock.”⁵¹ Chenevix Trench’s “hybrid” concept was finally vindicated in World War 1, most notably in Palestine.⁵² In Europe’s wars of the 1850s and 60s, however, the cavalry revival had yet to deliver such tactical flexibility.

In the Italian war of 1859, few lessons could be drawn because the rival cavalries were handled so poorly. At Solferino, 24 June, the French and Austrian armies collided unexpectedly whilst on the march, despite fielding some 25,000 horsemen between them. Tactical lessons were unclear. At Montebello, 20 May, the Sardinian Novara Chevaux Légers charged six times, but lost half their number. Many, indeed, fell to rifles but also to counter-charges by Austrian hussars. One very depleted squadron of Piedmontese lancers overran a square of Austrian infantry, but every rider was a casualty. At Solferino, once the rival cavalries had bestirred themselves to action, a number of charges were made. For the most part these involved clashes of bodies of horse, although fast-moving French Chasseurs d’Afrique broke one infantry square which had not quite completed its formation.⁵³ Overall, the cavalry arm had failed to make much impression. Rightly or wrongly, in some quarters this reenforced the sense of the arm’s impotence. Thus, in the aftermath of the war, the Austrians substantially reduced their cavalry arm. They (and the Russians) also abandoned the cuirass at this point.⁵⁴

To a degree, many of the same problems were evident again in the Austro-Prussian War of 1866. It was not really rifles that held the mounted arm in check but “the idea of a Reserve Cavalry.”⁵⁵ This notion of retaining a mass of cavalry to

51 Denison, *History of Cavalry*, 420-437.

52 See Stephen Badsey, *Doctrine and Reform in the British Cavalry, 1880-1918*. Aldershot: Ashgate, 2008; Jean Bou, *Light Horse: A History of Australia’s Mounted Arm*. Cambridge: Cambridge University Press, 2010; David R. Dorondo, *Riders of the Apocalypse: German Cavalry and Modern Warfare*. Annapolis: Naval Institute Press, 2012.

53 Anon., *A German Account of the Italian Campaign, 1859*. Solihull: Helion, 2002, 6; Major Graves, “The Functions of Cavalry in Modern War,” *RUSI* 19, 1885, 6; Denison, 353.

54 Anon. “Sixty Years of the Austro-Hungarian Cavalry.” *Cavalry Journal* [UK], 4, 1909, 244-245; Denison, 351. Gunther Rothenberg, *The Army of Francis Joseph*. West Lafayette: Purdue University Press, 1976, 63.

55 Prince Kraft Zu Hohenlohe-Ingelfingen, *Letters on Cavalry*. London: Edward Stanford,

strike the final blow against a reeling enemy was common to both sides, so little attempt was made to use cavalry during the opening stages of the campaign, or to try to influence the direction of major engagements once they were under way. The Prussian tactician Prince Kraft would bemoan this tendency, “this name Reserve Cavalry was a very unfortunate expression. It is hard to believe that a mere word could have such influence. And yet it had.”⁵⁶ Thus, reconnaissance was largely performed indifferently; “strategic” use of cavalry was not attempted; battlefields were dominated by infantry and artillery.

Yet there were a number of tactical engagements that once again suggested what cavalry might still achieve. During the opening phases of the battle of Königgrätz, 3 July 1866, the 3rd Battalion of the 51st Hungarian Regiment had been caught by surprise emerging from woods by a bold squadron of the 10th Magdeburg Hussars. Although only numbering 130 sabres, the hussars had captured 681 men and the Hungarians’ colours.⁵⁷ In the final stages of the battle, the victorious Prussians had failed to prevent the orderly withdrawal of the Austrian forces because of a rear-guard action by Austrian cavalry and supporting batteries. This costly but successful example became a model for the combined action of the horse-mobile arms. On 14 July, at Tobitschau, three squadrons of the Prussian 5th Cuirassiers, under Major William Adalbert von Bredow, attacked Austrian batteries in position and took eighteen guns. The speed of their approach had frustrated the gunners’ aim and the cuirassiers suffered only around ten casualties.⁵⁸

The most spectacular evidence for a revived cavalry arm, however, came at Custozza, 24 June 1866, on the Venetian front. There, two Austrian cavalry brigades, a total of around 2400 sabres, had played a pivotal role in preventing the advance of two Italian infantry divisions, totalling some 25000 rifles. Operating in small, handy formations and exploiting the cover of broken and wooded terrain (traditionally considered poor cavalry country), the Austrians had charged

1889, 12.

