

Entangled Histories: German Veterinary Medicine, c.1770–1900

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Abstract: Medical historians have recently become interested in the veterinary past, investigating the development of animal health in countries such as France, the Netherlands, the United Kingdom and the United States. An appreciation of the German context, however, is still lacking – a gap in the knowledge that the present article seeks to fill. Providing a critical interpretation of the evolution of the veterinary profession, this investigation explains why veterinary and medical spheres intersected, drifted apart, then came back together; it also accounts for the stark differences in the position of veterinarians in Germany and Britain. Emphasis is placed on how diverse traditions, interests and conceptualisations of animal health shaped the German veterinary profession, conditioned its field of operation, influenced its choice of animals and diseases, and dictated the speed of reform. Due to a state-oriented model of professionalisation, veterinarians became more enthusiastic about public service than private practice, perceiving themselves to be alongside doctors and scientists in status, rather than next to animal healers or manual labourers. Building on their expertise in epizootics, veterinarians became involved in zoonoses, following outbreaks of trichinosis. They achieved a dominant position in meat hygiene by refashioning abattoirs into sites for the construction of veterinary knowledge. Later, bovine tuberculosis helped veterinarians cement this position, successfully showcasing their expertise and contribution to society by saving as much meat as possible from diseased livestock. Ultimately, this article shows how veterinarians were heavily ‘entangled’ with the fields of medicine, food, agriculture and the military.

Keywords: Veterinary medicine, Epizootics, Zoonoses, Military, Agriculture

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Introduction

Over the last decade, historians have become increasingly concerned with the veterinary past. In a recent review, Saurabh Mishra went as far as to proclaim that veterinary history has ‘come of age’, successfully transcending ‘the older narratives of “progress”, “civilisation” and “great men”’ that had hitherto impaired the field.¹ Consequently, it is no longer possible to take a teleological view of veterinarians as a profession in-waiting. More appreciation has emerged about the diverse groups that produced veterinary knowledge and practised animal healing; and research has shed light on veterinarians’ involvement in both epizootics and zoonoses. Most of the critical literature referred to in Mishra’s article addresses developments in France, the Netherlands, the United Kingdom and the United States, and research into the colonies is also a recent concern.² Yet, circumstances in Germany, one of Europe’s largest nations, have so far attracted neither proper attention nor careful scrutiny.³ Given the important roles that German veterinarians played in cattle plague control, meat hygiene and research into communicable diseases between animals and humans, such an investigation is long overdue. Building on the ‘new veterinary history’, the present article shows that diverse traditions, interests and conceptualisations of animal health shaped the German profession, conditioned its field of operation, influenced its choice of animals and diseases, and dictated the speed of reforms.

One major difference between German and British veterinary history is the involvement of the state. At the end of the eighteenth century, the profession in both countries witnessed the foundation of veterinary schools, shared an overwhelming concern with horses, experienced difficulties creating trust with farmers and looked up to medical practitioners. Subsequent trajectories, however, could not have been more different. In 1817, the Prussian state set up a *Veterinärpolizei* (veterinary police) alongside a *Medizinische Polizei* (medical police), necessitating the appointment of suitably qualified practitioners to operate as veterinary officers in order to contain cattle plague. In the 1880s, the German profession built on this foundation by carving out a role in the inspection of meat in newly constructed abattoirs. By contrast, in Britain, minor involvement in state work emerged following the cattle plague outbreaks of 1865–7, but veterinary participation, in relation to meat or milk inspection, remained ‘sporadic’ well into the 1930s.⁴ Crucial to this difference

¹ Saurabh Mishra, ‘An Introduction: Veterinary History Comes of Age’, *Social History of Medicine* (Special Virtual Issue), <http://www.oxfordjournals.org/our-journals/sochis/veterinaryhistoryintro.pdf> (accessed 15 September 2014), 20.

² Karen Brown and Daniel Gilfoyle, (eds), *Healing the Herds: Disease, Livestock Economies, and the Globalization of Veterinary Medicine* (Athens: Ohio University Press, 2010); Louise Hill Curth, ‘The Care of the Brute Beast: Animals and the Seventeenth-century Medical Marketplace’, *Social History of Medicine*, 15, 3 (2002), 375–92; Ronald H. Hubscher, *Les Maîtres des Bêtes: Les Vétérinaires dans la Société Française (XVIIIe–XXe siècle)* (Paris: Edition Odile Jacob, 1999); Susan Jones, *Valuing Animals: Veterinarians and their Patients in Modern America* (Baltimore: John Hopkins University Press, 2003); C. Offringa, ‘Ars veterinaria: ambacht, professie, beroep: sociologische theorie en historische praktijk’, *Tijdschrift voor Geschiedenis*, 96 (1983), 407–32; Abigail Woods and Stephen Matthews, ‘“Little, if at all, Removed from the Illiterate Farrier or Cow-leech”: The English Veterinary Surgeon, c.1860–1885, and the Campaign for Veterinary Reform’, *Medical History*, 54, 1 (2010), 29–54.

³ For a sample of work on German veterinary history, mostly by veterinarians, see Angela von den Driesch and Joris Peters, *Geschichte der Tiermedizin. 5000 Jahre Tierheilkunde*, 2nd edn (Stuttgart: Schattauer, 2003); Johann Schäffer (ed.), ‘*Tierheilkundige*’ in *Geschichte und Gegenwart* (Giessen: DVG, 2010); Johann Schäffer and Peter Koolmees (eds), *History of Veterinary Medicine and Agriculture* (Giessen: DVG, 2003).

⁴ Anne Hardy, ‘Professional Advantage and Public Health: British Veterinarians and State Veterinary Services, 1865–1939’, *Twentieth Century British History*, 14, 1 (2003), 1–23; 2; Keir Waddington, *The Bovine Scourge: Meat, Tuberculosis and Public Health, 1850–1914* (Woodbridge: Boydell Press, 2006), 136–40.

was the role of the state in creating veterinary officers whose dominance muffled concerns about competition with other animal healers and facilitated a push for attaining parity with physicians. When bacteriology made its breakthrough, German veterinarians did not feel threatened in the way that British veterinarians did because they had successfully capitalised on their expertise into epizootics to claim new competency in zoonoses.⁵

Recent work on veterinary history has also underlined the extent to which veterinary and human medicine were not separate but overlapping spheres.⁶ In particular, Abigail Woods and Michael Bresalier have shown, in their work on the history of ‘One Health’, how medical practitioners took an interest in comparative anatomy, conducted experiments on animals, treated animal diseases and offered their expertise on cattle plague in the eighteenth century.⁷ Towards the end of the nineteenth century, the rising importance of zoonotic diseases disrupted this partnership, but Woods and Bresalier stress that ‘the establishment of barriers between human and animal health did not follow immediately or inevitably upon the profession’s creation’.⁸ Similar observations can be made with regard to Germany. Prior to the establishment of veterinary schools, physicians investigated cattle plague, taught and researched veterinary medicine in universities and treated animal diseases as part of their work. In the early nineteenth century, Johann Peter Frank, a pioneer of social medicine and public health, refused to see any distinction between the two fields of ‘healing’. Later, the pathologist Rudolf Virchow, credited as one of the founders of One Health, continued in a similar vein, seeing links between human and animal diseases. As in Britain, clearer barriers were erected between the two disciplines as the century unfolded – but human and animal diseases were difficult to keep apart. By demonstrating why veterinary and medical spheres overlapped, drifted apart and came together again, the present article also sheds light on the intertwined relationship between animal and human health.

For obvious reasons, this paper can only present a preliminary overview: it is limited to developments during the long nineteenth century, tells a story based mainly on the Prussian experience and relies overwhelmingly on printed material. More in-depth studies – eg., focusing on a particular disease – might exploit the untapped yet rich archival sources, some of which appear in this article. Even so, subsequent research should benefit from the broad context into which German veterinary history is placed, and future investigation into histories of medicine, agriculture, food or animals in Germany would benefit from taking into consideration the impact of ‘veterinisation’.

The State, Medicine and the Military

At least three diverse sources can be detected at the birth of the modern veterinary profession. In his work on French veterinary history, Ronald Hubscher pointed to the hippological, medical and popular traditions, and this observation can be fruitfully applied to the German context too.⁹ First, stretching back to at least the thirteenth century, riding

⁵ Michael Worboys, *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865–1900* (Cambridge: Cambridge University Press, 2000), 67–72.

⁶ Thomas Schlich, Eric Mykhalovskiy and Melanie Rock, ‘Animals in Surgery–Surgery in Animals: Nature and Culture in Animal–Human Relationship and Modern Surgery’, *History and Philosophy of the Life Sciences*, 31, 3/4 (2009), 321–54.

⁷ Abigail Woods and Michael Bresalier, ‘One Health, Many Histories’, *Veterinary Record*, 174, 26 (2014), 650–4.

⁸ *Ibid.*, 651.

⁹ Hubscher, *op. cit.* (note 2), 18–26.

masters, equerries and farriers employed within the courts represented the hippological tradition. They wrote treatises that dealt with the breeding, shoeing and curing of horses in the possession of the aristocracy, whose involvement with the military meant, in turn, concern with warhorses.¹⁰ Spreading from Renaissance Italy, a body of hippological knowledge written in German developed during the seventeenth century and remained robust well into the twentieth.¹¹ Second, a separate, medical tradition also emerged in response to cattle plague during the eighteenth century. Concerned with the damage wrought on livestock, monarchs turned to physicians, whose advice formed the basis on which states issued instructions to contain the spread of animal diseases.¹² Finally, the least conspicuous, though arguably the most widespread, was the popular tradition. Due to the absence of written records, its origins are difficult to trace, but a significant number of popular writings about animal health originate in the sixteenth century.¹³ Much of the expertise contained within these works reflects the experience of lay animal healers, such as shepherds and herdsmen, who heavily influenced the treatment of livestock well into the nineteenth century.¹⁴ These three relatively distinct traditions laid claims on the bodies of various animals, responded to demand from a diverse clientele and came to cast different shadows over the activities of the modern veterinarian.

Traditional German veterinary histories have tended to draw a direct line between contagious animal diseases and the establishment of veterinary schools.¹⁵ Cattle plague represented a major headache for early modern German states. In 1766, the Saxon parliament in Dresden suggested the setting up of a school that would conduct more reliable investigation:

You see it is not unknown to His Majesty how much the cattle plague in these lands has, despite all measures taken against it, wrought havoc for thirty years or more and that it is impossible to put forward reliable measures of prevention and cure without knowing for sure either the cause or, more importantly, the effects on the body of cattle.¹⁶

In nearby Berlin, Frederick the Great went one step further, demanding, in 1767, the opening of a school that would train specialists to tackle cattle disease.¹⁷ Both calls, however, were to fail. In Dresden, negotiations with the University of Wittenberg broke down, with the need to create a school for midwives taking precedence. In Berlin,

¹⁰ Driesch and Peters, *op. cit.* (note 3), 85–100.

¹¹ For a list of German hippological works, see F.H. Huth, *Works on Horses and Equitation: A Bibliographical Record of Hippology* (London: B. Quaritch, 1887).

¹² J. Kanold, *Kurtze Jahr-Historie von den Seuchen des Viehes von Anno 1701 biß 1717...* (n.a.: Richter, 1721); J.B.P. Pott, *Kurtzes medicinisches Bedencken und Gutachten über die Viehseuche* (n.a.: 1747); D.G. Schreiber, *Sammlung der in Sr. königl. Preuß. Majestät Landen, ergangenen neuesten respectve Verordnungen, Instructionen, und medicinischen Gutachten, die Rindviehseuche betreffend* (Halle: Gebauer, 1754).

¹³ Driesch and Peters, *op. cit.* (note 3), 111.

¹⁴ Friedrich Röver, *Der Schäfer auf dem Lande: ein Buch für Schafhirten und Landleute* (Magdeburg: Heinrichhofen, 1825), 1–2.

¹⁵ For a sample, see Friedrich Eichbaum, *Grundriss der Geschichte der Thierheilkunde. Für Thierärzte und Studirende* (Berlin: Paul Parey, 1885); Reinhard Froehner, *Kulturgeschichte der Tierheilkunde: Ein Handbuch für Tierärzte und Studierende*, 3 vols (Konstanz: Terra-Verlag, 1952–68); Reinhold Schmaltz, *Entwicklungsgeschichte des tierärztlichen Berufes und Standes in Deutschland* (Berlin: Richard Schoetz, 1936); and Georg Schneidemühl, *Das thierärztliche Unterrichtswesen Deutschlands in seiner geschichtlichen Entwicklung und Bedeutung für den thierärztlichen Stand* (Leipzig: Arthur Felix, 1890).

¹⁶ Günter Michel, 'Viehärzschule or Roßärzschule – the Veterinary School of Dresden in the First Four Decennia after its Foundation in the Year 1780', in Schäffer and Koolmees (eds), *op. cit.* (note 3), 140.

¹⁷ Schmaltz, *op. cit.* (note 15), 3.

enthusiasm also petered out; a report politely conveyed that the establishment of a school should be postponed ‘until sufficient funds become available’.¹⁸ In Munich, though, concerns about animal diseases were responsible for the opening of the *Thier-Arzney-Schule* (veterinary school), the main aim of which was, as the Duke of Bavaria proclaimed, ‘to control cattle plague from breaking out’.¹⁹ In general, despite evident willingness, the state struggled to bring veterinary schools into being.

Why there was this difficulty requires explanation. Consistent with what it had done throughout the eighteenth century, the state tapped into the medical tradition, looking to physicians as experts in cattle plague to help found veterinary schools. In Munich, Anton Will, a medical doctor from the University of Ingolstadt, was persuaded to head up the school in 1790, but academic physicians were, on the whole, hard to convince. Both the Prussian Academy of Sciences and the *Oberkollegium Sanitatis* – a committee made up of medical officers – refused to help when approached.²⁰ One reason for their rejection was the increased amount of work. At the end of the eighteenth century, as Ute Frevert has observed, ‘physicians, as the most important administrators of medical police,’ had become ‘hopelessly overburdened’.²¹ In the Kurmark, a province of Prussia, thirty medical officers were responsible for inspecting 114 apothecaries, 249 surgeons, 158 midwives and 114 doctors.²² In 1805, C.F.L. Wildberg, a Mecklenburg court councillor and early pioneer of medical jurisprudence, referred to this workload in an open letter to the Prussian senior medical councillor, complaining about the unfair amount of state veterinary work.²³ Status was a factor, too: in the same letter, Wildberg charged that ‘animal healing’ and ‘human healing’ were ‘incompatible’, and expressed dismay that tending to animals harmed the reputation of physicians.²⁴ Among learned medical doctors, animal health was considered degrading: shepherds, butchers and cow-leeches were its ‘natural’ practitioners. ‘People [who] have been bred with cattle, have grown up with them’, they scoffed, ‘are their true friends and know most about them.’²⁵ In practice, of course, doctors frequently treated animals in response to demand from owners, and a ‘knowledge of animal diseases’ remained a prerequisite for becoming medical officers in Prussia well into the nineteenth century.²⁶ Yet, as the standing of the profession rose in the mid-century, physicians yearned to be rid of animal healing. In 1857, a Würzburg medical professor explained candidly, ‘[A]nimal studies is not to be regarded as a coordinated and independent part of general healing; therefore a knowledge of animal medicine is not necessary for the human doctor.’²⁷

One important exception to the apparent split between these two areas of healing is that medical doctors had fewer qualms about veterinary medicine in universities –

¹⁸ *Ibid.*, 5.

¹⁹ *Ibid.*, 18.

²⁰ *Ibid.*, 4–5.

²¹ Ute Frevert, *Krankheit als politisches Problem 1770–1880: Soziale Unterschichten in Preußen zwischen medizinischer Polizei und staatlicher Sozialversicherung* (Göttingen: Vandenhoeck & Ruprecht, 1984), 68.

²² *Ibid.*, 67.

²³ C.F.L. Wildberg, ‘Gedanken über die Unvereinbarkeit der Thierheilkunde mit der Menschenheilkunde’, *Kritische Annalen der Staatsarzneykunde für das neunzehnte Jahrhundert*, 1, 3 (1805), 451–66.

²⁴ *Ibid.*, 463.

²⁵ M.K. Scherer, *Akademische Rede über die Vortheile der Thierarzneykunde in den Händen der Aerzte* (Innsbruck: Wagner, 1781), 29.

²⁶ Claudia Huerkamp, *Der Aufstieg der Ärzte im 19. Jahrhundert. Vom gelehrten Stand zum professionellen Experten: das Beispiel Preußens* (Göttingen: Vandenhoeck & Ruprecht, 1985), 167.

²⁷ *Wochenschrift für Thierheilkunde und Viehzucht* (1863), 429.

an outlook reflecting broader reservations about engaging in manual versus intellectual labour. As Claudia Huerkamp has noted, academic physicians ‘shunned manual activities such as blood-letting, dressing wounds, drawing abscesses’ – and the direct handling of animals would have fallen under this category.²⁸ Yet, a theoretical knowledge of animal health, as opposed to its practical applications, was acceptable, because teaching did not involve direct dealings with animal flesh. At the end of the eighteenth century, Göttingen (1771), Freiburg (1783), Marburg (1788) and Würzburg (1793) offered the subject, and professorial chairs were also created.²⁹ At the University of Giessen, from where a separate veterinary school came into being in 1829, veterinary teaching stretched back to 1777. Medical doctors such as Ernst Schwabe, Ludwig Bojanus and Christoph Nebel imparted veterinary knowledge to future physicians, landowners and lawyers, who would, in their later careers, have to recommend measures about contagious animal diseases, know something about breeding and deliver legal verdicts on the value of livestock.³⁰ Later scientific and medical interest in animal diseases partly stems from this tradition; it explains why veterinarians subsequently struggled to assert the validity of their expertise in public committees, at agricultural fairs and in courts. It also explains why veterinary schools started out estranged from universities.

Faced with medical reservations, the state looked to exploit the hippological tradition, turning to the military for help in setting up veterinary schools. At Hannover, Johann Adam Kersting, Senior Horse Doctor to the Royal Army, was responsible for founding the first school in Germany. King George III made it clear that the school’s priorities lay less on educating veterinarians with the knowledge to combat diseases of livestock than to train up regimental horse doctors with the practical know-how of shoeing (and curing) army horses.³¹ Reflecting this emphasis, the school was placed under the auspices of the *Ober-Hof-Marschallamt* (Senior Court Marshall Office), initially called itself *Roßarzneyschule* (School of Equine Medicine) and Kersting predominantly taught and wrote about horse-shoeing.³² In Berlin, the military influence was equally pronounced: when its school opened in 1790, some twenty years after initial plans, it was also aimed at ‘training up good horse doctors for the stable and the regiments’.³³ Even though civilian pupils were accommodated, cavalry regiments reserved the right to send their own soldiers to be trained as farriers, and a further six places were earmarked for future stud officials. Even at Munich, the military influence grew because of difficulties attracting pupils. On its tenth anniversary, the Prince-Elector of Bavaria, Maximilian Joseph, undertook efforts to attract physicians, surgeons and blacksmiths to enrol but he could not prevent the school’s reorganisation in 1810.³⁴ Placed in the hands of Baron Kessling, the *Oberstallmeister* (senior equerry), the main focus of the school was shifted to training farriers for the

²⁸ Claudia Huerkamp, ‘The making of the modern medical profession, 1800–1914: Prussian doctors in the nineteenth century’, in Geoffrey Cocks and Konrad H. Jaraush (eds), *German Professions, 1800–1950* (New York: Oxford University Press, 1990), 67.