56 Prince Kraft, *Letters on Cavalry*, 13.

57 Wood, *Achievements of Cavalry*, 163-174. Prince Kraft, *Letters on Cavalry*, 62.

58 Robert Home, *A Précis of Modern Tactics*. London: HMSO, 1892, 72-73. E.S. May, “The Action of Cavalry and Horse Artillery Illustrated by Modern Battles,” *RUSI*, 38, 1894, 15-16; Wood, *Achievements of Cavalry*, 177-190.



Aimé Morot, *Rezonville, 16 August 1870, La Charge des Cuirassiers*

repeatedly. Some of these actions resulted in heavy casualties, but they forced the Italian infantry to halt and deploy, thus achieving their tactical objective. With effective fields of fire limited by cover, the steadier riflemen had relied on traditional tactics: volleys from close order formations, or positions behind obstacles such as walls, at short range. In other instances, the infantry gave way. Early in the morning, a squadron of Austrian lancers caught Italian infantry in column; four out of five battalions fled. This was evidence to counter those who “would condemn large masses of cavalry to impotence,” and a reminder that “the indefinite improvements in firearms” had yet to eclipse the human dimension of the battlefield. A French officer wrote of the Austrian troopers’ achievement, “the moral effect, the shock, produced by their impetuous charge was such that the whole Corps was disorganised and paralysed for the rest of the day.”⁵⁹

The Prussian cavalry, long at the forefront of the revival, learned important lessons in advance of the war with France, 1870-71. However, this development has been largely obscured historiographically by the disasters which overcame French cavalry during that conflict. These have served to reinforce the notion of the arm’s obsolescence. Yet, once again, the root of those disasters was that

⁵⁹ H. R. Gall, *Modern Tactics*. London: W.H. Allen, 1890, 311-312. Wood, *Achievements of Cavalry*, 141-160.

the cavalry was badly led. French reconnaissance was poor; strategic operations neglected. The idea of the “reserve” continued to afflict the French; their regulations “prescribed that the place of the cavalry in the column of march was in rear of the infantry.”⁶⁰

When the French cavalry was committed to combat, it was generally mishandled. At Wörth, 6 August 1870, cuirassiers and lancers were thrown into the field to stem the Prussian advance without local reconnaissance. Pitched into ditches or caught in hop-fields, vineyards and village streets, milling formations of horsemen were subject to murderous fire.⁶¹ This practice of throwing masses of cavalry into combat in a futile effort to retrieve a lost battle was most evident at Sedan, 1 September 1870. There, a French army of 120,000 men under Patrice MacMahon had been encircled by Prussian forces totalling some 250,000 men. In desperation, the French cavalry was repeatedly hurled against positions manned by confident infantry and supported by 500 modern rifled, breech-loading artillery pieces. Nothing was achieved aside the destruction of some fine regiments. Archibald Forbes, an English war correspondent and ex-dragon, witnessed the charge of the Chasseurs d’Afrique. They rode into a storm of artillery and rifle fire delivered at close range: “When [the smoke] blew away there was visible a line of bright uniforms and grey horses struggling prostrate among the potato drills, or lying still in death... So thorough a destruction by what may be called a single volley probably the oldest soldier now alive never witnessed.”⁶²