²⁹ Eichbaum, *op. cit.* (note 15), 142–5.

³⁰ Wilhelm Schauder, ‘Zur Geschichte der Veterinärmedizin an der Universität und Justus Liebig-Hochschule Gießen’, *Ludwigs-Universität, Justus Liebig-Hochschule, 1607–1957. Festschrift zur 350-Jahrfeier* (Giessen: n.a., 1957), 100–7.

³¹ Karl Günther, *Die Königliche Thierarzneischule zu Hannover in den ersten Hundert Jahren ihres Bestehens* (Hannover: Schmorl & von Seefeld, 1887), 5.

³² Schmaltz, *op. cit.* (note 15), 11.

³³ *Ibid.*, 6.

³⁴ Carl Hahn, *Geschichte der K[öniglich] B[ayerischen] Zentral-Tierarzneischule München, 1790 bis 1890* (Munich: n.a., 1890), 7.

army – a decision that proved to be long lasting. As late as 1861, the Bavarian parliament complained about the school's narrow focus on the 'treatment of sick horses', lamented the lack of a clinic that dissected cattle (despite a burgeoning milk industry) and criticised the scant attention paid to the health of sheep and goats.³⁵

During this seminal period in the development of the German veterinary profession, medical and military traditions exhibited contrasting conceptualisations about animal health, where its knowledge should be constructed, the kind of people who should be trained and the types of animals that should be cared for. Medical practitioners, who were already very much involved with cattle plague, were sceptical about becoming involved in veterinary schools. Not least because associations with lay animal healers would be socially degrading, they preferred instead teaching in universities, where a theoretical knowledge of animal health could be imparted to future leaders. Due to medical reticence, the military took over. Yet for army officers, priorities lay in the training up of farriers for the purposes of shoeing and curing horses – an emphasis that precluded a broader engagement with the health of other animals and set back the possibilities of recruiting learned men as practitioners. In 1810, Wilhelm Humboldt approached the extant veterinary school in the Prussian capital with the intention of forging close ties with his new University of Berlin. However, the philosopher's plans for introducing free scientific inquiry did not sit well with the militaristic culture of the Berlin school. Directed as it still was by the *Oberstallmeister* and placed under the auspices of the *Marschallamt*, the school rejected this overture.³⁶ Much of the effort at reform within Germany during the second half of the century focused on weakening this military influence. Bringing back a more medical as well as scientific interest in contagious animal diseases – the state's initial plan – became the aim.

The Marketplace for Animal Health, the Private Practitioner and the Emergence of Veterinary Officers

For those who chose, following their attendance at a veterinary school, to work as private practitioners rather than serve as military farriers, fierce competition awaited. In 1805, the physician and naturalist Ludwig Bojanus, professor-elect of veterinary medicine at the University of Vilnius, observed how newly trained veterinarians struggled against lay animal healers for a share of the pie:

His office, which does not belong to the most respected, brings him constantly in relation with the common people, to whose ideas and conceptions he must adapt himself if he will not endanger his success and let it pass over into the hands of quacks and herdsmen.³⁷

Those who took the risk pointed to their training and knowledge in attempts to attract clientele. Without a substantial previous record of treating animals, however, livestock owners found it difficult to trust them; their 'knowledge' lacked the wealth of experience on which shepherds or herdsmen typically drew. With this in mind, Bojanus issued a warning, calling upon the new veterinary schools to resist re-emerging ideas of training 'learned' men. Belief in the superiority of 'scientific knowledge' would, he advised, repel farmers. Schools should instead select the veterinary aspirant 'from the mass of the people,

³⁵ *Wochenschrift für Thierheilkunde und Viehzucht* (1861), 258.

³⁶ Schneidemühl, *op. cit.* (note 15), 18.

³⁷ Frank S. Billings, *The Relation of Animal Diseases to the Public Health, and their Prevention* (New York: D. Appleton and Company, 1884), 314.

to whom he will return'; 'he should feel at home in the circle in which he shall enter . . . and should not be rejected as foreign by the class of people among whom he shall live and work.'³⁸ For Bojanus, veterinarians should be practical men. Their survival depended on possessing the right social background and communication skills.

Contesting this view was the physician Johann Peter Frank, author of the *System einer vollständigen medicinischen Polizey* (1779–1819). Mostly unremarked upon in standard medical histories, Frank not only fleshed out ideas for a medical police in his influential books but also provided a blueprint for a veterinary equivalent. Based on a belief that both the medical and veterinary fields should be categorised under 'general healing', he argued passionately against the view that veterinary work should be left to 'unscientific people'.³⁹ His exhortation that medical men should assume responsibilities for both areas may have fallen on deaf ears – it also left little room for the training up of veterinarians as a distinct group of experts – but his proposal that educated men should be employed in veterinary public health, and the involvement of medical men in this set-up, left an indelible mark. His influence can be discerned in the courses on cattle plague and veterinary policing that were set up at the Stuttgart (1810), Berlin (1822), Hannover (1824) and Dresden (1845) schools.⁴⁰ His views were also reflected in the works of Bernard Laubender (1805), Georg Friedrich Tscheulin (1821) and Ludwig Wagenfeld (1835) – a mixture of doctors and veterinarians tasked with teaching in veterinary schools.⁴¹

In 1817, two state appointments resulted from these developments, initially in Prussia. Though few in number, the *Departementstierarzt* (chief veterinary officers) served a broad administrative area; more numerous was the *Kreistierarzt* (district veterinary officers), who operated within narrower administrative areas. At the outset, veterinary officers were mere bystanders in the field of contagious animal diseases. Demonstrating uncertainty about whether veterinary expertise could be trusted, the state privileged the opinions of surgeons and physicians. Within the Prussian state apparatus, district veterinary officers were placed on the lowest scale and thus had to obey orders not only from medical officers in general but also from the *Kreiswundarzt* (district surgeons) – a profession on the wane.⁴² Chief veterinary officers were ranked higher than surgeons of any description, but they were still subordinate to district medical officers, who had the final say in matters of public health, broadly conceived.⁴³ Reporting animal diseases to a higher authority fell to veterinarians but no important decision could be made without the intervention of physicians, as higher-ranked officials.⁴⁴

In her book on the rise of the medical profession, Huerkamp observed that public appointments, while nothing more than technical positions with limited powers, nonetheless helped physicians win custom in a competitive medical marketplace.⁴⁵ For veterinarians, public work would have been a bigger deal. For one thing, private

³⁸ Ludwig Bojanus, *Über den Zweck und die Organisation der Thierarzneischulen* (Frankfurt-am-Main: Andreäische Buchhandlung, 1805), 136.

³⁹ Johann Peter Frank, *System einer vollständigen medicinischen Polizey*, vol. 6, pt 3, (Vienna: Carl Schaumburg, 1819), 55.

⁴⁰ Froehner, *op. cit.* (note 15), vol. 2, 342.

⁴¹ *Ibid.*, 142.

⁴² Schmaltz, *op. cit.* (note 15), 52.

⁴³ W. Horn, *Das Preussische Veterinär-Medicinal-Wesen: Aus amtlichen Quellen dargestellt* (Berlin: August Hirschwald, 1858), 188.

⁴⁴ Schmaltz, *op. cit.* (note 15), 55.

⁴⁵ Huerkamp, *op. cit.* (note 26), 168–9.

veterinarians failed to win state protection. In 1811, the Prussian Ministry of the Interior mandated that ‘farriers and animal doctors’ obtain a *Gewerbeschein* (trading licence) from their local authority; similar moves were undertaken in Bavaria (1810) and Hessen (1822).⁴⁶ Such rulings were expected to prohibit healers without proper ‘training’ from treating animals, barring those who had been ‘born’ into the profession. During the 1830s, however, such protection was lifted. Nominally, a lack of ‘properly trained veterinarians’ was the reason. More likely is that the ruling made it difficult for farmers to continue to rely on ‘self-appointed experts’.⁴⁷ How much resentment state moves could sow is shown in the counter-legislations that poured scorn on the notion that animal healers could be ‘trained’. For example, in the Stade region, part of the Kingdom of Hannover, a ruling was passed in 1836 that sought to protect those ‘born into’ the profession. Lay animal healers, it was decreed, did not need to request a licence, but ‘other people’, veterinarians included, did:

The practice of animal healing is to be left up to hangmen with regard to animals in general; to blacksmiths and farriers with regard to horses; to shepherds and other herdsman with regard to those animals they are in charge of and without limitation to their own herds. All other people must obtain authorisation to conduct this questionable art . . .⁴⁸

Such a situation reflected the strength of feeling among farmers concerning their rights. As the state discovered to its cost, arrangements that had been attained between farmers and animal healers were not to be taken lightly. For conservative Prussian estate owners, no doubt, the imposition of urban-trained veterinarians constituted an affront to their rural authority and a challenge to their traditional way of life.⁴⁹

Despite the lack of state protection, though, private practitioners – such as Johann Schmager, who operated in the Black Forest between the 1830s and 1850s – sought public works.⁵⁰ The son of a surgeon, Schmager originally attended the now-defunct veterinary school in Karlsruhe in 1828, and went on to study medicine at the university in Freiburg. He then set up a practice in nearby Lahr, a small town in the western part of the Black Forest. From the beginning, Schmager found it difficult to ply his trade because of the minimal amount of work farmers were willing to provide. He thus looked for other openings to stabilise his income but here, too, encountered resistance. His journal entries frequently feature complaints about Ferdinand Frank, the local knacker, whose network of clients, accumulated over a period of three generations, made it next to impossible to make inroads. His rival’s cosy relationship with the local authority, which allowed Frank to monopolise the collection of animal carcasses, did not help either. Eventually, Schmager readily accepted a new role, offered by the town, of inspector, in which post he oversaw the vending of meat, turned in stray dogs and policed the local livestock market. He was also quick to defend his public role when Frank attempted to muscle in. Further research must assess how representative Schmager’s experiences were of the whole of Germany, but they do hint at the kind of difficulties private practitioners encountered. Seeking collaboration with authority was, even for private practitioners, a realistic survival strategy.⁵¹

⁴⁶ Eichbaum, *op. cit.* (note 15), 275.