While the handling of Prussian cavalry was not always perfect, its overall performance offered a striking contrast to the French and underscored the progress made during the cavalry revival, leavened by recent experiences in the field. Effective performance of field duties by German light cavalry - screening, reconnaissance, cutting communications lines - had commenced at the very opening of the campaign. Individual officers undertook daring long-range patrols; a Lieutenant von Ziegler of the Uhlans of the Guard, covered nearly 90 miles in a single day. The uhlans (lancers) soon became a ubiquitous reminder that the war was

60 Chenevix Trench, *Cavalry*, 92.

61 Jean Jacques Théophile Bonie, *Cavalry Studies from Two Great Wars*, edited by Arthur L. Wagner, Kansas City: Hudson-Kimberly, 1896, 21-31. Prince Kraft, *Letters on Cavalry*, 64-65. Home, *A Précis of Modern Tactics*, 62.

62 Archibald Forbes, *My Experiences of the War between France and Germany*. Vol.1. London: Hurst and Blackett, 1871, 235-236.

going badly for France. A German gunner described how they “swarmed around the enemy’s columns on the march, just as bees swarm out of their hives against an intruder.” Harassed companies and sections would break away from the columns to fire volleys at the uhlans, who would quickly fall back to avoid the fire, and then come on again. The result of all this was “indescribable fatigue” for the weary French infantry.⁶³ French dragoon Théophile Bonie was chagrined to note of the uhlans, “they even pushed their audacity so far as to dismount and enter the inns.” Bonie’s command struggled to respond, “every day the same thing - like an irritating fly, that is driven off only to return the next moment - the enemy’s cavalry could not be laid hold of.”⁶⁴

While it was the dash, initiative, and confidence in the staying power of their horses displayed by the light cavalry in field duties that had the profoundest impact on the overall campaign, the Prussian cavalry of all branches also made significant tactical contributions on the battlefield. In some instances, masses of regiments would clash in engagements of a scale and ferocity not witnessed since the Napoleonic Wars. Bonie recalled one clash at Rezonville/Mars-la-Tour, 16 August 1870, as “a kind of furious mêlée or whirlpool in which 6000 cavalry soldiers, dressed in all sorts of uniforms, armed in every conceivable manner, were killing each other as fast as they could...” These clashes provided some vindication for those who argued for the retention of separate branches of cavalry and conventional close-order formations for shock: Bonie recalled that “the horses of our light cavalry were knocked to pieces against the solid and impassable line formed by the German dragoons.” The vulnerable Prussian left flank was thus secured and the battle of Mars-la-Tour brought to a victorious conclusion.⁶⁵

Rezonville/Mars-la-Tour is often best remembered for a heavy cavalry action against infantry and batteries: the so-called *Todtenritt* (death ride) undertaken by General William Adalbert von Bredow’s 12th Brigade, 750 sabres of the 7th Magdeburg Cuirassiers and 16th Altmark Uhlans. With Prussian infantry near Vionville wavering under a French bombardment, 12th Brigade was ordered to silence the batteries and drive back their supporting infantry. Von Bredow applied

63 Prince Kraft, *Letters on Cavalry*, 42-43.

64 Bonie, *Cavalry Studies from Two Great Wars*, 15-16.

65 Bonie, *Cavalry Studies from Two Great Wars*, 58, 62; Helmuth von Moltke, *The Franco-German War of 1870-71*: London: Harper & Brothers, 1907, 44.

all the tactical lessons that marked the cavalry revival. He plotted his approach march carefully, exploiting cover to minimise casualties from artillery. His own horse batteries laid down suppressive fire on the French guns, as the squadrons rode forward. Their mounts had been maintained in good condition, trotting for 1500 yards (1372m) in column, then deploying into line formation, for the last 1800 yards (1646m) of their advance. They gathered pace as they closed on the French positions; gunners and infantry armed with Chassepot bolt-action rifles and *mitrailleuse* machine-guns struggled to adjust their sights. Most of their fire went high. The torrent of horsemen swept away six batteries, scattered four battalions, and brought the advance of an entire corps to a halt. Only a counterattack by 23 squadrons of French cavalry finally checked the Prussian heavies, lances and sabres inflicting severe casualties on von Bredow's men and their exhausted mounts.⁶⁶