⁴⁷ Horn, *op. cit.* (note 43), 148.

⁴⁸ Eichbaum, *op. cit.* (note 15), 276.

⁴⁹ Christopher Clarke, *Iron Kingdom. The Rise and Downfall of Prussia, 1600–1947* (London: Allen Lane, 2006), 330.

⁵⁰ Anke Koller, ‘Untersuchungen zum Notizbuch des J.M. Schmager (1811–1859), Tierarzt in Lahr/Schwarzwald’ (unpublished Doc. Med. Vet. dissertation: Tierärztliche Hochschule Hannover, 1998).

⁵¹ *Ibid.*, 244–68.

Such circumstances undoubtedly explain why, from the 1830s, veterinarians sought to make headway instead as veterinary officers, wresting control of contagious animal diseases away from their medical colleagues. One small, early success was in the investigation of mange – a contagious skin disease. Traditionally, surgeons had treated this malady, but in 1836 the state expressed its reservations about this: the examinations that district surgeons had to pass ‘did not guarantee that they possessed the necessary knowledge to execute the affairs of veterinary police’.⁵² Consequently, the Prussian government delivered a decree that replaced surgeons with veterinarians. Such a decision, still rare at this time, represented a major advance. Back in 1803, a Prussian directive mentioned veterinarians for the first time as agents in the state’s fight against cattle plague.⁵³ Categorised alongside shepherds and herdsmen, however, they were merely asked to report outbreaks to the district medical officer. During the 1830s, however, veterinarians came to pose a threat to physicians. Even though the latter were called on ‘as higher authority in ambiguous and more important cases’ of cattle plague, the former, it seems, appear to have been less forthcoming about cases that needed the attention of higher-ranked experts.⁵⁴ Medical officers protested, complaining about the ‘loss of emoluments’ because veterinarians were referring fewer cases to them.⁵⁵ On this occasion, the Prussian state took the side of physicians. Following pressure, one reminder, issued in 1837, reprimanded district veterinary officers for doing as they pleased.⁵⁶

Compared with their counterparts in Britain, veterinarians in the German states took on public roles early on in the evolution of their profession, and the veterinary police, as it developed in the first half of the nineteenth century, witnessed significant intermingling of veterinary and medical personnel. In England, as Woods and Matthews have pointed out, private practitioners held sway in debates about the direction of the profession. They argued that practical know-how, business sense and social skills were more important than expertise in science, education or gentlemanly comportment within an unforgiving marketplace.⁵⁷ By contrast, within the German context, the voices of private practitioners and arguments for a more practical orientation, with a few early exceptions, are barely audible throughout the rest of the nineteenth century. Once a state-centred model of professionalisation was established, commercial concerns about quacks became secondary, social fears regarding association with shepherds and herdsmen dissipated and attention shifted to obtaining parity with doctors. Crucially, incorporation into the state apparatus removed veterinarians from the category of animal healer and placed them in the same category as medical practitioners. Even though the relationship was a subordinate one, state involvement offered veterinarians a way to escape the marketplace, to insist on similarities with medical practice and, as medicine incorporated more science, to regard themselves as scientists too. In Britain, a similar rallying cry for veterinarians to become more like physicians is detectable; in Germany, as the power of veterinary officers increased, it became the norm.

⁵² Horn, *op. cit.* (note 43), 196.

⁵³ Froehner, *op. cit.* (note 15), vol. 2, 140.

⁵⁴ *Ibid.*

⁵⁵ Schmaltz, *op. cit.* (note 15), 55.

⁵⁶ Horn, *op. cit.* (note 43), 197.

⁵⁷ Woods and Matthews, *op. cit.* (note 2), 46–50.

Two Veterinary Classes, the Rise of Veterinary Officers and Military Resistance

When the London Veterinary College (1791) and the Berlin Veterinary School (1792) were first founded, both institutions started out accepting anybody wishing to enter.⁵⁸ There was no common rule by which these places selected school-leavers for admission, reflecting fears that drawing up conditions of entry would deter applicants. In 1838, however, the Berlin school took the decision to impose on aspirants the *Sekundareife*: those interested in attending needed to have completed intermediate secondary school.⁵⁹ In England, the Royal Veterinary College continued to require no formal qualification until 1864. Crucial to this difference was the existence of public appointments. At the completion of their studies, Berlin students sat qualifying final examinations in order to become district veterinary officers, and then, after a further five years' experience, they could apply to become chief veterinary officers.

Such a move to create a high standard of entry, however, encountered military opposition. Nobody would, the army warned, want to become veterinarians if the academic hurdle was raised too high. Conditions to a second track were thus lowered: school-leavers needed to have completed *Volkschule* (primary school), which equipped children to be able to read and write basic German and Latin, but nothing more 'academic' was demanded.⁶⁰ Following admission, these pupils were trained over a course of six semesters in practical aspects of curing and shoeing. Much of the training took place in forges; shoes were hammered out and placed on horses' hooves. Those admitted on superior school-leaving qualifications became the 'bourgeois' of the profession; those admitted on less became the 'proletariat'.⁶¹ In Britain, the difference between various types of veterinarian was hazy; in Prussia, at least, it was stark.

For the first half of the nineteenth century, statistics on the profession do not differentiate between private, public or military veterinarians, making it difficult to ascertain the respective proportions, but the fact that a high standard of entry was introduced, despite military opposition, indicates the rising power of veterinary officers. Prior to the 1820s, fewer than 400 trained veterinarians operated in the whole of Prussia. Towards the end of the 1830s, however, numbers had picked up. A growing awareness that training at veterinary schools resulted in employment arguably raised incentives. Thus, despite meagre increases in the equine population (a reflection of the sluggish pace of industrialisation), the number of veterinarians witnessed a dramatic increase from the 1840s (see Table 1). In the following two decades, their number almost doubled. By 1848, chief veterinary officers were to be found in all ten provinces, and district veterinary officers operated in 169 of the 325 districts.⁶² Eventually, towns and cities also decided to employ their own veterinary officer. Berlin, for instance, appointed a full-time veterinarian in 1853. By 1870, the Prussian capital was employing one chief veterinary officer and two district veterinary officers.⁶³

Strength in numbers brought increased powers. In 1842, the Prussian Ministry of Justice entrusted district veterinary officers with the surveillance of borders, ensuring that diseased

⁵⁸ Schmaltz, *op. cit.* (note 15), 314.

⁵⁹ *Ibid.*, 53.

⁶⁰ *Ibid.*, 7–8.

⁶¹ *Deutsche Tierärztliche Wochenschrift* (1893), 77.

⁶² Schmaltz, *op. cit.* (note 15), 52.

⁶³ Landesarchiv Berlin, A Rep 000-02-01 2275: 'Pferde- und Schlachtviehmarkt, 1815–1902: Vorlage des Etats der sächlichen Kosten der Orts-Polizei pro 1876 zur Genehmigung, 31 März 1875'.

Year	No. of veterinarians	No. of horses
1822	387	1 363 247
1825	395	1 402 352
1828	386	1 385 021
1831	428	1 374 594
1834	465	1 415 289
1837	514	1 472 901
1840	613	1 516 619
1843	749	1 564 554
1846	835	1 614 696
1849	843	1 575 417
1852	951	1 579 560
1855	998	1 550 844

Source: 'Statistische Notizen', in *Wochenschrift für Thierheilkunde und Viehzucht* (1857), 295; Geheimes Staatsarchiv Preussischer Kulturbesitz, 'Pferdezucht und Pferdebestand in Preußen, 1816–55', VI. HA Familienarchive und Nachlässe, NL Adolf von Willisen, Nr. 65.

Table 1: Number of veterinarians versus number of horses registered in Prussia, 1822–55.

livestock did not cross national boundaries.⁶⁴ In 1849, the Ministry of Education put an end to the ongoing conflict between veterinarians and physicians, with a senior bureaucrat writing:

With regard to the question whether district veterinary officers should be tasked exclusively with matters of veterinary police, or whether they should be preferably conferred upon district medical officers, I am in agreement with His Majesty's Government that in all matters related to veterinary policing, district veterinary officers should be assigned in places where exceptional ones are employed and extended as a rule to all areas of veterinary police.⁶⁵

Following this watershed decision, administrations across the German states took steps to separate the veterinary and medical police, with Saxony (1856), Baden (1864–5), Württemberg (1868) and Bavaria (1868/72) all introducing independent administrative organisations.⁶⁶ Veterinarians thus no longer needed to report back to physicians. In Baden, fines were also imposed on those who meddled in veterinary affairs without the necessary qualifications.⁶⁷ Even though limited to safeguarding the activities of veterinary officers, the practice of healing, slaughter and inspection, when carried out in the duty of the state, became veterinarians' exclusive domain.