Rezonville was exceptional for the scale and intensity of its cavalry fighting. Yet further opportunities did sometimes arise for shock action. German cavalry in the northern theatre charged on at least sixteen further occasions. Twelve of these attacks were completely successful; most were delivered by bodies consisting of two squadrons or less.⁶⁷ These actions seem to have made a particular impression upon von Moltke, who concluded that "because in modern warfare the long range and destructive fire of artillery necessitates a scattered formation, there will be more frequent opportunities for those brilliant dashes of small bodies of cavalry, in which, by taking advantage of the critical moment, they have so often distinguished themselves."⁶⁸ Even Albrecht von Boguslawski, an infantry tactician who thought too much cavalry had been deployed to France and who favoured raising Mounted Infantry, acknowledged this: "the possibility of success against infantry [armed with modern rifles] is thereby proved, and will scarcely be denied by anyone who has a right idea of the vicissitudes of a hard fought battle."⁶⁹ Cavalry, it transpired, could charge infantry after all.

Yet the outstanding contribution of the cavalry revival to Prussia's victory

66 Prince Kraft, *Letters on Cavalry*, 24-25; Wood, *Achievements of Cavalry*, 224-238; "The German Cavalry at Vionville," in Wagner (ed), *Cavalry Studies*, 167-177.

67 C. Barter, "German Divisional Cavalry," *RUSI*, 36, 1892, 1180

68 Quoted in Home, *Modern Tactics*. 59-60.

69 Albrecht von Boguslawski, *Tactical Deductions from the War of 1870-1871*. Minneapolis, Absinthe Press Reprint, 1996, 75.

was in field duties. They had excelled in reconnaissance and screening. French armies had stumbled myopically through operations in ignorance of their enemy's whereabouts but with each step of their own marches observed and reported. German infantry had marched and bivouacked in security, largely spared from the wearisome tasks of outpost work and patrols. French troops, all too often, awoke to the scream of incoming shells or the sound of galloping uhlans' hooves. Consequently, the German infantry remained fresher than their French counterparts. Between the 3 August and 19 September 1870, the Prussian Guard Corps covered 540 miles, spending only 4 days at rest, and fighting three major battles. French infantry, in contrast, had crawled across country, barely making 9 miles on a good day, whilst the ubiquitous uhlans harassed the vulnerable columns of marching men. Thus, both the paralysis which beset French armies and the activity which characterised their Prussian opponents can be seen, in large measure, to be functions of the relative efficiency of their respective cavalry arms.⁷⁰

The European cavalry revival remained unfinished business in 1871. Most regiments still overburdened their horses. The full potential of "strategic cavalry," as demonstrated by the Army of the Potomac's Cavalry Corps in the final stages of the American Civil War, had not been realised. The debate over dismounted action was just beginning to stir. And the onward march of weapons technologies - quick firing artillery, smokeless powder, magazine fed bolt-action rifles, automatic weapons - soon sparked renewed debate about cavalry's survival on the modern battlefield. Yet the achievements of the Prussian cavalry in 1870-71 made it possible to argue, with much force and evidence, that the arm remained viable, had adapted to meet new challenges and could do so again. The history of the cavalry revival is, thus, a timely warning against assuming that innovative weapons augur tactical revolutions, be that weapon a Dreyse needle-gun or, for that matter, a drone.

70 Prince Kraft, *Letters on Cavalry*, 49-50.



NAPOLI
presso Severino Giuseppe
1836.

Tattica di Cavalleria del Conte Bismark, Generale di Cavalleria Wirttembergese, dall'originale Tedesco recata in Italiano ed arricchita di annotazioni da un primo Tenente di Cavalleria I. R. Austriaca, Napoli, presso Severino Giuseppe, 1836.

<https://books.google.com.do/books?id=oo03AQAIAAJ&printsec=frontcover#v=onepage&q&f=false>



Lev Nikolaevič Tolstoj in uniforme di capitano d'artiglieria

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