Two pieces of legislation cemented the advance of veterinarians in the state apparatus. In 1869, the *Rinderpestgesetz* (Rinderpest Law) came into effect in the North German Federation, placing veterinarians in exclusive charge of epizootics. In 1873, the Ministry of Agriculture, under the stewardship of the energetic Eduard Marcard, stepped in to take over veterinary administration. Two years later, Marcard oversaw the creation of the Prussian *Viehseuchengesetz* (Contagious Animal Diseases Law), which specified that 'the veterinary officer be immediately consulted'.⁶⁸ Medical officers were excluded. In order to advise the state at the highest level, the *Technische Deputation für das Veterinärwesen*

⁶⁴ Froehner, *op. cit.* (note 15), vol. 2, 140.

⁶⁵ Horn, *op. cit.* (note 43), 197.

⁶⁶ Eichbaum, *op. cit.* (note 15), 279.

⁶⁷ *Op. cit.* (note 61) (1896), 293–4.

⁶⁸ Froehner, *op. cit.* (note 15), vol. 2, 141.

(Veterinary Technical Deputation) was also created: composed of two medical doctors, three landowners and seven veterinarians, veterinarians thereby became influential in the decision-making process.⁶⁹ By the time that the Prussian law became an imperial one, following German unification, veterinary responsibility had further enlarged. Following amendments in 1894, swine plague, avian plague and tuberculosis were added to the list of contagious animal diseases.⁷⁰ New directives relating to healthy animals – not just diseased ones – also came into being. The shift to an emphasis on prevention is detectable here for the first time.

Less speed characterised changes to the power and status of military farriers. When reforms were implemented to the two-tier system in Prussia in 1855, elevating the prerequisite for study at veterinary schools to the acquisition of *Obersekundareife*, or graduation without the taking of final examinations, the military chose to abide by different rules; it came around to accepting this change only in 1866. During this period, military farriers were generally referred to as *Rofbarzt* (horse doctor), were tasked overwhelmingly with the shoeing of horses and had to ask for permission from their commanding officer to handle diseased horses.⁷¹ Officers felt they knew better: '[A] great part of the cavalry and artillery officers', one veterinarian complained, 'take it upon themselves to cure army horses, conduct it themselves and decide prescription, perceiving and using farriers only as a technical drudge.'⁷² No wonder that the military class, especially in Prussia, thought little about raising the status of horse doctors: 'The vet should be a farrier, a farrier cannot be an officer, and therefore the vet cannot be an officer.'⁷³

Building on their growing influence within the profession, veterinarian officers stepped up the pressure on the military from the 1870s. Shoeing became the main battleground, because of its association with manual as opposed to intellectual labour. In 1873, Anton Ludwig Sombart, a national liberal, supported a change to the status of military farriers. He argued in the *Reichstag* that '[veterinarians] cannot today go about swinging the hammer on the anvil and then the next day use the same hand to operate the lancet, the microscope and the chemical balance'.⁷⁴ During another debate in the Prussian parliament, it was pointed out that, 'in all other armies [with the exception of Prussia,] shoeing is not the main thing but is strictly separated from veterinary medicine and the military vets merely oversee it'.⁷⁵ After German unification, the inertia to synchronise veterinary arrangements across the German states witnessed the introduction of veterinary inspection within the Prussian army.⁷⁶ Those who had been *Oberrofärzte* (senior horse doctors) became *obere Militär Beamte* (senior military officials); standard *Rofärzte* became non-commissioned officers with the rank of *Wachmeister*; and *Unterrofärzte* (junior horse doctors) became sergeants.⁷⁷ Eventually, in 1910, a decree placed veterinarians on an equal footing with medical doctors and confirmed the military veterinarian's powers to conduct cures and implement hygienic measures without interference from their commanding officer.⁷⁸

⁶⁹ Schmaltz, *op. cit.* (note 15), 61.

⁷⁰ *Ibid.*, 83–4.

⁷¹ *Ibid.*, 253–4.

⁷² W.E.A. Erdt, *Die Thierarzneiwissenschaft nach ihrer Tendenz, Verwerthung und ihrem Standpunkte im preußischen Staate beim Civil und Militair* (Cöslin: Buback, 1861), 29–30.

⁷³ Schneidemühl, *op. cit.* (note 15), 52.

⁷⁴ *Wochenschrift für Thierheilkunde und Viehzucht* (1873), 292.

⁷⁵ Schneidemühl, *op. cit.* (note 15), 52.

⁷⁶ Schmaltz, *op. cit.* (note 15), 258.

⁷⁷ *Ibid.*, 259.

⁷⁸ *Ibid.*, 299–300.

Tasked also with the organisation and administration of shoeing, which specialist farriers were now to carry out, veterinarians could concentrate on the treatment of diseases.

During the 1870s and the 1880s, George Fleming, a British army veterinarian, called on colleagues to involve themselves more with contagious animal diseases and the inspection of meat and milk. To be able to do so, he urged, veterinarians needed to become ‘educated scientific men’.⁷⁹ In Germany, there was no comparable, progressive military figure. Rather, it was the army that played the conservative role, emphasising the importance of practical and manual labour against the view of veterinary officers, who insisted on the pursuit of intellectual and scientific inquiry. Starting out with the introduction of higher standards of entry in 1838, veterinary officers had, by the 1870s, established themselves as the most influential voice within the profession. Such a position had been achieved on the back of increased numbers, the resolution of institutional subordination to medical officers in the state apparatus, the widening of the scope of their activities through inclusion of a variety of contagious animal diseases and the elevation of veterinarians as experts to the highest level of government. Building on these advances, German veterinarians could capitalise on the increasing importance of zoonoses during the second half of the nineteenth century.

From Epizootics to Zoonoses: Meat Inspection in Abattoirs

During the 1860s, epidemics broke out that tested newly emerging boundaries of medical and veterinary knowledge. In Britain, as Michael Worboys has demonstrated, the cattle plague outbreaks were a watershed event: medical practitioners took an interest in the epizootic and eventually came to challenge the veterinary model of control that had been put in place following the outbreaks of 1865–6.⁸⁰ In Germany during a similar period, it was trichinosis, a zoonosis believed to be caused by the eating of raw pork, that proved formative. Most of the epidemics took place in northern Germany, and one of the most serious was recorded in 1862 in Hedersleben, a small town 160 km south of Berlin. Some 337 inhabitants came down with the disease, of which 101 eventually died – all from sharing one pig.⁸¹ Despite a tradition of zoological interest in the parasite, trichinosis was an overwhelmingly medical event. Both Friedrich Zenker and Friedrich Küchenmeister, who played key roles in demonstrating that the trichinae pathogens could transfer to humans, were physicians. Medical practitioners were tasked with diagnosis either at the bedside or in the hospital. They were also responsible for sending specimens for microscopic testing by laboratory scientists. Veterinarians were largely absent – but, during the 1880s, as the number of abattoirs dramatically increased, they became the main scientific experts in meat hygiene.

One influential pathologist who confirmed the existence of the disease in his laboratory was Rudolf Virchow. Because *trichinella* could only be diagnosed after slaughter, Virchow initially called for self-protection, urging households to purchase microscopes and to take hygienic measures in the kitchen.⁸² Despite the seemingly simple advice to cook meat thoroughly, however, instances failed to die down. Most medical observers placed the

⁷⁹ Woods and Matthews, *op. cit.* (note 2), 46.

⁸⁰ Worboys, *op. cit.* (note 5), ch. 2.

⁸¹ A. Schmidt-Mühlheim, *Handbuch der Fleischkunde* (Leipzig: F.C.W. Vogel, 1884), 134. For more on the outbreaks, see Dorothee Brantz, ‘How Parasites Make History’, *German Historical Institute Bulletin*, 36 (Spring 2005), 69–79.

⁸² Rudolf Virchow, *Darstellung der Lehre von den Trichinen* (Berlin: Georg Reimer, 1864).

blame – without much evidence – on the strength of the north German custom of eating raw pork. In 1864, the Commission of the Berlin Medical Society – of which Virchow was a member – took this lesson on board as it recommended state intervention: ‘Certainly, explanations about the dangers can be very useful but they cannot pervade all sections of the population so that a strong and securer control of slaughtered animals . . . is required more than ever.’⁸³ Following advice by the Commission, the Prussian *Schlachthofgesetz* (Slaughterhouse Law) was passed in 1868 that prescribed the construction of abattoirs as the fundamental solution to trichinosis; but the legislation did not specify who was to be placed in charge. Nor was the law particularly effective: only thirteen public slaughterhouses were built as a result.

For veterinarians, the field of zoonosis was, during this period, new and ambiguous terrain. Protecting the health of humans from transmissible animal diseases was still a contentious undertaking. Even though a few veterinarians threw themselves into trichinosis research from the mid-1860s, especially in Saxony, they hesitated about encroaching upon medical territory. One of the first veterinarians to write about the disease, the Dresden professor G.C. Haubner, balked at the opportunity to assess the health of meat and milk.⁸⁴ Both ‘undoubtedly’ belonged to ‘the medical police like all other food’, he argued; only when ‘veterinary knowledge is absolutely necessary’ could the task be ‘transferred to the veterinary police’.⁸⁵ Nor did Haubner particularly warm to either the idea of meat inspection, or the abattoir, because of the cost and time involved.⁸⁶ Gradually, however, interest in these areas did increase. One of the most influential advocates was Andreas Gerlach, who became director of the Berlin school in 1870. In his seminal work, *Die Fleischkost der Menschen (The Meat Diet of Humans)*, he called on fellow veterinarians to claim the ‘neutral terrain’ between human and animal medicine.⁸⁷ Despite sharing the experience of trichinosis with Haubner, Gerlach became convinced of the need for stricter controls, along the lines Virchow had advocated. His theory that rats were a major source of infection also shifted some of the responsibility to stockowners and breeders – not just butchers or housewives – for the spread of the disease.⁸⁸ By doing so, Gerlach helped to extend the frontline in the battle against trichinosis and paved the way for a veterinary model of policing zoonoses.

During the 1870s, the veterinary profession embraced the abattoir as an institution through which the powers of veterinary police could be extended. At this time, farmers and regional politicians resented the heavy hand of veterinary officers in the control of rinderpest.⁸⁹ From 1872, the epizootic periodically made its way from the Russian steppes, prompting an international conference, held in Vienna, which floated the idea

⁸³ A.C. Feit, *Bericht der zur Berathung der Trichinen-Frage niedergesetzten Commission der medicinischen Gesellschaft zu Berlin über öffentliche Schlachthäuser* (Berlin: Georg Reimer, 1864), 14.

⁸⁴ G.C. Haubner, *Ueber die Trichinen mit besonderer Berücksichtigung der Schutzmittel gegen die Trichinenkrankheit beim Menschen* (Berlin: August Hirschwald, 1864), 34–7.

⁸⁵ G.C. Haubner, *Handbuch der Veterinär-Polizei* (Dresden: G. Schönfeld, 1869), 8.

⁸⁶ Haubner, *op. cit.* (note 84), 35–6.

⁸⁷ A.C. Gerlach, *Die Fleischkost der Menschen von sanitären und marktpolizeilichen Standpunkte* (Berlin: August Hirschwald, 1875), 2.

⁸⁸ A.C. Gerlach, *Die Trichinen: Eine wissenschaftliche Abhandlung nach eigenen besonders im sanitäts-polizeilichen und staats-thierärztlichen Interesse angestellten Versuchen und Beobachtungen*, 2nd edn (Hannover: Schmorl & von Seefeld, 1873), 76.

⁸⁹ John Fisher, ‘To Kill or Not to Kill: The Eradication of Contagious Bovine Pleuro-pneumonia in Western Europe’, *Medical History*, 47, 3 (2003), 314–31: 329–30.

of constructing slaughterhouses on the East Prussian border.⁹⁰ Due to the development of the railway, contagious animal diseases spread more easily. Building slaughterhouses on the eastern border, and killing the animals prior to transportation, or forcing local regions (which were impoverished anyway) to consume the meat from slaughter, would, it was argued, prevent infected animals from moving west. Following the creation, in 1875, of the Veterinary Technical Deputation, of which both Virchow and Gerlach were founding members, discussions intensified.⁹¹ In 1877, Gerlach, as head of the deputation, issued a plea to the Prussian parliament, calling for the revision of the 1868 Slaughterhouse Law.⁹² Both epizootic and zoonotic arguments became important strands of the deliberations that took place.⁹³ Even though Gerlach did not live to witness the debate – he died later in 1877 – Virchow seconded his proposal. Speaking in the Prussian *Landtag* (state parliament), the pathologist delivered a eulogy that praised his friend's work on meat hygiene as 'the best on the subject'.⁹⁴ Thanks in part to Virchow's support, the amended law came into being; the argument that abattoirs could protect German agrarian interests from foreign imports also helped. By 1890, 183 abattoirs had been opened in Prussia alone; in 1903, 839 operated across Germany.⁹⁵

Most of these new slaughterhouses employed veterinarians, who worked as directors, inspectors or assistants. One of the largest opened in Berlin in 1881, and Hugo Hertwig, a former district veterinary officer, became its chief of meat inspection. Under him worked a further twelve veterinarians in an operation that numbered 160 personnel. Increasingly tasked not only with the administration but also with the construction of actual buildings, veterinarians quickly made abattoirs their new fiefdom.⁹⁶ In 1893, one of the self-titled 'sanitary veterinarians' wrote that the purpose behind the statistical reports he compiled was not only to inform consumers about the health of meat, but also to provide farmers with information on infectious diseases, reflecting both epizootic and zoonotic concerns.⁹⁷

In 1885, Robert Ostertag, the founding father of modern systems of meat inspection, began his illustrious career at the Berlin abattoir. There, he built his scientific reputation by dint of the 'extraordinarily large amount of specimens' placed for dissection.⁹⁸ Cattle plague control had furnished veterinarians with only a limited and irregular supply of mainly diseased animals, but abattoirs had an almost limitless and regular supply of both healthy and diseased livestock. Sanitary veterinarians published the results of their research in specialist journals: Ostertag's own *Zeitschrift für Fleisch und Milchhygiene* (*Journal of Meat and Milk Hygiene*) was one major outlet. In 1893, the slaughterhouse director at Berlin claimed that sanitary veterinarians were superior to researchers at Virchow's nearby Institute of Pathology: '[F]ar richer specimens are available . . . In fact,

⁹⁰ *Bericht über die Verhandlungen der . . . Plenarversammlung des Deutschen Landwirthschaftsraths* (1873), 264–5.

⁹¹ Geheimes Staatsarchiv Preußischer Kulturbesitz (GStak PK), I HA Rep 164 E 16: 'Technische Deputation für das Veterinärwesen [letter dated 6 April 1880]'.

⁹² GStak PK, I HA Rep 164 E 16: 'Technische Deputation für das Veterinärwesen: Antrag betreffend die Abänderung des Gesetzes vom 18. März 1868'.

⁹³ *Stenographische Berichte, Verhandlung der Häuser des Landtages. Haus der Abgeordneten*, Band 2 (8 January 1881 bis 23 February 1881), 1095.

⁹⁴ *Stenographische Berichte über die Verhandlungen des Preußischen Hauses der Abgeordneten*, Band 2 (16 January 1880 bis 20 February 1880), 1879.

⁹⁵ Schmaltz, *op. cit.* (note 15), 105.

⁹⁶ *Ibid.*, 107.

⁹⁷ See, eg., the annual reports published in the journal *Zeitschrift für Fleisch und Milchhygiene*.

⁹⁸ *Berliner Tierärztliche Wochenschrift* (1890), 311.

animal pathology is significantly advanced through the works of sanitary veterinarians, especially with regard to parasitology.⁹⁹

Such advances culminated in the *Reichsfleischbeschaugesetz* (Imperial Meat Inspection Law), which accorded veterinarians a central role. For Ostertag, a chief architect of the legislation, veterinarians had been crucial in bringing it about. In his influential *Handbook of Meat Inspection*, he boasted that the law was the direct result of ‘the indefatigable efforts which the representatives of veterinary science have put forth for several decades toward introducing a general compulsory inspection of food animals [sic!] and meat.’¹⁰⁰ One anomaly that remained, though, was medical involvement in trichinosis inspections. During the pre-abattoir era, most German states had designated educated laymen – whose expertise was certified by medical officers – to this task.¹⁰¹ Responding to individual requests from butchers, hotels or restaurants that slaughtered their own pigs, inspectors would visit equipped with a microscope and logbook. Only on rare occasions were veterinarians involved in this work. Following the widespread construction of abattoirs, however, the process of trichinosis inspection was modified so that applications had to be made to the slaughterhouses. Even so, as in the Berlin slaughterhouse, medical officers were to be called in for dubious cases, and physicians resisted a handover in places such as Kottbus (1891), Posen (1891) and Kassel (1894), rejecting what they saw as attempts at transforming this medical terrain into a veterinary one.¹⁰²

For the veterinary profession as a whole, involvement in meat hygiene proved to be highly significant: it carved out new expertise in zoonoses and created additional sites of employment that built on advances made in the control of epizootics. During the 1860s, the debate over trichinosis generated medical demand for abattoirs, but enthusiasm for them was low, resulting in piecemeal legislation that focused just on trichinosis inspection through medically certified laymen. In the wake of the rinderpest outbreaks in the 1870s, however, as enthusiasm for abattoirs resurfaced, veterinarians successfully transformed them into a hub that undertook to address both epizootic and zoonotic concerns. By the time Robert Koch made his bacteriological breakthrough in the 1880s, veterinarians were firmly institutionalised in meat inspection controls, and had no issues about introducing germ theory in the abattoir. ‘[M]eat inspection is’, Ostertag quipped, ‘nothing more or less [sic!] than applied bacteriology.’¹⁰³ For German veterinarians, abattoirs were their laboratory. Both healthy and unhealthy livestock could be assembled, dissected and investigated to produce veterinary knowledge. ‘Through the collection of biological and microscopic specimens’, one representative boasted, ‘science is advanced.’¹⁰⁴ In Britain, veterinarians opposed the setting up of laboratories in the wake of the cattle plague outbreaks, and resented medical encroachment. They exploited the fact that the disease did not transfer between humans and animals to ‘deny that there was much common ground

⁹⁹ Ströse, ‘Die Fleischschauberichte’, *Zeitschrift für Fleisch und Milchhygiene* (1893), 7.

¹⁰⁰ Robert Ostertag, *Handbook of Meat Inspection*, E.V. Willcox (trans.) (New York: William R. Jenkins, 1904), 36.

¹⁰¹ Landeshauptarchiv Sachsen-Anhalt, Abteilung Dessau, C 601 Kreisbehörden Blankenburg, Nr. 2941: Certificate issued 8 February 1884.

¹⁰² *Regulativ für die Untersuchung des in das öffentliche Schlachthaus der Stadt Berlin . . .* (Berlin: n.a., 1883), 30–31; Schmaltz, *op. cit.* (note 15), 116.

¹⁰³ Ostertag, *op. cit.* (note 100), 548.

¹⁰⁴ Oskar Schwarz, *Bau, Einrichtung und Betrieb öffentlicher Schlacht- und Viehhöfe. Ein Handbuch für Sanitäts- und Verwaltungsbeamte*, 3rd edn (Berlin: Springer, 1903), 65.

between veterinary and human medicine.¹⁰⁵ By contrast, in Germany, veterinarians moved the other way, capitalising on their involvement in epizootics to claim new terrain in zoonoses.

Bovine Tuberculosis, the *Freibank* and Agriculture

Because of the awareness raised by trichinosis, German veterinarians also became interested in the dangers posed by bovine tuberculosis, as transmitted through the consumption of meat and milk. At the end of the eighteenth century, medical opinion had concluded that *Perlsucht*, as bovine tuberculosis was traditionally called, posed little threat to human health, resulting in governmental action that sought to educate the public about its ‘harmlessness’.¹⁰⁶ In 1865, Jean Antoine Villemin, however, overturned this orthodoxy, demonstrating that tuberculosis *could* cross the species barrier. This finding inspired Gerlach to begin research into *Perlsucht* during the early 1870s. His discovery that experimental animals developed tubercular alterations when fed with the meat of animals suffering from *Perlsucht* convinced him that the meat could be a carrier of the disease. For Gerlach, the main criterion on which decisions about edibility should be based was to establish whether the virus had affected the lymph, because this was proof that the disease had spread throughout the body. Looking for clinical signs was deceptive: cattle that looked completely healthy could already be infected. Even in ambiguous cases, he argued, veterinarians should err on the side of caution and eject the animal from trade.¹⁰⁷

Such a recommendation aroused controversy within the veterinary community. Most veterinarians could not accept the amount of food that would have to be wasted, based on the mere suspicion of infection. Following heated debate, the newly created *Deutscher Veterinärerrat* (German Veterinary Council) passed a resolution in 1875, declaring that research was still insufficient to justify a ban on everything that came from infected animals.¹⁰⁸ Following Gerlach’s death, the Berlin veterinary school, when approached to give its own considered view, was equally sceptical: ‘[I]t is not yet proven that the meat of an otherwise very fat and well-nourished cow suffering from generalised tuberculosis is unsuitable for human consumption.’¹⁰⁹ Such negative reactions did not mean that communicability itself was doubted. In the 1880s, Alfred Johne, a professor at Dresden, extended Gerlach’s investigations into bovine tuberculosis, rectifying the mistake Gerlach had made in rejecting meat from the animal the moment the virus entered the lymph glands.¹¹⁰ He instead inferred that only when it reached the circulation of blood should the meat be regarded as unfit for human consumption. ‘Not until this point in time’, he concluded, ‘are we justified in unconditionally excluding from the market a given piece of meat.’¹¹¹ Following the contemporaneous publication of the results of Koch’s investigation into tuberculosis, transmissibility between man and animal received bacteriological support, but the debate continued with regard to how the danger should be addressed.

¹⁰⁵ Worboys, *op. cit.* (note 5), 58.

¹⁰⁶ A. Lydtin, *Über die Perlsucht. Vortrag, gehalten auf dem internationalen thierärztlichen Congress zu Brüssel* (Leipzig: Dege’sche, 1885), 10–11.

¹⁰⁷ Gerlach, *op. cit.* (note 87), 50.

¹⁰⁸ Lydtin, *op. cit.* (note 106), 21.

¹⁰⁹ Lydtin, *op. cit.* (note 106), 21.

¹¹⁰ A. Johne, *Die Geschichte der Tuberculose mit besonderer Berücksichtigung der Tuberculose des Rindes . . .* (Leipzig: F.C.W. Vogel, 1883).

¹¹¹ Ostertag, *op. cit.* (note 100), 634.

Veterinarians dominated much of the discussion into the practicalities of what to do.¹¹² At the International Congress of Veterinarians held in Brussels in 1883, August Lydtin, chief veterinary officer in Baden, succinctly presented three potential solutions: (1) heating, (2) confiscation and (3) the abattoir. For butchers and consumers, sterilisation through heating was perhaps the most convenient and economical. Certainly, the kitchen served as an effective place of disinfection, Lydtin acknowledged, but the experience of trichinosis had already cast doubt over the ability of the public to protect themselves. Even if instructions were issued about how the meat should be heated, he added, people would be led to believe that all cooked meat would be safe to eat, when, in fact, heat can at times fail to ‘penetrate deeply’ into all meat parts.¹¹³ Confiscation of diseased meat, on the other hand, would be safer than cooking. Even though this option would be unpopular, Lydtin remarked, diagnosing the infection itself in the carcass was relatively easy. Yet the problem with this approach was that the search for diseased meat necessitated major ‘interventions into the private possession of butchers and breeders’.¹¹⁴ Imposing fines would be counterproductive; parties would hide suspected cases for fear of incurring severe financial losses. For all of these reasons, Lydtin concluded, the abattoir was the only realistic solution.

Bovine tuberculosis presented an opportunity for veterinarians to show off their newly acquired expertise. Not only did sanitary veterinarians have to carry out the difficult task of ‘ascertaining exactly the spread and degree of the tubercular alterations’, they also had to ‘carefully remove the infected parts from the cadaver destined for consumption based on objective knowledge’.¹¹⁵ ‘Only the veterinarian, who has practical experience in meat inspection,’ Lydtin counselled, ‘has this necessary knowledge.’¹¹⁶ For sanitary veterinarians, this expertise was central to their mission of ‘saving’ as much meat as possible. Meat inspection was not only about the protection of human health; it was also concerned with its improvement through preventing the ‘unnecessary destruction of still useable, valuable nutritious material’.¹¹⁷ Nowhere was this interest more apparent than in moves to re-invent the *Freibank*. Originally, the *Freibank* was a sixteenth-century institution widespread in southern Germany and Austria. Placed under the control of the butcher’s guild, it had sold ‘inferior’ meat at a different location and at cheaper prices. For veterinarians, the *Freibank* was of interest because it could be refashioned to sell meat from cattle infected with localised tuberculosis. Public sentiment would not allow for healthy meat to be sold alongside that saved from diseased animals, but it could be offered at lower prices without attracting any criticism of deception. Thus, despite objections from butchers, veterinarians successfully implemented *Freibanks*: by 1900, 362 were in operation in Prussia alone, all attached to the abattoir system.¹¹⁸ Of all the cattle inspected during that same year, fifteen per cent were found to have tuberculosis; however, thanks to veterinary expertise, only 2.7 per cent had to be condemned.¹¹⁹ Pointing to this

¹¹² Regarding the main players in the debate, see Adolf Blanke, *Welche Gefahren bietet das Fleisch tuberkulöser Tiere für den Menschen und wie weit darf solches als Nahrungsmittel verwandt werden?* (Berlin: Schade, 1900).

¹¹³ Lydtin, *op. cit.* (note 106), 25.

¹¹⁴ *Ibid.*, 27.

¹¹⁵ *Ibid.*, 32.

¹¹⁶ *Ibid.*

¹¹⁷ Schmidt-Mühlheim, *op. cit.* (note 81), 187.

¹¹⁸ *Zeitschrift für Fleisch und Milchhygiene* (1902), Appendix, 43.

smaller loss through waste, veterinarians could further claim that they were making a major contribution to elevating the health of the nation, especially in urban areas.

Compared with their increased importance in towns and cities, veterinarians found it difficult to make their influence felt in the countryside. Such an impasse had beset the early history of the profession, driving practitioners into the arms of the state, but the subsequent and rapid rise in the number of veterinarians facilitated a shift in attitudes.¹²⁰ In 1894, Lydtin called on his colleagues not to rest content 'with the healing of damages that occur to domestic animals or with the finding of measures to protect domestic animals from plague' but to also look for ways to improve the 'performance' of livestock in order to make animals more economically valuable.¹²¹ Pointing to the lucrative livestock breeding industry, veterinarians should, he suggested, concern themselves more with 'life' than 'death', ally themselves more with private interest than with that of the state, and reach out more to farmers than to physicians. He advised colleagues to join agricultural societies, write to breeders, socialise with them and hand out instructions on the construction and maintenance of stalls and barns. The German Veterinary Council agreed that veterinarians should be more involved in commissions for selecting superior breeding stock among stallions and bulls, a surveying process known as *Körung*; invited to act as inspectors of studs and foals, or as judges at livestock exhibitions and agricultural fairs; and asked to provide their expertise at meetings of central agricultural societies.¹²² For a profession that had evolved as a state service, in which individual profit making took a backseat to the greater public good, this move to offer veterinary knowledge in the service of breeders represented a major departure.

Convincing farmers to accept veterinary expertise, however, proved difficult. At one livestock exhibition in Hamburg, held in 1893, not a single veterinarian was among the eighteen judges chosen to deliberate on the quality of horses.¹²³ Only in the section for cattle was a veterinarian present. He was, however, outnumbered by thirty-nine others who pronounced upon cattle as breeders, farmers and landowners. As one correspondent reported: 'Unfortunately, the vast majority of people think that only healers of diseased animals were trained in the veterinary schools', and that veterinarians had little to offer livestock production.¹²⁴ The situation changed little in the twentieth century. Veterinarians charged that both chambers and schools of agriculture would choose their own officers, breeding inspectors, temporary instructors and school directors, and did not appoint 'state-recommended, prejudice-free experts such as district veterinary officers.'¹²⁵ Some provinces, such as the Rhineland, were receptive, but others, such as East Prussia, were less so. For example, despite the efforts of Dr Arndt von Plotz, the chief veterinary officer, to make headway, 'an organised opposition' greeted his arrival: 'The large landowners East of the Elbe view animal breeding as their innermost domain, and in my opinion it is fruitless to wage a campaign in this area.'¹²⁶

Considered within this broader context, the recourse to the abattoir as a centre of zoonotic policing not only represented a success in extending veterinary influence

¹¹⁹ *Ibid.*, 45–6.

¹²⁰ *Op. cit.* (note 61) (1893), 79.

¹²¹ *Op. cit.* (note 61) (1894), 265.

¹²² *Op. cit.* (note 98) (1893), 221.

¹²³ *Op. cit.* (note 61), 308.

¹²⁴ *Ibid.*

¹²⁵ *Op. cit.* (note 98) (1913), 37.

¹²⁶ *Ibid.*, 38, 39.

over meat, it also signified a failure to gain influence over farmers, especially on the issue of bovine tuberculosis. In 1883, Johne observed how, for the past century, tuberculosis had been able to run riot because farmers were blind to its dangers. Due to the relaxed rules concerning *Perlsucht*, he observed, breeders cared less about the distance between livestock, paid less attention to the selection of breeds and became indifferent to the dangers posed by tuberculosis. ‘Nobody until today’, he fumed, ‘tried to stop [a farmer] from selling the milk of his tubercular cow.’¹²⁷ A major sticking point between veterinarians and agrarians was the reliability of diagnosis. In 1887, the *Landwirtschaftsrat* (German Agricultural Council) expressed doubts about the communicability of tuberculosis, contending that diagnosis was difficult. Calling attention to experiments conducted in the Berlin veterinary school, the council charged that ‘extremely well-trained veterinary practitioners’ failed to establish correctly the existence of tuberculosis or other diseases in live cattle; after slaughter, animals diagnosed with tuberculosis could turn out to have been free from the disease.¹²⁸ Veterinarians begged to differ, arguing that, only if they were offered more opportunity would chances of a more accurate diagnosis ‘significantly increase’, but such requests were rejected.¹²⁹ Even in Bavaria, where the relationship between farmers and veterinarians was more cordial, a governmental campaign that started in 1895 to introduce tuberculin testing on live cattle quickly ran out of steam because farmers’ insistence on ‘absolute diagnostic certainty’ could not be met.¹³⁰ It was only in 1952 that tuberculin testing became compulsory across Germany.

In 1882, Koch declared that the bacteria responsible for tuberculosis was identical in both man and animal. Confirming that the disease crossed species boundaries, he recommended draconian action: ‘Be the danger great or small that results from the consumption of *Perlsucht*-infected meat or milk, it is there and must therefore be avoided.’¹³¹ There was nothing original either in the bacteriologist’s findings that bovine tuberculosis was communicable or in his suggestion that drastic measures were needed: in the 1870s, the veterinary community, sparked by Gerlach’s pronouncements, had already visited these issues, and proposed solutions, by the time Koch made his intervention. As Keir Waddington has shown, British veterinarians, inspired by Gerlach, also took an early interest, but the impact of Koch’s interference was decidedly different between the two countries.¹³² In the case of Britain, ‘investigators with medical or pathological backgrounds’ quickly dismissed veterinary contributions and defended their role in the assessment of the health of meat.¹³³ In Germany, however, veterinarians’ influence held firm thanks to their control of abattoirs. As the example of the *Freibank* attests, they were

¹²⁷ Johne, *op. cit.* (note 110), 72.

¹²⁸ *Bericht über die Verhandlungen der 15. Versammlung des Deutschen Landwirtschaftsraths* (22. März–1. April 1887), 285.

¹²⁹ Georg Röckl, ‘Ergebnisse der Ermittlungen über die Verbreitung der Tuberkulose (Perlsucht) unter dem Rindvieh im Deutschen Reiche. Vom 1. Oktober 1888 bis 30. September 1889’, *Arbeiten aus dem kaiserlichen Gesundheitsamte*, 7 (1891), 479–555: 506.

¹³⁰ Bundesarchiv-Lichterfelde, R86 3039: ‘Impfung tuberkulöser Thiere 1890–1894: Norddeutsche Allgemeine Zeitung (11 Dezember 1897)’.

¹³¹ Robert Koch, ‘Die Ätiologie der Tuberkulose (Nach, einem in der Physiologischen Gesellschaft zu Berlin am 24. März 1882 gehaltenen Vortrage)’, in J. Schwalbe (ed.), *Gesammelte Werke von Robert Koch* (Leipzig: G. Thieme, 1912), 445.

¹³² Waddington, *op. cit.* (note 4), 36–40.

¹³³ Keir Waddington, ‘“Unfit for Human Consumption”: Tuberculosis and the Problem of Infected Meat in Late Victorian London’, *Bulletin of the History of Medicine*, 77, 3 (2003), 636–61: 648.

also able to claim a major contribution to the improvement of society: their expertise once more helped salvage meat from infected cattle. Even though the recourse to the abattoir could be seen as reflecting a failure to come up with reliable tools of diagnosis and generate trust with breeders, it was through the abattoir that the German veterinary profession made advances in the late nineteenth century, culminating in the passing of the Imperial Meat Inspection Law of 1900.

Conclusions

In 1938, Reinhold Schmaltz published what remains the most comprehensive history of the German veterinary profession. For the former professor of the Berlin school, who looked triumphantly back at the ‘finished past’, the history of his profession was a heroic story of veterinarians ‘independently’ achieving ‘full equal rights with all equals’.¹³⁴ One aim of this article has been to present a more sober, less simplistic and more complicated interpretation of events, in line with recent treatments accorded to other countries. German veterinary medicine in the period under review did not shape itself but was swayed by a variety of influences, traditions and interests laying claim to different types of animal. Political interests saw the need to solve epizootics among livestock at large; military figures wanted to train up farriers who would serve the horse; agricultural representatives preferred lay animal healers; and a significant body of physicians wanted little involvement in a venture that risked undermining their social reputation. Shaped by these conflicting influences and interests, veterinary medicine developed haphazardly. Exploiting the hippological tradition, veterinary schools emerged with a strong interest in military horses. By the mid-nineteenth century, as the voice of veterinary officers became dominant, concerns about competition with lay animal healers died down. The focus shifted to combatting cattle plague and identification with physicians grew strong. Building on their expertise in epizootics, veterinarians during the 1870s carved out new terrain in zoonosis, through their involvement with trichinosis, and then cemented their position through their later involvement with bovine tuberculosis.

Another major thread that has run through this article has been the entangled relationship between human and animal medicine. From early on, medical practitioners carried out veterinary duties. Even though some physicians resisted involvement in the veterinary schools, they were happy to teach the subject at universities. Following the foundation of the first generation of veterinary schools, discussion continued about the role of medicine in veterinary affairs, reflected in the ambiguous position medical officers assumed in veterinary police. What is clear is that veterinarians looked up to medical doctors. For this very reason, as medicine became increasingly scientific, veterinarians also wished to become scientific practitioners – a status achieved through their involvement in meat hygiene. Ultimately, the two healing professions differed in the degree to which they relied on the state. For veterinarians who struggled to win custom, especially in the countryside, involvement as public servants was integral to their survival, while, for medical practitioners, state appointments helped increase their competitiveness in private practice. Exposed less to the rigours of the marketplace, German veterinary identity came to acquire a strong public service ethos.

Compared with the British experience, the state-centred nature of the German profession was stark. In Britain, the private practitioners dominated the profession, which emphasised

¹³⁴ Schmaltz, *op. cit.* (note 15), preface.

practical knowledge, business acumen and social skills. In Germany, calls for a more practical orientation were made by the military, whose influence, while strong at the outset, diminished as the nineteenth century progressed. The voices of private practitioners are barely audible throughout the nineteenth century. For much of the period under review, veterinary officials dominated, whose status was built on superior school-leaving qualifications. They viewed the attainment of education and, in particular, scientific knowledge to be the way forward. Their powers grew more pronounced as veterinarians became employed in abattoirs, which allowed them to dissect and investigate both healthy and diseased animals in a laboratory-like setting. Crucially, while in Britain veterinarians were slow to embrace bacteriology because they felt threatened by a new model of controlling epizootics, in Germany veterinarians were more accommodating because of their secure position as sanitary investigators. They even claimed zoonotic diseases as part of their remit as the profession tried to expand its field of expertise.

Over the course of the nineteenth century, German veterinarians thus became important actors whose expertise informed the ways in which a modernising society should deal with animals. Contagious animal diseases became a major issue, with veterinarians contributing to debates about how the spread of epizootics should be contained. Concerns about meat hygiene offered veterinarians the opportunity to participate in discussions about how nutritious, healthy and safe foods could be tested, passed fit for consumption and delivered to a rapidly urbanising society. To make advances in both epizootics and zoonoses, veterinarians also sought to influence livestock breeding, persuading breeders to accept their 'scientific' expertise. Physicians, butchers, farmers – to name a few – contested this process of 'veterinisation' because it threatened both ownership and traditional understanding of animal bodies. Nonetheless, within rural and urban Germany, in diverse fields such as health, food, military and medicine, veterinary expertise made significant inroads – a development that became more marked during the twentieth century.